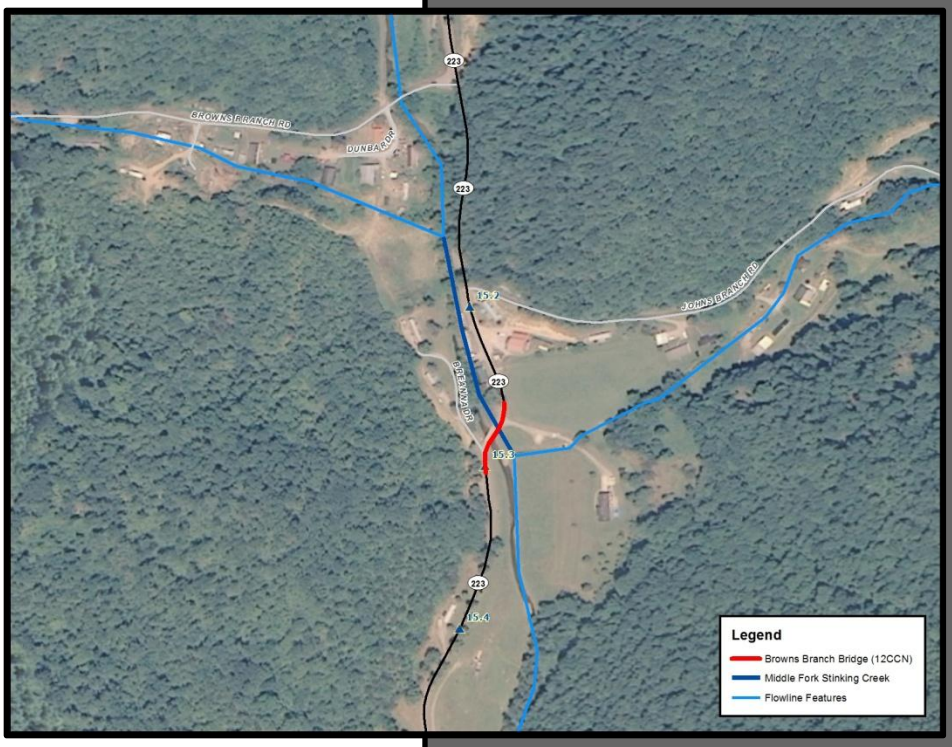
Data Needs Analysis



Scoping Study

KY 223, Knox County
Replace Stinking Creek Road
Browns Branch Bridge
Item No. 11-8705.00

Prepared by the KYTC
Division of Planning District 11

September 2012

KENTUCKY
TRANSPORTATION
CABINET

I. PRELIMINARY PROJECT INFORMATION

County: Knox **Item No.:** 11-8705
Route Number(s): KY 223 **Road Name:**
Program No.: **UPN:** (Function) (County #) (Route) (MPs)
Federal Project No.: **Type of Work:** Bridge Replacement

2013 **Highway Plan Project Description: Bridge Replacement**

Replace Stinking Creek Road Browns Branch Bridge.

Beginning MP: 15.26 **Ending MP:** 15.304 **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:**
ADT (current): 687 (2011) **Terrain:** Rolling
Access Control: ☐ None ☑ Permit ☐ Fully Controlled ☐ Partial Spacing:
Median Type: ☑ Undivided ☐ Divided (Type):
Existing Bike Accomodations: Shared Lane **Ped:** ☐ Sidewalk
Posted Speed: ☐ 35 mph ☐ 45 mph ☑ 55 mph ☐ Other (Specify):
KYTC Guidelines Preliminarily Based on : **MPH Proposed Design Speed**

Roadway Data:	**EXISTING**	**COMMON GEOMETRIC PRACTICES***
No. of Lanes	2	2
Lane Width	9	12
Shoulder Width	2	3
Max. Superelevation**	n/a	
Minimum Radius**	168	
Maximum Grade	n/a	
Minimum Sight Dist.	n/a	
Sidewalk Width(urban)	n/a	
Clear-zone***	n/a	

Existing Rdwy. Plans available? ☐ Yes ☑ No
Year of Plans:
☑ Traffic Forecast Requested
Date Requested: 9/27/2012
☐ Mapping 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.*:	061B00052N
Sufficiency Rating	24.9
Total Length	55
Width, curb to curb	24
Span Lengths	54
Year Built	1967
Posted Weight Limit	15 Ton
Structurally Deficient?	Yes
Functionally Obsolete?	No

Existing Geotech data available? ☐ Yes ☑ No

II. PROJECT PURPOSE AND NEED

A. Legislation

The following funds was listed in the 2012-2018 General Assembly's Enacted Highway Plan.

Funding	*Phase*	*Year*	*Amount*
BRX	D	2013	$200,000
BRX	R	2015	$25,000
BRX	U	2015	$25,000
BRX	C	2017	$515,000

B. Project Status

Design funds for this project have been requested. This project is for the replacement of a structurally deficient bridge along KY 233 at 15.280 Mile Point.

C. System Linkage

KY 223 connects KY 718 to US 25E between Barbourville and Pineville. The vicinity map can be seen in Exhibit 1.

D. Modal Interrelationships

KY 223 has no known modal interrelationships.

E. Social Demands & Economic Development

KY 223 connects to US 25E. It has a large residential population. There are a number of schools in the vicinity.

F. Transportation Demand

The 2011 actual traffic count is 687 ADT. Traffic forcasting has been requested.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

The current alignment of the roadway and bridge is difficult for truck traffic to maneuver with oncoming traffic. Numerous school buses travel this route daily.

H. Safety

There are 3 known accidents on this route in the vicinity of the bridge for 1/1/2009-12/31/2011. The bridge is structurally deficient with a sufficiency rating of 24.9. They may be seen in Exhibit 2.

I. Roadway Deficiencies

The bridge is classified as structurally deficient. According to the 07/16/2012 Structure Inventory and Appraisal Sheet, the super and sub structure are classified as poor.

Draft Purpose and Need Statement:

Need: This bridge is structurally deficient. It has a sufficiency rating of 24.9. With the existing alignment, it is difficult for truck traffic to maneuver the horizontal curves and remain in the correct lane.

Purpose: By replacing the bridge and roadway tying into the bridge, KY 223 will allow safer and more reliable access for the local communities of Scalf and Hammond to access US 25E.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

STIP Pg.#: **TIP Pg.#:**

Knox Co is attainment for all monitored air pollutants. Air quality during construction will be controlled with good construction practices.

B. Archeology/Historic Resources

☐ Known Archeological or Historic Resources are present

A phase I archaeological survey will determine cultural significance and if eligible sites are located in the project footprint. No historic resources have been identified. Skalf Quad, 1979, -83.699750 36.904949 Decimal Degrees.

C. Threatened and Endangered Species

The USGS Quadrangle is Scalf. Current species listed for Knox County are Indiana bat, Cumberland elktoe, little spectaslcase, blackside dace, Cumberland arrow darter and Cumberland darter. Future study will address the requirements of USFWS and prevent detriment to the protected species.

D. Hazardous Materials

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

Fueling stations or where petroleum products have been used can be identified for hazardous materials during phase I investigations and determine if phase II will be necessary. Other possible hazardous materials to investigate will be asbestos in structures.

E. Permitting

Check all that may apply: ☑ Waters of the US ☐ MS4 are ☑ 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 I ☐ DOW IWQC ☐ Special Use Waters

The USGS Quadrangle is Scalf. Middle Fork Stinking Creek is not listed as a special use water. No wetlands are identified near the project. A water of the United States, Middle Fork Stinking Creek, with impacts below ordinary high water will require coordination with the officers of the CORP and DOW. Construction activities may need a USACE 404 permit and a DOW 401 permit. Additionally, a surface water KYR 10 permit may be required for construction disturbance.

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

Bridge replacement.

G. Socioeconomic

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

Do not expect relocations.

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

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

The bridge has stone abutments with concrete box beams and deck overlay.

Anticipated Environmental Document: CE Level 1

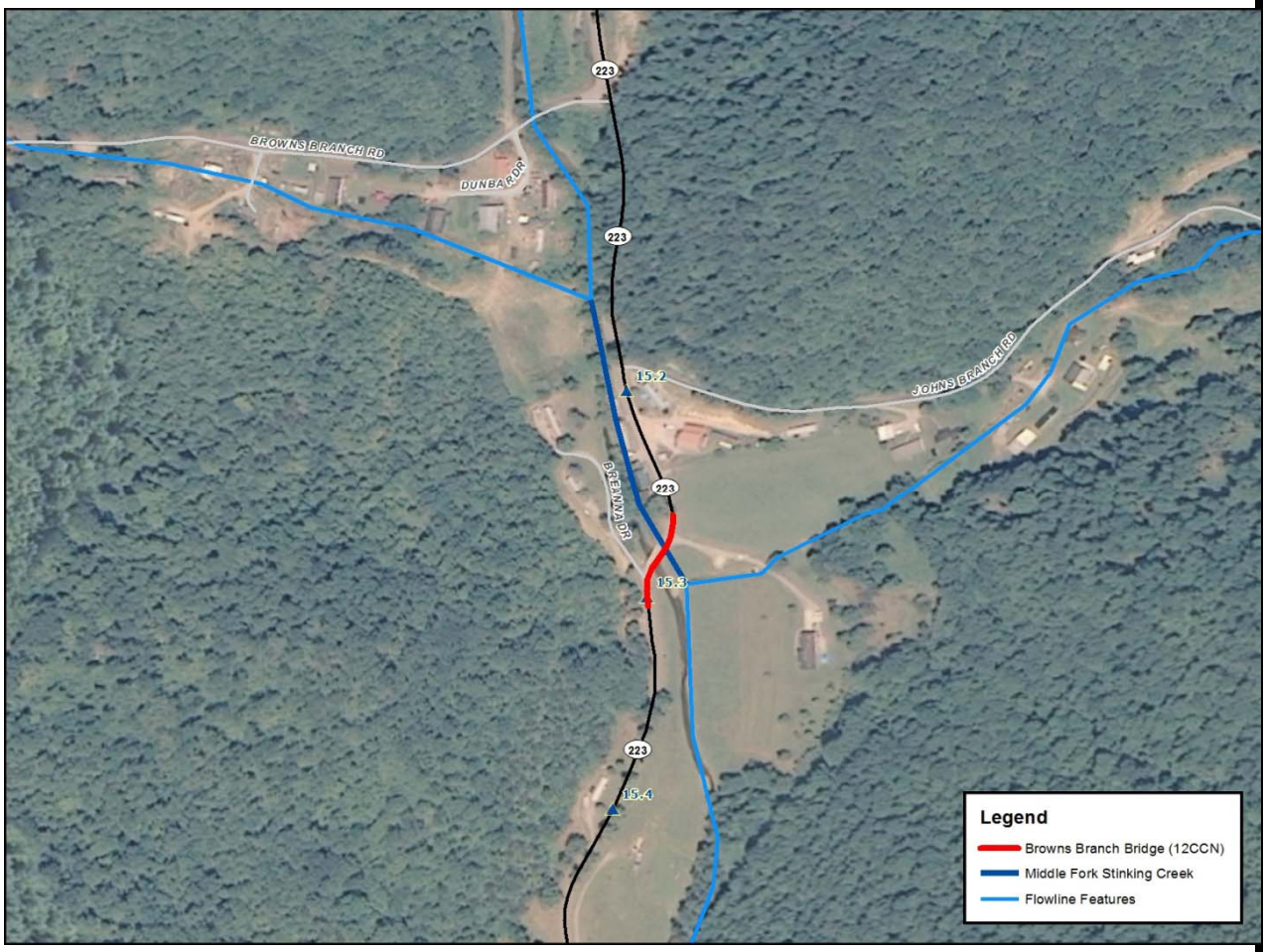
IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

This alternate could be carried forward, however, that would not address the need to repair a structurally deficient bridge.

B. Alternative 2: Build In-Place

Alternate 2 will replace the bridge in the same location as it is now. The road will be closed during construction. The detour route is 12 miles long. Right of way and utilities should be minimal.



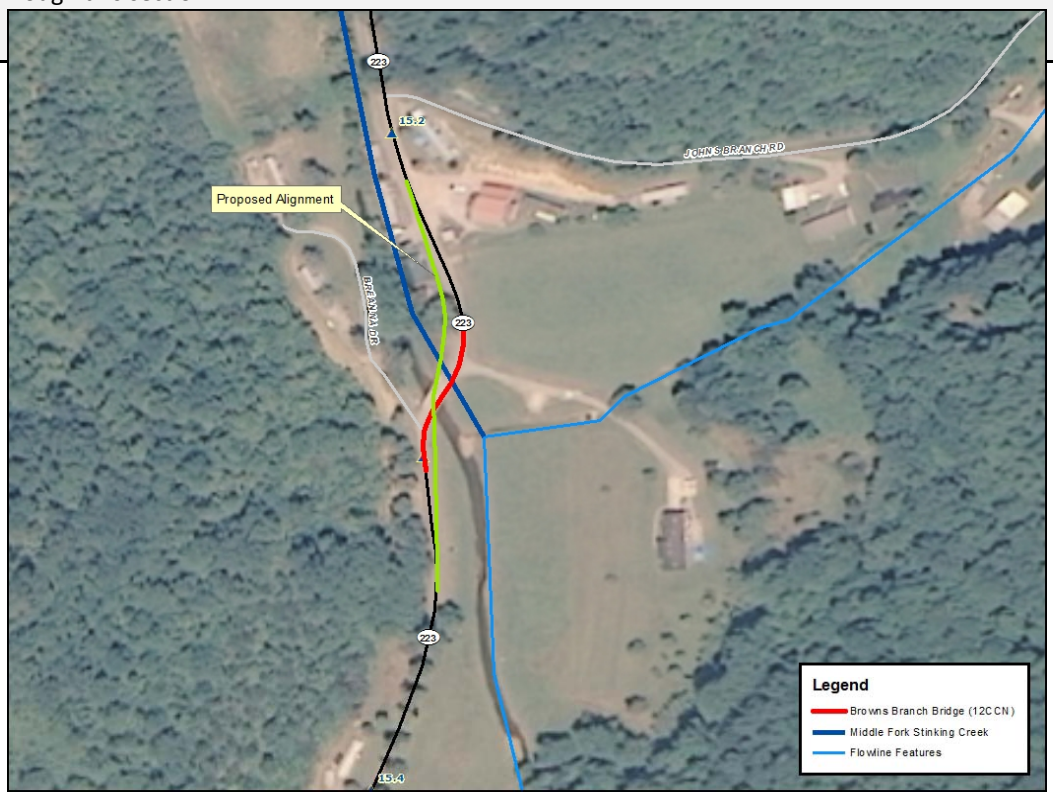
Planning Level Cost Estimate:

Phase	Estimate
Design	$200,000
R/W	$35,000
Utilities	$30,000
Const	$700,000
Total	**$965,000**

IV. POSSIBLE ALTERNATIVES (cont.)

B. Alternative 3: Build New Alignment

Alternate 3 will provide a new alignment for a portion of KY 223 and the bridge. It will improve the horizontal alignment of KY 223 tying into the bridge. During a site visit, the project team observed several school buses crossing the bridge. With the current alignment, it was difficult for the buses to remain on their side of the bridge and roadway through this section.



Planning Level Cost Estimate:

Phase	Estimate
Design	$200,000
R/W	$35,000
Utilities	$30,000
Const	$1,050,000
Total	**$1,315,000**

V. Summary

This study is a Data Needs Analysis (DNA) of a bridge replacement over Stinking Creek. The project team recommends Alternate 3 as funding allows.

Alt #	Description	D ($)(BRX)	R ($)(BRX)	U ($)(BRX)	C ($)(BRX)	Total ($mil)
1	No Build	-	-	-	-	-
2	Build In-Place	200,000	35,000	30,000	700,000	965000
3	Build New Alignment	200,000	35,000	30,000	1,050,000	1315000
-	Current Hwy Plan Estimated Cost	200,000	25,000	25,000	515,000	$765,000
-	Current Pre-Con Estimated Cost					

VI. Tables and Exhibits

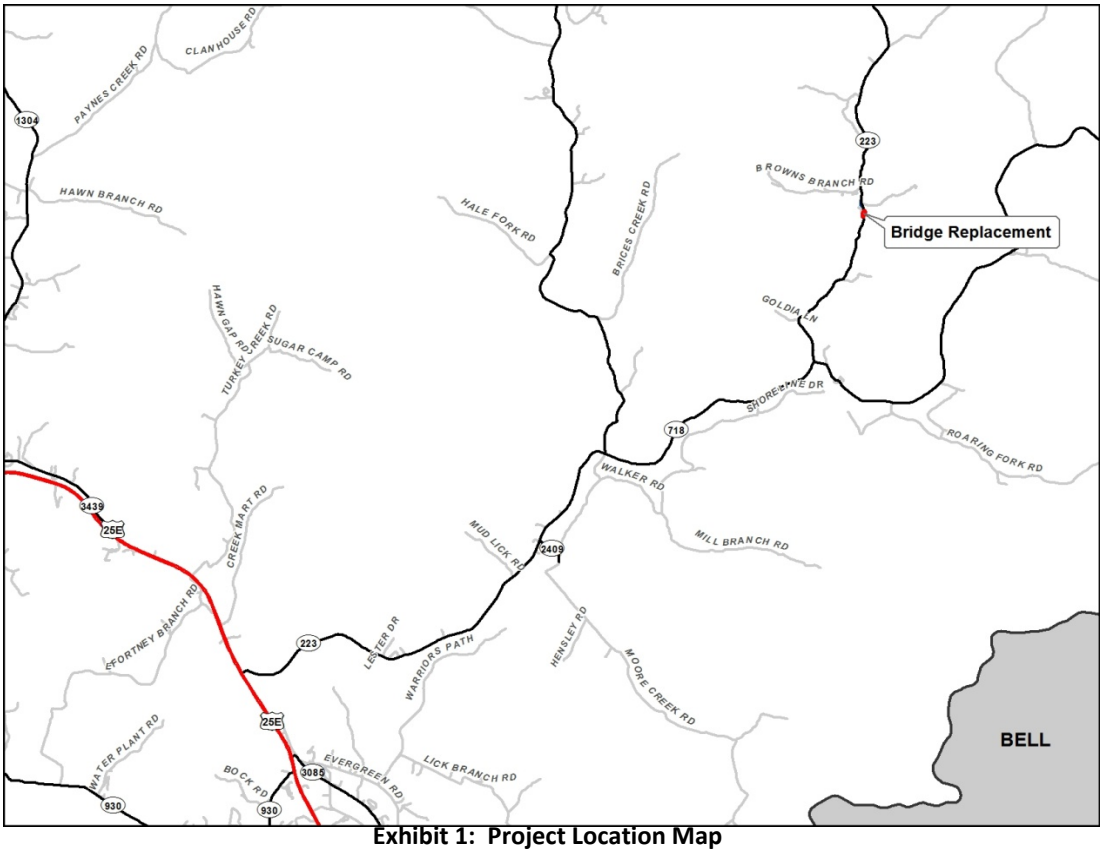


Exhibit 1: Project Location Map

Exhibit 2: Collision Data Map

VI. Tables and Exhibits (cont.)

Exhibit 3: Sideview of Bridge

Exhibit 4: Bridge Photo