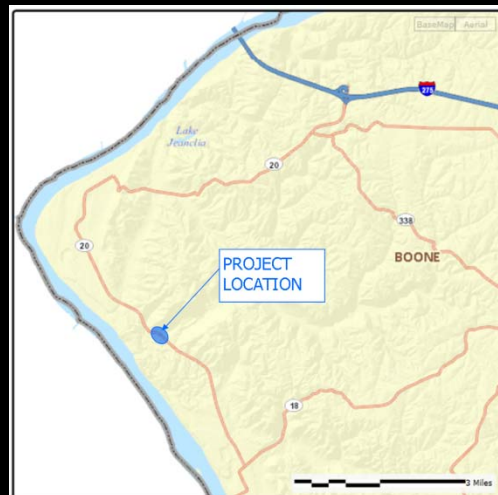
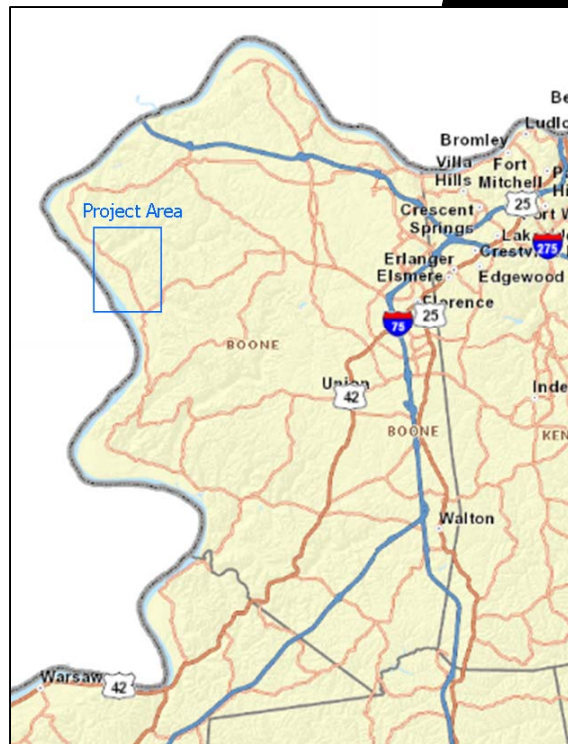


Data Needs Analysis



Scoping Study



KY 20, Boone County
From MP 2.8 to 2.86
Item No. 6-1079.00

Prepared by the KYTC
Division of Planning and
KYTC District 6

September 2012



I. PRELIMINARY PROJECT INFORMATION

County:	Boone	Item No.:	6-1079.00
Route Number(s):	KY 20	Road Name:	Bellevue Road
Program No.:	8664501D	UPN:	FD52 8 20 002-003
Federal Project No.:	BRO 5227 003	Type of Work:	Bridge Replacement

2012 Highway Plan Project Description:

Replace bridge on KY 20 over Woolper Creek southeast of Stone Creek Lane

Beginning MP: 2.8 Ending MP: 2.86 Project Length: 0.06

Functional Class.: ☐ Urban ☒ Rural State Class.: ☐ Primary ☒ Secondary

Collector ▼

Route is on: ☐ NHS ☒ NN ☐ Ext Wt

MPO Area: Not Applicable ▼

Truck Class.: AA ▼

In TIP: ☒ Yes ☐ No

% Trucks: 11.1

ADT (current): 657 (2012)

Terrain: Rolling ▼

Access Control: ☐ None ☒ Permit ☐ Fully Controlled ☐ Partial Spacing: ▼Median Type: ☒ Undivided ☐ Divided (Type):

Existing Bike Accommodations: None ▼

Ped: ☐ SidewalkPosted Speed: ☐ 35 mph ☐ 45 mph ☒ 55 mph ☐ Other (Specify):

KYTC Guidelines Preliminarily Based on : 55 MPH Proposed Design Speed

COMMON GEOMETRIC

Roadway Data: EXISTING PRACTICES*

No. of Lanes	2	Min. 2
Lane Width	9 ft	11 ft
Shoulder Width	3 ft	5 ft
Max. Superelevation**	Unknown	6%
Minimum Radius**	800 ft	1065 ft
Maximum Grade	2%	7%
Minimum Sight Dist.	Unknown	495 ft
Sidewalk Width(urban)	N/A	N/A
Clear-zone***	15 ft	10-18 ft

[Existing Rdwy. Plans available?](#)☒ Yes ☐ No

Year of Plans: 1939

☐ [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.*: 008B00018 (Bridge #2)

Sufficiency Rating 39.6

Total Length 279 ft

Width, curb to curb 18 ft

Span Lengths 182 ft

Year Built 1939

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 information was obtained from the 2012-2018 Six Year Plan.

<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
BRO	D	2013	\$500,000
BRO	R	2014	\$100,000
BRO	U	2014	\$50,000
BRO	C	2015	\$750,000

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.

C. System Linkage

KY 20 runs parallel to the Kentucky River along Boone County's western border. As a rural collector, it links small communities and individual residences and businesses in western Boone County and provides access to higher-level facilities such as I-275.

D. Modal Interrelationships

Trucks use the portion of KY 20 north and east of the project area to travel from a quarry near Petersburg to I-275, but trucks only occasionally use KY 20 within the project limits.

E. Social Demands & Economic Development

The stretch of road within the project limits is primarily used by local traffic. Some of this traffic's destination is the city of Burlington, which the local residents depend on for many commercial resources. The bridge over Woolper Creek allows for ease of travel to Burlington as well as to I-275.

F. Transportation Demand

The most recent traffic count was taken in 2012 and showed an ADT of 657. The prior ADT obtained was 678. Traffic has remained relatively stable over the past years.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

Congestion is not an issue due to the relatively low ADT; the existing two-lane configuration provides adequate capacity.

H. Safety

Only one crash was recorded during the past 3 years, resulting in a CRF of 0.37 which is well below the 1.00 threshold for high-crash locations. This crash was a single-vehicle collision. KY 20 is located on a tangent section south of the bridge, but the north approach to the bridge contains a relatively sharp S-curve. Based on the crash data, however, this doesn't appear to be creating a safety hazard within the project limits.

I. Roadway Deficiencies

The roadway width on the approaches and on the bridge itself is narrower than the 22-foot roadway width identified in the Common Geometric Practices for this type of facility; however, this is consistent with much of the KY 20 corridor. The bridge over Woolper Creek is structurally deficient and floods frequently.

Draft Purpose and Need Statement:

Need: The bridge on KY 20 over Woolper Creek has a Sufficiency Rating of 39.60 and is classified as structurally deficient as of July 2012. The steel girders are susceptible to failure due to section loss from rust. The abutments are also significantly damaged. The bridge floods frequently.

Purpose: The purpose of this project is to improve the reliability and safety of the KY 20 corridor by addressing flooding concerns and structural issues on the KY 20 bridge over Woolper Creek.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW**A. Air Quality**Project is in: ☐ Attainment area ☒ Nonattainment or Maintenance Area ☒ PM 2.5 County

STIP Pg. #: 6-7 (2013-2016, Draft)

TIP Pg. #: 76

B. Archeology/Historic Resources☐ Known Archeological or Historic Resources are present

At this time, it is unknown whether the bridge will be replaced in-place or along a new route. If it is replaced along a new route, and archaeological investigation will need to be performed. The bridge may also need to be cataloged for its historic properties.

C. Threatened and Endangered Species

Boone County is listed as having several threatened and endangered species, including Indiana Bat, several mussels, 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. Woolper Creek is not suitable for the listed mussel species because it is murky and the stream bed consists of silty clay. The area is covered by thick underbrush and, therefore, is not suitable habitat for Running Buffalo Clover.

D. Hazardous Materials☐ Potentially Contaminated Sites are present ☒ Potential Bridge or Structure Demolition

There are no potentially contaminated sites at the project location. A bridge will be demolished and will need to be checked 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

This is a bridge replacement project, which is considered a Type II Project.

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

The project location has houses around it but the houses are far enough away from the bridge to not be considered a problem.

H. Section 4(f) or 6(f) ResourcesThe following are present on the project: ☐ Section 4(f) Resources ☐ Section 6(f) Resources

Split Rock Conservation Park is located just west of the project location. This should be investigated as a potential 4(f) or 6(f) resource.

Anticipated Environmental Document:

CE Level 1



IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

This alternative does not meet the project purpose and need.

B. Alternative 2

Alternative 2 consists of replacing the bridge in-place. This option has the lowest cost of the alternatives that meet the project purpose and need, but will require traffic to be detoured during construction. The likely detour route would add up to ten miles for some trips.



Planning Level Cost Estimate:

<u>Phase</u>	<u>Estimate</u>
Design	\$500,000
R/W	\$100,000
Utilities	\$50,000
Const	\$750,000
Total	\$1,400,000

IV. POSSIBLE ALTERNATIVES (cont.)**B. Alternative #3**

Alternative 3 consists of replacing the bridge on a new alignment slightly upstream of the existing bridge. Like Alternative #2, this option would meet the project purpose and need, but would have the advantage of avoiding the need for a detour during construction. It would also improve the southern portion of the S-curve immediately north of the bridge. However, this alternative will require substantially more right-of-way than Alternative #2 and would have a higher construction cost.



Planning Level Cost Estimate:

<u>Phase</u>	<u>Estimate</u>
Design	\$500,000
R/W	\$400,000
Utilities	\$100,000
Const	\$1,100,000
Total	\$2,100,000

V. Summary

This study is a Data Needs Analysis (DNA) of a bridge replacement project on KY 20 over Woolper Creek, Item Number 6-1079.00. The bridge is to be replaced due to its age and structural capacity. The likely alternatives include a no-build option, bridge replacement in place, and a bridge replacement along a new route. The projected preferred alternative is Alternative 2, which is the replacement of the bridge at its current location.

Alt #	Description	D (\$)(Fund)	R (\$)(Fund)	U (\$)(Fund)	C (\$)(Fund)	Total (\$mil)
1	No-Build	-	-	-	-	-
2	Replace Bridge in Existing Location	500,000	100,000	50,000	750,000	1,400,000
3	Construct Bridge in New Location	500,000	400,000	100,000	1,100,000	2,100,000
-	Current Hwy Plan Estimated Cost	500,000	100,000	50,000	750,000	1,400,000
-	Current Pre-Con Estimated Cost	500,000	100,000	50,000	750,000	1,400,000

VI. Tables and Exhibits

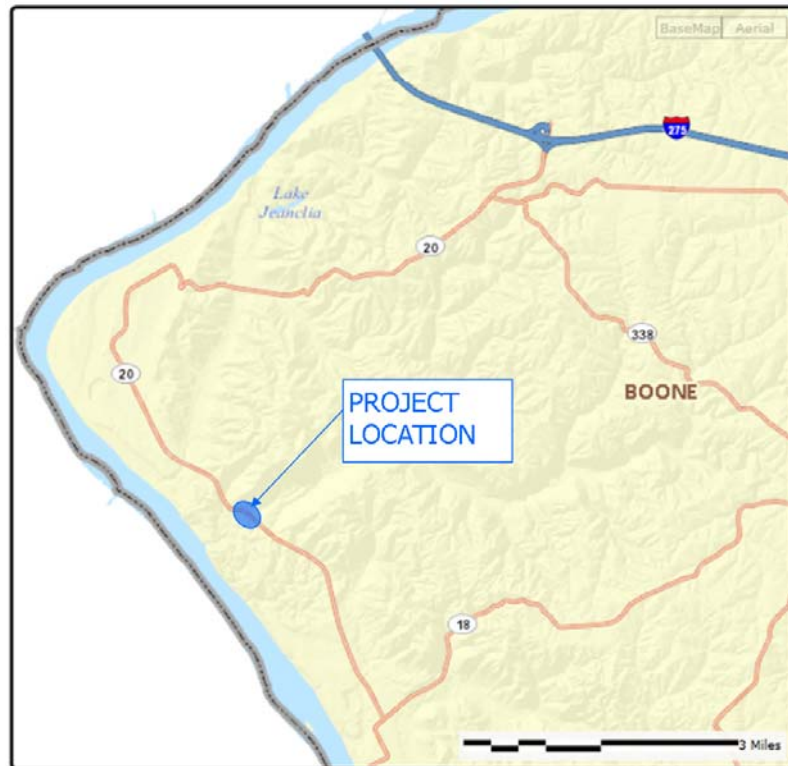


Exhibit 1: Project Location Map



Exhibit 2: View of bridge and approach roads

VI. Tables and Exhibits (cont.)



Exhibit 3: View of bridge substructure