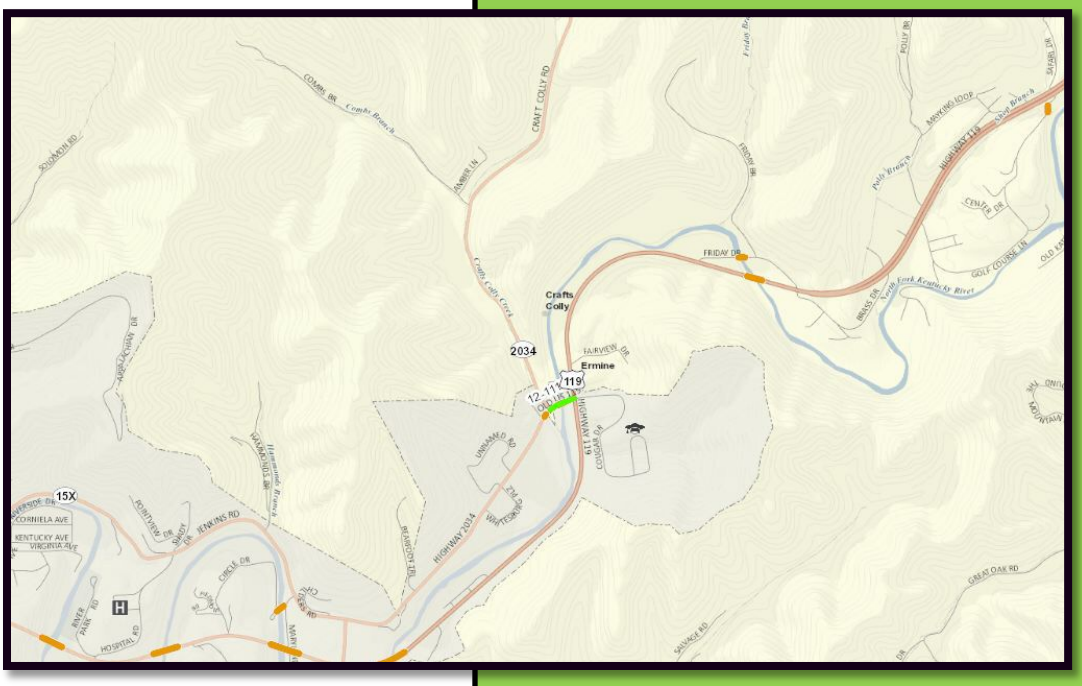
Data Needs Analysis



Scoping Study

Bridge Replacement
Letcher County
Replace Bridge on KY 2034C
over North Fork of Kentucky
River 0.02 E of US 119
(SR 42.7)
Item Number 12-1113.00

Prepared by KYTC
Division of Planning
District 12

April 2013

KENTUCKY TRANSPORTATION CABINET

I. PRELIMINARY PROJECT INFORMATION

County: Letcher **Item No.:** 12-1113.00
Route Number(s): KY 2034C **Road Name:** Old US 119
Program No.: 8750501D **UPN:** FD 52 067 2034 000-001
Federal Project No.: BRO 1203 (352) **Type of Work:** Bridge Replacement

2012 **Highway Plan Project Description:**

Replace bridge on KY 2034C over North Fork of Kentucky River 0.02 E of US 119 (SR42.7)

Beginning MP: 0.000 **Ending MP:** 0.058 **Project Length:** 0.058 Mile

Functional Class.: ☐ Urban ☑ Rural Collector **State Class.:** ☐ Primary ☑ Secondary
Route is on: ☐ NHS ☑ NN ☐ Ext Wt
MPO Area: Not Applicable **Truck Class.:**
In TIP: ☐ Yes ☐ No **% Trucks:** 8.00%
ADT (current): 5430 (2010) **Terrain:** Mountainous
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 : 35 **MPH Proposed Design Speed**

Roadway Data:	**EXISTING**	**COMMON GEOMETRIC PRACTICES***
No. of Lanes	2	3
Lane Width	10	12'
Shoulder Width	2'	4' and 6'
Max. Superelevation**	N/A	4%
Minimum Radius**	N/A	420'
Maximum Grade	N/A	10%
Minimum Sight Dist.	N/A	1280'
Sidewalk Width(urban)	N/A	N/A
Clear-zone***	N/A	N/A

Existing Rdwy. Plans available? ☑ Yes ☐ No Year of Plans: 1934
☐ Traffic Forecast Requested Date Requested:
☐ Mapping/Survey Requested Date Requested:
Type: Conventional

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.*:	067B00121N	(Bridge #2)
Sufficiency Rating	42.7	
Total Length	86.9'	
Width, curb to curb	23'	
Span Lengths	39'	
Year Built	1921	
Posted Weight Limit	No Restriction	
Structurally Deficient?	Yes	
Functionally Obsolete?	No	
Existing Bridge Type	Concrete Cast In Place	

Existing Geotech data available? ☐ Yes ☑ No

Detour Length(s): 3.7 Miles

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

II. PROJECT PURPOSE AND NEED

A. Legislation

This following funding was listed in the 2012 General Assembly's Enacted Highway Plan

Funding	*Phase*	*Year*	*Amount*
BRO	D	2014	$400,000
BRO	R	2015	$420,000
BRO	U	2015	$125,000
BRO	C	2016	$1,350,000

B. Project Status

Design funds for this project have not been authorized.

C. System Linkage

KY 2034C is a Rural Collector road located in the eastern part of Letcher County that connects KY 15 and KY 2034 to US 119. It serves as a connection for businesses and residences and crosses the North Fork of the Kentucky River.

D. Modal Interrelationships

There are presently no bike or pedestrian facilities along this section of highway.

E. Social Demands & Economic Development

There is no economic development anticipated in this area with the completion of this project. Although, as with all communities, development may occur within the project area. Letcher County High School is located across US 119 from the bridge. Traffic from the school uses the bridge as a connection to Whitesburg without having to travel US 119.

F. Transportation Demand

KY 2034C serves as a connection for businesses and residences between KY 15 and US 119. There is an alternate connection located at the intersection of KY 15 (M.P. 0.0) and US 119 (M.P. 17.0).

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

There are no congestion issues that would contribute to the need of this project.

H. Safety

Over the past three years there have only been 8 collisions at the intersection of US 119 and KY 2034C. All of these being on US 119. None of them were due to roadway characteristics, most are attributed to driver inattention due to wet roads and traffic stoppage. There could be a need for future lighting in the intersection or on the bridge, so if possible, include conduit channels with the new bridge construction or with lighting already installed.

I. Structure Deficiencies

The exterior beams have moderate spalling and the delams have rusty rebar exposed. There are some open cracks and stairstep cracking along the grout joints of the wet stone masonry pier. The wet stone masonry abutments and wingwalls have stairstep cracking with mortar exposed under the cap. The pier cap has 4' section of loss to the cap that is exposed to weather on the upstream side. The cap has deteriorated back to exterior beam and needs to be repaired.

Draft Purpose and Need Statement:

Need: Replace two-lane bridge that has a Sufficiency Rating of 42.7 which is structurally deficient and make improvements to approaches if needed.

Purpose: Improvements through replacement that will address the safety and structure deficiency concerns associated with the project.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

STIP Pg.#: 81 of 127 **TIP Pg.#:**

FY 2013-2016

B. Archeology/Historic Resources

☐ Known Archeological or Historic Resources are present

No Section 106 notifications have been generated from the District at this point. If the historical survey indicates that there may be an impact to historical sites, then the 106 process will be started.

C. Threatened and Endangered Species

The Indiana Bat (Myotis Sodalis), Gray Bat (Myotis Grisescens), and Blackside Dace (Phoxinus Cumberlandensis) are listed as threatened or endangered species in the project area. A BA may be required to satisfy Section 7 requirements for all species or an IBCMOA or tree-cutting restrictions may be utilized to compensate for any potential habitat loss for the Indiana Bat.

D. Hazardous Materials

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

At the time of the Environmental Overview, no UST/HAZMAT issues were noted in the project area.

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

ACE LON will be required from impacts associated with bridge replacement

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

G. Socioeconomic

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

Possible relocations associated with project. Relocation surveys will need to be completed to see if any low income or minority populations are affected.

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

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

No anticipated 4(f) or 6(f) impacts associated with project.

Anticipated Environmental Document: CE Level 1

IV. PROJECT SCOPING

One alignment has been considered for this project.

Alternate 1 Estimate

Phase	Estimate
Planning	
Design	$300,000
R/W	$236,000
Utilities	$200,000
Const	$1,000,000
Total	**$1,736,000**

This alternative would remove the existing structure and a bridge would be constructed in approximately the same location. Widening of the new structure would occur to the west of the existing structure. The new bridge would be three (3) lanes with one (1) 4.0' shoulder and one (1) 6.0' shoulder . A sidewalk is not proposed due to limited pedestrian usage and not having a reasonable termination point. Improvements would be made to the approaches, but the extent of the improvements would likely be driven by traffic data and right-of-way impacts. There is a detour that is 3.7 miles long that will be utilized so the existing bridge can be demolished and a new one constructed in its place.

Exhibit 1

V. Summary

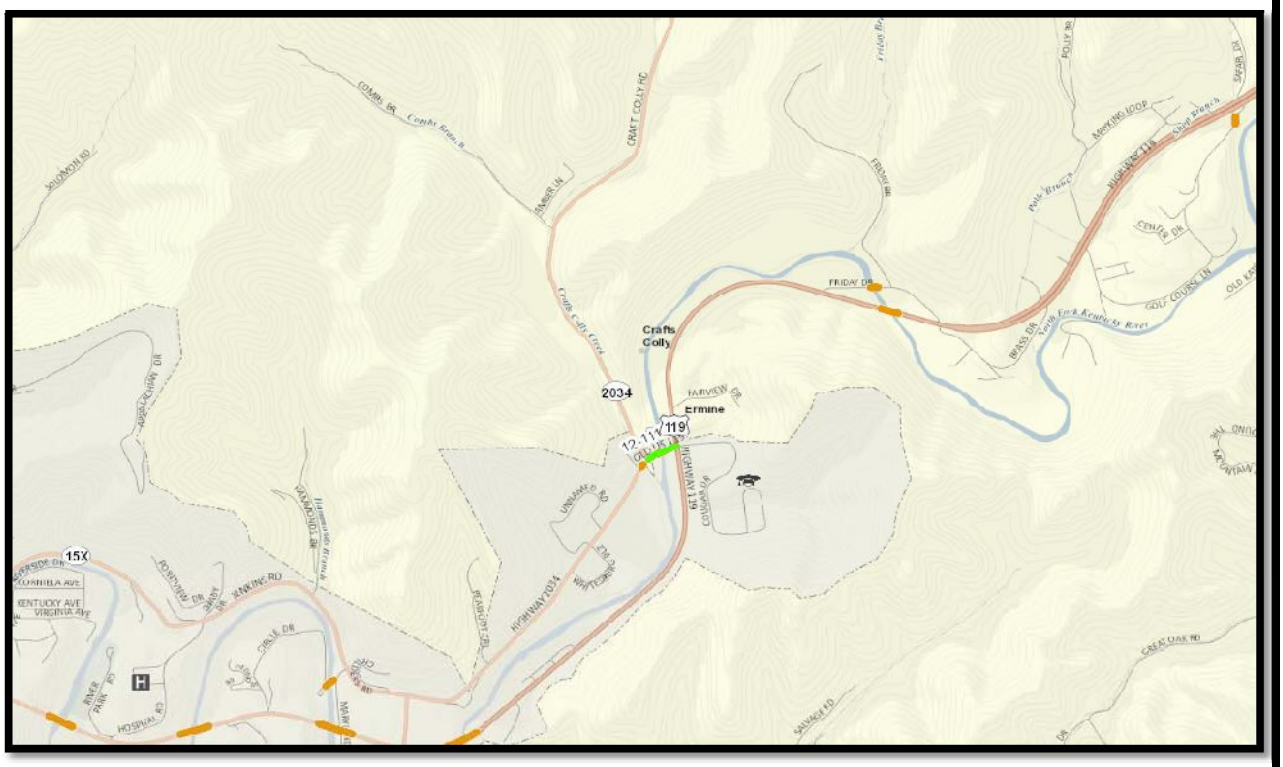
This study is a Data Needs Analysis (DNA) of a reconstruction project to address structure and functional deficiencies of the bridge at Ermine in Letcher County, Item Number 12-1113.00. Through analysis of the existing roadway geometrics, crash data, site visits, and discussion with the Project Team, several needs were identified within the project limits. The following were identified as project needs:

- The No Build Alternative is not feasible due to the poor Sufficiency Rating of the bridge.
- The proposed design shall be a three (3) lane bridge.
- Improvement of the bridge approaches will include transition from a two (2) lane to three (3) lane roadway.
-The new bridge is to include conduit for future lighting.

VI. Tables and Exhibits

Exhibits 2 & 3

VI. Tables and Exhibits



Location Map

VI. Tables and Exhibits