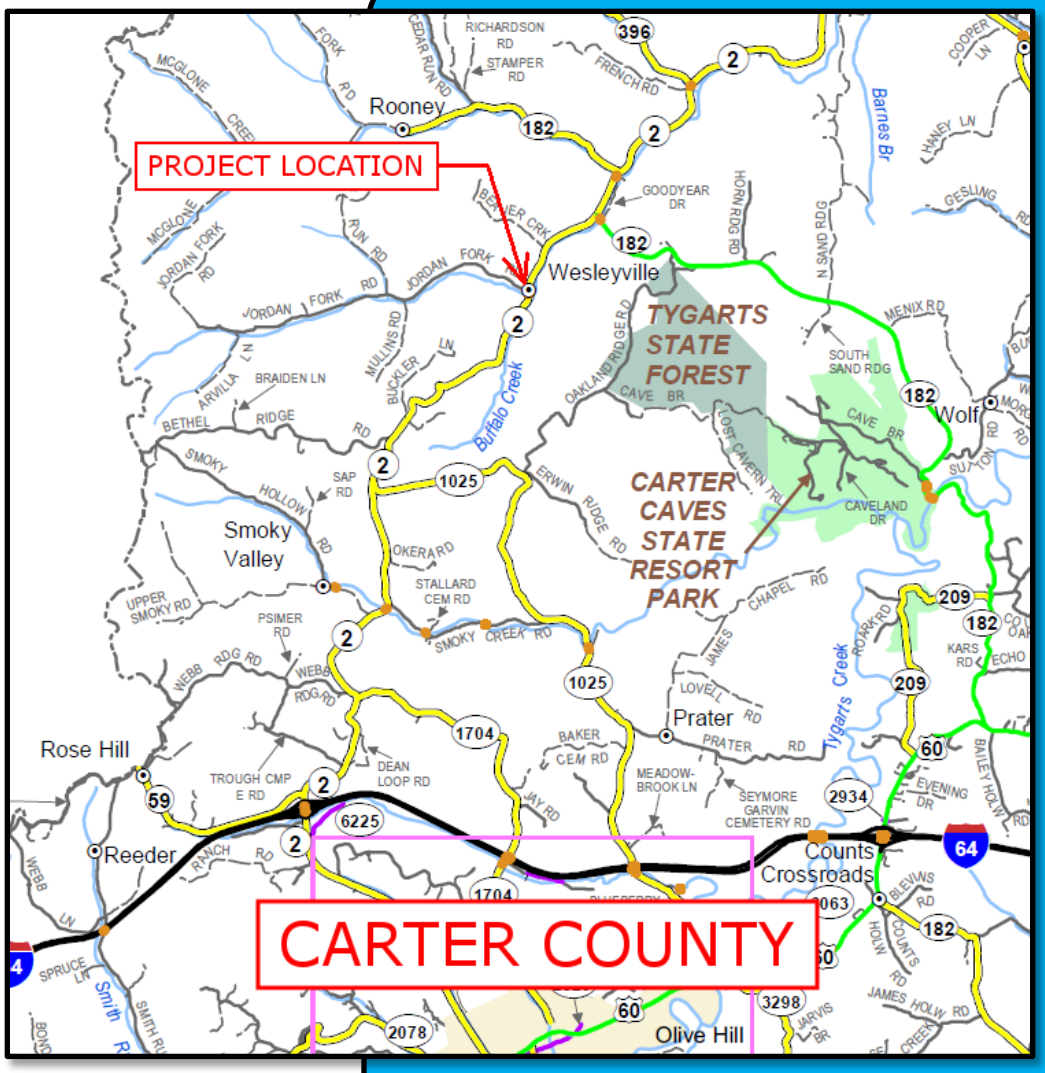
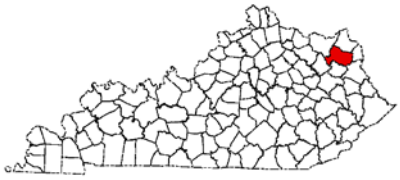
Data Needs Analysis





KY 474, Carter County
Bridge Replacement
M.P. 5.062 to M.P. 5.102
Item No. 09-1081.0

Prepared by KYTC
District 9 Design Staff

January 2013

KENTUCKY TRANSPORTATION CABINET

I. PRELIMINARY PROJECT INFORMATION

County: Carter **Item No.:** 09-1081.00
Route Number(s): KY 474 **Road Name:** Sandy Hook - Willard Road
Program No.: 86826 **UPN:** FD52 022 0474 005-006
Federal Project No.: BRO 0903(178) **Type of Work:** Structure
2012 **Highway Plan Project Description:**

REPLACE BRIDGE ON KY 474 OVER SMITH CREEK IN CARTER AT INTERSECTION OF KY 474 AND NUNN ROAD(CR 1507)(SR 40.1) 022B00123N

Beginning MP: 5.062 **Ending MP:** 5.102 **Project Length:** 0.04

Functional Class.: ☐ Urban ☑ Rural ☐ Local **State Class.:** ☐ Primary ☑ Secondary
Route is on: ☐ NHS ☑ NN ☐ Ext Wt
MPO Area: Not Applicable **Truck Class.:** AA
In TIP: ☐ Yes ☐ No **% Trucks:**
ADT (current): 917 (2010) **Terrain:** Rolling
Access Control: ☐ None ☑ Permit ☐ Fully Controlled ☐ Partial Spacing:
Median Type: ☑ Undivided ☐ Divided (Type):
Existing Bike Accommodations: Shared Lane **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	2
Lane Width	20'	24'
Shoulder Width	2' Earth	2'
Max. Superelevation**		8%
Minimum Radius**	311'	350'
Maximum Grade		5%
Minimum Sight Dist.		275'
Sidewalk Width(urban)		
Clear-zone***	0	2'

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.*:	(Bridge #1)	(Bridge #2)
Sufficiency Rating	41.1	
Total Length	74.1	
Width, curb to curb	20.3	
Span Lengths	2x34.1 (Approx)	
Year Built	1975	
Posted Weight Limit	15 tons	
Structurally Deficient?	Yes	
Functionally Obsolete?	Yes	
Existing Bridge Type	2- Span Box Beam	

Existing Geotech data available? ☐ Yes ☑ No

Detour Length(s):

*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 Highway Plan

Funding	*Phase*	*Year*	*Amount*
STP	D	2012	$450,000
STP	R	2012	$75,000
STP	U	2012	$150,000
STP	C	2012	$500,000

B. Project Status

Design funds were authorized in July, 2012. The project will be advertised to consultants.

C. System Linkage

KY 474 is classified as a Rural Local roadway and connects the communities of Poplar and Smith's Creek to KY 2 and the rest of Carter County.

D. Modal Interrelationships

N/A

E. Social Demands & Economic Development

The primary economic development in the area is a quarry at mile marker 3.2, approximately 2 miles from the project. Trucks from the quarry travel along KY 474, crossing this bridge on their way to KY 2.

F. Transportation Demand

The last traffic count near this intersection was 917 and was performed in 2010. Traffic has remained relatively constant over the past 10 years.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

The current number of lanes on the bridge is sufficient for the traffic that crosses it. No additional lanes are necessary.

H. Safety

The bridge is both structurally substandard and functionally obsolete. The curb-to-curb roadway width on the structure is 20.3 ft. The bridge is currently on a 12-month inspection schedule due to transverse cracks in one of the beams that were recently installed to replace existing substandard beams.

I. Roadway Deficiencies

The current roadway width of 20' does not meet current design standards. The roadway width is especially problematic due to the higher volume of truck traffic that this roadway carries.

Draft Purpose and Need Statement:

Need: This project is necessary due to the poor condition of the bridge, the poor geometrics of the roadway, and the high volume of trucks that cross the structure daily.

Purpose: The purpose of this project is to reconstruct the bridge and approaches to provide improved safety and access for the residents and businesses of KY 474.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

STIP Pg.#: Pg 17&18 of 127 FY2013- **TIP Pg.#:**

B. Archeology/Historic Resources

☐ Known Archeological or Historic Resources are present

There are no known archaeology sites present within the project area. Additionally, the area appears to have been highly disturbed. Investigations will be conducted, if warranted, once an alignment has been chosen for final development. There are no NRHP listed properties within the project area. The DEA Historian has made a site visit and determined that there are no eligible properties (including the bridge) existent within the project area.

C. Threatened and Endangered Species

Indiana bat, gray bat and fanshell mussel are federally listed species that are known to occur in Carter County. The project area is within a known swarming polygon for Indiana bat. There are a few trees in the project area that will likely be impacted. Once an alignment is chosen an IB CMOA will be developed to include tree clearing restrictions and/or payment into the Indiana Bat Conservation Fund (IBCF). It is likely that an "Assumed Presence Biological Assessment" for gray bat will be written and will include strict adherence to the KYTC Standards and Specifications for erosion and sedimentation control as mitigation measures to offset impacts to any potential gray bat foraging habitat. The stream does not appear to be of a size or of a substrate type to support freshwater mussels. Therefore, a No Effect finding is anticipated for the fanshell mussel.

D. Hazardous Materials

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

The bridge will need to be inspected for asbestos containing materials. It is possible that there are some mastics that were used on the structure that could contain some asbestos. However, it is not expected that these materials would warrant a full blown asbestos abatement. Division of Environmental Analysis (DEA) personnel will oversee any inspection and/or abatement of ACMs related to the demolition of the existing structure or any other structures that might require demolition as a result of the project. In addition to possible asbestos abatement that might be required for the project, there is also a gas station within the project area that will likely require a Phase II ESA to determine if there is contamination present. It appears likely that at least a strip taking might be necessary from the gas station so some drilling to determine if contamination is present and if so, the extent of it, will be completed prior to right of way acquisition. Again, DEA personnel will oversee this work. All of these investigations will be documented as part of the CE Level 1.

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

The existing structure crosses Smith Creek which is within the Tygarts Creek basin. It is not considered a Special Use water of the Commonwealth. It appears to have been highly disturbed, scoured, and eroded. The stream banks have been lined with grouted channel liner both upstream and downstream of the existing bridge and there are some existing gabion baskets along one side. Smith Creek is shown as a Zone A on the FEMA mapping, which indicates that no base flood elevations have been determined, but it is subject to inundation by the 1% annual flood. Unless channel relocation and/or design will be required to correct the scouring problem, it is anticipated that an ACE LON can be used for the project.

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

There are homes, apartments, businesses, and a church within the project area.

G. Socioeconomic

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

It is unknown whether low income or minority populations reside within the project limits. However, with the proximity of some of the residences and businesses, it appears that relocations could be a possibility.

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

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

There were no publicly owned parks or recreation areas observed within the project limits. If any of the potentially eligible properties are determined to be eligible for the NRHP, then Section 4(f) would apply if any of them are impacted by the project.

Anticipated Environmental Document: CE Level 1

IV. PROJECT SCOPING

The Project Scope and estimated costs were based on a temporary run-around detour and an in-place replacement of the existing structure.

Current Estimate

Phase	Estimate
Planning	
Design	$450,000
R/W	$75,000
Utilites	$150,000
Const	$500,000
Total	**$1,175,000**

IV. PROJECT SCOPING (cont.)

V. Summary

The current Six Year Plan project cost estimate should be adequate to cover the bridge replacement costs.

VI. Tables and Exhibits