

Data Needs Analysis



Boyle County
Bridge Replacement
Curtis Road (CR 1226)
Item No. 7-1133

Prepared by
KYTC District 7 Planning

October 9, 2012



I. PRELIMINARY PROJECT INFORMATION

County:	Boyle	Item No.:	7-1133.00
Route Number(s):	CR 1226	Road Name:	Curtis Road
Program No.:	86752	UPN:	FD52 011 1226 000-001
Federal Project No.:	BRZ 0703 (311)	Type of Work:	Bridge Replacement

2012 Highway Plan Project Description:

Replace bridge on Curtis Rd (CR 1226) over N Rolling Fork at jct with KY 37 (SR 19.2) 011C00042N.

Beginning MP:	0.004	Ending MP:	0.044	Project Length:	0.04
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Functional Class.: ☐ Urban ☒ Rural

State Class.: ☐ Primary ☐ Secondary

Route is on: ☐ NHS ☐ NN ☐ Ext Wt

MPO Area: Not Applicable

Truck Class.:

% Trucks:

Terrain:

ADT (current): 153 (2006)

Access Control: ☐ None ☒ Permit ☐ Fully Controlled ☐ Partial

Median Type: ☒ Undivided ☐ Divided (Type):

Existing Bike Accommodations:

Ped: ☐ Sidewalk

Posted Speed: ☐ 35 mph ☐ 45 mph ☐ 55 mph ☒ Other (Specify): 15 mph

KYTC Guidelines Preliminarily Based on : 15 **MPH Proposed Design Speed**

COMMON GEOMETRIC

Roadway Data:	EXISTING	PRACTICES*
No. of Lanes	1	2
Lane Width		18 ft
Shoulder Width		2 ft
Max. Superelevation**		8%
Minimum Radius**		60 ft
Maximum Grade		12%
Minimum Sight Dist.		80 ft
Sidewalk Width(urban)		
Clear-zone***		

Project Notes/Design Exceptions?:

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

☒ [Traffic Forecast Requested](#)
Date Requested: 5/25/2012

☐ Mapping/Survey Requested
Date Requested:

Type:

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

*Criteria taken from the Geometric Design of Very Low-Volume Local Roads (ADT less than or equal to 400)

Bridge No.*:	011C00042N
Sufficiency Rating	19.2
Total Length	70.9 ft
Width, curb to curb	11.8 ft
Span Lengths	
Year Built	1930
Posted Weight Limit	12 tons
Structurally Deficient?	YES
Functionally Obsolete?	

[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 project is listed in the 2012 Highway Plan with federal bridge funds.

<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
BRZ	D	2013	\$300,000
BRZ	R	2014	\$45,000
BRZ	U	2014	\$45,000
BRZ	C	2015	\$450,000
			\$840,000

B. Project Status

Federal funding was approved on July 19, 2012 for \$300,000 for the design phase.

C. System Linkage

Curtis Road is not a connecting link to any other roads. It is a local road that dead ends less than one mile from KY 37. Its provides local access to about seven houses and a cemetery.

D. Modal Interrelationships

The project will not interface with nor complement any airports, rail and port facilities, or transit services. Boyle County public schools operate school buses across this bridge in both morning and afternoon.

E. Social Demands & Economic Development

The project will not foster any new employment, nor benefit schools, land use plans, or recreation facilities. There are no additional developments in this area at this time for future development.

F. Transportation Demand

Curtis Road is a one lane roadway with low traffic volumes around 153 ADT. This is a low volume road since it is a dead end road with only seven properties consisting of residential, farm land, and a cemetery.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

There does not appear to be a concern with current congestion along the route.

H. Safety

There is no accident data available for this road on the Kentucky State Police collision database. The Boyle County Road Engineer does not have knowledge of any crashes at this location.

I. Roadway Deficiencies

The bridge is located on a rural local route over North Rolling Fork Creek in southwestern Boyle County. A bridge inspection was completed in November 2011. Based on the report, this bridge has a sufficiency rating of 19.2 and is structurally deficient. The structural deficiencies are reported in the 'Element Condition State Data' section of the inspection report (Appendix A). From a field reivew in August 2012, there appeared to be a broken rail and cracked pavement along the bridge (Appendix B).

Draft Purpose and Need Statement:

Need: The existing bridge is around 82 years of age and has experienced rusting, spalling, and cracking throughout the structure. The bridge is structurally deficient with a sufficiency rating of 19.2.

Purpose: To improve and provide a structurally sound crossing for Curtis Road over the North Rolling Fork Creek.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

STIP Pg. #: p 9 of DRAFT FY 13-16

TIP Pg. #:

Boyle Co. is in attainment for all monitored air pollutants.

B. Archeology/Historic Resources

☒ Known Archeological or Historic Resources are present

A historic checklist or study will be needed. The bridge is historic. It was built in 1930. Additionally, within the viewshed of the bridge is the Forkland Community Center which consists of several historic buildings, including a school dating to 1928. An Archaeology Checklist or Phase I survey will need to be completed in order to rule out any impacts to archaeological sites. This may be done in house or contracted out, depending on time and available resources. Optimum time for a survey would be during a winter draw-down when more of the shoreline is exposed. Coordination of findings with the SHPO is required.

C. Threatened and Endangered Species

Indiana bat, clubshell, and running buffalo clover are listed as federally endangered in Boyle Co. During a site visit in September 2012 potential foraging and roosting habitat was observed for the bat species in the project area along with potential mussel habitat; however a Habitat Assessment will need to be conducted to examine the habitat potential more closely. A Biological Assessment may also be needed. Habitat for RBC should be assessed in May during bloom time since the location/setting is historic. A HA will be needed; however, the shading and disturbance regime needed for RBC did not appear present. Any impacts to threatened and endangered species must be mitigated for through coordination with USFWS.

D. Hazardous Materials

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

During a site visit in September 2012, a small, local dump was noted adjacent to the project area. During the environmental process, the hazardous materials Subject Matter Expert will be consulted on this property. Due to the age of the bridge, it should be tested for asbestos prior to demolition.

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

Any impacts below the ordinary high water mark within the stream will need a USACE 404 Permit (likely LON or NW depending on length of impact) and potentially a Water Quality Certification from the Division of Water.

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 scope of the project may require noise analyses if additional lanes of traffic planned for this project. The noise associated with construction and demolition will be temporary.

G. Socioeconomic

Check all that may apply: ☐ Low Income/Minority Populations affected ☐ Relocations ☒ Local Land Use Plan available
There will likely be no socioeconomic impacts associated with 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

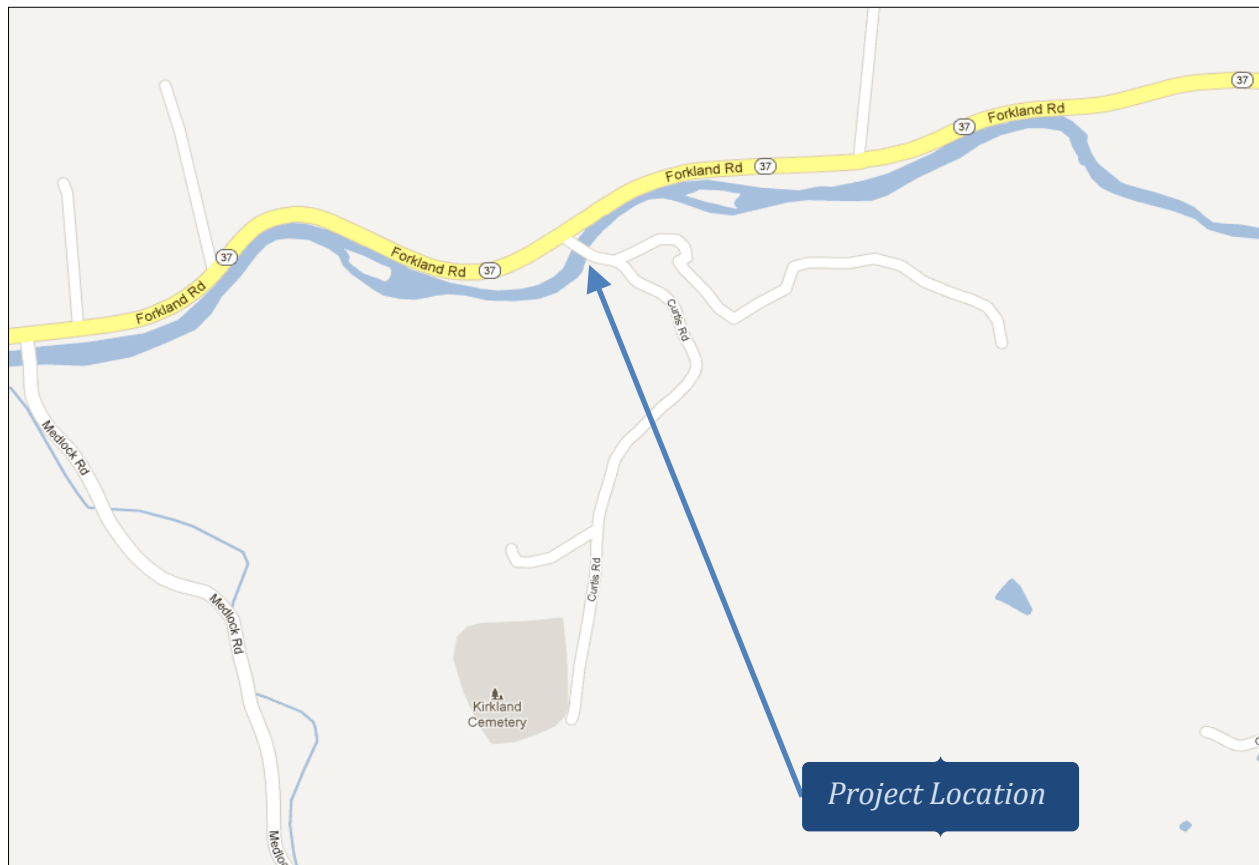
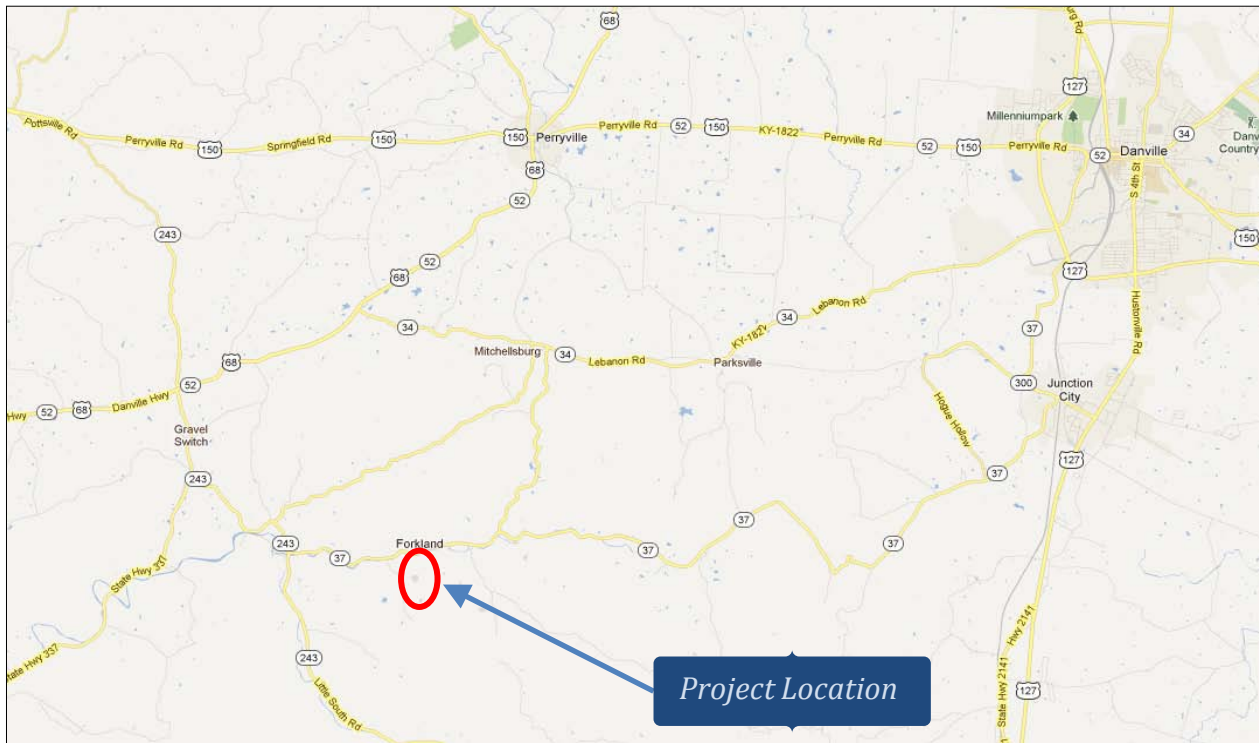
If the bridge is ruled as eligible for the National Register of Historic Places it could also be afforded protection under Section 4(f). The KYTC has options to mitigate and avoid impacts to Section 4(f) resources including a programmatic agreement for mitigating historic bridges and using "de minimis" guidance for minor strip takings.

Anticipated Environmental Document:

CE Level 1



IV. Project Location Maps



IV. Project Scoping

A. No Build

Due to the age of the existing bridge structure and the low sufficiency rating with apparent structural deficiencies, the "No Build" alternative should not be recommended. If no improvements are made, the structure will continue to be structurally deficient which could become a hazard to motorists and other users of the road.

B. Basis for Highway Plan Cost Estimate

The cost estimate is based on replacing the existing two-span bridge with a new two-span bridge in the same location with no alignment shift. The proposed clear bridge width includes one 12 foot lane with two foot shoulders (16 feet curb to curb). The approach length would be minimal with little pavement tapers since the new bridge width would be near the same width as the existing approaches. Temporary easements for construction would most likely need to be acquired around the bridge for removing existing structure and other construction activities as well as allowing room for materials.

VI. PROJECT CONCERNS

- Due to Curtis road being a dead end street, the bridge should not be closed during construction.

VII. Appendix

A. Appendix of the DNA Planning Study

- A 2011 Bridge Inspection Report
- B Bridge Photos

011C00042N

KYTC Bridge Inspection Report

Summary:

Inspection Date: 10/26/2011
 Inspector: JHOOD (210)
 Primary Type: Substandard (12 Months)

Types of Inspections Performed:

National Bridge Inventory: Y
 Element: Y
 Fracture Critical: N
 Underwater: N
 Other Special: N

Inspector Signature: _____

District Review Date: 11/1/2011

District Reviewer: JWHEELER (124)

JRW

IDENTIFICATION			
Bridge ID (8):	011C00042N	MAP BRIDGE	District Number: 7
Route Carried (7):	CURTIS ROAD		County (3): 11 Boyle
Mile Point:	0.024		Feature Intersected (6): NO. ROLLING FORK
Location (9):	75' S OF JCT KY 37		Road Name: CURTIS RD
Structure Description:	70.87 Foot - 2 Span Steel Stringer/Multi-beam or Girder		

NBI CONDITION		SCHEDULE TAB				
Deck (58):	6	Schedule:	Required (Y/N)	Last Date	Frequency	Next Date
Superstructure (59):	4	NBI (90):		10/26/2011	(91): 12 mos	10/26/2012
Substructure (60):	5	Fracture Critical (92A):	N	(93A): 1/1/1901	(92A): mos	1/1/1901
Culverts (62):	N	Underwater (92B):	N	(93B): 10/1/2004	(92B): mos	10/1/2006
Channel/Protection (61):	6	Other Special (92C):	N	(93C): 1/1/1901	(92C): mos	1/1/1901
		Elemental:	NA		12 mos	10/26/2012

Load Rating and Posting						WATERWAY	
Truck Type	Typ I	Typ II	Typ III	Typ IV	Gross	Scour Critical (113):	8
Recomm. Posting:	12	12	12	12	12	Observed 113 Rating:	5
Field Posting:	-1	-1	-1	-1	12	Waterway Adeq. (71):	6
Posting Status (41):	P Posted for load						
Signs Posted:	Cardinal:	Y	Non-Cardinal:	Y			

DECK/WEARING SURFACE					
Deck Type (107):		8 Wood or Timber			
Wearing Surface/Protective System (108):		Type: 6	Membrane: 0	Protection: 0	
Traffic Safety Features (36):		Bridge Rail: 0	Transition: 0	Appr. Rail: 0	Rail Ends: 0
Overlay:		Y			
Overlay Type:		Asphalt			
Overlay Thickness:		4.00			

Vertical Clearances	
Minimum Vertical Overclearance (53):	99.99
Minimum Vertical Underclearance (54):	0.00
Maximum Vertical Clearance (10):	99.99
Minimum Vertical Clearance:	99.99

Sufficiency Ratings		
SR:	19.20	SD/FO: 1 Structurally Deficient

Element Condition State Data									
Elm/Env	Description	Units	Total Qty.	Qty. CS1	Qty. CS2	Qty. CS3	Qty. CS4	Qty. CS5	
106/1	Unpnt Stl Opn Girder	LF	420.00	0.00	0.00	420.00	0.00	0.00	
210/1	R/Conc Pier Wall	LF	17.00	0.00	17.00	0.00	0.00	0.00	
215/1	R/Conc Abutment	LF	72.00	0.00	72.00	0.00	0.00	0.00	

011C00042N

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Element Condition State Data

Elm/Env	Description	Units	Total Qty.	Qty. CS1	Qty. CS2	Qty. CS3	Qty. CS4	Qty. CS5
32/1	Timber Deck/AC Ovly	SF	840.00	840.00	0.00	0.00	0.00	0.00
332/1	Timb Bridge Railing	LF	140.00	140.00	0.00	0.00	0.00	0.00
357/1	Pack Rust Smart Flag	EA	1.00	0.00	1.00	0.00	0.00	0.00
609/1	Debris on Superstruc	EA	1.00	1.00	0.00	0.00	0.00	0.00

Element Condition State Data

Str Unit	Elm/Env	Description	Description
1	106/1	Unpnt Stl Opn Girder	MODERATE TO HEAVY PACK RUST ON ALL STRINGERS WITH 100% SECTION LOSS IN AREAS OF THE WEBS OF BEAMS 2 & 5.
1	210/1	R/Conc Pier Wall	MODERATE SPALLING AT TOP OF PIER AT BEARING AREA. MODERATE HONEYCOMBING.
1	215/1	R/Conc Abutment	MINOR VERTICAL CRACKING IN ABUTMENTS. MODERATE HONEYCOMBING.
1	32/1	Timber Deck/AC Ovly	< none >
1	332/1	Timb Bridge Railing	< none >
1	357/1	Pack Rust Smart Flag	MODERATE TO HEAVY PACK RUST ON ALL BEAMS.
1	609/1	Debris on Superstruc	THERE IS MINOR DEBRIS BETWEEN THE BEAMS.

BRIDGE.Notes

Work Candidates

Inspector Candidates:

Candidate ID:	Status	Priority	Assigned	Action	Elem	Date Recommended
REMOVE DEBRIS	Approved	High	Unassigned	40	609	10/26/2011

August 2012



August 2012

Appendix B



October 1995



March 1988

