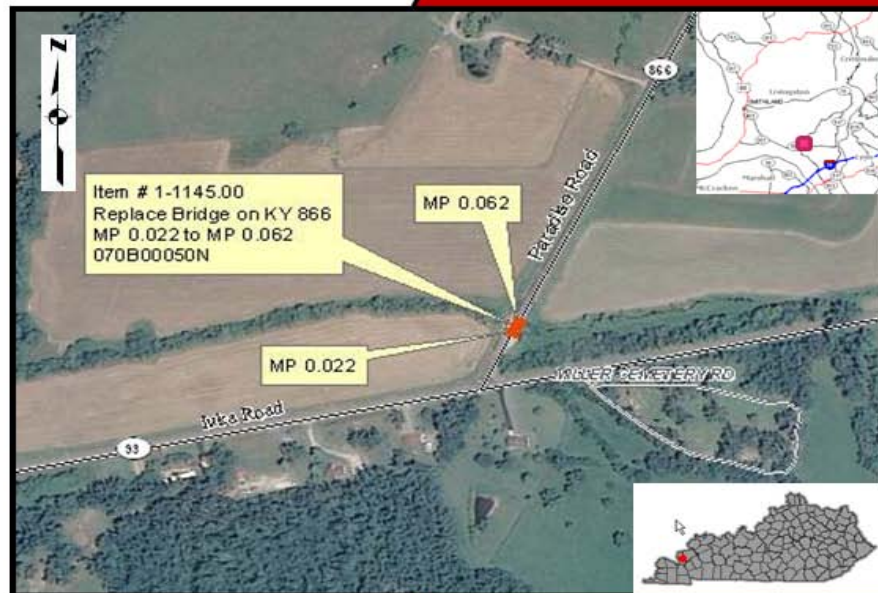


Data Needs Analysis



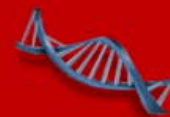
Scoping Study



KY 866
Livingston County
Gum Creek
Bridge Replacement
Item No. 1-1145.00

Prepared by
KYTC District 1

October 2012



I. PRELIMINARY PROJECT INFORMATION

County: Livingston Item No.: 1-1145.00
Route Number(s): KY 866 Road Name: Paradise Road
Program No.: 86849 UPN: FD52 070 0866 000-001
Federal Project No.: BRO 0103(310) Type of Work: Bridge Replacement

2012 Highway Plan Project Description:

Replace Bridge on KY 866 over fork of Gum Creek 0.02 mile North of KY 93 (SR 28.1) 070B00050N

Beginning MP: 0.022 Ending MP: 0.062 Project Length: 0.04

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

Route is on: ☐ NHS ☐ NN ☐ Ext Wt

MPO Area: Not Applicable

Truck Class.: ☐

In TIP: ☐ Yes ☒ No

% Trucks: 0

ADT (current): 599 (2010)

Terrain: ☐

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

Spacing: ☐

Median Type: ☒ Undivided ☐ Divided (Type): ☐

Existing Bike Accommodations: ☐

Ped: ☐ Sidewalk

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

KYTC Guidelines Preliminarily Based on : 45 MPH Proposed Design Speed

COMMON GEOMETRIC

Roadway Data:

EXISTING

PRACTICES*

No. of Lanes	2	2
Lane Width	9'	9'
Shoulder Width	1' earth	3' paved
Max. Superelevation**		6%
Minimum Radius**		660'
Maximum Grade		8%
Minimum Sight Dist.		360'
Sidewalk Width(urban)		n/a
Clear-zone***		30'

[Existing Rdwy. Plans available?](#)

☐ Yes ☒ No

Year of Plans:

☒ [Traffic Forecast Requested](#)

Date Requested: 8/24/2012

☐ Mapping/Survey Requested

Date Requested:

Type:

Project Notes/Design Exceptions?: Yes, DE for 45mph instead of 55mph to more closely match existing conditions.

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

Bridge No.*: 070B00050N

Sufficiency Rating: 28.1

Total Length: 32.2

Width, curb to curb: 22

Span Lengths: 29.9

Year Built: 1961

Posted Weight Limit: 15 Tons

Structurally Deficient?: No

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 was listed in the FY 2012 - FY 2018 Highway Plan.	<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
	BRO	D	2013	\$200,000
	BRO	R	2014	\$100,000
	BRO	U	2014	\$100,000
	BRO	C	2015	\$400,000

B. Project Status

Design funds for this project have been requested and approved on 7/25/2012.

This project is to replace the bridge on KY 866/Paradise Road over fork of Gum Creek, 0.02 mile North of KY 93 / Iuka Road (SR 28.1) 070B00050N. The project will span from milepoint 0.022 to milepoint 0.062.

C. System Linkage

KY 866 is classified as a Rural Minor Collector. It serves the local community and local traffic as Paradise Road.

D. Modal Interrelationships

KY 866 is rated Truck Class A. Current traffic data shows no truck traffic. KY 866 is not a part of any known bike routes in Kentucky.

E. Social Demands & Economic Development

The area along KY 866 / Paradise Road is made up mostly of residential and farm land. There looks to be very little expectation of economic development in the immediate area. Please see Exhibit 1 on Page 9 for more detail.

F. Transportation Demand

The last actual traffic count on KY 866 from MP 0.022 to MP 0.062 was in 2010 and showed an ADT of 599 (this data can be found in CTS). According to the traffic count data shown in CTS, the ADT had declined between 1995 to 2001, but has begun trending upward between 2001 and 2010.

A traffic forecast was requested on 8/24/2012.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

Based upon the low traffic count of 599 ADT (please see the notes mentioned above in Section F. Transportation Demand), and the roadway geometrics of two 9' lanes with 1' earth shoulders, capacity does not look to be an issue at this time nor in the future.

H. Safety

The collision data was obtained from the Kentucky State Police database for a 12 year period from January 1, 2000 to September 28, 2012 and stretching along KY 866 / Paradise Road from MP 0.0 to MP 1.062 to encompass the whole area of the project. 1 collision was found using these criteria. The collision location can be seen in Exhibit 2 on Page 9. From viewing the location of the collision located through these parameters, (it is shown around the intersection of Paradise Road / KY 866 and Country Road, which is beyond the immediate area of the project), this collision is of no consequence with regards to this project.

The CRF for this section of KY 866 is unavailable in HIS. However for KY 866 from MP 0.467 to MP 1.467, there is a CRF of 0.586 shown in HIS.

I. Roadway Deficiencies

The existing roadway on KY 866 / Paradise Road consists of two 9' lanes with 1' earth shoulders. These findings are not consistent with the HIS assessment of two 9' lanes and 3' earth shoulders. Since this road is classified as Rural Minor Collector, KYTC's Practical Solutions Geometrics for Rural Collectors recommends using two 9' lanes with 3' paved shoulders. (This will require a design exception for use of a design speed of 45 mph to more closely match existing conditions.)

Draft Purpose and Need Statement:

Need: The bridge on KY 866 over the Fork of Gum Creek needs to be replaced due to having a sufficiency rating of 28.1 and poor roadway geometrics.

Purpose: The purpose of this study is to identify all necessary concerns involved with the replacement of the bridge over the fork of Gum Creek and to improve the reliability of this bridge via replacement.

2/12/2013

IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

This alternative may be carried forward, but does not address the needs identified. Future permanent closure of this bridge would cause traffic to be redirected and impact local residents. Please see Exhibit 3 on Page 10 for Example Detour.

B. Alternative 2: Replace Bridge in Existing Location

Replace the two lane rural roadway approaches on KY 866 and bridge over Gum Creek in the same location as the existing. The new bridge may need to be widened to allow for the recommended geometrics. This alternative will not change the current horizontal alignment. Since the existing bridge cannot remain open during construction, the road will be closed to through traffic during construction. Traffic will be detoured onto other roads. A sketch of the proposed project can be seen below. Please see Exhibit 3 on Page 10 for Example Detour.



Planning Level Cost Estimate:

<u>Phase</u>	<u>Estimate</u>
Design	\$220,000
R/W	\$100,000
Utilities	\$250,000
Const	\$500,000
Total	\$1,070,000

IV. POSSIBLE ALTERNATIVES (cont.)

B. Alternative 3: Replace Bridge to West / East of Existing Location

Replace the two lane rural roadway approaches on KY 866 and bridge over Gum Creek shifting the alignment West or East of the existing. Since the new bridge will be constructed away from the existing bridge, traffic could remain on the existing bridge during construction. Temporary diversions will be necessary to construct tie-ins. A sketch of the proposed project can be seen below. Please see Exhibit 3 on Page 10 for Example Detour.



Planning Level Cost Estimate:

<u>Phase</u>	<u>Estimate</u>
Design	\$220,000
R/W	\$150,000
Utilities	\$200,000
Const	\$700,000
Total	\$1,270,000

V. Summary

This study is a Data Need Analysis (DNA) of a Bridge Replacement project of KY 866 / Paradise Road over Gum Creek from MP 0.022 to MP 0.062 in Livingston County, Item Number 1-1145.00. 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:

- KY 866 / Paradise Road has poor roadway geometrics.
- Key 866 / Paradise Road has a Sufficiency Rating of 28.1.
- Key 866 / Paradise Road has a CRF of 0.586.

The purpose of this study is to address poor roadway geometrics, SR, and CRF; and to improve the safety and reliability of the roadway and bridge on KY 866.

Included in the alternatives were a no build recommendation, a replace in the existing location alternative, and a replace to the West or East of the existing location alternative. After review of the data and discussion at the project team meeting, it was determined that Alternative #2, Replace in the existing location would best address the purpose and need for the project. The estimate for this alternative is slightly above the funding listed in the current Highway Plan (see phases D, U, and C).

Alt #	Description	D (\$)BRO	R (\$)BRO	U (\$)BRO	C (\$)BRO	Total (\$mil)
1	No Build	-	-	-	-	-
2	Replace in Existing Location	220,000	100,000	250,000	500,000	1,070,000
3	Replace to West / East	220,000	150,000	200,000	700,000	1,270,000
-	Current Hwy Plan Estimated Cost	200,000	100,000	100,000	400,000	800,000
-	Current Pre-Con Estimated Cost	200,000	100,000	100,000	400,000	800,000

VI. Exhibits



Exhibit 1: Project Location Map

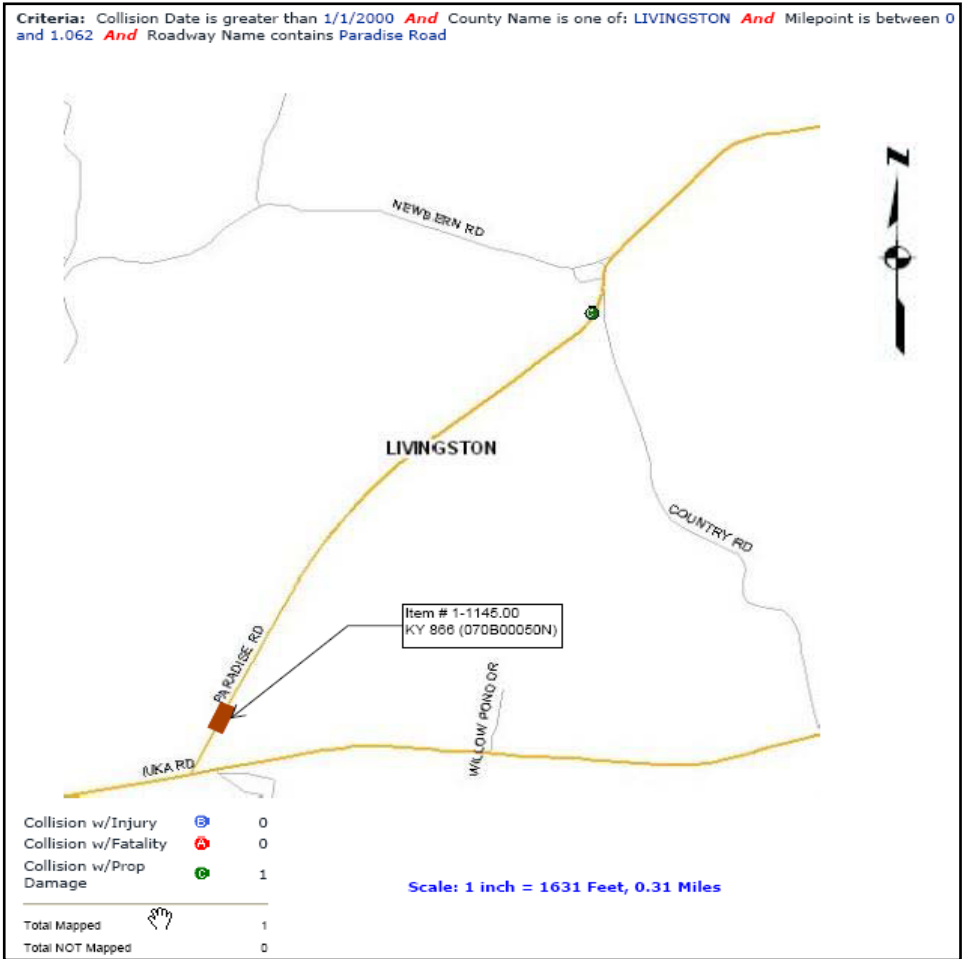


Exhibit 2: Collision Data from Kentucky State Police Database

VI. Exhibits (cont.)

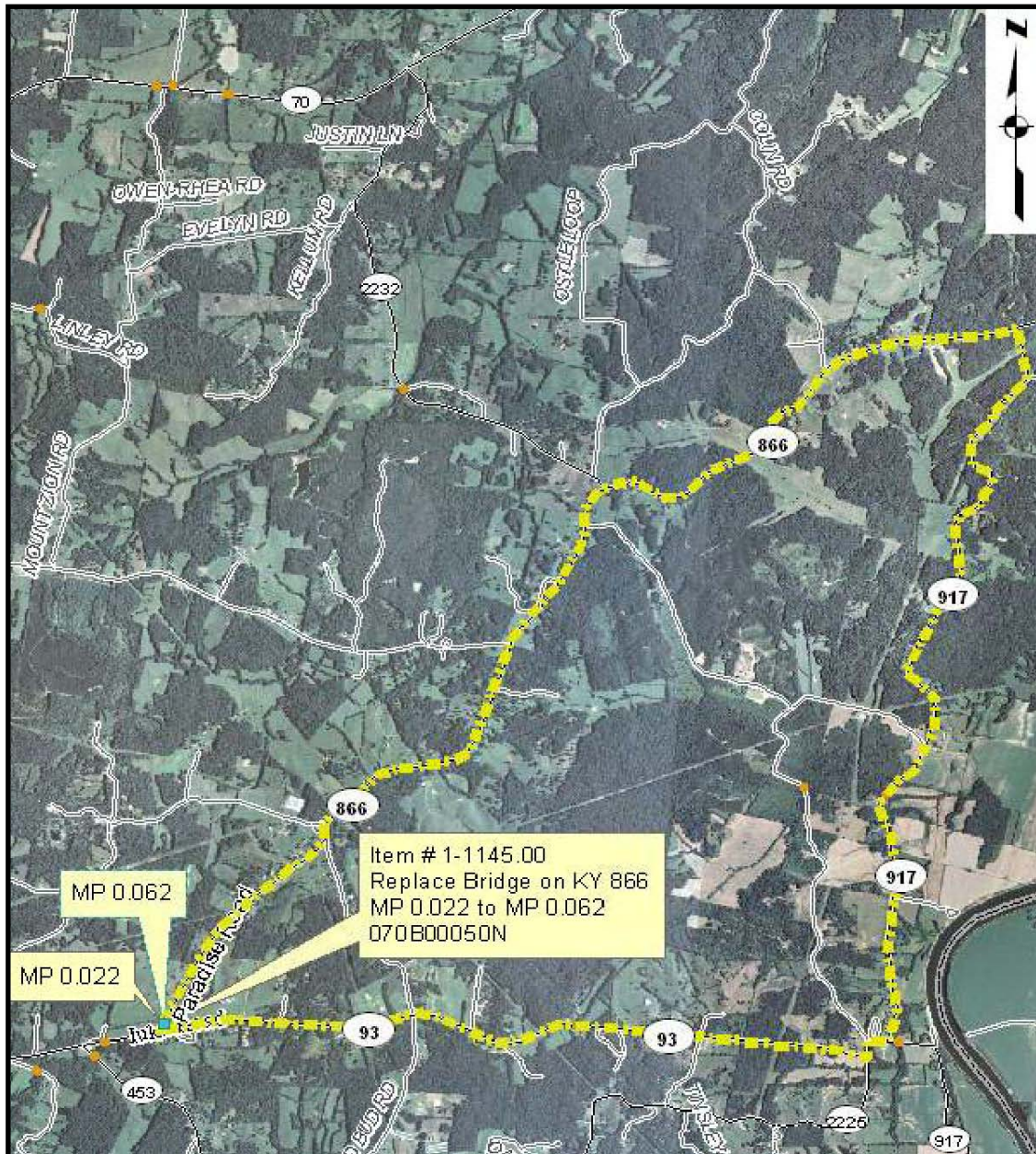


Exhibit 3: Example Detour - (approximately 14.5 miles)

From the bridge on KY 866, go South on KY 866, then East on KY 93, then North on KY 917, then Southwest on KY 866 back to the bridge location.

Helpful Links:

Projectwise folder containing all DNA Study documents: [1145 DNA Study.xlsx](#)

Collision Report: [1145 Crash Data Report.pdf](#)

Bridge Report: [1145 Bridge Report.pdf](#)

Bridge Pictures: [1145 Bridge Pictures.pdf](#)

Traffic Forecast: [1145 2-8-13 livingston county traffic forecast.pdf](#)

(A printed version of these documents can be made available to those without Projectwise access.)