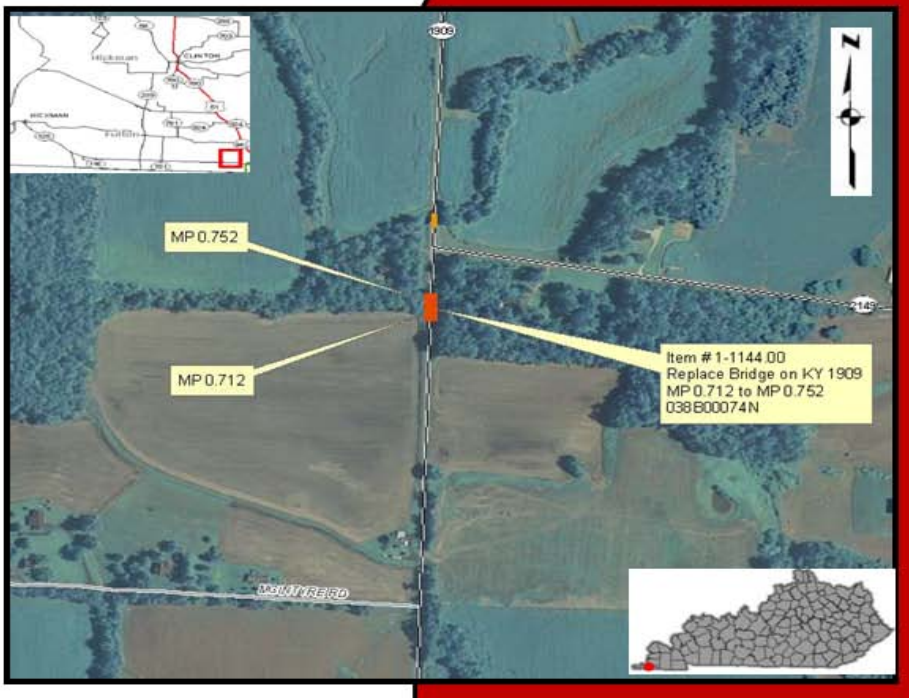
Data Needs Analysis



Scoping Study

KENTUCKY TRANSPORTATION CABINET

KY 1909
Fulton County
Little Bayou De Chien Creek
Bridge Replacement
Item No. 1-1144.00

Prepared by
KYTC District 1

October 2012

I. PRELIMINARY PROJECT INFORMATION

County: Fulton **Item No.:** 1-1144.00
Route Number(s): KY 1909 **Road Name:**
Program No.: 86848 **UPN:** FD52 038 1909 000-001
Federal Project No.: BRO 0103(311) **Type of Work:** Bridge Replacement

2012 **Highway Plan Project Description:**

Replace Bridge on KY 1909 over Little Bayou De Chien Creek South of Intersection with KY 2149 (SR 28.7) 038B00074N

Beginning MP: 0.712 **Ending MP:** 0.752 **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): 163 2008 **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 : 50 **MPH Proposed Design Speed**

Roadway Data:	**EXISTING**	**COMMON GEOMETRIC PRACTICES***
No. of Lanes	2	2
Lane Width	8'	9'
Shoulder Width	2' (1' paved shoulder	2'
Max. Superelevation**	on each side measured)	6%
Minimum Radius**		835'
Maximum Grade		8%
Minimum Sight Dist.		425'
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 50 mph 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.*:	038B00074N
Sufficiency Rating	28.7
Total Length	32.2
Width, curb to curb	22.3
Span Lengths	29.9
Year Built	1966
Posted Weight Limit	3 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 was listed in the FY 2012 - FY 2018 Highway Plan.

Funding	*Phase*	*Year*	*Amount*
BRO	D	2014	$225,000
BRO	R	2015	$150,000
BRO	U	2015	$150,000
BRO	C	2016	$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 1909 over Little Bayou De Chien Creek South of the Intersection with KY 2149 (SR 28.7) 038B00074N. The project will span from milepoint 0.712 to milepoint 0.752.

C. System Linkage

KY 1909 is classified as a Rural Local roadway. It serves the local community and local traffic.

D. Modal Interrelationships

KY 1909 is rated Truck Class A. Current traffic data shows no truck traffic. KY 1909 is not a part of any known bike routes in Kentucky.

E. Social Demands & Economic Development

The area along KY 1909 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 1909 from MP 0.712 to MP0.752 was in 2008 and showed an ADT of 163 (this data can be found in CTS). According to the traffic count data shown in CTS, the ADT has been increasing since 1990.

A traffic forecast was requested on 8/24/2012. The traffic forecast was completed on 12/21/2012.
A growth rate of 2% was used. The projected volume for Design Year 2038 is 290 AADT. For more information, please see the section Helpful Links located on Page 11 for a link to the Traffic Forecast.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

Based upon the low traffic count of 163 ADT, and the roadway geometrics of two 8' lanes with 1' paved shoulders, capacity does not look to be an issue at this time nor in the future. The traffic forecast projects volume growth up to 290 ADT, which still does not look to be a capacity issue.

H. Safety

The collision data was obtained from the Kentucky State Police database for a 12 year period from January 1, 2000 to September 29, 2012 and stretching along KY 1909 from MP 0.512 to MP 0.952 to encompass the whole area of the project. 2 collisions were found using these criteria. Collision locations can be seen in Exhibit 2 on Page 9. By reading the 2 Crash Reports (Please see the section Helpful Links located on Page 11 for more information.), it is shown that these crashes were at the intersection of KY1909 and KY2149, and appear to be due to drivers not stopping for the stop sign at that intersection.

HIS had no available CRF for this section of KY1909.

I. Roadway Deficiencies

The existing roadway on KY 1909 consists of two 8' lanes with 1' paved shoulders. These findings are somewhat consistent with the HIS assessment of two 8' lanes and 2' shoulders. Since this road is classified as Rural Local, KYTC's Practical Solutions Geometrics for Rural Local Roads recommends using two 9' lanes with 2' paved shoulders. (This will require a design exception for use of a design speed of 50 mph to more closely match existing conditions.)

Draft Purpose and Need Statement:

Need: The bridge on KY 1909 over Little Bayou De Chien Creek needs to be replaced due to being structurally deficient, having a sufficiency rating of 28.7, and poor roadway geometrics.

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

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

STIP Pg.#: **TIP Pg.#:**

Project is within air quality attainment area.

B. Archeology/Historic Resources

☐ Known Archeological or Historic Resources are present

Project area has been cleared by DEA archaeologist and the SHPO office with a No Effect on Historic Properties. Cultural Historic clearance is still to be completed. Initial survey of area by DEC did not find any known historic structures.

C. Threatened and Endangered Species

The following species are listed as Endangered, Threatened or Candidate for Fulton County: Myotis sodalis (Indiana bat); Potamilus capax (fat pocketbook); Scaphirhychus albus (pallid sturgeon); Etheostoma chienense (relict darter); Sterna antillarum (interior least tern); and Villosa lienosa (little spectaclecase). Project location is not within any indiana bat polygon and the little bayou de chien is not considered habitat for the relict darter. A habitat assessment will be required for all listed species to determine any possible impacts to the T&E species.

D. Hazardous Materials

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

No suspected Haz/Mat sites are within the project area. Bridge structure will have to be assessed for possible asbestos containing material. Bridge removal will be required by this project and the Division of Air Quality will require an NOI 10 days 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

At this stage in planning this project is expected to require an ACE LON. ARCGIS and the National Wetlands map does not show the project to be within the 100 year floodplain or to have any wetlands associated within the project area. Soils mapping do show soils to be conducive to wetland development and the area will require investigation once the project plans are completed.

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

Two homes are adjacent to the project area. Noise impacts are expected to be minimal and return to normal once construction is complete.

G. Socioeconomic

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

The project area is within a low income population area. No relocations are expected with this project though.

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

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

N/A

Anticipated Environmental Document: CE Level 1

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 1909 and bridge over Little Bayou De Chien Creek in the same location as the existing. The new bridge may need to be widened to allow for the recommended geometrics. This alternate will 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.

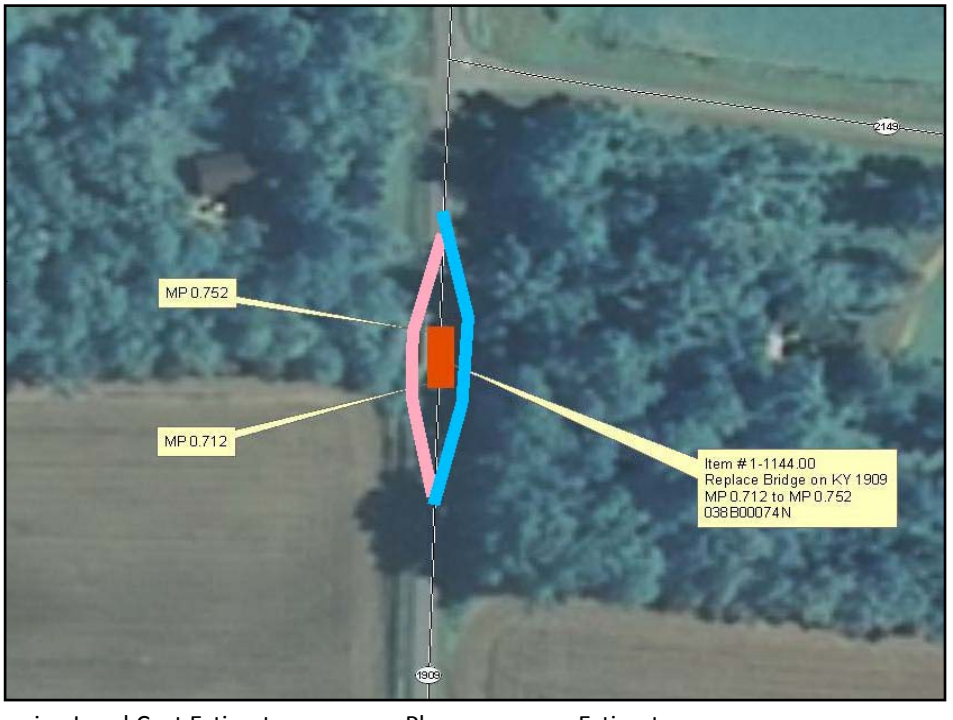
Planning Level Cost Estimate:

Phase	Estimate
Design	$225,000
R/W	$100,000
Utilities	$250,000
Const	$300,000
Total	**$875,000**

IV. POSSIBLE ALTERNATIVES (cont.)

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

Replace the two lane rural roadway approaches on KY 1909 and bridge over Little Bayou De Chien 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:

Phase	Estimate	
Design	$225,000	
R/W	$150,000	*
Utilities	$200,000	
Const	$500,000	
Total	**$1,075,000**	

*This estimate is based upon the assumption that we will not have a direct impact on the house to the West of the project.

V. Summary

This study is a Data Needs Analysis (DNA) of a Bridge Replacement project of KY 1909 over Little Bayou De Chien Creek from MP 0.712 to MP 0.752 in Fulton County, Item Number 1-1144.00. 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 1909 has poor roadway geometrics.
KY 1909 has a Sufficiency Rating of 28.7.
KY 1909 is Structurally Deficient.

The purpose of this study is to address poor roadway geometrics, crash data, and SR; and to improve the safety and reliability of the roadway and bridge on KY 1909.

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 within the funding listed in the current Highway Plan (phases D, R, U, and C).

Alt #	Description	D ($)BRO	R ($)BRO	U ($)BRO	C ($)BRO	Total ($mil)
1	No Build	-	-	-	-	-
2	Replace in Existing Location	225,000	100,000	250,000	300,000	875,000
3	Replace to West/East	225,000	150,000	200,000	500,000	1,075,000
-	Current Hwy Plan Estimated Cost	225,000	150,000	150,000	400,000	925,000
-	Current Pre-Con Estimated Cost	225,000	150,000	150,000	400,000	925,000

VI. Exhibits

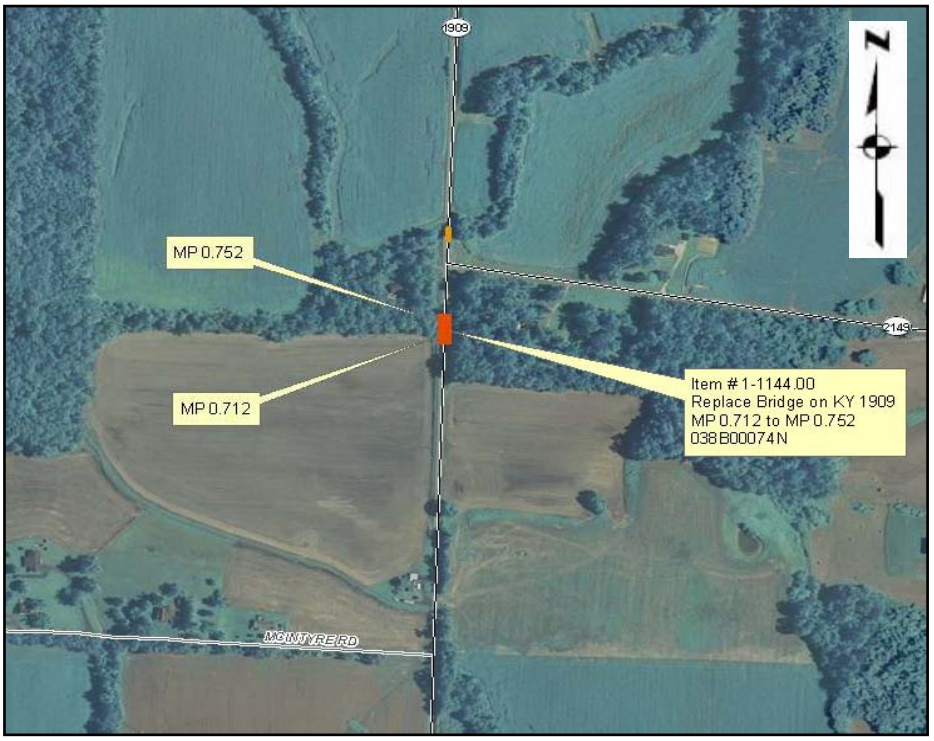


Exhibit 1: Project Location Map

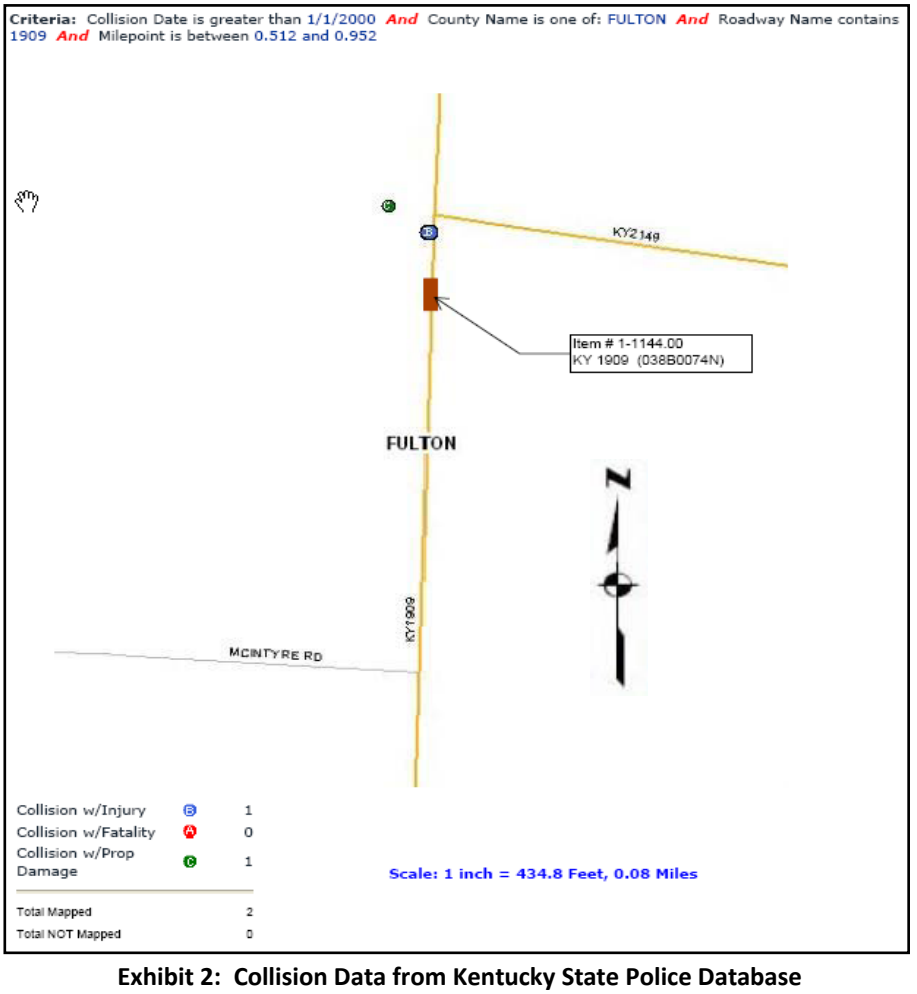


Exhibit 2: Collision Data from Kentucky State Police Database

VI. Exhibits (cont.)

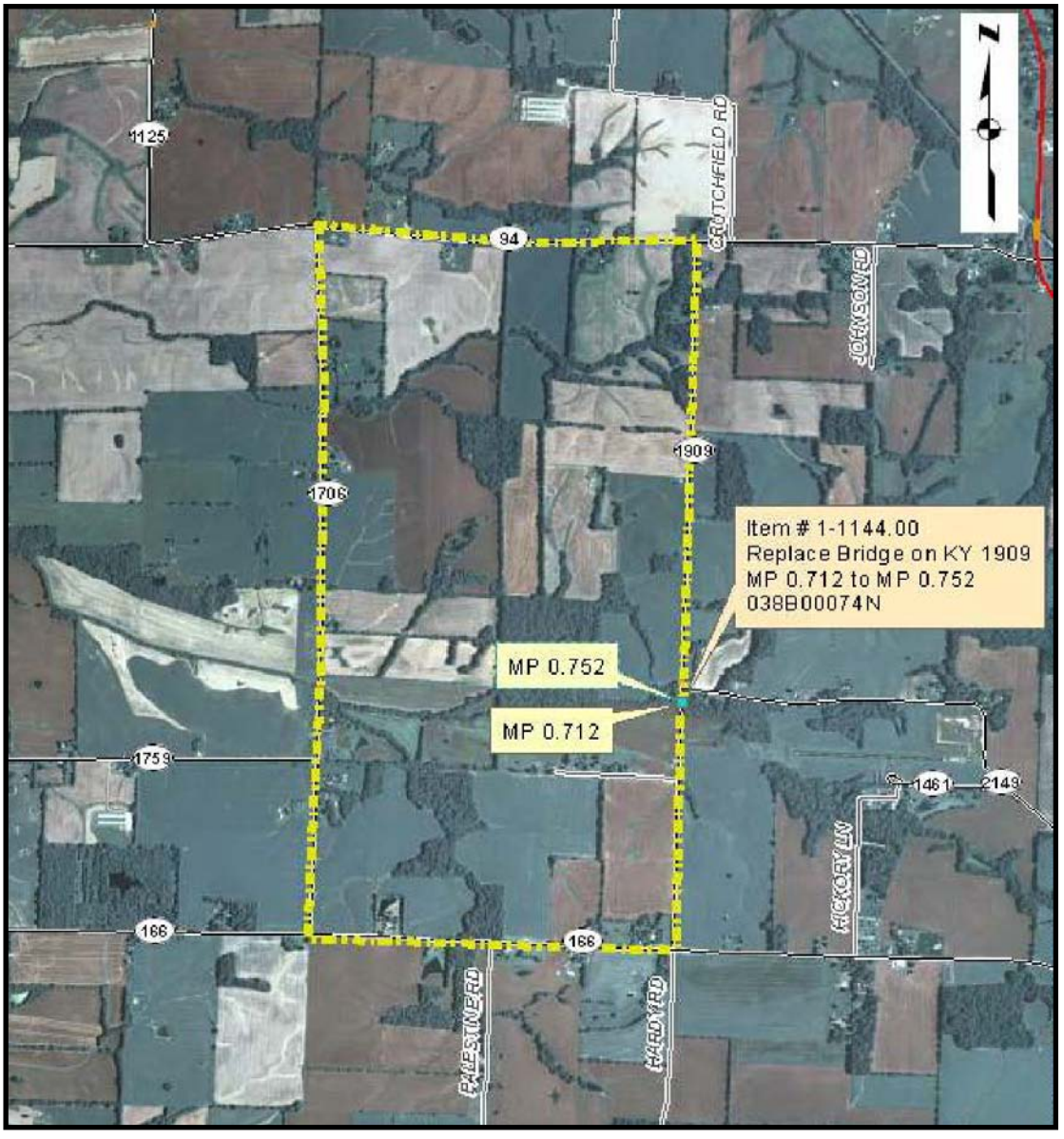


Exhibit 3: Example Detour - (approximately 6.3 miles)

From the bridge on KY 1909, go South on KY 1909, then West on KY 166, then North on KY 1706, then East on KY 94, and then South on KY 1909 back to the bridge location.

Helpful Links:

Projectwise folder containing all DNA Study documents: 1144 DNA Study.xlsx

Collision Reports: 70739422 Crash Report.pdf
71174533 Crash Report.pdf

Bridge Report: 1144 Bridge Report.pdf

Bridge Pictures: 1144 Bridge Pictures.pdf

Traffic Forecast: TF 12-075 - Cover Letter Template.doc
TF 12-075 - Forecast Report Template.pdf

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