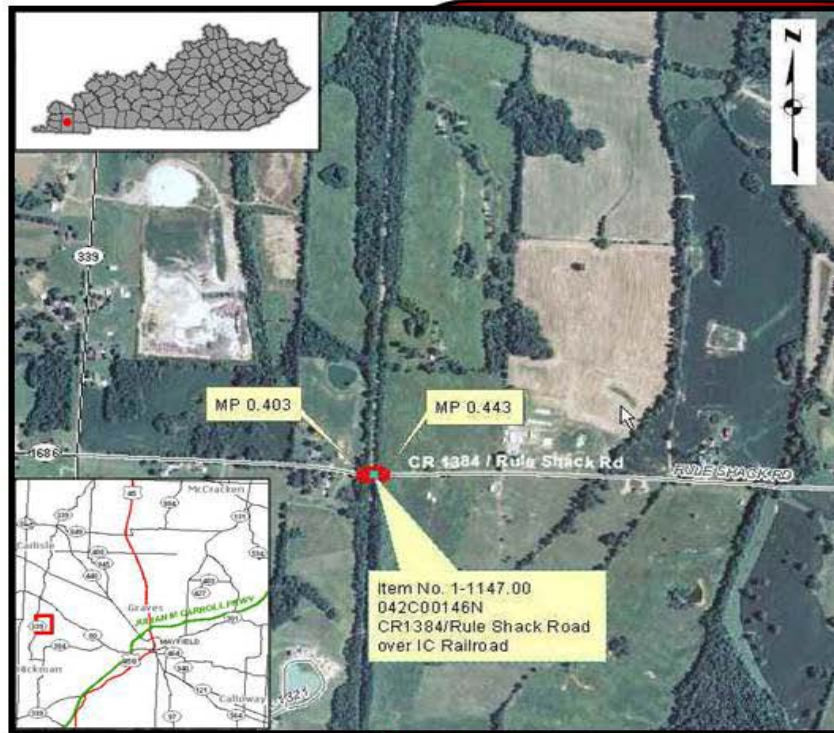


Data Needs Analysis



Scoping Study



CR 1384 / Rule Shack Road
Graves County
Bridge Replacement
over IC Railroad
Item No. 1-1147.00

Prepared by
KYTC District 1

November 2012



2/12/2013

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>
BRZ	D	2013	\$300,000
BRZ	R	2014	\$200,000
BRZ	U	2014	\$225,000
BRZ	C	2016	\$1,500,000

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 CR 1384 / Rule Shack Road over IC Railroad, 0.4 mile East of KY 339 (SR29.3) 042C00146N. The project will span from milepoint 0.403 to milepoint 0.443.

C. System Linkage

CR 1384 is classified as Rural Local. It serves the local community and local traffic as Rule Shack Road.

D. Modal Interrelationships

CR 1384 / Rule Shack Road is rated Truck Class A. Current traffic data (based upon nearest count station 005 on KY 1686) shows no truck traffic. CR 1384 / Rule Shack Road is not a part of any known bike routes in Kentucky.

E. Social Demands & Economic Development

The area along CR 1384 / Rule Shack 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

Being that this is a bridge replacement on a County road (CR 1384 / Rule Shack Road), CTS does not currently contain any traffic counts for the road that this project is located on.

****Please note that a traffic count was performed on KY1686 at traffic count station ID 005 in 2010 showing an ADT of 178. This traffic count has been shown for this project on the grounds that CR 1384 begins at KY 339 where KY 1686 ends at MP 1.26. Traffic count station ID 005 is less than a mile from the project. Please see Exhibit 2 on Page 9 for more details on this Traffic Count Station. This is the same traffic count station and information that was used for the Traffic Forecast.**

Based upon the Traffic Forecast received on 9/5/2012, the ADT for 2037 is estimated to be 370, which follows a 2.5% growth rate. For more information, please see the section Helpful Links on Page 11 for a link to the Traffic Forecast.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

Based upon the presently low traffic count of 178 ADT and the predicted future low traffic count of 370 ADT in 2037 (please see the notes mentioned above in Section F. Transportation Demand), and the roadway geometrics of two 9' lanes with 2' paved 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 1/1/2000 and stretching along CR1384 / Rule Shack Road from MP 0.00 to MP 1.00 for the project. No collisions were found using these criteria. For more information, please see the section Helpful Links on Page 11 for a link to the Crash Data Report.

HIS does not contain a CRF for this section of roadway.

I. Roadway Deficiencies

The existing roadway on CR 1384 / Rule Shack Road consists of two 9' lanes with 2' earth shoulders. These findings are not consistent with the HIS assessment of two 9' lanes and 2' paved 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 CR 1384 / Rule Shack Road over IC Railroad needs to be replaced due to being functionally obsolete, having a sufficiency rating of 29.3, and poor roadway geometrics.

Purpose: The purpose of this study is to identify all necessary concerns involved with the replacement of the bridge over IC Railroad 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. #: 46

B. Archeology/Historic Resources

☐ Known Archeological or Historic Resources are present

Archaeology survey completed by James Hixon. A No Historic Properties Affected was signed on 11-13-12 and SHPO concurrence was received on 11-14-12. Cultural Historic survey is required. Initial survey did not find any obvious historic structures.

C. Threatened and Endangered Species

Myotis sodalis- Indiana Bat; Etheostoma chienense-Relict Darter; Cyprogenia stegaria- Fanshell mussel are listed for Graves County. It is anticipated that an IBCMOA will be required to deal with habitat loss for the Indiana Bat.

D. Hazardous Materials

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

Bridge demolition will require a NOI to be submitted to the Division of Waste Management at least 10 days prior to demolition. No other possible hazmat sites were observed during the site visit.

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

Site visit didn't reveal any streams in the project area. No permits are expected at this time.

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

Though noise receptors are located within the project vicinity any disturbances are temporary and noise levels will return to normal once construction is completed.

G. Socioeconomic

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

Project is located within a low income area.

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 and approaches on CR 1384 / Rule Shack Road and bridge over IC Railroad in the same location as the existing. The new bridge may need to be widened to allow for the recommended geometrics. This alternate will not change the current horizontal alignment. Since the existing bridge cannot remain open during construction, the road will be closed 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.



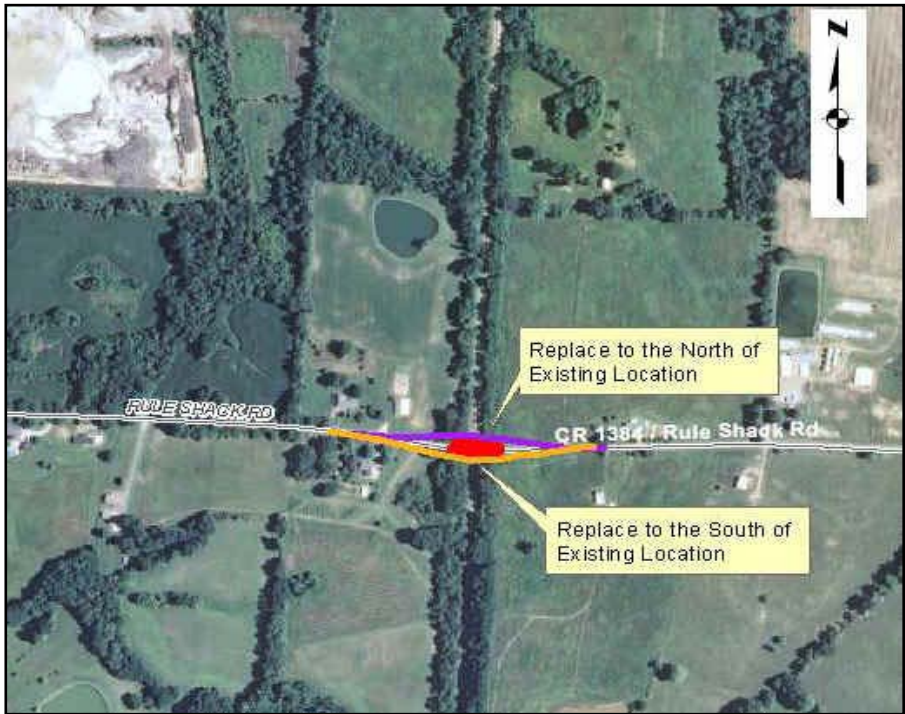
Planning Level Cost Estimate:

<u>Phase</u>	<u>Estimate</u>
Design	\$175,000
R/W	\$300,000
Utilities	\$350,000
Const	\$1,500,000
Total	\$2,325,000

IV. POSSIBLE ALTERNATIVES (cont.)

B. Alternative 3: Replace to North / South of Existing Location

Replace the two lane rural roadway approaches on CR 1384 / Rule Shack Road and bridge over IC Railroad just North or just South of its existing alignment. The new bridge may need to be widened to allow for the recommended geometrics. A sketch of the proposed project can be seen below.



Planning Level Cost Estimate:

<u>Phase</u>	<u>Estimate</u>
Design	\$175,000
R/W	\$350,000
Utilities	\$300,000
Const	\$1,800,000
Total	\$2,625,000

V. Summary

This study is a Data Need Analysis (DNA) of a Bridge Replacement project of CR 1384 / Rule Shack Road over IC Railroad from MP 0.403 to MP 0.443 in Graves County, Item Number 1-1147.00. 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:

- CR 1384 / Rule Shack Road has poor roadway geometrics.
- This bridge on CR 1384 / Rule Shack Road has a Sufficiency Rating of 29.3.
- This bridge on CR 1384 / Rule Shack Road is functionally obsolete.

The purpose of this study is to address poor roadway geometrics, SR, and functionally obsolete bridge; and to improve the safety and reliability of the roadway and bridge on CR 1384 / Rule Shack Road.

Included in the alternatives were a no build recommendation, a replace in the existing location alternative, and a replace to the North / South 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 above the funding listed in the current Highway Plan (phases R & U are higher, while phases D & C are within the previous estimate).

Alt #	Description	D (\$)BRZ	R (\$)BRZ	U (\$)BRZ	C (\$)BRZ	Total (\$mil)
1	No Build	-	-	-	-	-
2	Replace in Existing Location	175,000	300,000	350,000	1,500,000	2,325,000
3	Replace to North/South	175,000	350,000	300,000	1,800,000	2,625,000
-	Current Hwy Plan Estimated Cost	300,000	200,000	225,000	1,500,000	2,225,000
-	Current Pre-Con Estimated Cost	300,000	200,000	225,000	1,500,000	2,225,000

VI. Tables and Exhibits

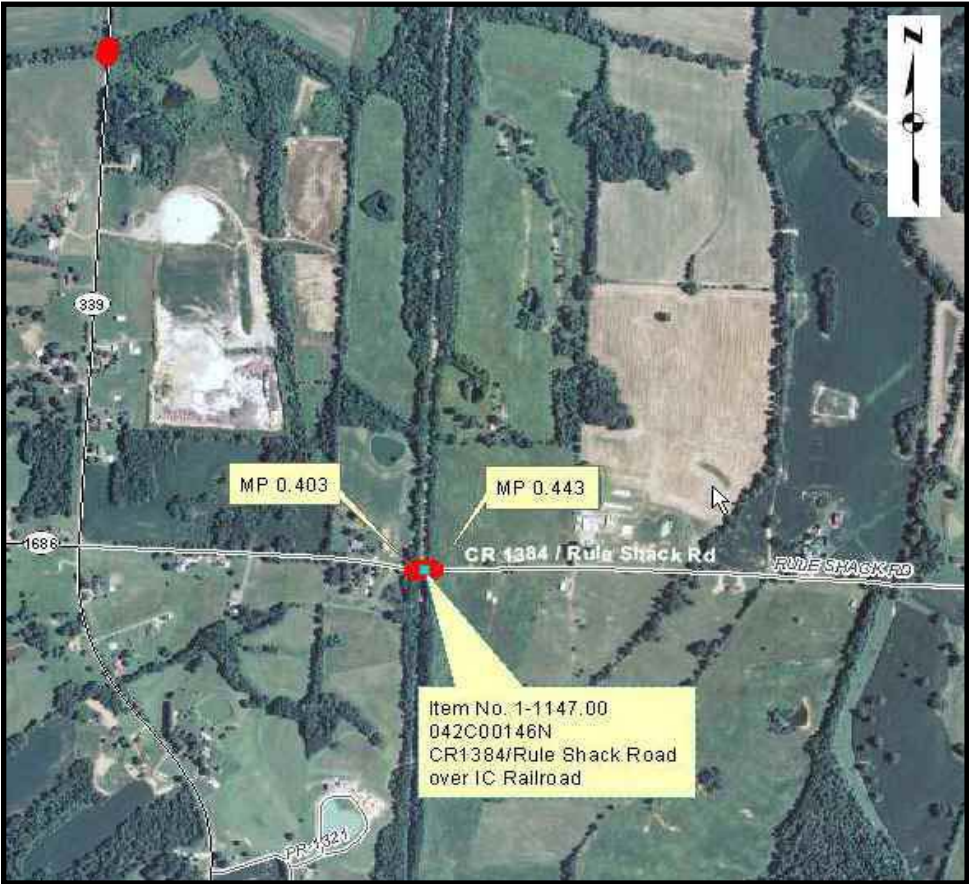


Exhibit 1: Project Location Map

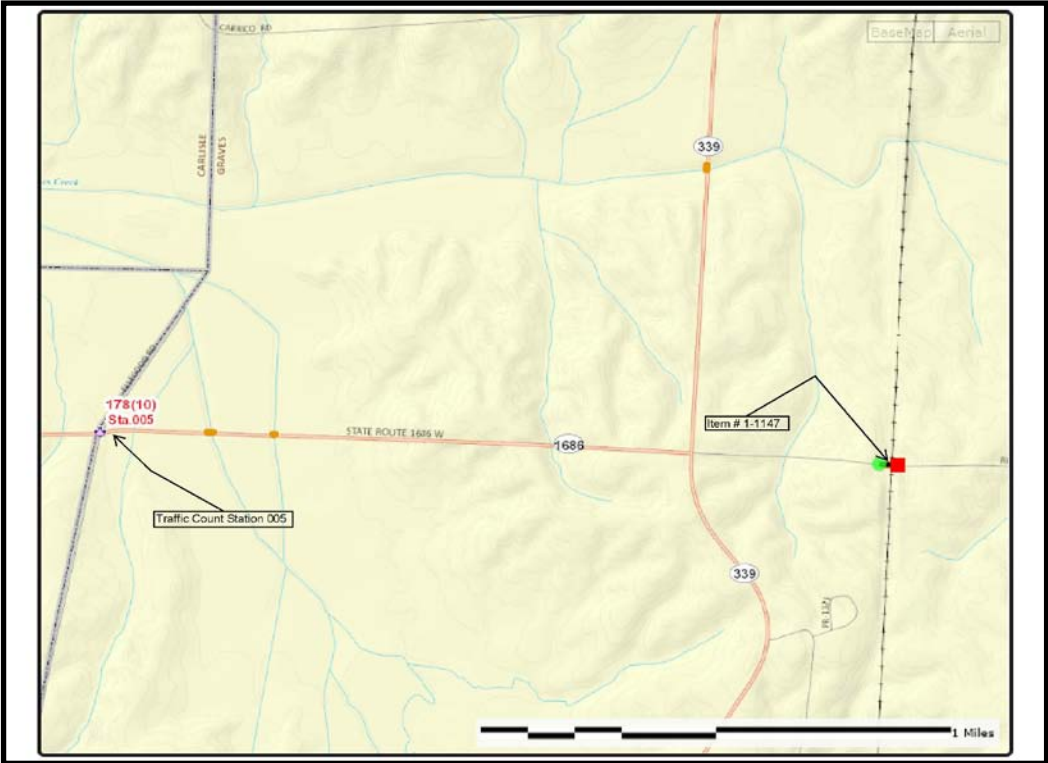


Exhibit 2: Traffic Count Station ID 005 on KY 1686

VI. Tables and Exhibits (cont.)

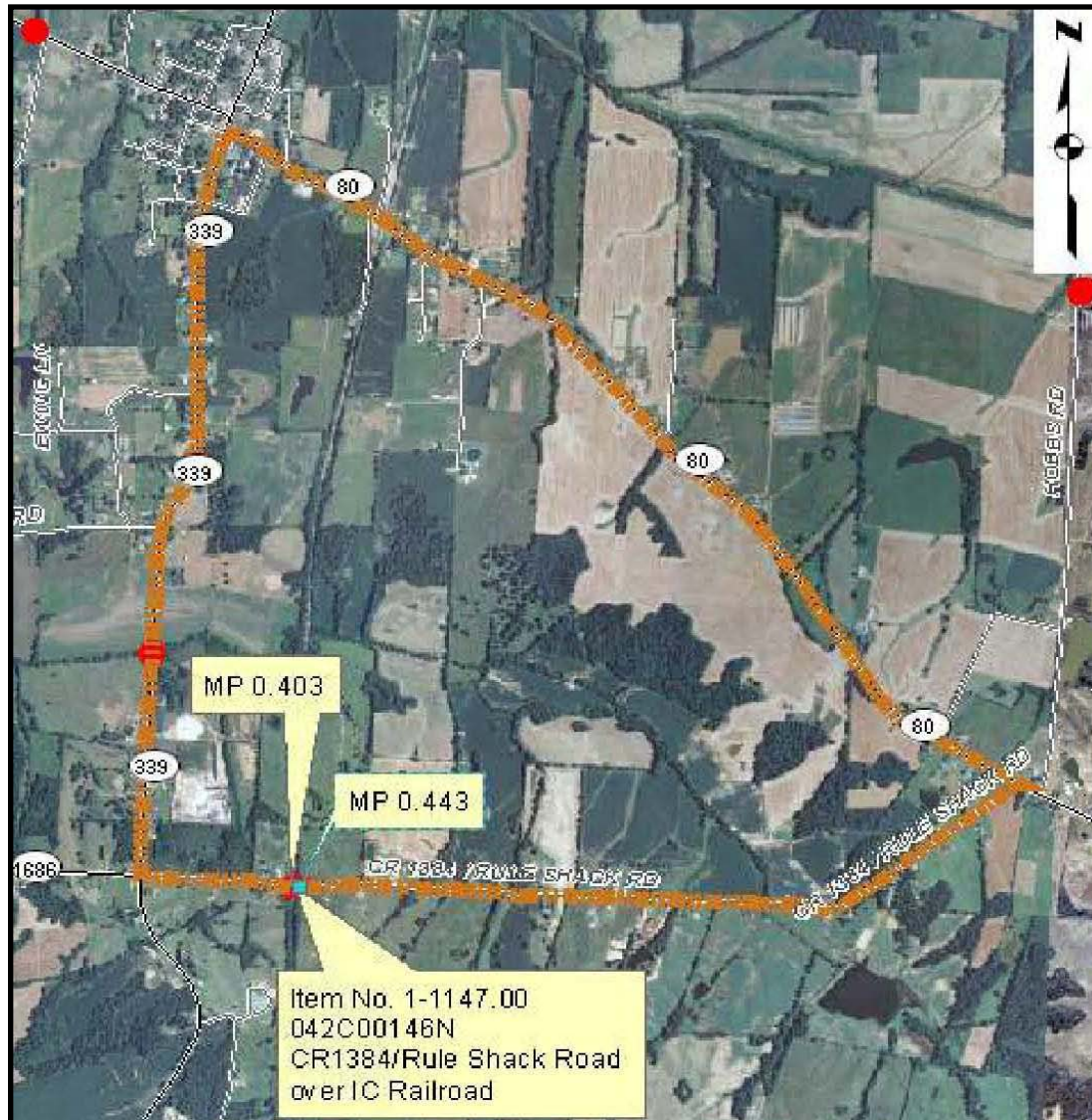


Exhibit 3: Example Detour - (approximately 7.6 miles)

From the bridge on CR 1384 / Rule Shack Road, go West on CR 1384 / Rule Shack Road, then go North on KY 339, then go Southeast on KY 80, and then West on CR 1384 / Rule Shack Road back to the bridge location.

Helpful Links:

Projectwise folder containing all DNA Study documents: [1147 DNA Study.xlsx](#)

Collision Report: [1147 CrashData Report.jpg](#)

Bridge Report: [1147 Bridge Report.pdf](#)

Bridge Pictures: [1147 Bridge Pictures.pdf](#)

Traffic Forecast: [1147 Traffic Forecast 9-5-2012.pdf](#)

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