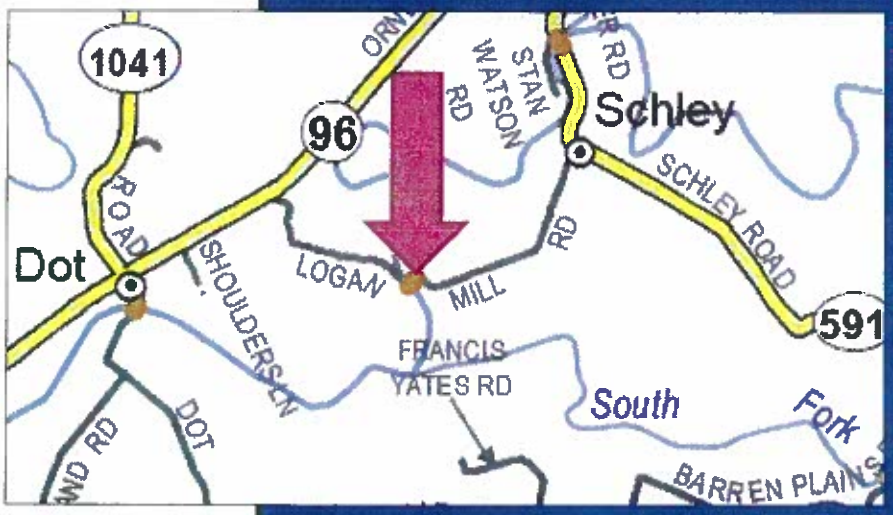
Data

Needs

Analysis



Scoping Study

3-1083 (Logan County)
Replace bridge on Logan Mill Road over Red River 0.78 mile southeast of Orndorff Mill Road

Prepared by
KYTC District 3

July 31, 2012

KENTUCKY TRANSPORTATION CABINET

I. PRELIMINARY PROJECT INFORMATION

County: Logan **Item No.:** 3-1083
Route Number(s): CR1249 **Road Name:** Logan Mill Road
Program No.: **UPN:** (Function) (County #) (Route) (MPs)
Federal Project No.: **Type of Work:** Bridge Replacement

2012 **Highway Plan Project Description:**

Replace bridge on Logan Mill Road (CR1249) over Red River 0.78 mile southeast of Orndorff Mill Road (KY 96) (SR 25.3) 071C00023N

Beginning MP: **Ending MP:** **Project Length:** 0.2

Functional Class.: ☐ Urban ☑ Rural — Local
State Class.: ☐ Primary ☐ Secondary
Route is on: ☐ NHS ☐ NN ☐ Ext Wt
MPO Area: Not Applicable
Truck Class.:
In TIP: ☐ Yes ☐ No
% Trucks:
ADT (current): (Year)
Terrain: Rolling
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 : 55 **MPH Proposed Design Speed**

Roadway Data:	EXISTING	COMMON GEOMETRIC PRACTICES*
No. of Lanes	N/A	2
Lane Width	N/A	TBD
Shoulder Width	N/A	TBD
Max. Superelevation**	N/A	8%
Minimum Radius**	N/A	760
Maximum Grade	N/A	8%
Minimum Sight Dist.	N/A	425
Sidewalk Width(urban)	N/A	N/A
Clear-zone***	N/A	N/A

Existing Rdwy. Plans available? ☐ Yes ☑ No
Year of Plans:
☑ Traffic Forecast Requested
Date Requested: Aug-12
☐ Mapping/Survey Requested
Date Requested: TBD
Type: Conventional

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.*:	071C00023N	(Bridge #2)
Sufficiency Rating	25.3	
Total Length	192	
Width, curb to curb	19	
Span Lengths	45	
Year Built	1925	
Posted Weight Limit	N/A	
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 following funding was listed in the 2012 General Assembly's Enacted Highway Plan.

Funding	*Phase*	*Year*	*Amount*
BRZ	DESIGN	2013	$250,000
BRZ	R/W	2014	$70,000
BRZ	UTILITIES	2014	$190,000
BRZ	CONST	2016	$850,000

B. Project Status

The design funds will be available for this bridge replacement in FY 2013 and the project will be included in the STIP.

C. System Linkage

Logan Mill Road provides local access for adjacent properties to KY 96 to the west and KY 591 to the northeast and results in connecting these residents and farms to Russellville (the Logan County Seat) and the nearby incorporated town of Adairville. This bridge is located in the center of the connecting roadway.

D. Modal Interrelationships

This is a rural roadway that has very low intermodal interaction. A fixed route transit service does not exist in Logan County, but this project would accommodate the existing demand/response rural service.

E. Social Demands & Economic Development

This roadway provides connection between the residents of this Logan Mill area of the county to the services (schools, business, government services, and recreational activities) provided in Russellville, the Logan County Seat.

F. Transportation Demand

There are no records of existing traffic counts along this section of county maintained roadway.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

This roadway currently does not experience congestion issues.

H. Safety

Since this bridge has been identified as structurally deficient, then its replacement would prevent a catastrophic collapse and a resulting detour for motorists as well as emergency vehicles. A search of the past three years of available crash data did not identify any crashes in the project area.

I. Roadway Deficiencies

This bridge was identified as a replacement candidate based upon its low sufficiency rating of 25.3 which qualifies it as a structurally deficienct bridge and has a posted weight limit. The bridge is only 19 feet in width from edge to edge which creates a hazard for vehicles. The approaches to the bridge have significant vertical and horizontal alignment issues, especially on the western approach.

Draft Purpose and Need Statement:

Need: The structurally deficient condition of the existing bridge on Logan Mill Road has indicated that there is a need for full replacement of the structure.

Purpose: The purpose of this project is to improve the safety and reliability of Logan Mill Road.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

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

B. Archeology/Historic Resources

☑ Known Archeological or Historic Resources are present

The truss bridge is eligible for the National Register for Historic Places. There has been discussion within KYTC as to the dwindling number of truss bridges in the bridge stock across the state and is one of the few remaining truss bridges in the district.

C. Threatened and Endangered Species

Gray bat, Indiana bat, littlewing pearlymussel, slbside pearlymussel, fanshell, ring pink, fluted kidneyshell

D. Hazardous Materials

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

The bridge will must be inspected for asbestos containing materials. The Division for Air Quality must be notified 10 prior to demolition to infor them of the demolition date and if the bridge has asbestos containing materials.

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

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

G. Socioeconomic

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

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

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

Bridge is eligible for National Historic Registar.

Anticipated Environmental Document: CE Level 3

IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

This alternative should be carried forward, but does not address the needs identified.

B. Alternative 2

This project will require a new horizontal and vertical alignment due to poor existing bridge and approach geometry. The existing bridge is a steel truss type, built in 1925, making it a historic structure. The proposed replacement bridge is a 104' single span Precast I Beam type with concrete deck and barrier walls. The proposed replacement bridge should be located on the north side of the existing bridge in order to minimize right of way impacts to a property on the east end of the bridge. The proposed alignment should be an improvement from the existing alignment, which features severe vertical deficiencies on the east end of the bridge, and sub standard horizontal curves on the east and west approaches, although design exceptions may be necessary on the proposed horizontal curves for being slightly smaller than the minimum radius. Since this is one of the few remaining truss bridges in the district, the study team recommends this alternative present the traditional beam bridge replacement as well as a possible truss bridge design alternative.

Since this bridge will be built on a new alignment, it is not necessary to close the existing bridge to construct the replacement. There will be short road closures necessary to construct approach tie ins to the existing roadway. UTILITIES: This study identified three utilities which require relocation within the project. Pennyrile Rural Electric Co-op will require $12,000, Logan Telephone Co-op will require $70,480, and South Logan Water Association will require $10,425 in estimated relocation costs. With consideration toward contigencies and state forces engineering, the total estimate for utility relocation is $150,000.

Insert Alt. Picture/Sketch here

Planning Level Cost Estimate:

Phase	Estimate
Design	$250,000
R/W	$70,000
Utilities	$150,000
Const	$850,000
Total	**$1,320,000**

IV. POSSIBLE ALTERNATIVES (cont.)

B. Alternative #3

Since this bridge is one of the few remaining truss bridge structures in the district, an alternative to rehab the existing structure should also be considered during Phase I design. David Steele, KYTC Bridge Maintenance, stated that the Kentucky Transportation Center is developing a list of truss bridges which they recommend we try to save, and that list may be approximately 1/3 of the approximately 110 truss bridges remaining in Kentucky. David said that Bridge Maintenance will be involved to make the determination on whether this bridge is able to be rehabbed. If the bridge is rehabbed, it would not be eligible for any federal funds for 10 years. The fracture critical bridge will also require more time and cost intensive arms-length inspections versus the traditional beam bridges.

Planning Level Cost Estimate:

Phase	Estimate
Design	Unknown
R/W	unknown
Utilities	unknown
Const	unknown
Total	**unknown**

V. Summary

The study team recommends that both Alternative 2 and Alternative 3 be fully investigated as part of the Phase I design for this project.

Alt #	Description	D ($)(BRZ)	R ($)(BRZ)	U ($)(BRZ)	C ($)(BRZ)	Total ($mil)
1	No Build	-	-	-	-	-
2	Replace north of existing bridge	250,000	70,000	150,000	850,000	1,320,000
3	Rehab Existing Truss Bridge	UNK	UNK	UNK	UNK	UNK
-	Current Hwy Plan Estimated Cost	250,000	70,000	190,000	850,000	1,360,000
-	Current Pre-Con Estimated Cost					

VI. Tables and Exhibits

Exhibit 1: Project Location Map

Exhibit 2:

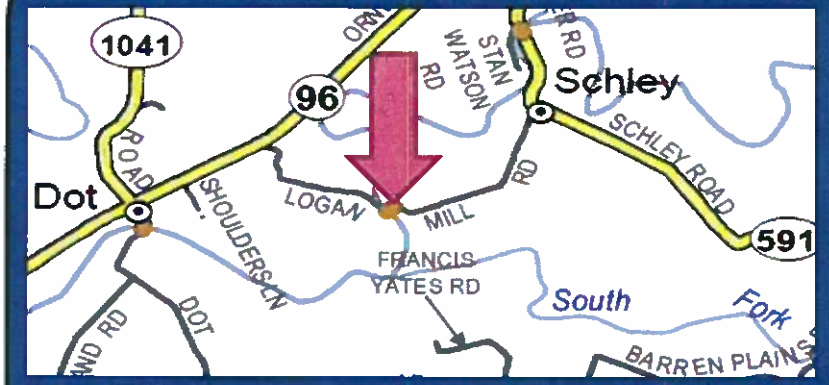
VI. Tables and Exhibits (cont.)

Exhibit 3:

Tables

Helpful Links:

Links may include Projectwise folder(s) containing supportive documentation, links to archived as-builts of the corridor, threatened/endangered species list for the county, FIRM maps, Bridge Rating Sheets, etc.



3-1083 (Logan County)
Replace bridge on Logan Mill Road over Red River 0.78 mile southeast of Orndorff Mill Road

Photo 1: Curve before bridge on east side of Logan mill road.

Photo 2: View of bridge from east side of bridge.

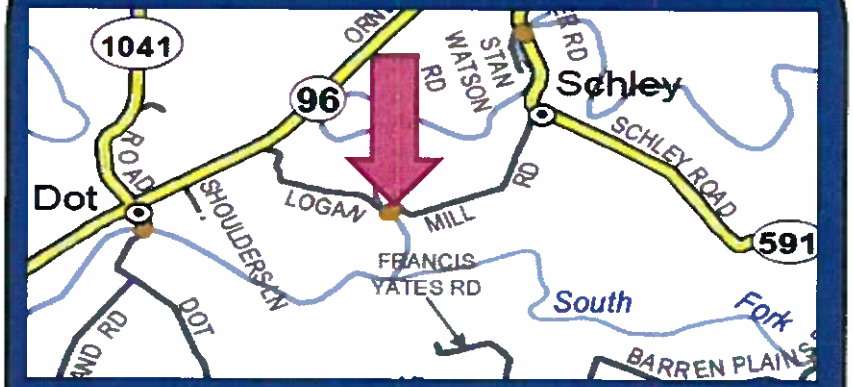


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Photo 1: View of bridge from east side of bridge.

Photo 2: View of bridge from east side of bridge.

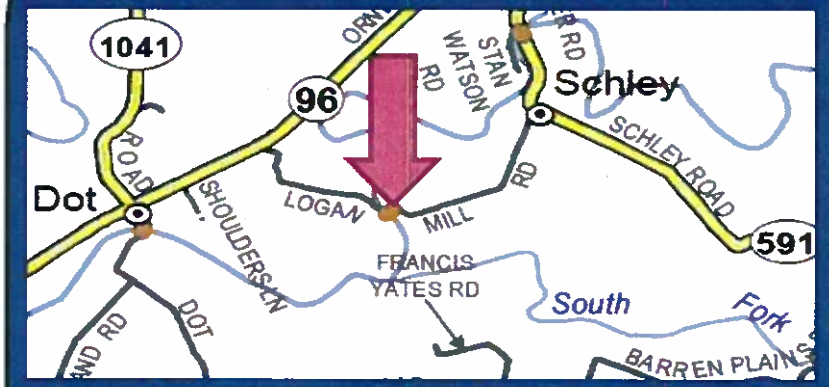

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Photo 1: View of bridge looking west.

Photo 2: View of bridge looking south down the river.

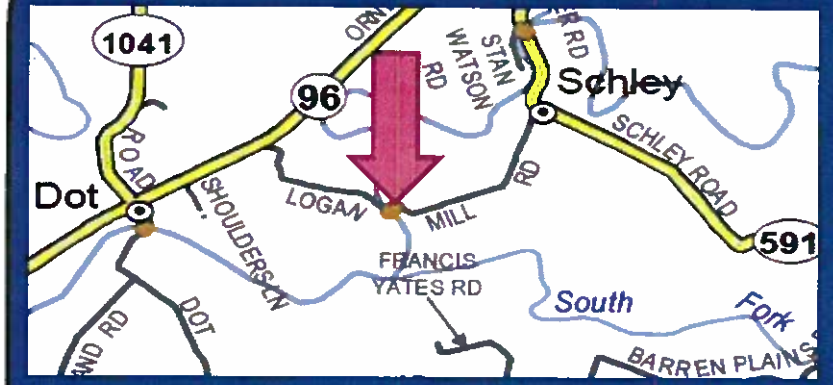

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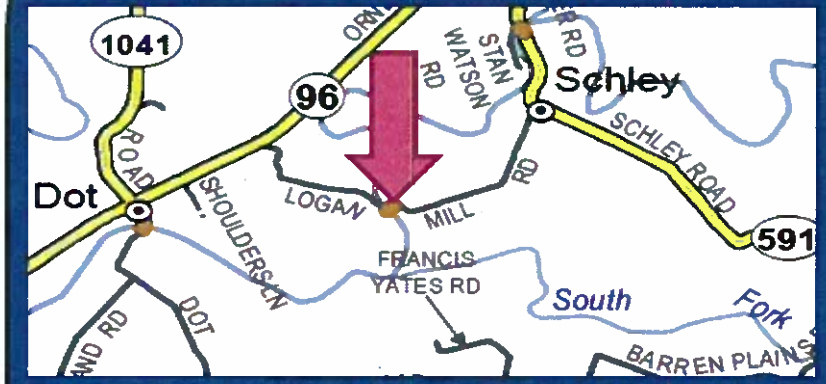
Photo 1:View of bridge looking north up the river.

Photo 2: View of bridge looking north up the river.



3-1083 (Logan County)
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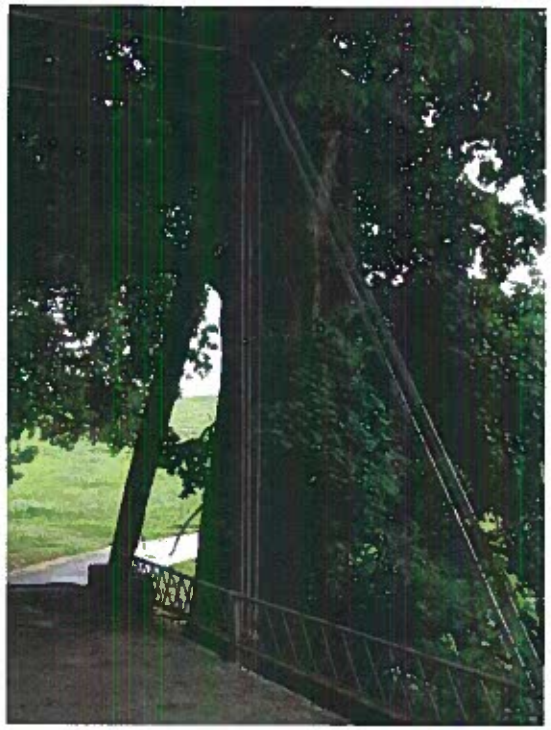
Photo 1: View of bridge abutment on west end of bridge.

Photo 2: Close up of stone work on abutment.



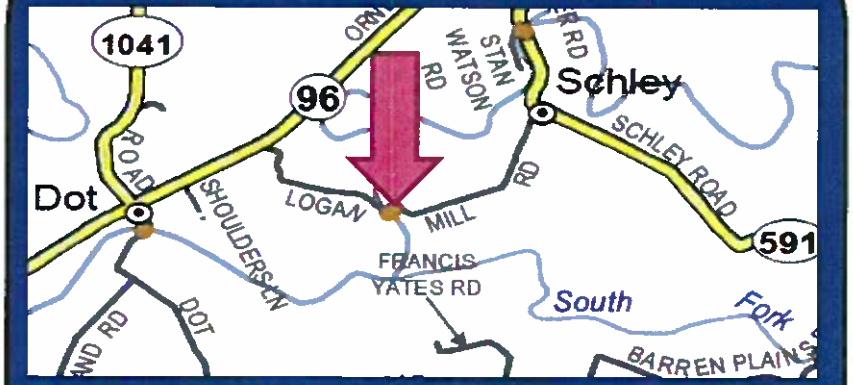


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Photo 1: Tree on west end of bridge

Photo 2: Tree on west end of bridge

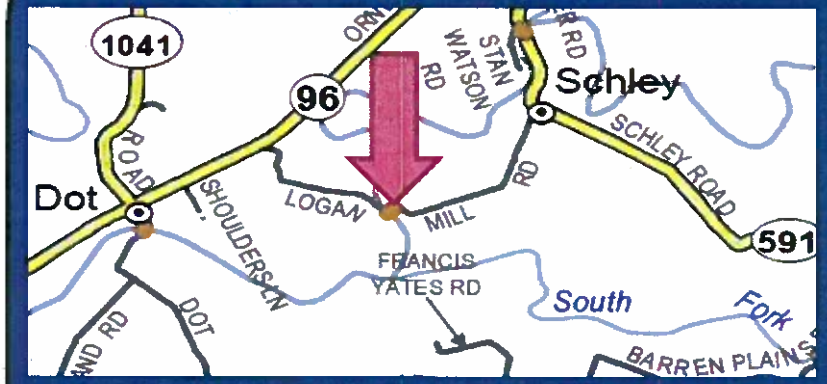

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Photo 1: View of bridge looking east

Photo 2: View of bridge looking east

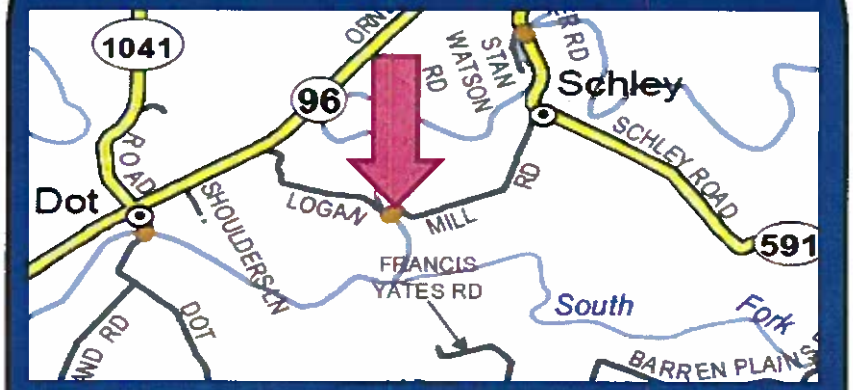

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Photo 1: Bike route sign on 591