

Data Needs Analysis Study

Bridge Replacement at Pevyhouse Branch

Lincoln County

Item #: 8-1049.00



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TABLE OF CONTENTS

I. INTRODUCTION	1
A. Data Needs Analysis (DNA) Studies	1
B. FHWA Recommended Elements for Purpose and Need	1
C. Item 8-1049.00 DNA Study	1
D. Project Location	2
II. PROJECT PURPOSE AND NEED	2
A. Legislation	3
B. Project Status	3
C. System Linkage	3
D. Modal Interrelationship	3
E. Social Demands or Economic Development	4
F. Transportation Demand	4
G. Capacity	4
H. Safety	4
I. Geometric Deficiencies	5
III. PRELIMINARY ENVIRONMENTAL OVERVIEW	9
A. Air Quality	9
B. Archaeology	9
C. Threatened and Endangered Species	9
D. Hazardous Materials	10
E. Historic Resources	10
F. Permitting	10
G. Noise	10
H. Socioeconomic	12
I. Section 4(f) Resources	12
J. Section 6(f) Resources	12

- IV. OTHER PROJECT INFORMATION 12**
 - A. Utilities at Site 12
 - B. Right of Way 13
- V. PROJECT TEAM MEETING & SITE VISIT 13**
- VII. PROPOSED TYPICAL SECTION 14**
- VIII. PROJECT PURPOSE AND NEED STATEMENT 14**
- IX. POSSIBLE ALTERNATIVES 14**
 - A. Alternate #1 - No Build 15
 - B. Alternate #2 – Build inplace with detour using existing State routes 15
 - C. Alternate #3 – Build inplace with temporary detour at site..... 16
 - D. Alternate #4 – Build the new structure on the upstream side..... 17
 - E. Alternate #5 – Build the new structure on the downstream side..... 17
- X. OTHER ISSUES 19**
- XI. CONSTRUCTION 19**
- XII. SUMMARY 19**

LIST OF FIGURES

- Figure 1 Project Location Map 2
- Figure 2 System Linkage Map 4
- Figure 3 Bridge Location on KY 78..... 5
- Figure 4 Field Sketch of Project Location 6
- Figure 5 Inner Structure of the Box Culvert 8
- Figure 6 Structural Damage to the Box Culvert 8
- Figure 7 Sediment build up on the upstream side 9
- Figure 8 Potentially eligible for the National Register, currently owned by J.B. and Jacque Camenisch 11
- Figure 9 Stone Walls adjacent to the bridge location..... 11
- Figure 10 Utilities at the site 13

LIST OF TABLES

Table 1 Existing Conditions and Data Summary	7
Table 2 USFWS listing of Threatened and Endangered Species in Lincoln County	10
Table 3 Alternate #2 - Build inplace with detour using existing State routes	16
Table 4 Alternate #3 - New structure built inplace with temporary detour at site	16
Table 5 Alternate #4 - Cost estimate for new structure on the upstream side	17
Table 6 Summary of Cost Estimates	18

LIST OF APPENDICES

APPENDIX A	Exhibits
Exhibit 1	Project Location
Exhibit 2	Topographic Map
Exhibit 3	KY 78 Route Log
APPENDIX B	2010 General Assembly's Enacted Roadway Plan
APPENDIX C	UPL Project Information Forms
APPENDIX D	Crash Data
APPENDIX E	KYTC Common Geometric Practice Guidelines
APPENDIX F	Existing Roadway Plans
APPENDIX G	Inventory and Inspection Sheets
APPENDIX H	FIRM Maps of the Study Area
APPENDIX I	PVA Map
APPENDIX J	Project Team Meeting Minutes
APPENDIX K	Detour Map
APPENDIX L	Project Photos
APPENDIX M	Cost Estimation Tables

I. INTRODUCTION

A. Data Needs Analysis (DNA) Studies

A DNA Study is a Pre-Design Scoping Study performed on projects that did not have a prior Planning study. DNA Studies are shortened version of Planning studies and are conducted to better define the intent of the project before design starts. They are done to document existing data, to initiate early project requests such as Traffic Forecasting/Modeling and to accomplish early agency coordination. A preliminary environmental overview is also a part of these studies to identify potential environmental impacts due to the project. These studies help develop a project schedule and identify possible alternatives and costs. A "Purpose and Need" statement is developed by the Project team involved in the study. By investigating a project early in the process, scope changes can be kept to a minimum.

B. FHWA Recommended Elements for Purpose and Need

Federal Highway Administration (FHWA) National Environmental Policy Act (NEPA) recommends that the following nine elements may be a part of Purpose and Need statement during the transportation decision making of a project. The recommended nine elements are:

- Legislation
- Project Status
- System Linkage
- Modal Interrelationships
- Transportation Demand
- Capacity
- Safety
- Roadway Deficiencies
- Social Demands/Economic Development

As part of Purpose and Need statement for the current project, these FHWA recommendations will be addressed to the extent applicable.

C. Item 8-1049.00 DNA Study

Item 8-1049.000 is a Bridge Replacement project on Pevyhouse Branch at MP 11.216 on KY 78 in Lincoln County. This report describes a DNA Study conducted for this project.

The study investigated existing project information, developed a project scope and defined a Project Purpose and Need. A preliminary environmental overview

to identify potential impacts was conducted by the KYTC District 8 Environmental Coordinator. The Project Team discussed and developed possible alternatives and planning level cost estimates for the alternatives. Other information that will be of assistance in the Project Development Phase of this project was noted.

D. Project Location

The project is located on KY 78 at MP 11.216 in Lincoln County, approximately 0.3 mile west of JCT KY 300. (See Figure 1 and Exhibit 1 in Appendix A). A topographic map (Exhibit 2) of the study area and Route Log (Exhibit 3) can also be viewed in Appendix A.

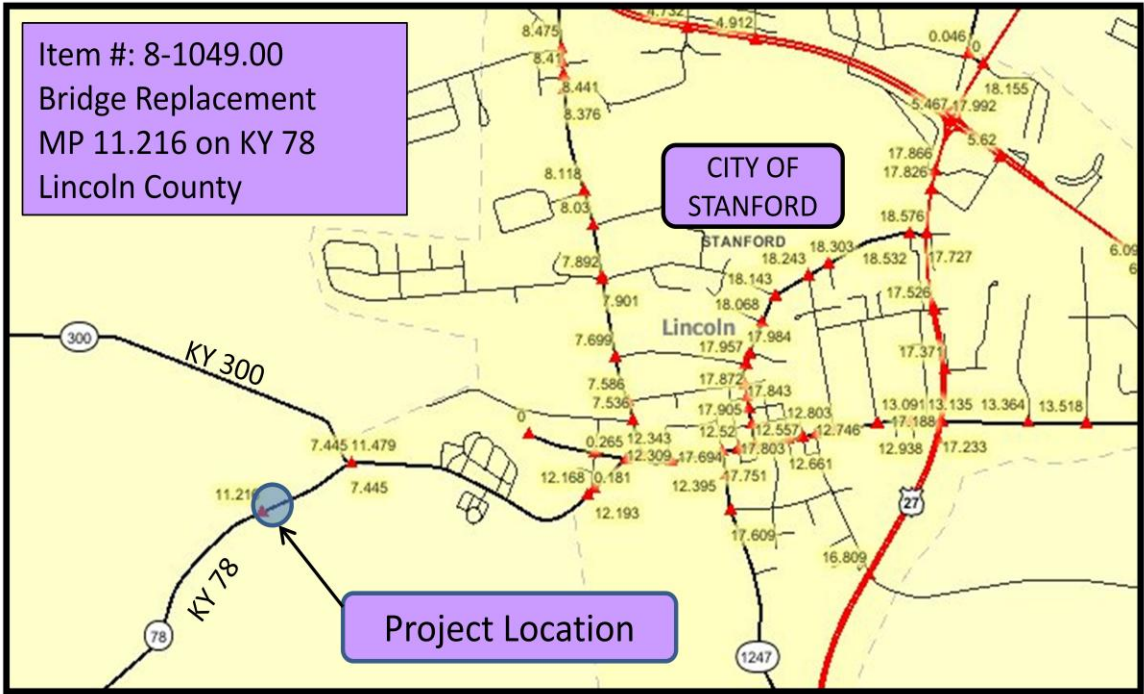


Figure 1: Project Location Map

II. PROJECT PURPOSE AND NEED

As discussed in Section IB, FHWA recommends nine elements to be considered as part of Purpose and Need for a project. For the current project, these nine elements will be discussed in the following section.

A. Legislation

The following is a description of the project as it is listed in the 2010 General Assembly's Enacted Roadway Plan. 2010 Highway Plan projects for District 8 and Lincoln County can be seen in Appendix B.

Item #8-1049.00, Lincoln County

<u>Phase</u>	<u>Fund</u>	<u>Year</u>	<u>Estimate</u>
D:	BRO	2010	\$130,000
R:	BRO	2012	\$75,000
U:	BRO	2012	\$50,000
C:	BRO	2013	\$310,000
<hr/>			<hr/>
TOTAL			\$565,000

REPLACE BRIDGE ON KY 78 (MP 11.216) OVER PEVYHOUSE BRANCH; .30 MI WEST OF JCT KY 300; (STRUCTURALLY DEFICIENT. SR = 43.3) 069B00027N

B. Project Status

The design on the project is expected to start in the near future. A second project that is currently in design on KY 78, Item 8-907.00, is a horizontal and vertical realignment spot improvement project from MP 8.20 to MP 8.65. The project is awaiting environmental approval to request right of way funding at the time of this report.

Reconstruction of KY 78 between Stanford and Hustonville is a project on the Unscheduled Project List (UPL) with a UPL project # 08 069 D0078 22.00. A Project Identification Form (PIF) exists (see Appendix C) and the project is listed as low (Regional) to medium (Local and District) priority.

C. System Linkage

KY 78 connects the Cities of Stanford and Hustonville. KY 78 is a Scenic Highway designated as "Cumberland Cultural Heritage Highway" (see Figure 2).

The project segment on KY 78 is not on a National Truck Network. Mostly grain trucks, tractors and local delivery traffic are known to operate on this segment. A towing company operates from the home next to the project site currently.

D. Modal Interrelationship

There is no public transit or intermodal use currently on this route.

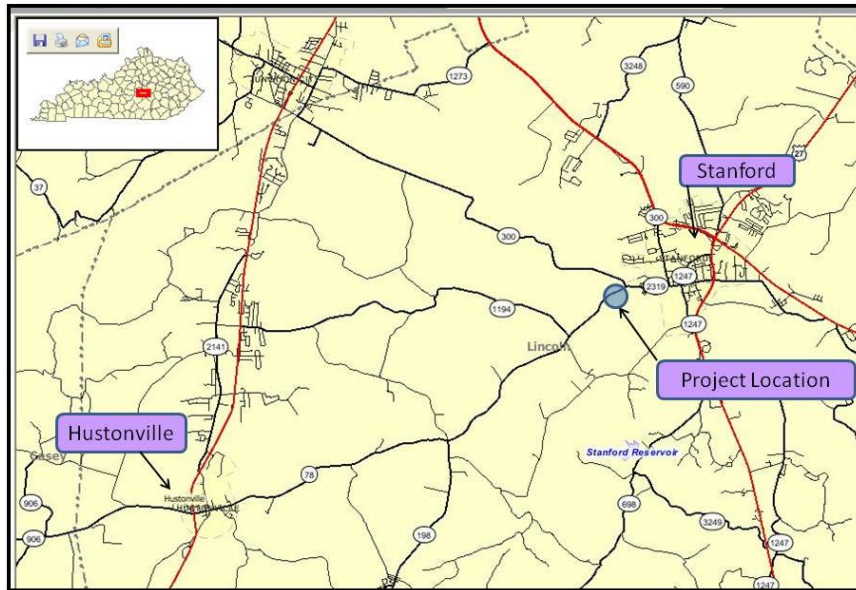


Figure 2: System Linkage Map

E. Social Demands or Economic Development

The project location is not expected to have any significant development. This was confirmed by Director of Economic Development in Stanford. According to the Director, there are no particular plans, at least in the immediate future for significant economic development activity in this area.

F. Transportation Demand

Traffic data was obtained from CTS – Traffic Counts summary data. Current and historic traffic data was obtained and future year traffic was estimated. The traffic growth expected is non-significant.

The current ADT in 2010 is 3300. A forecast will be needed to determine ESAL's.

G. Capacity

According to the KYTC Division of Planning's Adequacy Ratings Data, the current Vehicle/Service Flow (V/SF) is 0.18. This means that the current capacity of the existing roadway will be adequate for the near future.

H. Safety

Crash history of this segment was studied using Kentucky State Police data. Crash data was obtained from the Kentucky State Police database for a three year period from August 2007 to August 2010. There was one fatal crash involving two vehicles resulting in two deaths at MP 11.09 in June, 2010, about 600 feet west of the project site. In the past three years, Kentucky State Police did not report any crashes in the immediate vicinity of the bridge site. The property owner of the home next to the bridge site reported some minor crashes. Appendix D shows crash locations in the vicinity of the project as well as along KY 78 in that area.

I. Geometric Deficiencies

Roadway Information and Deficiencies

The existing culvert is skewed at 45 degrees to the roadway. Existing roadway is a two-lane undivided roadway with 9 foot lanes. Measured shoulder width at the site is approximately 1 foot. For the ADT and speed of the segment, KYTC Common Geometric Design Practices (Appendix E) suggest 12 foot lanes and 8 foot shoulders. Guardrail exists on the west side only. On the east side, there is no guardrail. Figure 3 shows the location of the bridge on KY 78.

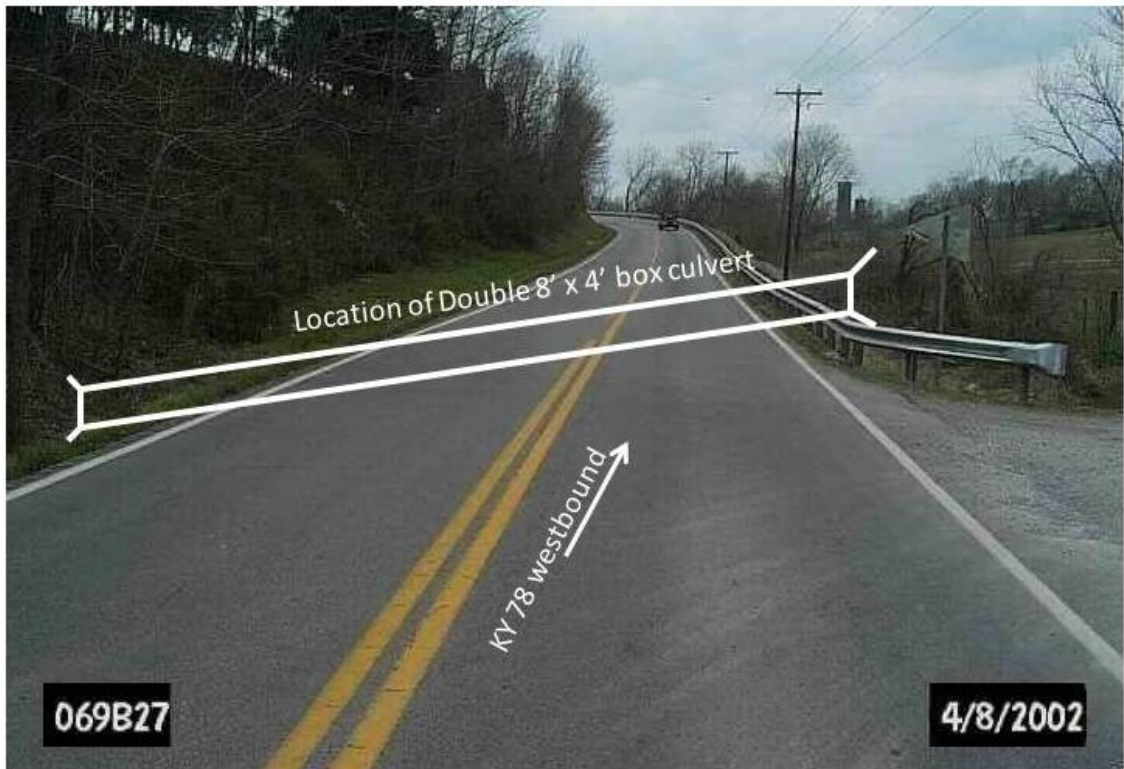


Figure 3: Bridge Location on KY 78

The location of the bridge is in a tangent section with a grade of approximately 0.64%. Speed limit in this area is 55 mph. Other existing roadway information is available in the roadway plans in Appendix F.

Figure 4 is a field sketch of the project location. A summary of the existing conditions at the project site can be seen in Table 1.

Appendix F shows roadway plans of KY 78 built in 1928 at the project location. The Composite Adequacy Rating of the roadway is 51.5. The rating is a composite of roughness, safety and service of the roadway.

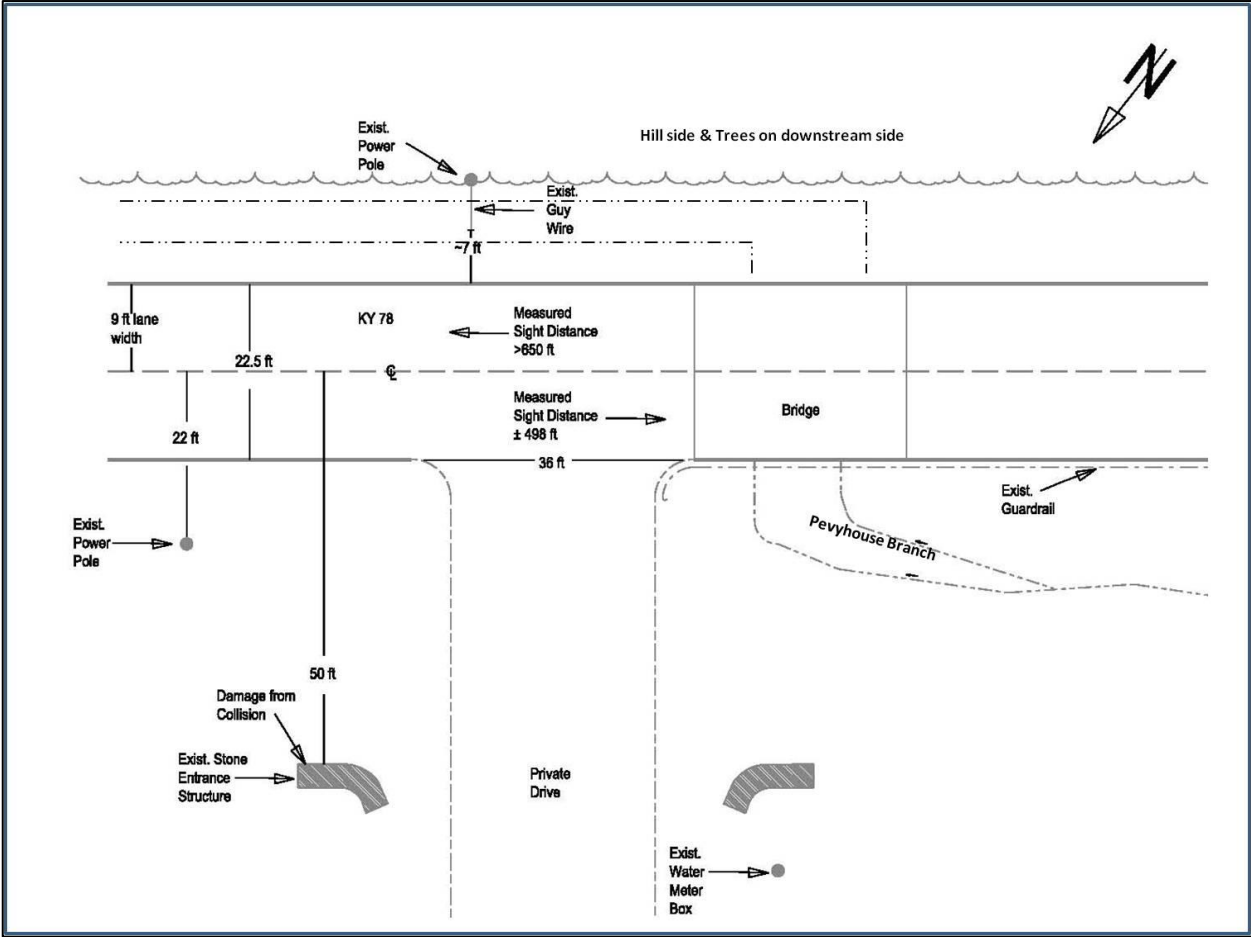


Figure 4: Field Sketch of Project Location

Table 1: Existing Conditions and Data Summary

County	<i>Lincoln</i>	Item No.	<i>8-1049.00</i>
Route Number(s)	<i>KY 78</i>	Funding Type	<i>BRO</i>
ADT (2010)	<i>3,830</i>	MP	<i>11.216</i>
Terrain	<i>Level</i>	Posted Speed	<i>55 mph</i>
Median Type	<i>Undivided</i>		
Roadway Data			
Functional Classification	<i>Rural Major Arterial</i>	State Primary Road System	<i>State Secondary Route</i>
National Highway System (NHS)	<i>No</i>	Coal Haul Route	<i>No</i>
National Truck Network	<i>No</i>	Truck Weight Classification	<i>A</i>
Bike Route	<i>No</i>	Adequacy Rating Percentile	<i>51.50</i>
Roadway Geometry			
	Existing Conditions	KYTC Common Geometric Practices (55 mph Design Speed)	
Number of Lanes	<i>2</i>	<i>2</i>	
Lane Width	<i>9 foot</i>	<i>12 foot</i>	
Shoulder Width	<i>+/- 1 foot</i>	<i>8 foot</i>	
Bridge Data			
Bridge Number	<i>069B00027N</i>		
Max. Span Length	<i>8 foot</i>		
Length	<i>27.0 foot</i>		
Sufficiency Rating	<i>43.2</i>		

Bridge Information and Deficiencies

The existing bridge is a double 8 foot x 4 foot x 37 foot culvert built in 1930. Bridge Number is 069B00027N. The existing culvert is skewed at 45 degrees to the roadway. The Sufficiency Rating of the bridge is 43.2. Bridge Inventory and Inspection reports can be seen in Appendix G.

Bridge Inventory and Inspection reports (April, 2010) list this bridge as structurally deficient. Bridge inspection reports recorded advanced deterioration of concrete in the barrels. Vertical cracks in the barrels, scaling and spalling in wing walls, and headwalls were also noted. The structural condition of the bridge can be seen in Figures 5 & 6.

Drainage

There are no reported flooding issues and roadway overtopping at this location. The Flood Insurance Rate Maps (FIRMs) do not indicate any flood zone in the vicinity of the project location. The FIRM Maps of the project site can be viewed in Appendix H.



Figure 5: Inner Structure of Box Culvert

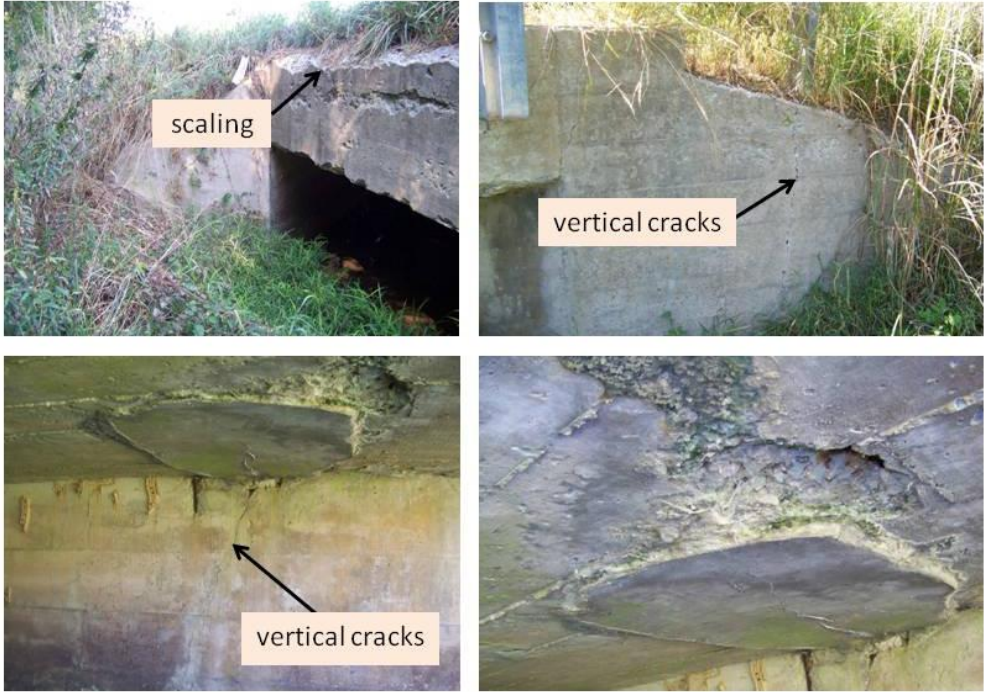


Figure 6: Structural Damage to the Box Culvert

Hydraulic Issues

Hydraulic issues were discussed at the Project Team meeting. Hydraulic Analysis will be conducted during the Phase 1 Design. Double 18 inch circular culverts exist at the driveway entrance of the hill side home on the downstream side. Ponding issues have been reported at these culverts.



Figure 7: Sediment build up on the upstream side

On the upstream side of the structure, sedimentation is filling up the channel. The walls of the double barrel culvert obstruct flow and cause sedimentation buildup. Another reason for the sedimentation buildup may be due to the skewed alignment of the channel with respect to the culvert and the flat grade of the stream. The problem may be minimized by replacing the box culvert with a single span bridge. If a double barrel culvert is installed, then a low flow diverter wall may be helpful in avoiding sedimentation.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

Lincoln County is in attainment for all monitored air pollutants.

B. Archaeology

An Archaeology 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.

C. Threatened and Endangered Species

The USFWS has identified the known and potential presence of threatened and endangered species in Lincoln County (See Table 2). During a site visit in August 2010 potential habitat was observed for the bat species in the project area; however a Habitat Assessment will need to be conducted to examine the

habitat potential more closely. The project area is outside the Upper Cumberland River Watershed; therefore no listed mussel species will be impacted. Any impacts to threatened and endangered species must be mitigated for, through coordination with USFWS.

Table 2: USFWS listing of Threatened and Endangered Species in Lincoln County

<u>Group</u>	<u>Species</u>	<u>Common Name</u>	<u>Legal Status</u>
Mammals	<i>Myotis sodalist</i>	Indiana bat	E
	<i>Myotis grisescens</i>	Gray bat	E
Mussels	<i>Villosa trabilis</i>	Cumberland bean pearlymussel	E

D. Hazardous Materials

During a site visit in August 2010, no properties were observed that would have a high probability of hazardous materials. However, due to the age of the bridge, it should be tested for asbestos prior to demolition.

E. Historic Resources

The house located immediately adjacent to the North of the project is reportedly 150 years old and is potentially eligible for listing on the National Register for Historic Places (see Figure 8). It has yet to be determined whether the potential eligibility will include only the house or the surrounding property as well. Additionally, the bridge over Peavey House Branch was constructed during the 1930s; which allows it to meet at least the first screening requirement for listing on the National Register for Historic Places. Therefore, a thorough assessment of the eligibility and listed status of the local residence and bridge should be completed in future project phases.

Due to the potential National Register eligibility of the home adjacent to the current project, early coordination with State Highway Preservation Office (SHPO) is necessary.

F. Permitting

Any impacts below the ordinary highwater mark within Peavey House Branch will need a USACE 404 Permit and potentially a Water Quality Certification from the Division of Water.

G. Noise

The scope of the project should not require additional noise analyses since there are no additional lanes of traffic planned for this project. The noise associated with construction and demolition will be temporary.



Figure 8: Potentially eligible for the National Register, currently owned by J.B. and Jacque Camenisch



Figure 9: Stone Walls adjacent to the bridge location

H. Socioeconomic

There will be no socioeconomic impacts associated with this project.

I. Section 4(f) Resources

The house, currently owned by Jacque and J.B. Camenisch is potentially eligible for the NR and if found to be eligible, it would therefore be protected under Section 4(f) of the Department of Transportation Act of 1966. Additionally, if the bridge or any residences located nearby are ruled as eligible for the National Register of Historic Places they 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 minimus" guidance for minor strip takings.

J. Section 6(f) Resources

At this time, there do not appear to be any resources in the project area that are protected under Section 6(f) of the Land Water Conservation Fund Act.

IV. OTHER PROJECT INFORMATION

A. Utilities at Site

Existing utilities present at the site are electric, telephone, water and cable. A summary of the utility contacts in the project area is shown below.

Electric: Kentucky Utilities
August Faeth
198 Broadway, P.O. Box. 109
Danville, KY 40422
(859)936-3240

Telephone: AT & T
Brenda Richards
1535 Twilight Trail
Frankfort, KY 40361

Water: Stanford Waterworks
Alan DeShon, Manager
P.O. Box. 45, 305 Main St.
Stanford, KY 40484
(606)365-4512

Cable: Adelphia
Earl Finley
P.O. Box 727, 1617 Foxhaven Drive
Richmond, KY 40475
(859)624-9666

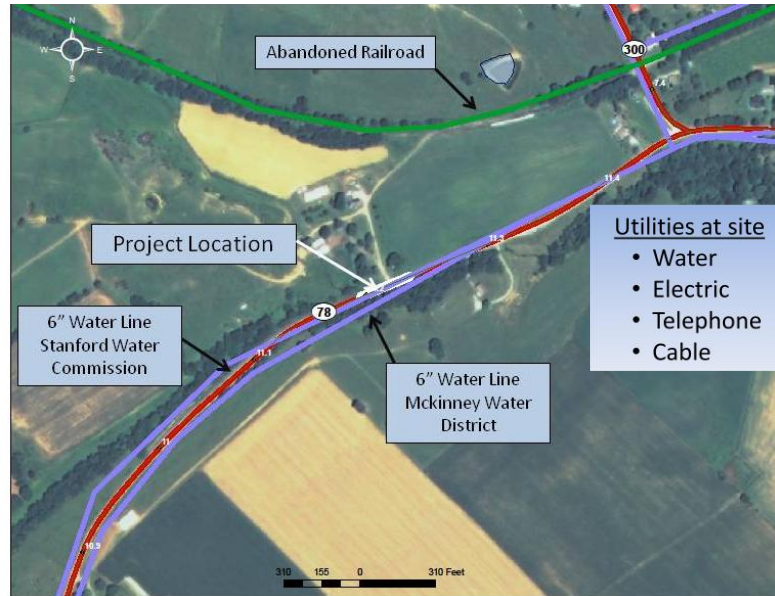


Figure 10:
Utilities at the site

The location of utilities will need to be verified as the project survey is completed in Phase I Design.

B. Right of Way

As already mentioned, Appendix F has existing roadway plans for the project area. Right of Way appears to be 60 feet on the east side and 25 feet on the west side based on the existing plans.

PVA map of the project area can be seen in Appendix I. There is one owner for the property west of the existing bridge and one owner for the property east of the bridge. Deeds were investigated by District 8 Planning and are available for use.

V. PROJECT TEAM MEETING & SITE VISIT

Project Team Meeting

A Project Team meeting was held on September 8, 2010 at the District 8 office in Somerset. It was attended by KYTC Central Office team and District 8 Office staff. Introduction to DNA Pre-Design Scoping studies was presented which was followed by a Power Point presentation and discussion of DNA study of Item 8-1049.00. Existing conditions, preliminary environmental overview, possible alternatives were discussed and a draft “Purpose and Need” statement was defined. Meeting minutes can be seen in Appendix J.

Site Visit Observations

No truck traffic was noticed during the two site visits that were conducted. When the Project team visited the site, as many as eleven School Buses were seen traveling

through the project site just after the school dismissal time around 3 pm. It is recommended that construction should begin immediately after the School closes for the summer months to avoid any inconvenience to School traffic. Considering this important issue, an incentive per day should be added to the construction contract to finish the project early and open to traffic. A penalty for late completion of the project should also be defined.

During the site visit, the deck of the existing double box culvert was measured as 2 foot deep. Some erosion was noticed behind the northeast wing wall. The stonewalls were observed closely at the project site in order to estimate their life. It seems that the concrete on the stone walls is relatively new indicating the walls may not be as old as the home itself.

The downstream drainage structures at the entrance to the hill side home were investigated. The structures are double 18 inch circular concrete culverts. There was a lot of erosion seen on the downstream side of these culverts.

VII. PROPOSED TYPICAL SECTION

The Project Team discussed the proposed typical section for the project. Bridge design criteria should follow the future project design criteria on KY 78 as established in the Highway Design Guidance Manual.

KYTC Current Geometric Practices (see Appendix E) suggest two lanes 12 foot in width with 8 foot shoulders for the speed and ADT of this segment on KY 78. Reduced width of shoulders (4 foot) may be recommended. The typical will be finalized during Phase I Design.

VIII. PROJECT PURPOSE AND NEED STATEMENT

A Purpose and Need Statement is the foundation for project decision-making and is needed for projects requiring NEPA documentation. Based upon the information presented in Section II of this report and discussion of the project team, the following Purpose and Need Statement was drafted for this project:

The purpose of the project is to eliminate the structural deficiency of the bridge which has a Sufficiency Rating of 43.2, to provide safety, mobility and connectivity between the cities of Stanford and Hustonville.

IX. POSSIBLE ALTERNATIVES

Structures considered by the Project team were a new bridge or a box culvert to replace the existing structure. For the culvert alternatives, double box culvert similar to the existing structure may be considered. Pre-cast arch culverts such as CONSPAN or BEBO will also be considered. Use of CONSPAN culverts can

minimize construction time and thereby shorten road closure duration. Minimum cover for these culverts is 1-1/2 foot not including pavement structure. Hydraulic analysis conducted in Phase 1 should also investigate the required opening and will allow for confirming or denying CONSPAN as an option. However, the low cover could pose a problems for installing guardrails for CONSPAN culverts.

Replacing the bridge at the current location: Alternates were discussed by the Project Team to construct the new structure at the current location. Replacing the bridge in-place with a new structure will require a temporary detour at the site or closing road, then detour traffic along an alternate route. The detour at site could affect the adjacent property which could be declared historic. On the east side, there is a hill and any construction of a detour will be expensive.

The Project Team decided that only State Routes will be used for detour and no County roads will be used for detour. Closing the road is the optimum choice to replace the bridge.

This segment of the road is planned to be closed down for another roadway improvement project (Item 8-907.00) a few miles west of the current project. Item 8-907.00 from MP 8.20 to 8.65 on KY 78 in Lincoln county is a spot improvement project to correct horizontal and vertical geometry.

The Project Team discussed that both the projects can be constructed at the same time so that the road closure can be combined. The Project Team recommended that this project should be let to construction at the same time as 8-907.00.

Realigning the structure: Realigning the structure by placing the new structure to the west may be problematic due to possible historic significance of the home. Realigning the structure on the downstream may be expensive involving cutting into the hill side. Both alternatives will involve realigning the existing roadway. Other disadvantages of realignment are: possible channel realignment and associated permits required. Also, significant amount of cut & fill will be required. With both upstream alternative or downstream alternative, matching the roadway with the realigned bridge would require adding new curves and super elevation in the roadway and will further increase the cost.

The following are the alternatives discussed at the Project Team meeting.

A. Alternate #1 - No Build

The Sufficiency Rating of the bridge is 43.2. The Project Team decided that this alternative should be dropped as the Project is already on the Highway Plan with funding allocated to it.

B. Alternate #2 – Build inplace with detour using existing State routes

This alternate involves a new structure with detour using existing State routes. The existing bridge is located on KY 78 at MP 11.216. The detour will be use KY 127 and KY 300. The detour length is 22 miles. The distance between KY 300 and KY 127 on KY 78 is 10.1. The detour length will lengthen this distance by 11.9 miles (22 miles – 10.1 mile = 11.9 miles). KY 78 will remain closed from JCT KY 300 to three miles north of JCT KY 78 – KY 198. The detour is shown in detail in Exhibit K.

This alternate will consider all possibilities for a new structure: a new bridge, pre-cast arch culvert and a double box culvert. Cost estimate for this alternate is shown below.

Some of the advantages of this alternate are: no additional right of way is needed, construction can take place without having to deal with traffic control and cost of relocation of utilities will be the minimum. The disadvantages of this alternate are: a detour is required which will increase the travel time. If construction takes place during non summer months, it will be inconvenient for school traffic.

Table 3: Alternate #2 - Build inplace with detour using existing State routes

	CONSTRUCTION	DESIGN	RIGHT OF WAY	UTILITIES	TOTAL
BRIDGE	\$300,000	\$150,000	\$0	\$50,000	\$500,000
PRE CAST ARCH	\$250,000	\$150,000	\$0	\$50,000	\$450,000
DOUBLE BOX CULVERT	\$210,000	\$150,000	\$0	\$50,000	\$410,000

C. Alternate #3 – Build inplace with temporary detour at site

This alternate involves a new structure with temporary detour or diversion at the site. In this case, KY 78 does not need to close down during the construction period. Traffic can continue to operate using the temporary detour route at the site. In this Alternate, there are additional costs associated with the temporary detour such as temporary pavement, drainage, traffic control etc..

Table 4: Alternate #3 - New structure built inplace with temporary detour at site

	CONSTRUCTION	DESIGN	RIGHT OF WAY	UTILITIES	TOTAL
BRIDGE	\$440,000	\$175,000	\$15,000	\$50,000	\$680,000
PRE CAST ARCH	\$380,000	\$175,000	\$15,000	\$50,000	\$620,000
DOUBLE BOX CULVERT	\$350,000	\$175,000	\$15,000	\$50,000	\$590,000

D. Alternate #4 – Build the new structure on the upstream side

This alternate involves construction of a new structure on the upstream side of the existing culvert. If the adjacent home is declared a historical property, the possibility of construction of a new structure on the upstream side will depend on the direction given by the State Historical Preservation Office.

This is a costlier alternative compared to Alternate 2 & 3. In this instance, the existing roadway can remain functional to the extent possible during construction. However, geometry of KY 78 needs to be realigned to match the location of the new structure. Additional right of way and utility expenses are required.

Table 5: Alternate #4 - Cost estimate for new structure on the upstream side

	CONSTRUCTION	DESIGN	RIGHT OF WAY	UTILITIES	TOTAL
BRIDGE	\$660,000	\$175,000	\$30,000	\$100,000	\$965,000
PRE CAST ARCH	\$610,000	\$175,000	\$30,000	\$100,000	\$915,000
DOUBLE BOX CULVERT	\$570,000	\$175,000	\$30,000	\$100,000	\$875,000

E. Alternate #5 – Build the new structure on the downstream side

This alternate involves construction of a new structure on the downstream side of the existing culvert. This alternate was discussed at the Project Team meeting as a possible alternate. The downstream side of the existing culvert has a hill side for a considerable distance along KY 78.

This alternate was not recommended by the District office during the cost estimation phase because the alternate can be considerably more expensive. The location of the new structure and the realignment necessary on either side of the structure along KY 78 will be expensive. No cost estimates were developed for this alternate.

All the alternates have been summarized in Table 6 for comparison purposes.

Table 6: Summary of Cost Estimates

Alternate #1 - No Build – no cost estimate

Alternate #2: Build inplace with detour using existing State routes

	CONSTRUCTION	DESIGN	RIGHT OF WAY	UTILITIES	TOTAL
2010 BIENNIAL PLAN	\$310,000	\$130,000	\$75,000	\$50,000	\$565,000
BRIDGE	\$300,000	\$150,000	\$0	\$50,000	\$500,000
PRE CAST ARCH	\$250,000	\$150,000	\$0	\$50,000	\$450,000
DOUBLE BOX CULVERT	\$210,000	\$150,000	\$0	\$50,000	\$410,000

Alternate #3: New structure built inplace with temporary detour at site

	CONSTRUCTION	DESIGN	RIGHT OF WAY	UTILITIES	TOTAL
2010 BIENNIAL PLAN	\$310,000	\$130,000	\$75,000	\$50,000	\$565,000
BRIDGE	\$440,000	\$175,000	\$15,000	\$50,000	\$680,000
PRE CAST ARCH	\$380,000	\$175,000	\$15,000	\$50,000	\$620,000
DOUBLE BOX CULVERT	\$350,000	\$175,000	\$15,000	\$50,000	\$590,000

Alternate #4: New structure on the upstream side

	CONSTRUCTION	DESIGN	RIGHT OF WAY	UTILITIES	TOTAL
2010 BIENNIAL PLAN	\$310,000	\$130,000	\$75,000	\$50,000	\$565,000
BRIDGE	\$660,000	\$175,000	\$30,000	\$100,000	\$965,000
PRE CAST ARCH	\$610,000	\$175,000	\$30,000	\$100,000	\$915,000
DOUBLE BOX CULVERT	\$570,000	\$175,000	\$30,000	\$100,000	\$875,000

Alternate #5 – Build the new structure on the downstream side – no cost estimate because the District does not suggest this alternate.

X. OTHER ISSUES

The owner of the adjacent property on the west side operates a towing company from his home. During the site visit, the owner informed KYTC of the two crashes he was involved in, due to the difficulties entering and leaving his driveway. When he stops to take a left turn into his property from east bound KY 78, his vehicle is in danger of being rear-ended. He mentioned that he encounters problems leaving his driveway to get on KY 78 because of poor turning radius.

One recent crash damaged his stone wall fence which was noted at the time of the site visit. The Project Team decided that KYTC cannot make any improvements to his driveway as this is a private entrance. The property owner would be allowed to change his entrance by acquiring a KYTC permit. A left turn lane is not warranted at this location, however, the property owner could also construct this by permit.

XI. CONSTRUCTION

As discussed earlier, this project may be constructed at the same time as Item 8-907.00 which is a roadway spot improvement project west of the current project. This will enable road closure of KY 78 for the two projects along this segment at the same time. Also, as mentioned earlier, it is recommended that construction should take place during summer months when Schools are not in session to prevent disruption of School Bus services. The contract terms should include incentive for work completed ahead of schedule and penalties for not completing on time.

XII. SUMMARY

As seen in Table 6 in Section VIII, the estimated cost of all alternates except Alternate 2 exceeds the programmed cost in the 2010 Biennial Plan. Additional funds need to be requested. SHPO review of the site and adjacent property will determine if the project design should require mitigation. If the selected alternate is a new structure at the current location, these effects will be very minimum. If the selected alternate will place the structure on the upstream side, then greater mitigation may be required.

As mentioned in the report, a hydraulic analysis will be conducted during Phase I studies which will determine the size of the opening. The hydraulic analysis should include three alternative structural types for the new structure, a bridge, a culvert or a precast structure such as BEBO or CONSPAN culvert.

Upon completion of this project, a new bridge will be constructed which will replace the current bridge with a Sufficiency Rating of 43.2. Safety, mobility and connectivity between the cities of Stanford and Hustonville will be enhanced.

Additional Project photos can be seen in Appendix L. Some cost estimation tables can be seen in Appendix M.

For more information regarding this study please contact:

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