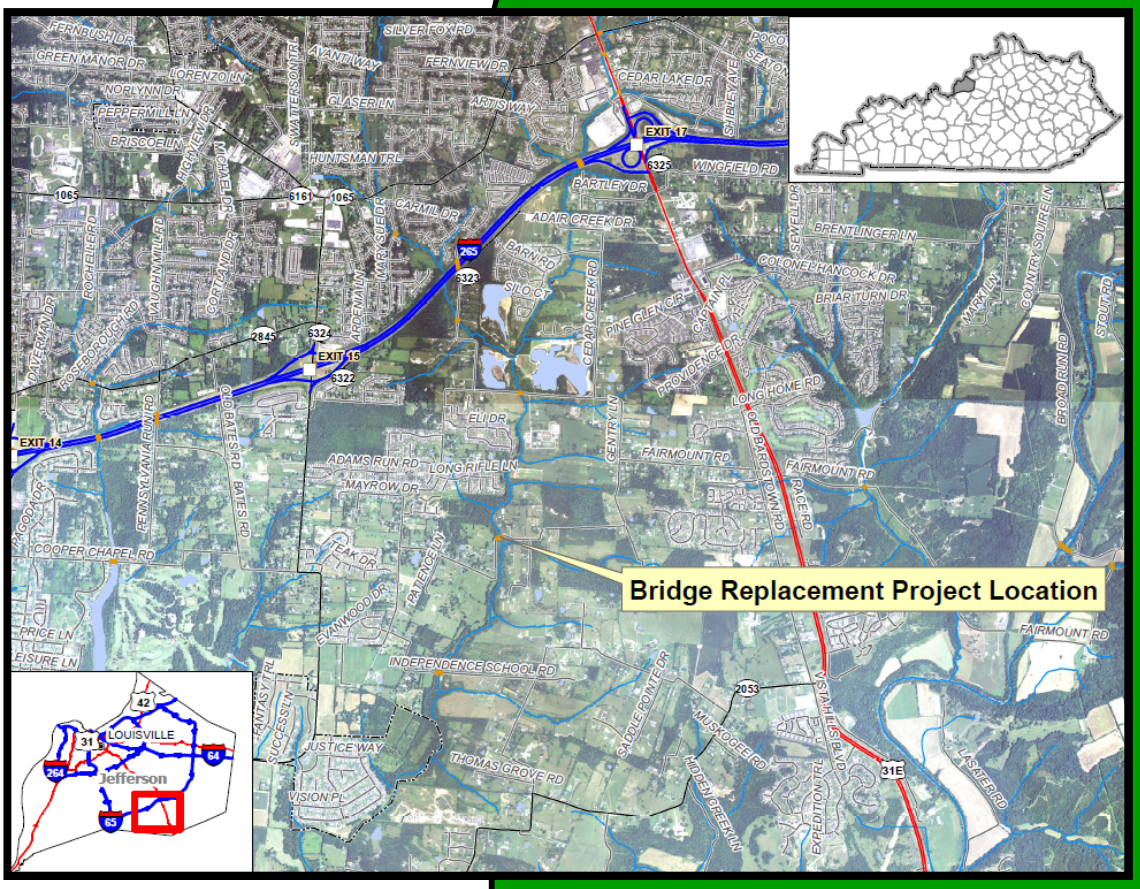
Data Needs Analysis



Scoping Study

KENTUCKY TRANSPORTATION CABINET

Bridge Replacement on
CR 1004N (Fairmont Rd.)
Over Cedar Creek
Jefferson County
MP 0.737 to 0.777
Item No. 5-1068.00

Prepared by the KYTC
Division of Planning and
KYTC District 5

February 2013

I. PRELIMINARY PROJECT INFORMATION

County: Jefferson | Item No.: 5-1068.00
Route Number(s): CR-1004N | Road Name: Fairmount Rd.
Program No.: N/A | UPN: 56 1004 000 - 001
Federal Project No.: N/A | Type of Work: Bridge Replacement

2012 Highway Plan Project Description:

Replace Bridge on Fairmount Rd. (CR 1004N) over Cedar Creek 0.2 mile W of Farmers Way (PR 1021N)(SR 16.8) 056C00054N

Beginning MP: 0.737 | Ending MP: 0.777 | Project Length: 0.04

Functional Class.: ☑ Urban ☐ Rural — Local
State Class.: ☐ Primary ☐ Secondary
Route is on: ☐ NHS ☐ NN ☐ Ext Wt
MPO Area: KIPDA
Truck Class.:
In TIP: ☑ Yes ☐ No
% Trucks: Unknown
ADT (current): 155 (2006)
Terrain: Rolling
Access Control: ☐ None ☑ Permit ☐ Fully Controlled ☐ Partial
Spacing:
Median Type: ☑ Undivided ☐ Divided (Type):
Existing Bike Accommodations: Shared Lane
Ped: ☐ Sidewalk
Posted Speed: ☑ 35 mph ☐ 45 mph ☐ 55 mph ☐ Other (Specify):
KYTC Guidelines Preliminarily Based on : See Project Notes. MPH Proposed Design Speed

Roadway Data:	EXISTING	COMMON GEOMETRIC
No. of Lanes	1	Min. 2
Lane Width	13'	16'
Shoulder Width	2.5'	N/A
Max. Superelevation**	N/A	N/A
Minimum Radius**	N/A	N/A
Maximum Grade	N/A	11%
Minimum Sight Dist.	N/A	165'
Sidewalk Width(urban)	N/A	10'
Clear-zone***	N/A	N/A

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

Project Notes/Design Exceptions?: Use guidelines for Very Low Vol. Loc Rds. TTWW-16' includes 1.5' shoulders

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

Bridge No.*:	056C00054N
Sufficiency Rating	19.3
Total Length	124'
Width, curb to curb	18'
Span Lengths	40'
Year Built	1940
Posted Weight Limit	10 Ton
Structurally Deficient?	Yes
Functionally Obsolete?	No
Existing Bridge Type	Concrete Arch

Existing Geotech data available? ☐ Yes ☐ No

Detour Length(s): 1.1 mi.

*If more than two bridges are located on the project, include additions sheets.

II. PROJECT PURPOSE AND NEED

A. Legislation

This project was approved by the General Assembly as part of the Bridge Replacement Program in the 2012 Highway Plan.

Funding	Phase	Year	Amount
BRZ	D	2013	$200,000
BRZ	R	2014	$100,000
BRZ	U	2014	$50,000
BRZ	C	2015	$500,000

B. Project Status

As of the completion date of this report, there are no design funds authorized. There are also no projects within the vicinity or on Fairmount Rd. (CR-1004N) listed in the Unscheduled Needs List (UNL) or the District Transportation Plan (DTP). However, the extension of Cooper Chapel Rd. (Item # 5-404.01) is a project listed in the Active Highway Plan, and the preferred alignment is located directly south of this project (see Exhibit 3). Lastly, this project is ready to be advertised and is grouped with two other bridge replacement projects in Jefferson County (5-1061.00 and 5-1064.00).

C. System Linkage

Fairmount Rd. (CR-1004N) is a county route located in the southern part of Jefferson County that connects Bardstown Rd. (US 31E) to Beulah Church Rd. (KY 864), south of the Gene Snyder Freeway (I-265). The active project - the extension of Cooper Chapel Rd. - will act as a more direct route to and from southern areas in Jefferson County and the City of Mt. Washington, located in Bullitt County.

D. Modal Interrelationships

N/A

E. Social Demands & Economic Development

As the city of Louisville continues to expand away from the congested downtown, residential and commercial growth is expected to continue to occur in the general vicinity of this project and further to the South. Hillview Fire District Station 3 has been constructed within the last several years just south of the project area, at the intersection of Cedar Creek Rd. and Justice Way. Lastly, Metro's Louisville Loop Project is planned to pass through the area along the Cooper Chapel Rd. extension. This will likely add pedestrian and bike traffic within the area of this project.

F. Transportation Demand

The last actual count for this bridge, noted in the attached inspection report, is 155 in the year 2006. This is a local route and a significant increase in traffic volume is not expected. Although, due to Cooper Chapel III (Item #: 5-404.01) currently going forward into phase II design, Fairmont Rd. may see a slight increase in traffic, as the new route of Cooper Chapel Rd. will provide a direct route from Cedar Creek Rd. to Bardstown Rd. (US 31E).

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

There are no current capacity issues with this roadway due to the low volume of traffic.

H. Safety

According to the KY State Police's collision information there have been no reported incidents on Fairmont Rd. (CR-1004N), within 0.5 mile of each side of the bridge. The biggest safety concerns are that this bridge is rated structurally deficient (SR: 19.3, 10 Ton posted weight limit) with heavy spalling and deterioration of the concrete arches, and there may also be an issue with sight distance when traveling across the bridge. After a field review, vegetation located within the inside curve on the western approach may impede sight for motorist traveling across and approaching this one lane bridge.

I. Roadway Deficiencies

The bridge is a single lane rated structurally deficient. The segment of Fairmount Rd. that this bridge is located has an average lane width of 13-15 feet with 0-2 feet shoulders. As mentioned above, the curvature of the approach roadway on the western side of the bridge creates a deficiency of sight distance.

Draft Purpose and Need Statement:

Need: This project is necessary to rehabilitate a single lane bridge (056C00054N) that is structurally deficient. Extensive deterioration of the concrete arches, including spalling and section loss of the re-steel, and some scouring at the bases of the arches have given this bridge a sufficiency rating of 19.3.

Purpose: To eliminate the structural deficiency and improve safety of a 73 year old, multi-spandrel arch, 124 feet in length bridge (056C00054NN), located at MP 0.757, running over Cedar Creek.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

STIP Pg.#: FY 2011-2014 Ad. Mod. 2 TIP Pg.#: FY 2011-2015 P. 7 of 80

B. Archeology/Historic Resources

☐ Known Archeological or Historic Resources are present

Concrete arched bridge is considered potentially eligible for the National Register of Historic Places (NRHP) as was indicated from previous project design phase in 2003. No other sites anticipated in project area.

C. Threatened and Endangered Species

Threatened and endangered species are listed in Jefferson County. The list includes; Indiana bat, Gray bat, Running Buffalo Clover, Interior Least Tern, Clubshell mussel, Fanshell mussel, Fat pocketbook mussel, Ring Pink mussel, Pink Mucket mussel, Orangefoot pimpleback mussel, Sheepnose mussel, Rough pigtoe mussel. The potential for T&E habitat in the project area exists for the two bats species, freshwater mussels, and running buffalo clover. There is no habitat for interior least tern in the project area. Project area within priority area for Indiana bats (maternity colony) requiring special coordination with USFWS should any habitat be impacted.

D. Hazardous Materials

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

New guidelines from KY Division of Air Quality will require sampling of structure concrete for the presence of Asbestos Containing Material. NOI submittal to KY Division of Air Quality prior to structure demolition.

E. Permitting

Check all that may apply: ☑ Waters of the US ☐ MS4 area ☑ Floodplain Impact ☐ 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

Cedar Creek is a perennial stream that will be impacted by removal of old bridge and installation of new bridge. It is expected that the project will require a NW 14 permit with no mitigation.

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

Bridge replacement projects not typically found to be type I projects unless adding capacity. Current bridge is one lar

G. Socioeconomic

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

No relocations expected from this very rural project location.

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 potentially eligible for the National Register of Historic Places and would fall under the Programmatic 4(f) Agreement for historic bridges. State Level Documentaion and Programmatic 4(f) statement would potentially be required.

Anticipated Environmental Document: CE Level 1

IV. POSSIBLE ALTERNATIVES

A. Alternative 1a: No Build

This alternative should be carried forward but does not meet the purpose and need of the project.

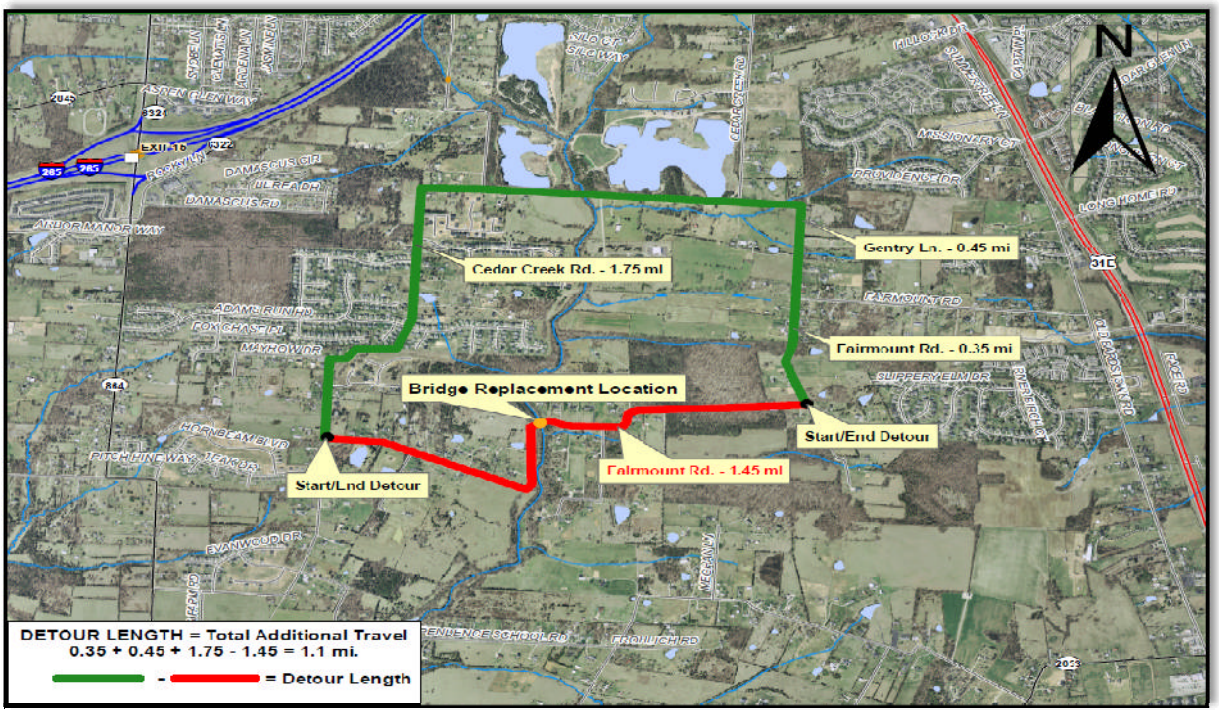
B. Alternative 1b: Close Bridge in Place/Re-purpose as a Ped and Bike Crossing

This alternative can be looked at as a possible solution that meets the purpose of this project. The bridge could still function as a path for pedestrians and bicyclists. In order to close the bridge in place, bollards must be constructed on the approaches directly in front of the bridge. In addition, signage must be placed along the roadway giving advanced warning to the closure of the bridge. Total cost would be minimum, and an estimate is not shown below.

C. Alternative 2: Replace Bridge in Existing Location

This alternative proposes to replace the bridge in its existing location. This would require a detour of approximately 1.1 miles (see below). Right-of-way and Construction costs would be at a minimum if this alternative is selected (excluding Alternative 1b).

Detour Route and Length



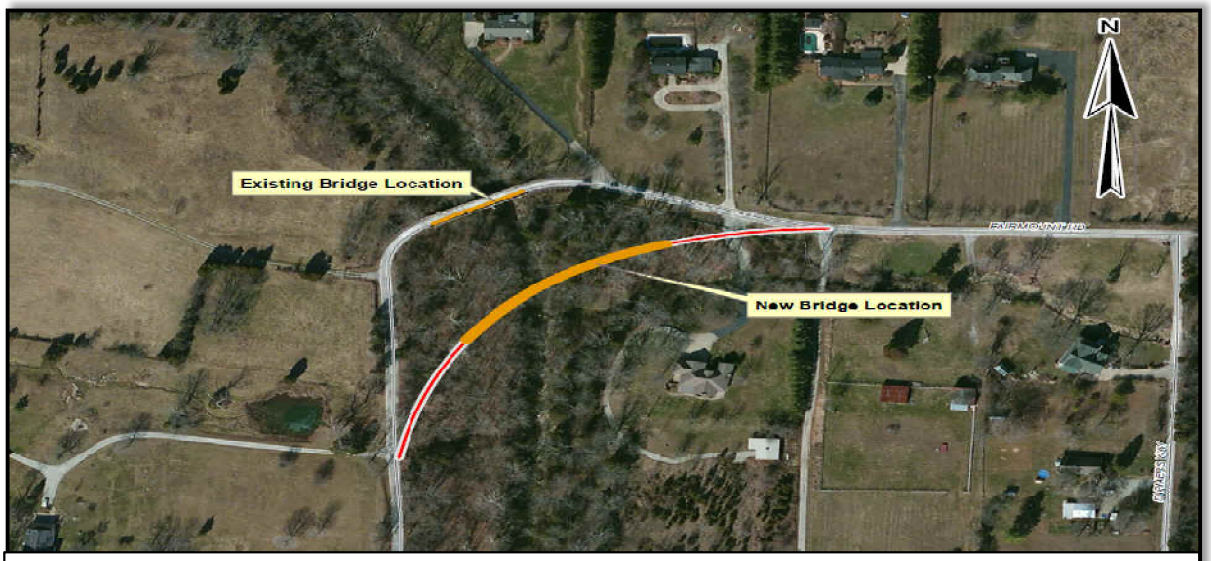
Planning Level Cost Estimate:

Phase	Estimate
Design	$200,000
R/W	$20,000
Utilities	$70,000
Const	$730,000
Total	$1,020,000

IV. POSSIBLE ALTERNATIVES (cont.)

D. Alternative 3: Replace Bridge on New Alignment

Alternative 3 proposes to realign the bridge to the Southeast. This alternative was previously selected as the preferred alternative in a Preliminary Line and Grade Inspection in 2002. The new bridge would cross Cedar Creek approximately 200-feet downstream of the existing structure. The new structure would be constructed on the maximum possible radius that would increase sight distance but also avoid disturbing a small tributary to Cedar Creek. This alternative would be the most expensive due to acquiring of the most Right-of-Way, the construction of a longer bridge, and the amount of embankment needed to tie in the approaches to existing grade.



Alternative 3 - New Alignment

Planning Level Cost Estimate:

Phase	Estimate
Design	$200,000
R/W	$180,000
Utilities	$70,000
Const	$1,660,000
Total	$2,110,000

V. Summary

This is a DNA scoping study for a bridge replacement (056C00054N) located on Fairmount Rd. (CR-1004N) over Cedar Creek, item number 5-1068.00. After analysis of the roadway's and the bridge's geometrics, reviewing of the last inspection report, and a site visit, the project team has decided that the purpose and need of this project is to improve the safety of Fairmont Rd. by eliminating the structural deficiency of this bridge. Alternative's 1b, 2, and 3 are recommended to be carried forward, as they all meet the purpose of this project. Alternative 1b would be the most affordable. However, the highway plan's cost estimate does not adequately cover the estimates of the other two Alternatives. Lastly, it is important to note that the extension of Cooper Chapel III (SYP# 5-404.01) is scheduled to start construction in FY 2019 and could affect which alternative mentioned above is selected.

Alt #	Description	D ($)(Fund)	R ($)(Fund)	U ($)(Fund)	C ($)(Fund)	Total ($mil)
1	No build/Close Bridge in Place	-	-	-	-	-
2	Replace Bridge in Existing Location	$200,000	$20,000	$70,000	$730,000	$1,020,000
3	Replace Bridge on New Alignment	$200,000	$180,000	$70,000	$1,660,000	$2,110,000
-	Current Hwy Plan Estimated Cost	$200,000	$100,000	$50,000	$500,000	$850,000
-	Current Pre-Con Estimated Cost					

VI. Tables and Exhibits

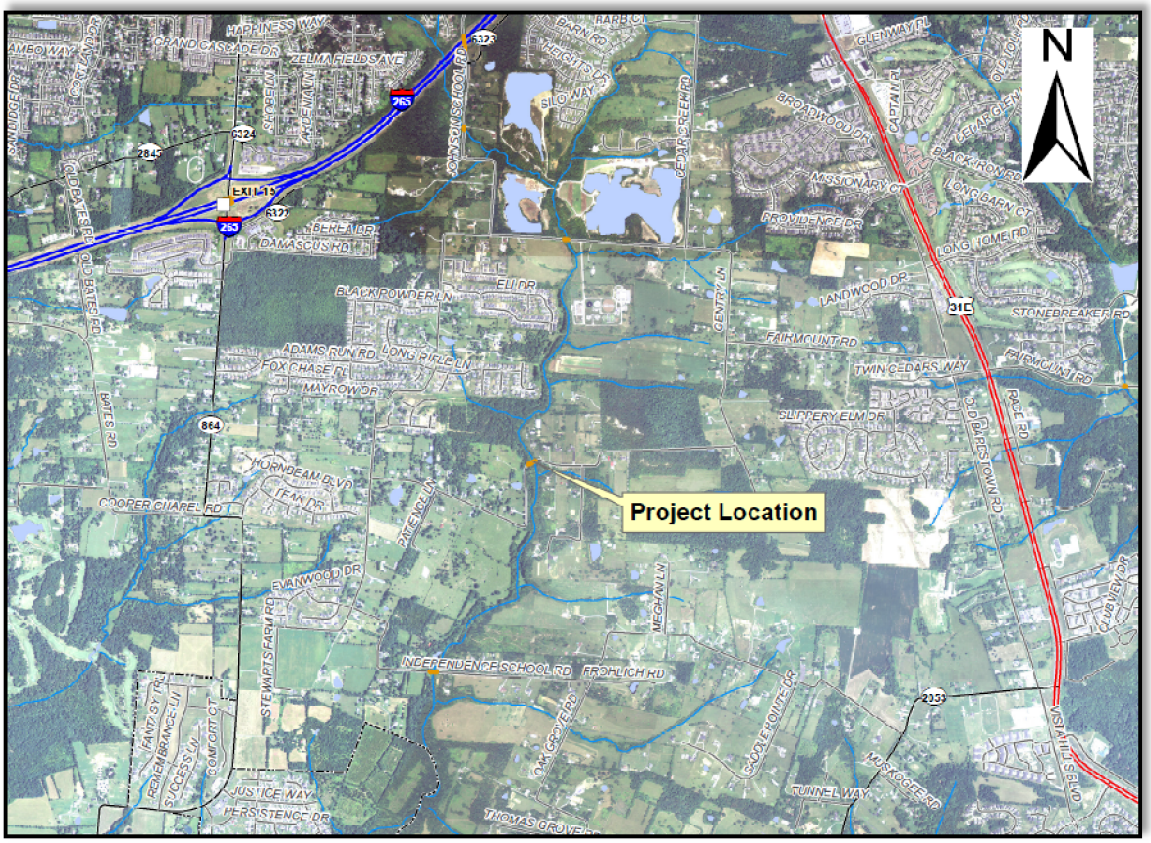


Exhibit 1: Project Location Map

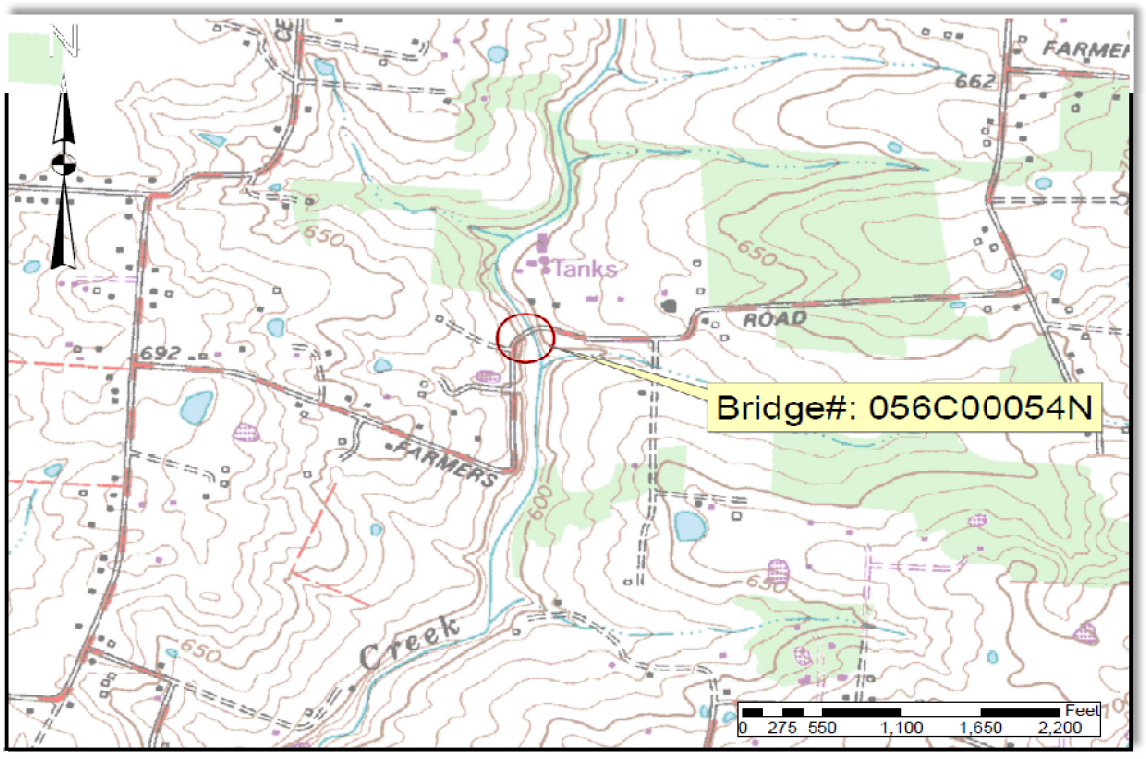


Exhibit 2: Topographic Map

VI. Tables and Exhibits (cont.)

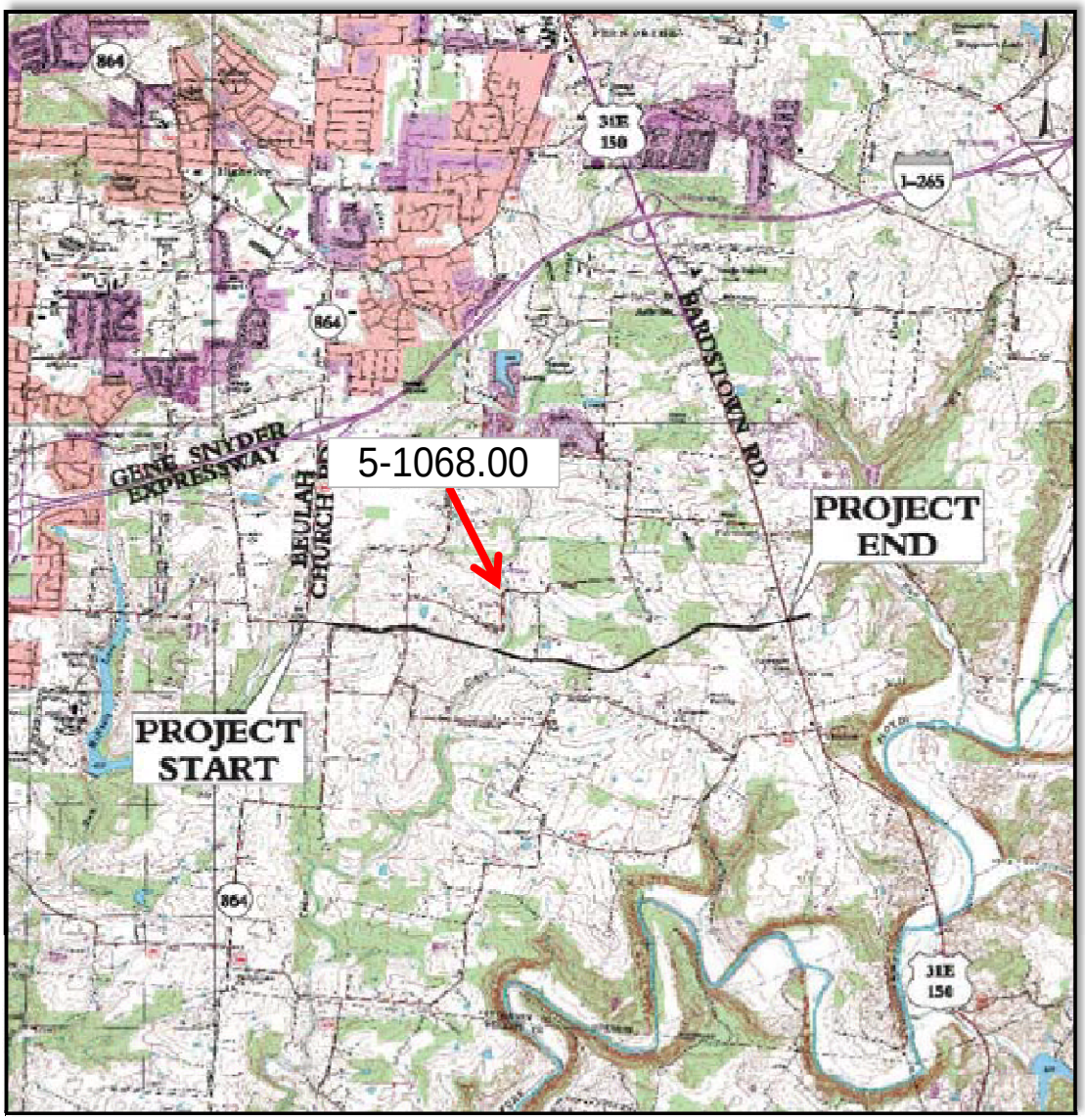


Exhibit 3: Extension of Cooper Chapel Rd. (5-404.01)

VI. Tables and Exhibits (cont.)

Figure 1: Looking North

Figure 2: Looking East

VI. Tables and Exhibits (cont.)

Figure 3: Looking West