Data Needs Analysis

Harrison County
US 27 MP 11.9 to 12.4
Item 06-8708.00
September 2012

Prepared by
the Kentucky
Transportation
Cabinet
District 6

KENTUCKY TRANSPORTATION CABINET

Division of Planning

I. PRELIMINARY PROJECT INFORMATION

County: Harrison **Item No.:** 06-8708.00
Route Number(s): US 27 **Road Name:** Falmouth Rd
Program No.: **UPN:** (Function) 49 27 011-013
Federal Project No.: **Type of Work:** RECONSTRUCTION

2012 **Highway Plan Project Description:**

RECONSTRUCT US 27 FROM MP 11.9 TO MP 12.4

Beginning MP: 11.9 **Ending MP:** 12.4 **Project Length:** 0.5 miles

Functional Class.: ☐ Urban ☑ Rural — Arterial
State Class.: ☑ Primary ☐ Secondary
Route is on: ☐ NHS ☑ NN ☐ Ext Wt
MPO Area: Not Applicable
Truck Class.: AAA
In TIP: ☐ Yes ☑ No
% Trucks: 7.1
ADT (current): 2,634 2,011
Terrain: Rolling
Access Control: ☐ None ☑ Permit ☐ Fully Controlled ☐ Partial Spacing:
Median Type: ☑ Undivided ☐ Divided (Type):
Existing Bike Accommodations: Shoulder **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	3	Min. 2
Lane Width	11 ft	12 ft
Shoulder Width	5 ft	8 ft
Max. Superelevation**	10.00%	6%
Minimum Radius**	716 ft	1065 ft
Maximum Grade	2%	5%
Minimum Sight Dist.	Unknown	495 ft
Sidewalk Width(urban)	N/A	N/A
Clear-zone***	16 ft	20-30 ft

Existing Rdwy. Plans available? ☑ Yes ☐ No
Year of Plans: 1986
☐ Traffic Forecast Requested
Date Requested:
☐ Mapping/Survey Requested
Date Requested:
Type:

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.*:	N/A	N/A
Sufficiency Rating		
Total Length		
Width, curb to curb		
Span Lengths		
Year Built		
Posted Weight Limit		
Structurally Deficient?		
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

Project is shown in the Six Year Plan - Harrison Co
Reconstruct US 27 From MP 11.9 to MP 12.4

Funding	*Phase*	*Year*	*Amount*
SPP	D	2012	$500,000
SPP	R	2012	$500,000
SPP	U	2012	$350,000

B. Project Status

Project is funded through the utilities phase in the Six Year Plan. No work has currently been completed other than the DNA Study.

C. System Linkage

US 27 is a major North/South arterial in Harrison County linking Cynthiana in the south to Falmouth in the north.

D. Modal Interrelationships

US 27 is on the National Truck Network. This is an important route to move freight through the Northern Kentucky area.

E. Social Demands & Economic Development

This portion of US 27 is a critical route in providing access to homes, businesses, and communities between Lexington and Northern Kentucky.

F. Transportation Demand

The section of US 27 has an ADT of 2,634 in 2011 and 7.1% Trucks.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

This portion of US 27 includes two through lanes with a truck climbing lane in the southbound direction. Capacity is adequate to handle current traffic volumes and anticipated traffic voumes for the foreseeable future.

H. Safety

Warning signs, chevrons and guradrails are present. This section of US 27 has a Critical Rate Factor of 2.09, indicating a high crash rate and potential safety issue.

I. Roadway Deficiencies

The southern curve at MP 12.0 was designed with a superelevation of 10% which is more than the design recommended maximum of 6%. This may be a contributing factor to the high crash rate.

Draft Purpose and Need Statement:

Need: Critical Rate Factor of 2.09 indicates a high crash rate in this area. Sharp curve at MP 12.0 has a higher than recommended superelevation and lower than recommended radius.

Purpose: To improve safety by adjusting the roadway alignment to meet current geometric recommendations.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

STIP Pg.#: N/A **TIP Pg.#:** N/A

B. Archeology/Historic Resources

☑ Known Archeological or Historic Resources are present

Possible historic barn near MP 12.4

C. Threatened and Endangered Species

Possible bat habitat near area.

D. Hazardous Materials

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

Horse manure present in area.

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

N/A

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

Alt 2 might be considered a Type I Project because of its major realignment. Alt 3 most likely would not qualify.

G. Socioeconomic

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

A few houses and barns would have to be cleared and a few relcations would be necessary.

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: None (Completely State funded)

IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

This alternative does not meet the purpose of this project.

B. Alternative 2

Realign US 27 from MP 11.9 to MP 12.4 to eliminate the S curve in the roadway.

Planning Level Cost Estimate:

Phase	Estimate
Design	$1,000,000
R/W	$1,000,000
Utilities	$700,000
Const	$15,000,000
Total	**$17,700,000**

IV. POSSIBLE ALTERNATIVES (cont.)

B. Alternative #3

Realign southern curve at MP 12.0

Planning Level Cost Estimate:

Phase	Estimate
Design	$500,000
R/W	$500,000
Utilities	$350,000
Const	$6,000,000
Total	**$7,350,000**

V. Summary

Alternative 2 is a total realignment of the segment from MP 11.9 to 12.4, eliminating the S-curve entirely. This would be very expensive and require a lot of property accusitions as well as grade and fill. Alternative 3 would cost less than half as much and would address the more serious southern curve at MP 12.0 where the majority of the crashes take place. Alt 3 would be the more cost effective option.

Alt #	Description	D ($)(Fund)	R ($)(Fund)	U ($)(Fund)	C ($)(Fund)	Total ($mil)
1	No Build	-	-	-	-	-
2	Realign S Curve	1,000,000	1,000,000	700,000	15,000,000	17,700,000
3	Realign southern curve	500,000	500,000	350,000	6,000,000	7,350,000
-	Current Hwy Plan Estimated Cost	500,000	500,000	350,000		1,350,000
-	Current Pre-Con Estimated Cost	500,000	500,000	350,000		1,350,000

VI. Tables and Exhibits

Note: Crash rates are in terms of crashes per 100 million vehicle-miles.

INPUT					
	Begin	End	AADT	Functional	Total No.
Route	Milepoint	Milepoint		Class Rate	Accidents
US 27	11.500	12.500	2634	**127**	**19**

OUTPUT				
Section	HMVM	RC	Total	Critical
Length			Accident	Rate
(miles)			Rate	Factor
1	0.03	315	659	2.09

County:	Harrison
Route:	US 27
Period:	7/1/2009 to 7/1/2012

Exhibit 1: Project Location Map

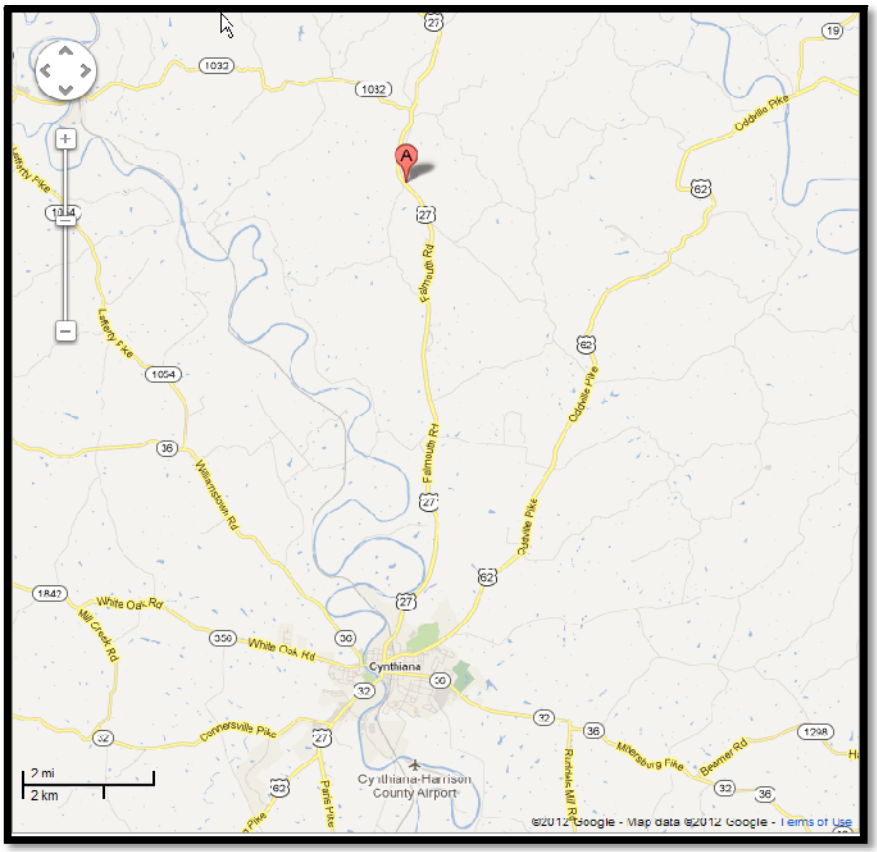
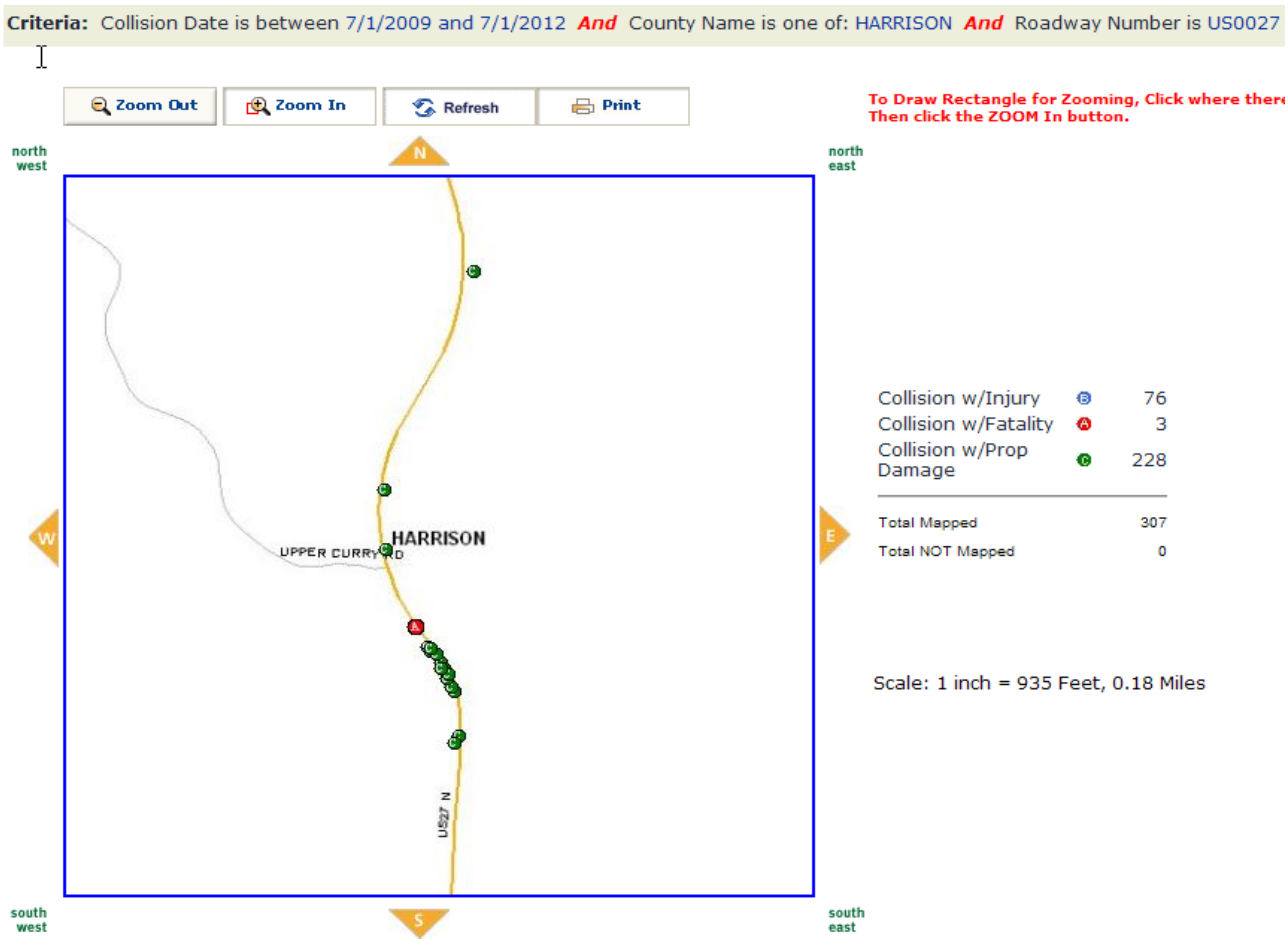


Exhibit 2: Southern Curve at MP 12.0 Looking South

Exhibit 3: Crash Summary

MP 11.5 - 12.5 **19 Collisions**
7/1/09 - 7/1/12 **1 Fatality**



Crash Plot Data indicates a high amount of crashes on the southern curve at MP 12.0