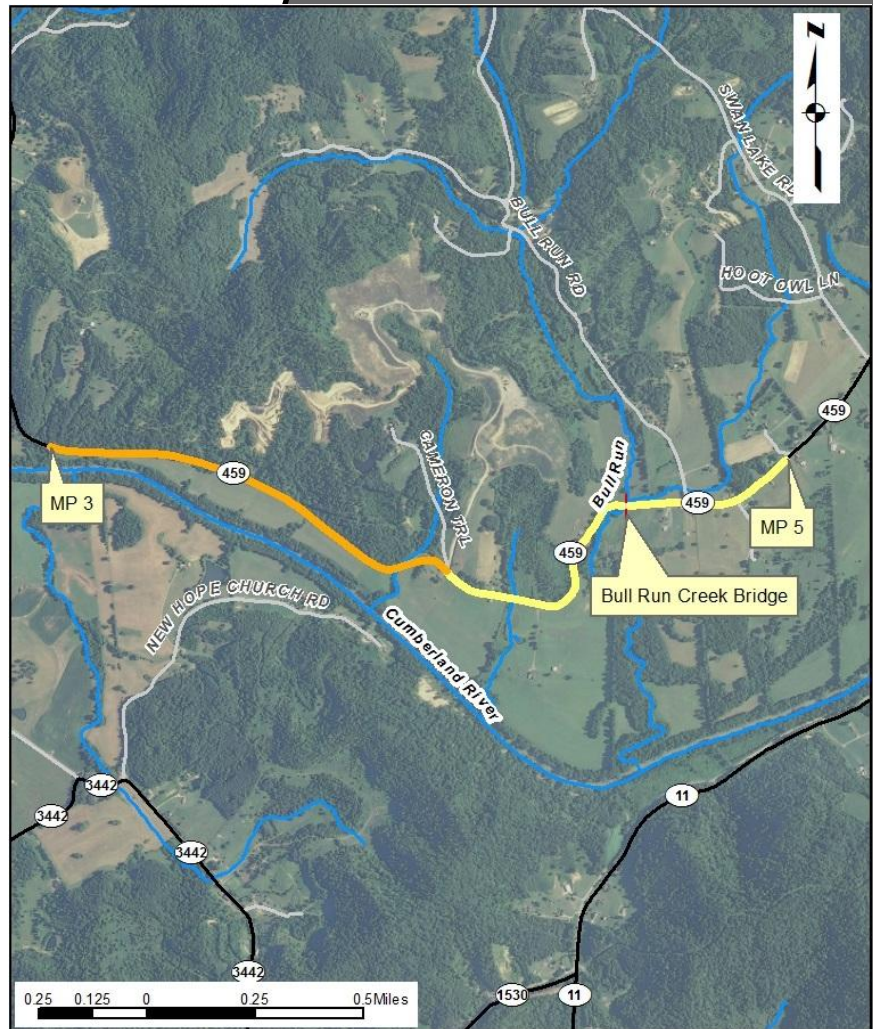
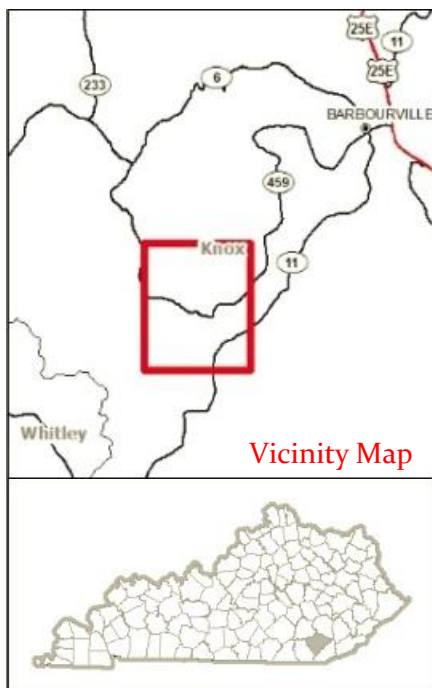


D N A



Scoping Study

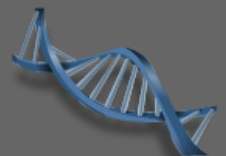


KY 459, Knox County Replace Bridge (061B00071N) And Spot Improvements Between MP 3.0 and MP 5.0

Item No. 11-8712.00
Item No. 11-8713.00

Prepared by the KYTC
Division of Highway Design
District 11

October 2013



I. PRELIMINARY PROJECT INFORMATION			
County:	Knox	Item No.:	11-8712.00 & 11-8713.00
Route Number(s):	KY 459	Road Name:	Daniel Boone Drive
Program No.:	8756401D	UPN:	FD04 061 0459 004-005
	8756301D		FD04 061 0459 003-004
Federal Project No.:	N/A	Type of Work:	Bridge Replacement
2012 Highway Plan Project Description:	Spot Improvements		
Spot improvements along Daniel Boone Drive (KY 459) between MP 3.0 and MP 5.0 to raise roadway above floodplain elevation of 971.0 ft. & replacement of existing bridge (061B00071N) over Bull Run Creek at MP 4.595.			
Beginning MP:	3.0	Ending MP:	5.0
Project Length:	2.0 Miles		
Functional Class.:	<input type="checkbox"/> Urban <input checked="" type="checkbox"/> Rural Collector ▼	State Class.:	<input type="checkbox"/> Primary <input checked="" type="checkbox"/> Secondary Route is on: <input type="checkbox"/> NHS <input type="checkbox"/> NN <input type="checkbox"/> Ext Wt
MPO Area:	Not Applicable ▼	Truck Class.:	A ▼
In TIP: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		% Trucks:	10.40% (Estimated)
ADT (current):	130 2011	Terrain:	Rolling ▼
Access Control:	<input type="checkbox"/> None <input checked="" type="checkbox"/> Permit <input type="checkbox"/> Fully Controlled <input type="checkbox"/> Partial	Spacing:	▼
Median Type:	<input checked="" type="checkbox"/> Undivided <input type="checkbox"/> Divided (Type): 		
Existing Bike Accommodations:	Shared Lane ▼	Ped:	<input type="checkbox"/> Sidewalk
Posted Speed:	<input checked="" type="checkbox"/> 35 mph <input type="checkbox"/> 45 mph <input type="checkbox"/> 55 mph <input type="checkbox"/> Other (Specify): 		
KYTC Guidelines Preliminarily Based on :	35	MPH Proposed Design Speed	
COMMON GEOMETRIC			
Roadway Data:	EXISTING	PRACTICES*	
No. of Lanes	2	2	Existing Rdwy. Plans available? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Year of Plans: <input type="checkbox"/> Traffic Forecast Requested Date Requested: <input type="checkbox"/> Mapping/Survey Requested Date Requested: Type: ▼
Lane Width	9'	9'-10'	
Shoulder Width	2'	2'	
Max. Superelevation**	4.0%	8.0%	
Minimum Radius**	218'	371'	
Maximum Grade	8.4%	9.0%	
Minimum Sight Dist.	N/A	250'	
Sidewalk Width(urban)	N/A	N/A	
Clear-zone***	N/A	N/A	
Project Notes/Design Exceptions?: Survey is of profile only, additional survey will be required.			
<small>*Based on proposed Design Speed, **AASHTO's A Policy on Geometric Design of Highways and Streets, ***AASHTO's Roadside Design Guide</small>			
Bridge No.*:	061B00071N (Bridge #2)		
Sufficiency Rating	78		Existing Geotech data available? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Total Length	28'		
Width, curb to curb	20.5'		
Span Lengths	1		Detour Length(s): 6.4 Miles
Year Built	1975		
Posted Weight Limit	-		
Structurally Deficient?	No		*If more than two bridges are located on the project, include additions sheets.
Functionally Obsolete?	Yes		
Existing Bridge Type	1-span concrete box beam		

II. PROJECT PURPOSE AND NEED

A. Legislation

In April 2012, the General Assembly scheduled SPP funds for 11-8712.00 and 11-8713.00.

<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
SPP	D	2012	\$400,000
SPP	R	-	-
SPP	U	-	-
SPP	C	2013	\$2,200,000

B. Project Status

Design funds were authorized for 11-8712.00 and 11-8713.00 on January 14, 2013. A survey of the existing roadway profile has been completed.

C. System Linkage

Daniel Boone Drive (KY 459) is a two-lane rural minor collector connection between KY 11 in Barbourville and KY 6 near Dishman Springs. It primarily serves the residents along the route. This route could serve as a detour for KY 6 in the instance of any closures between KY 11 and the KY 459 junction on KY 6.

D. Modal Interrelationships

The only mode of transportation along the length of the project is vehicular traffic. There are no intermodal interactions with pedestrians, railroads, ferries, river ports, or bicycle routes.

E. Social Demands & Economic Development

There is no economic development along the length of the project and very little economic development along the rest of the route. The route does provide direct access to the more economically developed area of Barbourville to the residents along KY 459.

F. Transportation Demand

Due to the lack of economic development and limited number of residents, there is a relatively low transportation demand.

G. Capacity

This section of KY 459 primarily serves the residents along the route. The last available traffic count data from 2011 indicates an ADT of 130 vehicles per day for this section of KY 459. This was a decrease from other recent traffic counts. The ADT was 277 in 2008 and 205 in 2005. The current roadway capacity should be sufficient to satisfy future traffic needs.

H. Safety

Representatives from the Transportation Cabinet spoke with residents and property owners in the area and concluded that this section of KY 459 frequently experiences overtopping of the roadway during heavy rainfall events, regularly resulting in school closings in the area.

This section of highway experiences very few vehicular accidents. This is likely due to the fact that there is a relatively low ADT for this section. Between January 2002 and June 2012 there were 15 accidents involving 21 vehicles, resulting in 15 injuries and no fatalities. The majority of these accidents (9) involved a single vehicle, four of the accidents were sideswipes and two crashes were head-on collisions. Darkness does not appear to be a significant factor in these collisions; seven occurred during the daytime, seven in the nighttime, and one occurred in the early morning. Nine of the accidents occurred in tangent sections while six occurred in curves. The location of these crashes can be seen on the Crash Map in the Tables and Exhibits Section.

I. Roadway Deficiencies

Portions of the roadway along this section frequently experience flooding during heavy rainfall events. The design team has determined that the minimum roadway elevation should be 971.0 feet to reduce the risk of flooding. The following sections are below the desired minimum elevation: MP 3.00-3.19, MP 3.59-3.76, MP 3.85-4.00, MP 4.14-4.22, MP 4.39-4.46, MP 4.51-4.77. A total of 0.92 miles (4,858') of the roadway lies below the minimum desired elevation as well as the bridge over Bull Run Creek at MP 4.595.

The existing geometric conditions of the roadway are mostly within the acceptable limits for a rural minor collector, however, the existing minimum radius is significantly below the recommended minimum radius of 371'. This does not appear to be a serious issue due to the relatively low number of vehicular accidents occurring in curves on this section of road (see Safety section). The 2-9' lanes with 2' shoulders are acceptable for the design speed of 35 MPH and the ADT of 130 vehicles per day. The existing 4.0% maximum superelevation is well within the acceptable 8.0% maximum and the existing maximum grade of 8.4% is below the acceptable 9.0% maximum.

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

Knox County is attainment for all monitored air pollutants. This project is not anticipated to significantly change increase traffic or add additional lanes. Structure will be inspected for asbestos containing materials. Division for Air Quality requires advanced notification prior to demolition and removal of the bridge. Air quality during construction will be controlled with good construction practices.

B. Archeology/Historic Resources

☒ Known Archeological or Historic Resources are present

A phase 1 archaeological survey will determine cultural significance and if any eligible sites are located in the project footprint or borrow area. Structures will be evaluated for historic inclusiveness.

C. Threatened and Endangered Species

Kentucky Division of Water has no waterways listed as sensitive in the area including Bull Run Creek. Best Management Practices (BMPs) will be developed to adequately control erosion and runoff. USFWS has identified suitable habitats for threatened and endangered species in the project area. Current species listed for Knox County are *Myotis sodalis*, Indiana bat, *Alasmidonta atropurpurea*, Cumberland elktoe, *Phoxinus cumberlandensis*, blackside dace, *Etheostoma susanae*, and Cumberland darter.

Future review prior to construction will address the requirements of USFWS to prevent detriment to the protected species. A habitat assessment, biological assessment or mitigation measures will address potential impacts.

D. Hazardous Materials

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

Project will be reviewed for UST/Hazmat issues such as active or prior active fuel stations. Project does include a bridge that will be inspected for asbestos.

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

The USGS Quadrangle is Barbourville. Wetlands are not identified on the project. No listed sensitive streams are identified. A water of the United States (Bull Run and bridge 061B00071N @ -83.939309 36.819384 Decimal Degrees) with impacts below ordinary high water will require coordination with the officers of the CORP and DOW. Construction activities may need a USACE 404 permit and a DOW 401 permit. Additionally, a surface water KYR 10 permit may be required for construction disturbances. Filling in floodplain may require a permit.

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

Noise issues will be temporary and limited to those associated with construction activities. It does appear that there are noise receptors within 150 feet of the project and part of the project is changing the vertical alignment by raising the roadway. Project does not increase capacity of through travel lanes.

G. Socioeconomic

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

Relocations are not anticipated and construction is temporary, this project should not pose hardships to the community provided that traffic access is provided during construction. There appears to be no impacts on prime farmland.

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

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

Should structures be accepted as eligible for the National Register of Historic Places, they could be afforded protection under section 4(f). KYTC has options to mitigate and avoid impacts to section 4(f) resources including a programmatic agreement for mitigating historic bridges, or using 'de minimus' guidance for properties with minor strip takings.

Anticipated Environmental Document:

None (Completely State funded)



IV. PROJECT SCOPING, NEEDS & PURPOSE

A. Scoping & Need:

11-8712.00

This section begins at MP 4.00 on KY 459 and terminates at MP 5.00. There are three sections of roadway that are currently below the minimum recommended elevation of 971.0 feet. They are located at MP 4.14-4.22, MP 4.39-4.46, and MP 4.51-4.77. This is a total of 0.41 miles (2,165'). The bridge over Bull Run Creek at MP 4.595 will also be required to be raised. The horizontal alignment will not be altered to limit the amount of right-of-way that needs to be purchased.

11-8713.00

This section begins at MP 3.00 on KY 459 and terminates at MP 4.00. There are three sections of roadway that are currently below the minimum recommended elevation of 971.0 feet. They are located at MP 3.00-3.19, MP 3.59-3.76, MP 3.85-4.00. This is a total of 0.51 miles (2,693'). The horizontal alignment will not be altered to minimize the amount of right-of-way that needs to be purchased.

B. Draft Project Purpose:

The purpose of this project is to improve safety and address bridge and roadway deficiencies. This section of KY 459 regularly experiences flooding during heavy rainfall events due to portions of the roadway and existing bridge being below the recommended minimum elevation of 971.0 feet. The flooding frequently causes school closings in the area.

12/12/2013

VII. PRECONSTRUCTION STATUS REPORT

02-Apr-2013		Preconstruction Status Report		Page 150 of 152	
Auth No. / Date	87564 14-Jan-2013	Project No.	11 8712.00	Parent No.	11 8712.00
County Name	KNOX				
BMP / EMP	4 / 5				
Route	KY-459-				
Desc	RAISE KY-459 ABOVE FLOOD PLAIN FROM MP 4 TO MP 5, INCLUDING RAISING THE BULL RUN CREEK BRIDGE.(12CCN)				
Type Of Work	SAFETY(P)	No. Lanes		Length	1.00 Measurement Type E
Road Eng.	CONSULTANT	Bridge Eng.	CONSULTANT		
Proj Mgr	kytc\david.fields	Bridge No.		Suff. Rating	
Letting Status / Date *****					
Final Plans			Contractor Notice		
Environmental	Name	Date	Type	Sched. Comp.	Actual Comp.
Assigned:					
Requested:					
Concerns					
Phase Code	D	C	EMARS PROGRAM CODE		
Stage	AUTHORIZED	ESTIMATED	8756401D		
Fund Code	SPP	SPP			
Escalated Cost	0	1,500,000			
Fiscal Year		2013			
Auth Amt.	200,000				
Auth Date	14-Jan-2013				
Current Cost					
Date Of Current Cost					
Year of Proj Auth Date					
Program Code	FD04				
Remaining Balance	200,000.00				
Right Of Way Parcel Information			Utility Information		
Total Parcels:		Completion Date		Completion Date	
Appraisals	of		Negotiated Starts	of	
Relocated	of		Agreement	of	
Deeds Signed			Relocated	of	
Suits Filed					
Right Of Entry					
Parcels Cleared					
Milestone	Remarks	Status	Date	Scheduled	
PRELIMINARY LINE AND GRADE		UNKNOWN	21-May-2012		
DRAINAGE INSPECTION		UNKNOWN	21-May-2012		
JOINT INSPECTION		UNKNOWN	21-May-2012		
GEOTEC ENGINEERING - ROADWAY		UNKNOWN	21-May-2012		
GEOTEC ENGINEERING - BRIDGES		UNKNOWN	21-May-2012		
BRIDGE AND STRUCTURE PLANS TO CENTRAL OFFICE		UNKNOWN	21-May-2012		
ADVANCE SITUATION TO CENTRAL OFFICE		UNKNOWN	21-May-2012		
RIGHT OF WAY PLANS TO CENTRAL OFFICE		UNKNOWN	21-May-2012		
ROAD PLANS TO CENTRAL OFFICE		UNKNOWN	21-May-2012		
TRAFFIC PLANS - SIGNING		UNKNOWN	21-May-2012		
TRAFFIC PLANS - LIGHTING		UNKNOWN	21-May-2012		
TRAFFIC PLANS - SIGNALS		UNKNOWN	21-May-2012		
TRAFFIC PLANS - TRAFFIC CONTROL		UNKNOWN	21-May-2012		

VII. PRECONSTRUCTION STATUS REPORT (cont.)

02-Apr-2013		Preconstruction Status Report		Page 151 of 152	
Auth No. / Date	87563 14-Jan-2013	Project No.	11 8713.00	Parent No.	11 8713.00
County Name	KNOX				
BMP / EMP	3 / 4				
Route	KY-459-				
Desc	RAISE KY-459 ABOVE FLOOD PLAIN FROM MP 3 TO MP 4.(12CCN)				
Type Of Work	SAFETY(P)	No. Lanes		Length	1.00 Measurement Type E
Road Eng.	CONSULTANT	Bridge Eng.	CONSULTANT		
Proj Mgr	kytc\david.fields	Bridge No.		Suff. Rating	
Letting Status / Date *****					
Final Plans			Contractor Notice		
Environmental	Name	Date	Type	Sched. Comp.	Actual Comp.
Assigned:					
Requested:					
Concerns					
Phase Code	D	C	EMARS PROGRAM CODE		
Stage	AUTHORIZED	ESTIMATED	8756301D		
Fund Code	SPP	SPP			
Escalated Cost	0	700,000			
Fiscal Year		2013			
Auth Amt.	200,000				
Auth Date	14-Jan-2013				
Current Cost					
Date Of Current Cost					
Year of Proj Auth Date					
Program Code	FD04				
Remaining Balance	198,649.47				
Right Of Way Parcel Information			Utility Information		
Total Parcels:		Completion Date		Completion Date	
Appraisals	of		Negotiated Starts	of	
Relocated	of		Agreement	of	
Deeds Signed			Relocated	of	
Suits Filed					
Right Of Entry					
Parcels Cleared					
Milestone	Remarks	Status	Date	Scheduled	
PRELIMINARY LINE AND GRADE		UNKNOWN	21-May-2012		
DRAINAGE INSPECTION		UNKNOWN	21-May-2012		
JOINT INSPECTION		UNKNOWN	21-May-2012		
GEOTEC ENGINEERING - ROADWAY		UNKNOWN	21-May-2012		
GEOTEC ENGINEERING - BRIDGES		UNKNOWN	21-May-2012		
BRIDGE AND STRUCTURE PLANS TO CENTRAL OFFICE		UNKNOWN	21-May-2012		
ADVANCE SITUATION TO CENTRAL OFFICE		UNKNOWN	21-May-2012		
RIGHT OF WAY PLANS TO CENTRAL OFFICE		UNKNOWN	21-May-2012		
ROAD PLANS TO CENTRAL OFFICE		UNKNOWN	21-May-2012		
TRAFFIC PLANS - SIGNING		UNKNOWN	21-May-2012		
TRAFFIC PLANS - LIGHTING		UNKNOWN	21-May-2012		
TRAFFIC PLANS - SIGNALS		UNKNOWN	21-May-2012		
TRAFFIC PLANS - TRAFFIC CONTROL		UNKNOWN	21-May-2012		

VIII. TABLES AND EXHIBITS

Exhibit A - Bridge Inventory and Appraisal Report

NATIONAL BRIDGE INVENTORY KENTUCKY INVENTORY AND APPRAISAL REPORT <small>Use of this document is subject to 23 USC SEC 409</small>			
IDENTIFICATION		CLASSIFICATION	
(8) STRUCTURE NUMBER	061800071N	(112) NBIS BRIDGE LENGTH:	Y
(1) STATE NAME:	KENTUCKY	(104) HIGHWAY SYSTEM:	0
(5) INVENTORY ROUTE:	KY- 459	(26) FUNCTIONAL CLASS	08
(2) DISTRICT AGENCY DISTRICT:	11	(100) STRAHNET HIGHWAY:	0
(3) COUNTY CODE: 121	(4) PLACE CODE: 0000	(101) PARALLEL STRUCTURE:	N
(6) FEATURES INTERSECTED :	BULL RUN CREEK	(102) DIRECTION OF TRAFFIC:	2
(9) LOCATION:	4.6 MI SE OF W-JCT KY 6	(103) TEMPORARY STRUCTURE:	
(7) FACILITY CARRIED:	KY-459	(105) FEDERAL LANDS HIGHWAY:	0
(11) MILEPOINT:	4.595	(110) DESIGNATED NATIONAL NETWORK:	0
(12) BASE HIGHWAY NETWORK:	0	(20) TOLL:	3
(13) LRS INVENTORY ROUTE & SUBROUTE:		(21) MAINTAIN:	01
(16) LATITUDE:	36.82 N DEGREES	(22) OWNER:	01
(17) LONGITUDE:	-83.94 W DEGREES	(37) HISTORICAL SIGNIFICANCE	5
(98) BORDER BRIDGE STATE CODE: Unknown % shared: Unknown			
(99) BORDER BRIDGE STRUCTURE NO.:			
STRUCTURE TYPE AND MATERIAL		CONDITION	
(43) STRUCTURE TYPE MAIN:	5	(58) DECK:	6
(44) STRUCTURE TYPE APPR:	1	(59) SUPERSTRUCTURE:	6
(45) NUMBER OF SPANS IN MAIN UNIT:	1	(60) SUBSTRUCTURE:	6
(46) NUMBER OF APPROACH SPANS:	0	(61) CHANNEL AND CHANNEL PROTECTION :	6
(107) DECK STRUCTURE TYPE:	9	(61) CULVERTS:	N
(108) WEARING SURFACE PROTECTION SYSTEM:	0	LOAD RATING AND POSTING	
(108A) TYPE OF WEARING SURFACE:	0	(31) DESIGN LOAD :	4
(108B) TYPE OF MEMBRANE:	0	(63) OPERATING RATING METHOD:	1
(108C) TYPE OF DECK PROTECTION:	0	(64) OPERATING RATING:	61.8 Tons
AGE AND SERVICE		(65) INVENTORY RATING METHOD:	1
(27) YEAR BUILT:	1975	(66) INVENTORY RATING:	37.1 Tons
(106) YEAR RECONSTRUCTED:	0	(70) BRIDGE POSTING:	5
(42A) TYPE OF SERVICE-ON:	CODE: 1	(41) STRUCTURE OPEN, POSTED OR CLOSED:	A
(42B) TYPE OF SERVICE-UNDER:	CODE: 5	APPRAISAL	
(28) LANES ON STRUCTURE : 2	LANES UNDER STRUCTURE: 0	(67) STRUCTURE EVALUATION:	6
(29) AVERAGE DAILY TRAFFIC:	165	(68) DECK GEOMETRY:	3
(30) YEAR OF ADT: 2012	TRUCK ADT %0	(69) UNDERCLEARANCE, VERTICAL & HORIZONTAL:	N
(19) BYPASS, DETOUR LENGTH:	3.1mi	(71) WATERWAY ADEQUACY:	6
GEOMETRIC DATA		(72) APPROACH ROADWAY ALIGNMENT:	6
(48) LENGTH OF MAXIMUM SPAN:	26 ft	(36) TRAFFIC SAFETY FEATURES:	0000
(49) STRUCTURE LENGTH:	28 ft	(113) SCOUR CRITICAL BRIDGES:	8
(50) CURB OR SIDEWALK LEFT: 0.80	RIGHT: 0.80	PROPOSED IMPROVEMENTS	
(51) BRIDGE ROADWAY CURB TO CURB:	19.40 ft	(75) TYPE OF WORK:	341
(52) DECK WIDTH OUT TO OUT:	20.50 ft	(76) LENGTH OF STRUCTURE IMPROVEMENTS:	3
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS):	23.00 ft	(94) BRIDGE IMPROVEMENT COST:	75000
(33) BRIDGE MEDIAN:	CODE: 0	(95) ROADWAY IMPROVEMENT COST:	0
(34) SKEW:	0	(96) TOTAL PROJECT COST:	74000
(10) INVENTORY ROUTE MIN VERT CLEAR (Volintv):	99.99 ft	(97) YEAR OF IMPROVEMENT COST ESTIMATE	1994
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR (Volintv):	19.3 ft	(114) FUTURE ADT:	201
(53) MIN VERT CLEAR OVER BRIDGE RDWY (VClover):	99.99 ft	(115) YEAR OF FUTURE ADT:	2032
(54) MIN VERT UNDERCLEAR REF (Refvuo):	(a) N (b) 0	INSPECTIONS	
(55) MIN LAT UNDERCLEAR RT REF (Refvuo):	(a) Nft (b) 0 ft	(90) INSPECTION DATE:	7/26/2012
(56) MIN LAT UNDERCLEAR LEFT (Holintv):	0 ft	(91) FREQUENCY:	24months
NAVIGATION DATA		(92A) FRACTURE CRITICAL DETAIL:	N
(38) NAVIGATION CONTROL:	0	(92B) UNDERWATER INSPECTION:	N
(111) PIER PROTECTION:	0	(92C) OTHER SPECIAL INSPECTIONS:	N
(39) NAVIGATION VERTICAL CLEARANCE:	0	(93A) FC DETAILS INSP DATE:	1/1/1901
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEARANCE:	0	(93B) UW DETAILS INSP DATE:	1/1/1901
(40) NAVIGATION HORIZ CLEARANCE:	0	(93C) OTHER SPECIAL INSP DATE:	1/1/1901
SUFFICIENCY RATING:	78		
STATUS:	2		

VIII. TABLES AND EXHIBITS (cont.)

Exhibit B - Crash Map

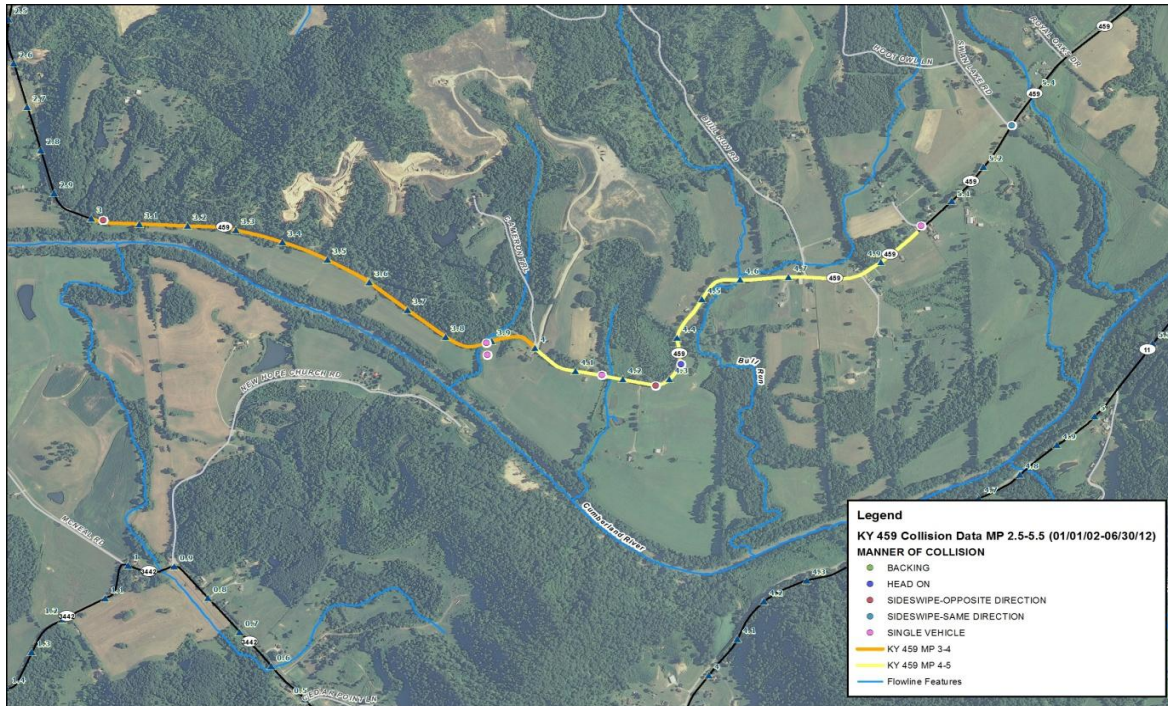


Exhibit C - Vicinity Map

