2011

Pre-Design Scoping Study

Data

Needs

Analysis

US 421 Franklin County Bridge Replacements

Mile Points:

13.090, 14.059, 15.091

Item Numbers:

05-1057.00, 05-1058.00, 05-1059.00

Prepared By:

Kentucky Transportation Cabinet

Department of Highways District 5

Division of Planning

August 15, 2011

Table of Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

I. INTRODUCTION

A. Study Purpose

The purpose of the Data Needs Analysis (DNA) is to address the nine elements of Purpose and Need as defined by the National Environmental Policy Act (NEPA) in order to develop a draft Purpose and Need Statement for the project(s). This study will also provide a more defined project scope, possible alternatives, planning-level cost estimates for the alternatives, an identification of possible environmental impacts, and other information that will be beneficial in the Project Development phase of this project.

B. Location

The bridge projects are located within 2 miles of each other on US 421 in the northwestern part of Franklin County (see Figure 1). Bridge #037B00023N is located over Flat Creek at MP 13.090 (see Figure 2). Bridge #037B0024N is located over Hudson Creek at MP 14.059 (see Figure 3). Bridge #037B00025N is located over Little Flat Creek at MP 15.091 (see Figure 4). Junction KY 12 is located approximately 2-4 miles south of the bridge projects. The approach to Lebanon Road (county road) is approximately 0.4 miles south of Bridge #037B00023N. The approaches to Flag Fork Road (county road) are directly south of Bridge #037B00025N. Maps of the project area, including topographic and orthographic, can be seen in Appendix A.

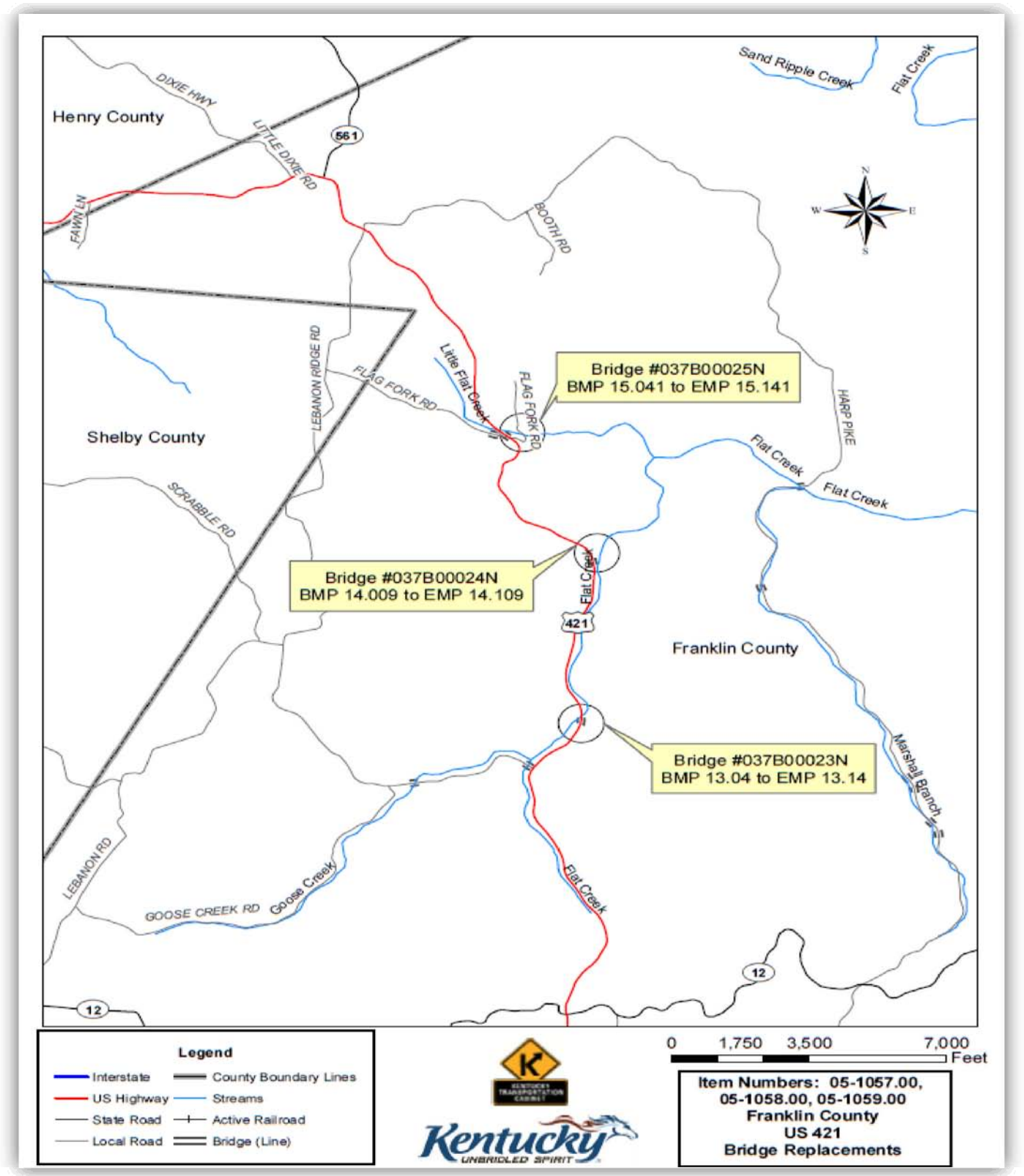


Figure 1: Project Location Map

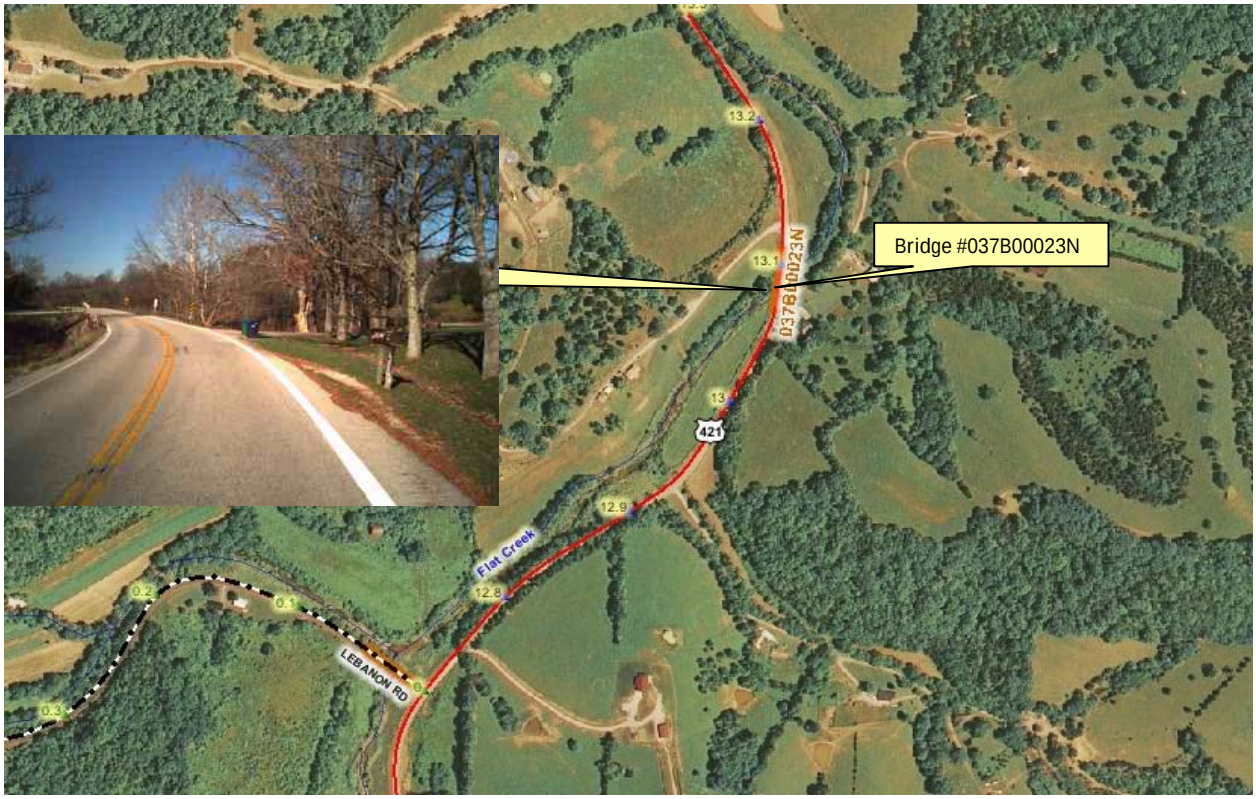


Figure 2: Bridge #037B00023N Location

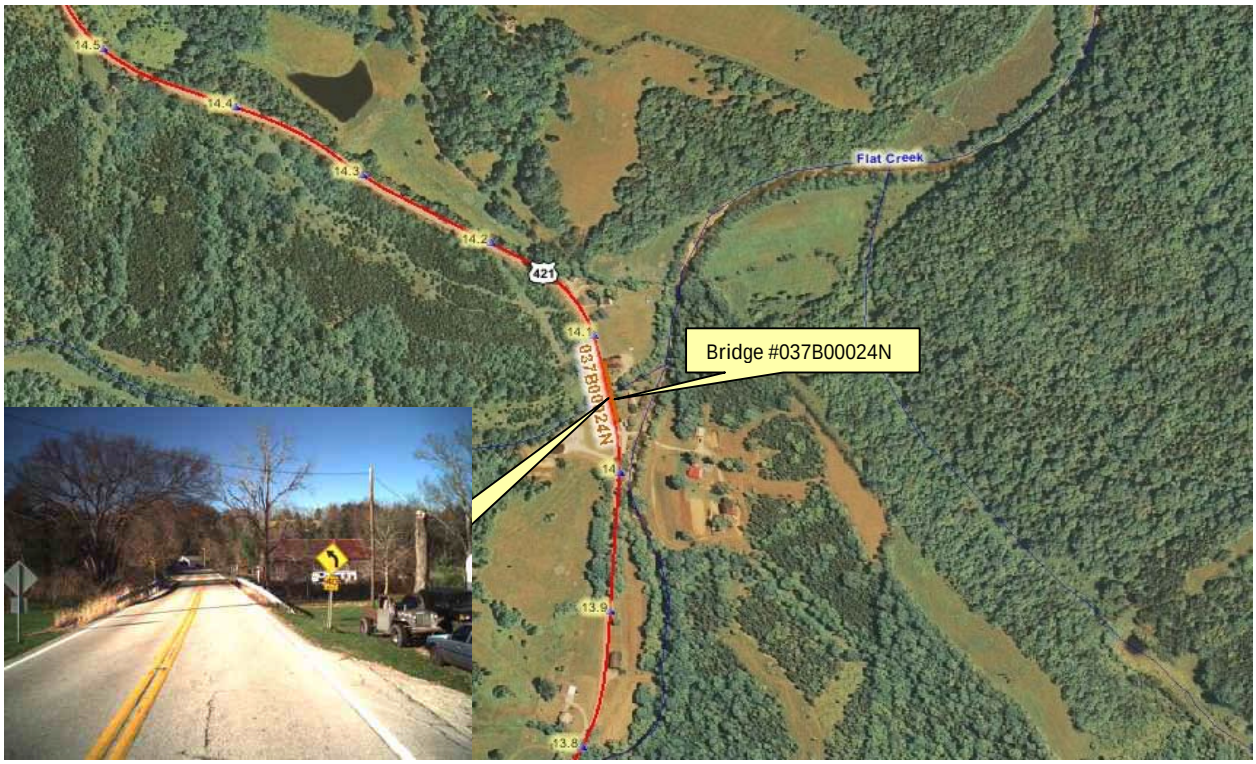


Figure 3: Bridge #037B00024N Location

Figure 4: Bridge #037B00025N Location

II. PROJECT PURPOSE AND NEED

A. Legislation

The following is a description of the projects as they are listed in the Six Year Highway Plan:

- Item #05-1057.00

Phase	Fund	Year	Estimate
D:	BRO	2012	170,000
R:	BRO	2014	150,000
U:	BRO	2014	30,000
C:	BRO	2016	390,000
	Total:		740,000

REPLACE BRIDGE ON US-421 (MP 13.09) OVER FLAT CREEK; 2.0 MI NORTH OF JCT KY 12; (STRUCTURALLY DEFICIENT, SR=46.8) 037B00023N

- Item #05-1058.00

Phase	Fund	Year	Estimate
D:	BRO	2012	120,000
R:	BRO	2014	100,000
U:	BRO	2014	60,000
C:	BRO	2016	200,000
	Total:		480,000

REPLACE BRIDGE ON US-421 (MP 14.059) OVER HUDSON CREEK; 2.8 MI NORTH OF JCT KY 12; (STRUCTURALLY DEFICIENT, SR=48.9) 037B00024N

- Item #05-1059.00

Phase	Fund	Year	Estimate
D:	BRO	2012	140,000
R:	BRO	2014	75,000
U:	BRO	2014	30,000
C:	BRO	2016	300,000
	Total:		545,000

REPLACE BRIDGE ON US-421 (MP 15.091) OVER LITTLE FLAT CREEK; 3.8 MI NORTH OF JCT KY 12; (STRUCTURALLY DEFICIENT, SR=48.7) 037B00025N

The total cost estimate in the highway plan for all three projects is $1,765,000. Refer to Appendix B for the complete listing of the projects in the Six Year Highway Plan.

B. Project Status

The bridges are structurally deficient with sufficiency ratings of 46.8, 48.9, and 48.7 as identified above. The highway plan design year is listed as 2012 in the Six Year Highway Plan.

Other projects in the area that are currently on the Unscheduled Projects List (UPL) include:

- 05 037 B0421 16.23 - Improve safety and level of service on US 421 from MP 11.132 to MP 16.047. This project is currently a low priority project.

The Project Identification Form (PIF) for this project is located in Appendix C.

C. System Linkage

The section of US 421 where the bridge projects are located is a rural area. However, the road provides access to Frankfort and I-64 to the south. Access is provided to New Castle and I-71 to the north (see Figure 5). A map of Franklin County can be viewed in Appendix D.

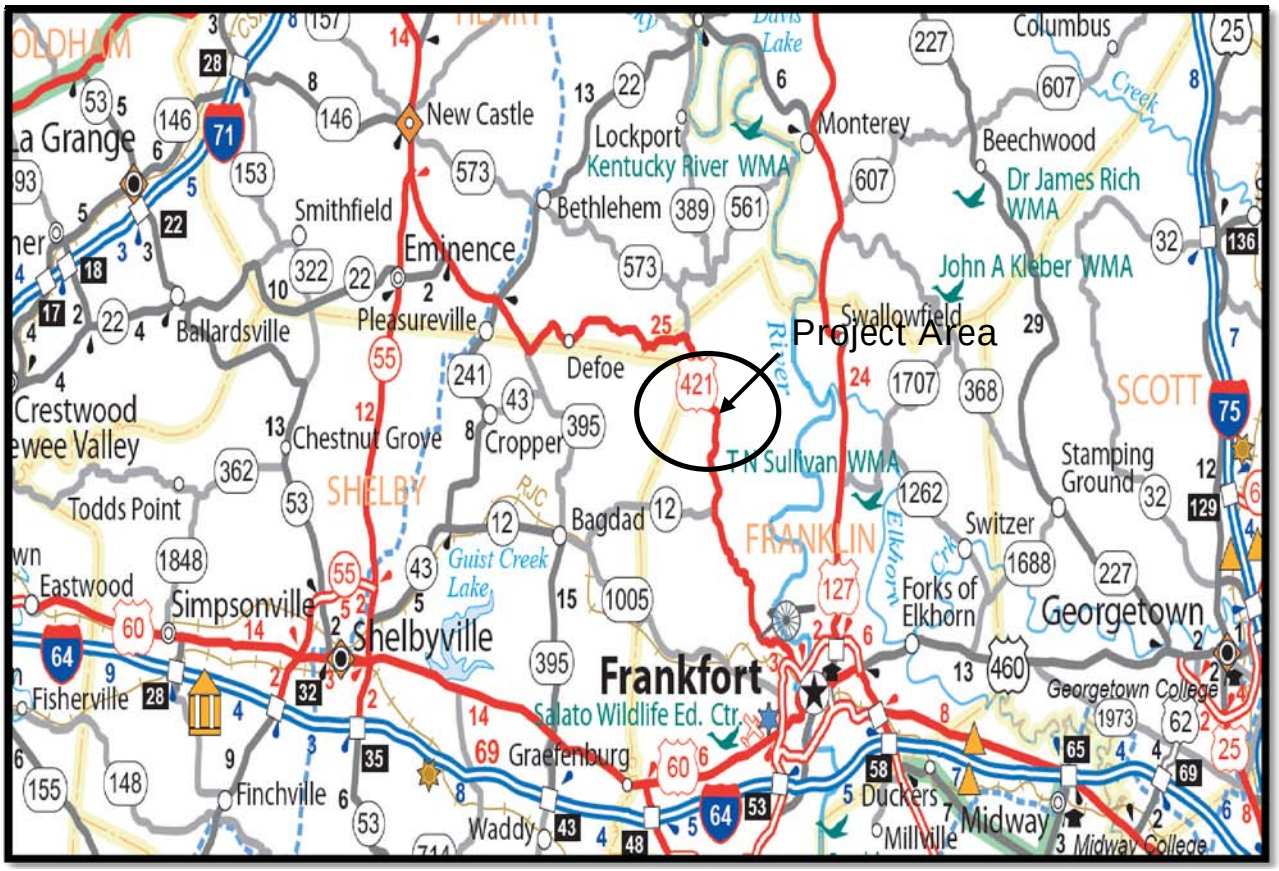


Figure 5: System Linkage

US 421 in this section can be summarized by the following roadway classifications:

- Functional Classification – Rural Principal Arterial
- State System – State Primary
- Truck Weight Classification – AAA (80,000 lbs maximum)
- Not on the National Truck Network
- Not a designated Bike Route

D. Modal Interrelationships

There are no rail lines near this section of roadway and currently public transportation does not operate on this route. Separate bike/pedestrian facilities are not needed in this area. The traffic flow on US 421 from BMP 11.132 to EMP 16.947, which all three bridge projects are within, consists of 9.4% single trucks and 1.3% combination trucks (tractor-trailers).

E. Social Demands and Economic Development

The projects are located in a rural area. However, as discussed before US 421 provides a link for local residents to Frankfort and I-64 to the south and New Castle and I-71 to the north. There are no other similar routes for residents of the area to use.

F. Transportation Demand

The last actual traffic count at this location (BMP 11.132 to EMP 16.947) had an average daily traffic (ADT) of 957 in 2010. Over the last few years the ADT has decreased slightly. However, as the trend line suggests, an overall growth in the amount of traffic can be expected in future years. Figure 6 contains traffic count data for the stretch of US 421 where the projects are located. The actual traffic counts were collected between 1966 and 2010. The trend line forecasts the general trend of traffic usage on this section of US 421 in the future based on the data that has been collected. Detailed traffic count data is located in Appendix E.

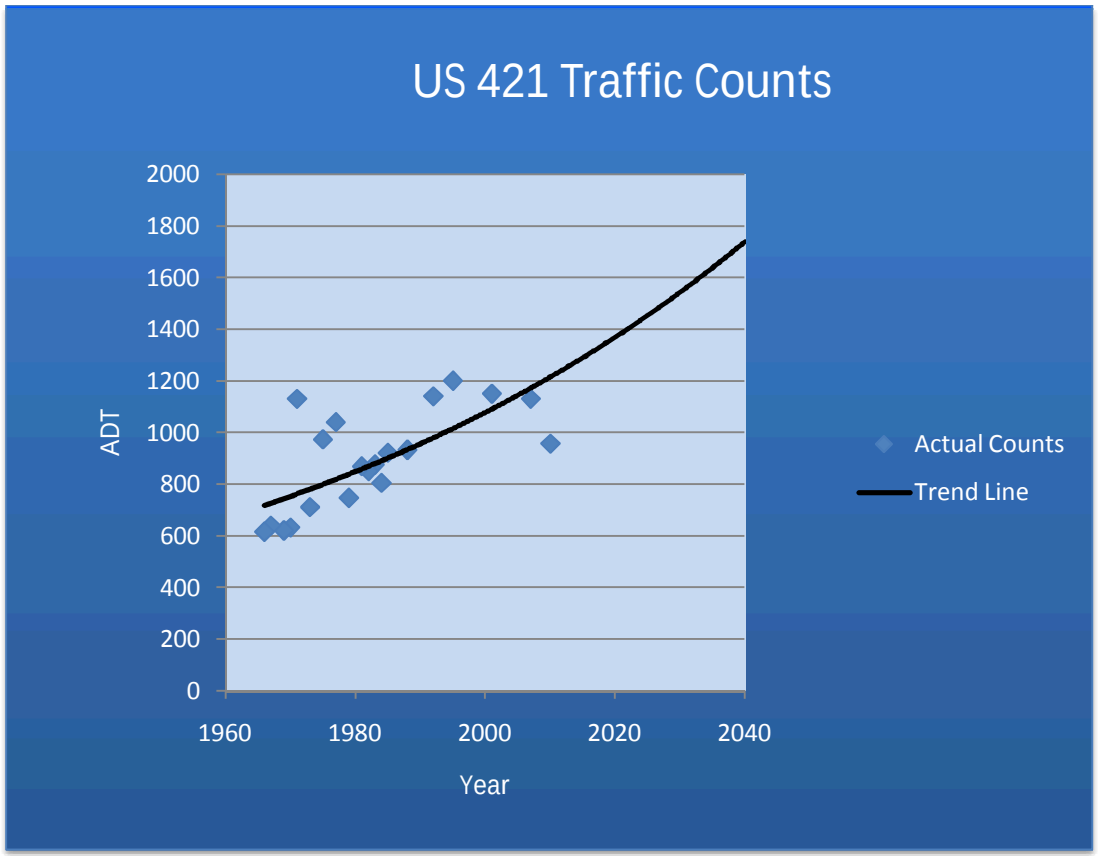


Figure 6: US 421 Traffic Counts

G. Capacity

The Volume/Service Flow ratio (V/SF), according to the 2010 Adequacy Rating Data for this section of US 421, is currently 0.15. The current roadway provides adequate service to existing traffic demands and should continue to do so in the future. No additional lanes should be needed for any of these projects.

H. Safety

Collision Data was obtained from the KY State Police database of collisions from a time period of January 1, 2000 to June 6, 2011. In total there were 33 collisions that occurred in the project areas during this time period. These 33 collisions resulted in 1 fatality and 26 injuries. The location and result of the collisions can be viewed in Figure 7. The majority of the collisions in the area occurred south of Bridge #037B00025N. It does not appear that the bridge affects this location, but a spot analysis was performed since a higher frequency of collisions occurred at this location. The spot analysis data can be found below in Figure 8 and Table 1. In addition, there are blind spots at all three bridges. This may be something to address as the projects move further along. This section of US 421 has a critical rate factor (CRF) of up to 0.90. More detailed collision data can be found in Appendix F.

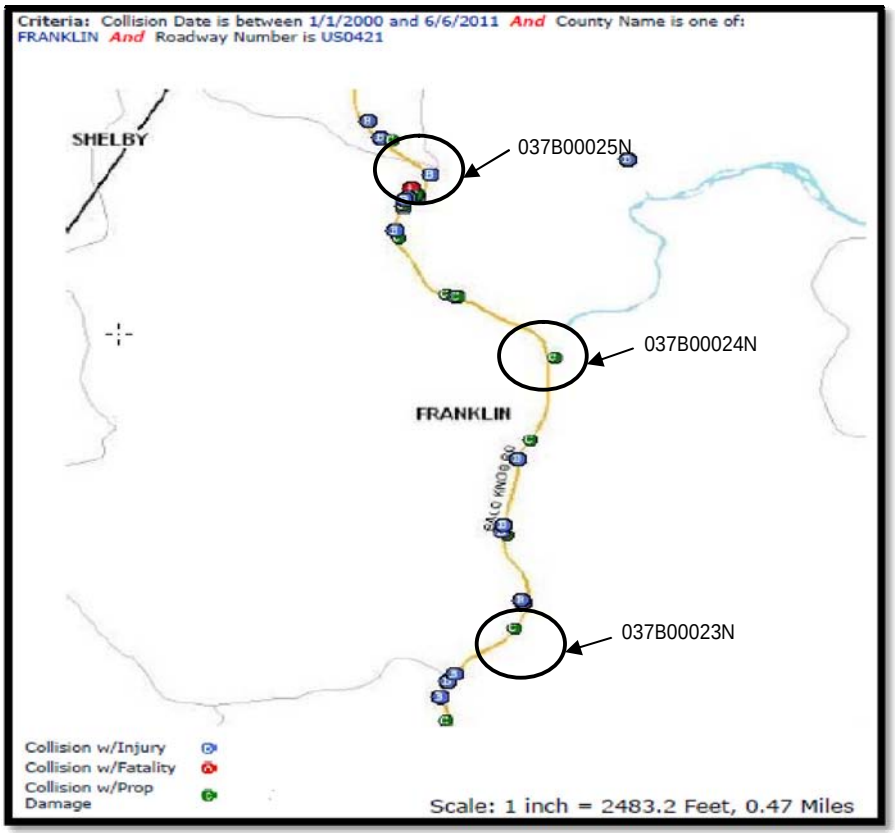


Figure 7: Collision Data

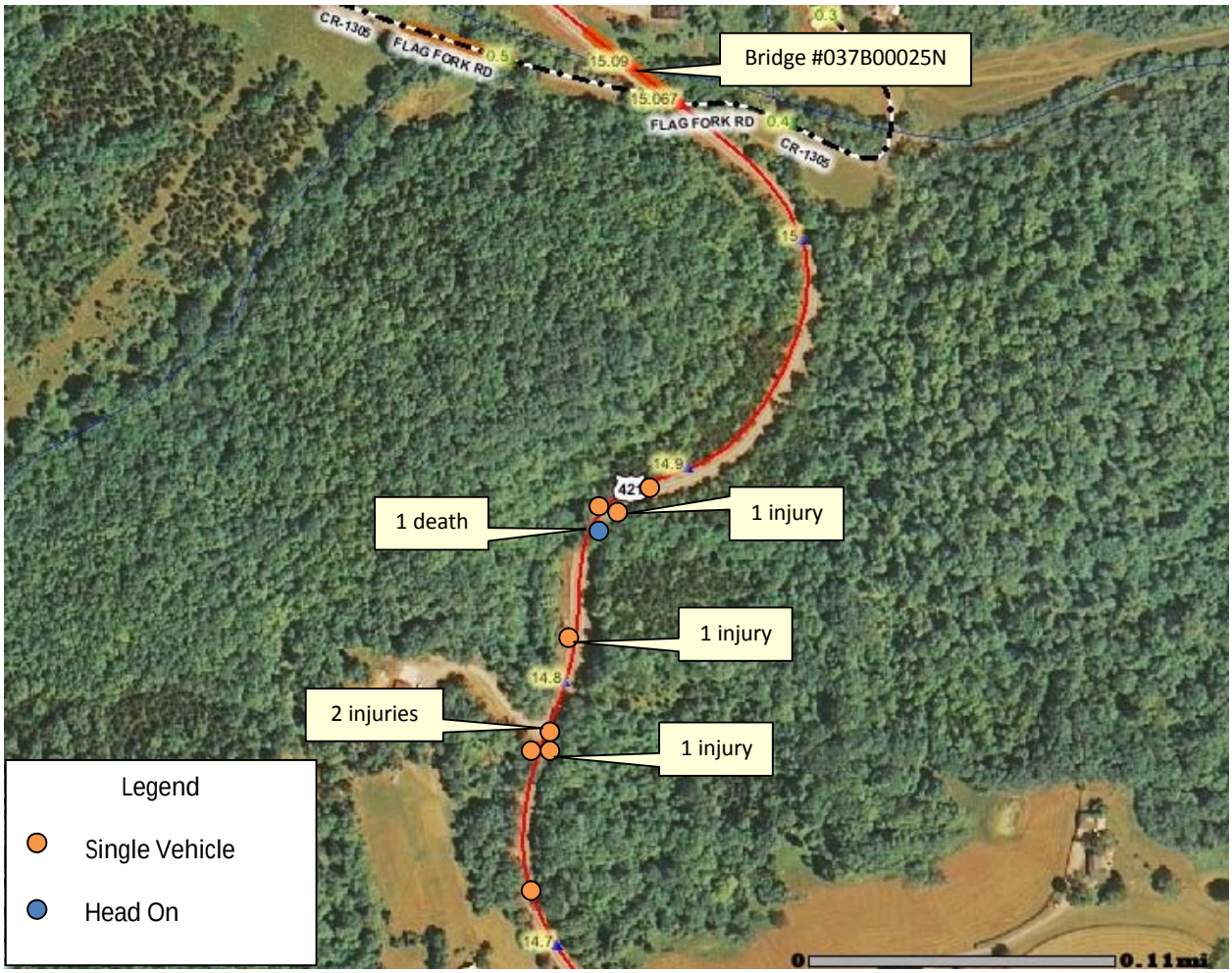


Figure 8: Spot Analysis South of Bridge #037B00025N

Table 1: Spot Analysis South of Bridge #037B00025N

MILEPOINT DERIVED	MOTOR VEHICLES INVOLVED	KILLED	INJURED	WEATHER	ROADWAY CONDITION	DIRECTIONAL ANALYSIS	MANNER OF COLLISION	ROADWAY CHARACTER	LIGHT CONDITION
14.719	1	0	0	CLEAR	DRY	COLLISION WITH FIXED OBJECT NON - INTERSECTION	SINGLE VEHICLE	CURVE & LEVEL	DAWN
14.767	1	0	0	CLEAR	DRY	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.767	1	0	1	CLEAR	DRY	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.77	1	0	2	CLEAR	DRY	OTHER COLLISIONS ON SHOULDER	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.817	1	0	1	CLEAR	DRY	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.861	2	1	0	CLEAR	DRY	HEAD-ON COLLISION	HEAD ON	CURVE & GRADE	DAYLIGHT
14.867	1	0	1	CLEAR	DRY	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.867	1	0	0	RAINING	WET	COLLISION WITH FIXED OBJECT NON - INTERSECTION	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.886	1	0	0	CLEAR	DRY	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED

I. Roadway and Bridge Deficiencies

Within the project limits, the roadway currently has 10 ft lanes, 2 ft shoulders, approximately a 6.5% to 8.4% grade near Bridge #037B00025N, a minimal grade near the other two bridges, a posted speed limit of 55 MPH, and an Adequacy Rating of 48.80 percentile. KYTC's Common Geometric Practices for Rural Arterial Roads (see Appendix G) for this type of road recommends 11 ft lanes and 5 ft shoulders for a 55 MPH design speed.

Bridge #037B00023N is 66 feet long and 26 feet wide out to out (23 feet wide curb to curb). It is structurally deficient with a sufficiency rating of 46.8 and does not meet the guidelines stated above of 11 ft lanes and 6 ft shoulders. The deck is rated as serious, the superstructure is rated as poor, and the substructure is rated as fair. Furthermore, the bridge has severe spalling and deterioration with resteel exposed in areas. Steel plates have been placed on the edge of the bridge deck to protect motorists from traveling over the severely deteriorated areas. The guardrail is loosely attached to the sides of the bridge due to deterioration and cones are placed on the edge of the bridge to warn motorists of the area. A Structure Inventory and Appraisal Sheet for this bridge can be found in Appendix H. Photographs of this bridge can be seen below in Figures 9 and 10.

Figure 9: Bridge #037B00023N Looking North

Figure 10: Bridge #037B00023N East Edge at Pier 2

Bridge #037B00024N is 23 feet long and 22 feet wide out to out (22 feet wide curb to curb). It is structurally deficient with a sufficiency rating of 48.9 and does not meet the guidelines stated above of 11 ft lanes and 6 ft shoulders. The deck and superstructure are rated as poor. The substructure is rated as fair. Furthermore, the bridge has severe spalling and deterioration with resteel exposed in areas. The guardrail posts on both sides are no longer anchored to the bridge due to the condition of the concrete that they were anchored in. A Structure Inventory and Appraisal Sheet for this bridge can be found in Appendix H. Photographs of this bridge can be seen below in Figures 11 and 12.

Figure 11: Bridge #037B00024N Looking North

Figure 12: Bridge #037B00024N West (upstream) Profile

Bridge #037B00025N is 35 feet long and 29 feet wide out to out (27 feet wide curb to curb). It is structurally deficient with a sufficiency rating of 48.7 and does not meet the guidelines stated above of 11 ft lanes and 6 ft shoulders. The deck, superstructure, and substructure are all rated as poor. Furthermore, the bridge has severe spalling and deterioration with resteel exposed in areas. Box beams have been previously added to each side of the bridge. The old beams to the inside of these are heavily spalled and resteel is exposed. In addition, recent maintenance work has been done to the southwest wingwall. A Structure Inventory and Appraisal Sheet for this bridge can be found in Appendix H. Photographs of this bridge can be seen below in Figures 13 and 14. The recent maintenance work can be seen below in Figure 15.

Figure 13: Bridge #037B00025N Looking North

Figure 14: Bridge #037B00025N East (downstream) Profile

Figure 15: Recent Maintenance Work on Southwest Wingwall

All three of these bridges are located near curves in the roadway and have blind spots. It appears that Bridge #037B0025N has the most conflict due to a county road (Flag Fork Road) being located directly south of the bridge. To the south of this bridge is the spot of the majority of the crashes that occur on this section of the road (refer to the safety section of this study). Additional pictures of the bridges and roadway are contained in Appendix I.

Flooding over the bridges has not been reported. Also there does not appear to be a problem with debris catching the bridges. A flood prone areas map can be seen in Figure 16. According to the Flood Insurance Rate Maps (FIRM), Bridge # 037B00023N and # 037B00024N are both located in the special flood hazard zone A. This area is subject to flooding by the 1% annual chance flood (100 year flood). FIRM's of the project area are included in Appendix J. A floodway analysis may be performed in future project phases to determine the needed hydraulic opening for water under the bridges.

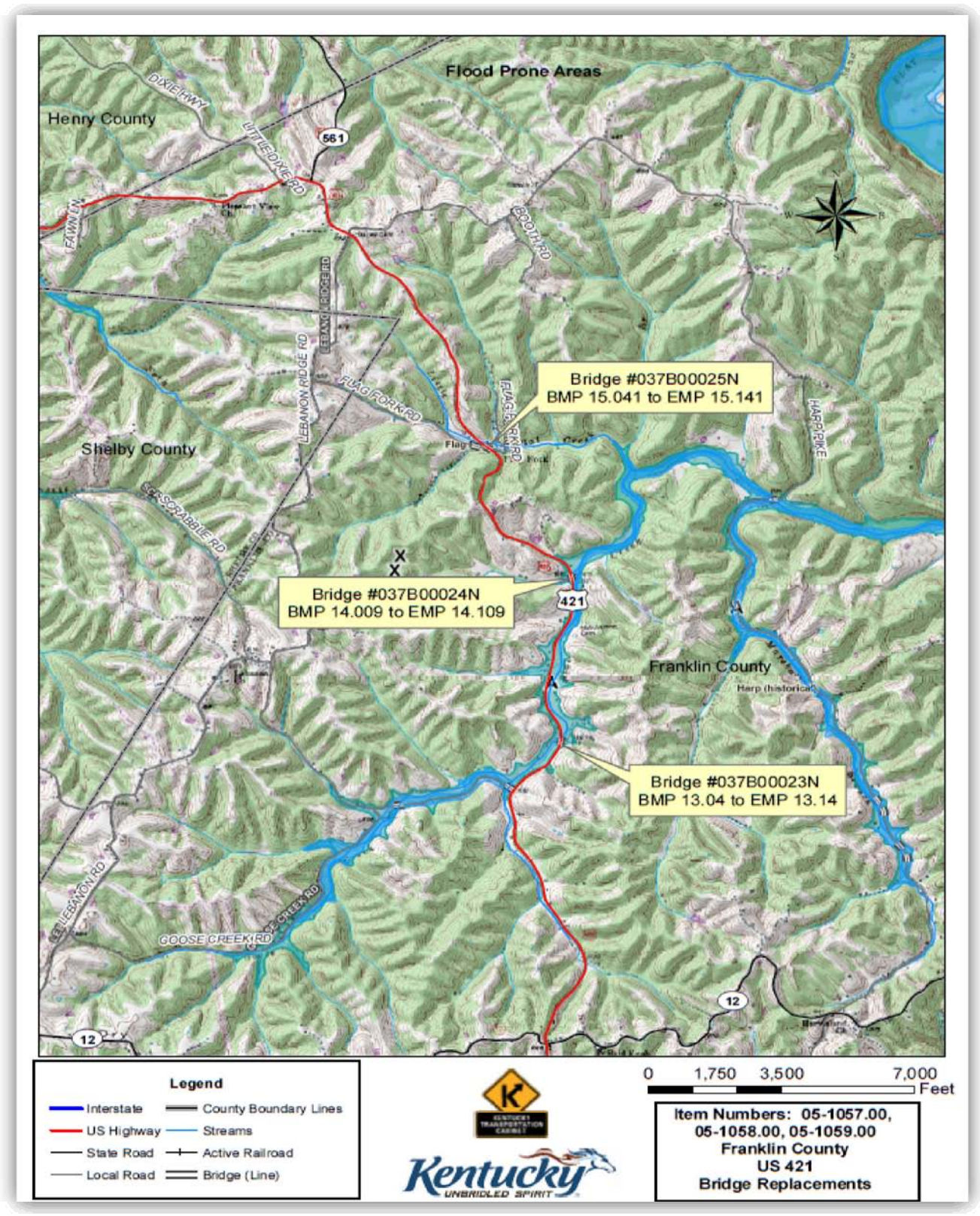


Figure 16: Flood Prone Areas Map

III. DRAFT PROJECT PURPOSE AND NEED STATEMENT

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 this project is to provide safe travel along US 421. This project is needed due to the structural deficiencies of the three bridges that are located on US 421. This route is the main connection for residents of the area and is relied upon to provide access to Frankfort, New Castle, I-64, and I-71.

IV. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

Franklin 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.

C. Threatened and Endangered Species

The United States Fish and Wildlife Service (USFWS) has identified the known and potential presence of threatened and endangered species in Franklin County, which can be viewed below in Table 2. It is important to note that the project area is adjacent to the critical habitat of the Braun's rockcress. In addition, Threatened and Endangered Species reports from the Kentucky Department of Fish and Wildlife Resources (KDFWR) and the Kentucky State Nature Preserves Commission (KSNPC) can be found in Appendix K.

Table 2: USFWS Threatened and Endangered Species in Franklin County

Group	Species	Common name	Legal* Status	Known** Potential
Mammals	*Myotis grisescens*	gray bat	E	K
	Myotis sodalis	Indiana bat	E	P
Plants	*Arabis perstellata*	Braun's rockcress	E, CH	K
	Lesquerella globosa	globe bladderpod	C	K
	Trifolium stoloniferum	running buffalo clover	E	P

* Key to notations: E = Endangered, T = Threatened, C = Candidate, CH = Critical Habitat

**Key to notations: K = Known occurrence record within the county, P = Potential for the species to occur within the county based upon historic range, proximity to known occurrence records, biological, and physiographic characteristics.

D. Hazardous Materials

No properties appear to have a high probability for hazardous materials. However, due to the age of the bridge, it should be tested for asbestos prior to demolition.

E. Historic Resources

All three concrete bridges were constructed in 1929 which allows them to meet at least the first screening requirement for listing on the National Register of Historic Places. Figure 17 below shows possible structures that are 50 years or over near Bridge #037B00023N. Figure 18 does the same for Bridge #037B00024N and Figures 19 and 20 for Bridge #037B00025N. A more thorough assessment of the eligibility of the bridges and any other structures near the project area should be conducted in future project phases.

Figure 17: Possible Historic Structure near Bridge #037B00023N

Figure 18: Possible Historic Structure near Bridge #037B00024N

Figure 19: Possible Historic Structure near Bridge #037B00025N

Figure 20: Possible Historic Structure near Bridge #037B00025N

F. Permitting

Any impacts below the ordinary high water mark within Flat Creek, Hudson Creek, or Little Flat Creek will need a USACE 404 permit and potentially a Water Quality Certification from the Division of Water. All permits will need to meet the general requirements since none of the streams are considered special use.

G. Noise

The scope of the project should not require additional noise analysis since there are no additional lanes of traffic planned for the facility. Noise due to construction and demolition will be temporary.

H. Socioeconomic

There should be no socioeconomic impacts associated with this project. According to Census Data from 2000 the area surrounding the projects (census tract 711) does not have any concentrations of minorities. In addition, 6.5% of the population was below the poverty line and 10.7% of the population was 65 years and over. These are below the state and national averages. However, if the road is closed during construction and temporary structures are not put in place, there could be negative impacts to low income families due to the length of the detour required for the projects. Socioeconomic concerns should be addressed further in future project phases.

I. Section 4(f) Resources

If residences or structures located nearby are ruled as eligible for the National Register of Historic Places they could also be afforded protection under Section 4(f). The Kentucky Transportation Cabinet (KYTC) has options to mitigate and avoid impacts to section 4(f) resources including a programmatic agreement for mitigating historic bridges, using 'de minimus' guidance for minor strip takings.

J. Section 6(f) Resources

There does not appear to be any resources in the project area that are protected under Section 6(f) of the Land Water Conservation Fund.

V. PRELIMINARY PROJECT INFORMATION

A. Existing Conditions/Roadway and Bridge Data

Table 3: Existing Conditions and Data Summary			
County:	Franklin	Route Number:	US 421
Road Name:	Bald Knob Road	Item No.:	05-1057, 05-1058, 05-1059
BMP:	13.04, 14.009, 15.041	EMP:	13.14, 14.109, 15.141
Project Length:	0.3 miles	State Class:	Primary
Roadway Class:	Rural Principal Arterial	Access Control:	None
Truck Class:	AAA	Median Type:	None
ADT(current):	957	Posted Speed:	55 MPH
Terrain:	Rolling	Funding Type:	BRO
Roadway Data			
	Existing Conditions	Design Criteria*	
No. of Lanes:	2	2	
Lane Width:	10 ft	11 ft	
Shoulder Width:	2 ft	6 ft	
Minimum Radius:	-	965 ft	
Maximum Grade:	-	5%	
Adequacy Rating %:	48.8	-	*55 MPH Design Speed
Bridge Data			
	037B00023N	037B00024N	037B00025N
Type:	Concrete Tee Beam	Concrete Tee Beam	Concrete Tee Beam
Year Built:	1929	1929	1929
Skew:	30 degrees	0 degrees	45 degrees
Max. Span Length:	32 ft	21 ft	30 ft
Length:	66 ft	23 ft	35 ft
Width, out to out:	26 ft	22 ft	29 ft
Width, curb to curb:	23 ft	22 ft	27 ft
Sufficiency Rating:	46.8	48.9	48.7

B. Right of Way

If the bridges are built in place where the existing bridges are located right of way should be minimal. However, this requires the road to be shut down during the construction of the new bridges. Right of way may need to be bought to allow for a temporary diversion or realignment if the road is deemed too important to shut down. In addition, small amounts

of right of way may need to be added since the bridges will need to be widened to meet current standards. A temporary easement may also be required for the construction phase. Figures 21, 22, 23 show properties that are located near the bridges according to the Franklin County Property Value Administrator (PVA). Also from referencing the original plans of US 421 it appears that the standard right of way is 30 ft in both directions from the center line. The plans are not included since they are from 1927 and are very hard to see. It is also important to note that a church is located to the west of Bridge #037B00024N and part of the land may have to be purchased. Refer to Appendix L for pictures of the church and other properties that are located near the projects.

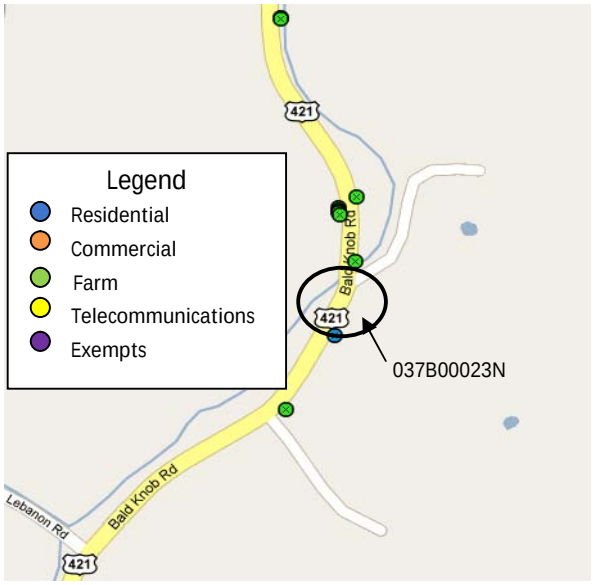


Figure 21: Properties near Bridge #037B00023N

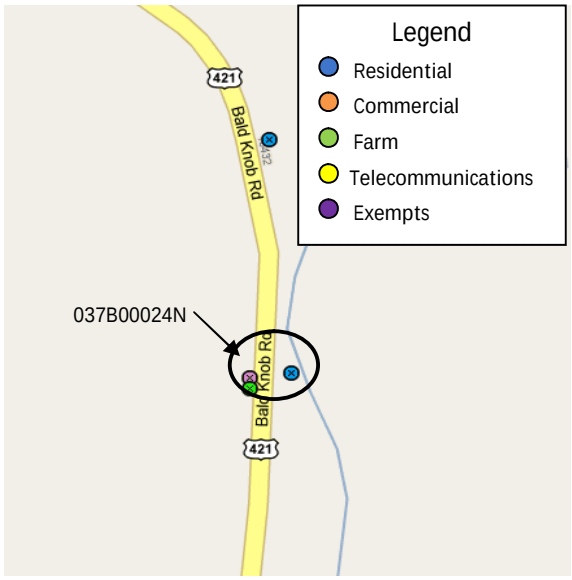


Figure 22: Properties near Bridge #037B00024N

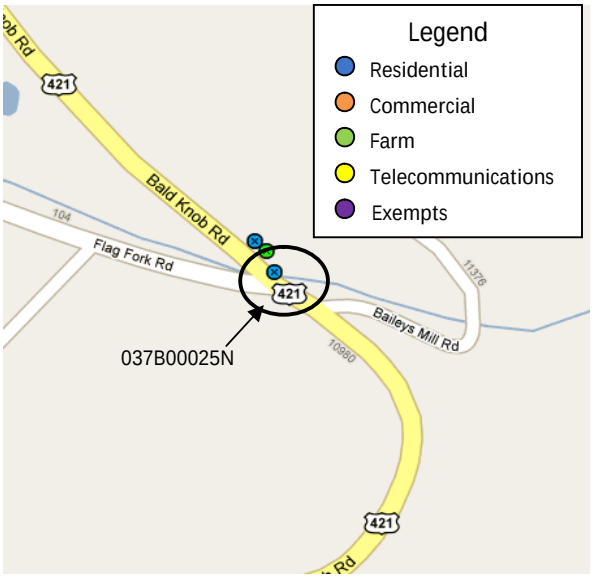


Figure 23: Properties near Bridge #037B00025N

C. Utilities

A request has been sent out to the utility companies in the area to determine what utilities are located within the project area. A list of the contacts for the utility companies in Franklin County can be found in Appendix M. A more in depth assessment of utilities in the area will need to be done as the project moves further along.

D. Agency Coordination

At this time the project team has not held an official meeting to discuss these projects.

VI. POSSIBLE ALTERNATIVES

The following is a description of several of the alternatives analyzed and discussed during the development of this study.

A. Alternative #1 – No Build

This option is not a feasible alternative due to the structural deficiency of the bridges. It would not address the draft purpose and need defined for these projects.

B. Alternative #2 – Build in place Using Existing State Routes as a Detour

This alternative would build a new structure where the current one is and use existing state routes to as a detour. This would require the bridges to be built at separate times. If the bridges were built simultaneously residents living in between the projects would be trapped. A county road (Flag Fork Road) does provide access between Bridges #037B00025N and #037B00024N. However, there is no access point between Bridges #037B00024N and #037B00023N. In addition, the bridges should be constructed during the summer months to avoid interfering with the school bus traffic that uses this route.

The detour would use KY 12 and KY 1922. The detour length is approximately 11 miles. The same stretch of US 421 between KY 12 and KY 1922 is approximately 10 miles. For vehicles traveling through the project area the detour would be minimal. However, for those that live within the stretch of US 421 affected a detour length of up to 20 miles could occur. Figure 24 details the detour.

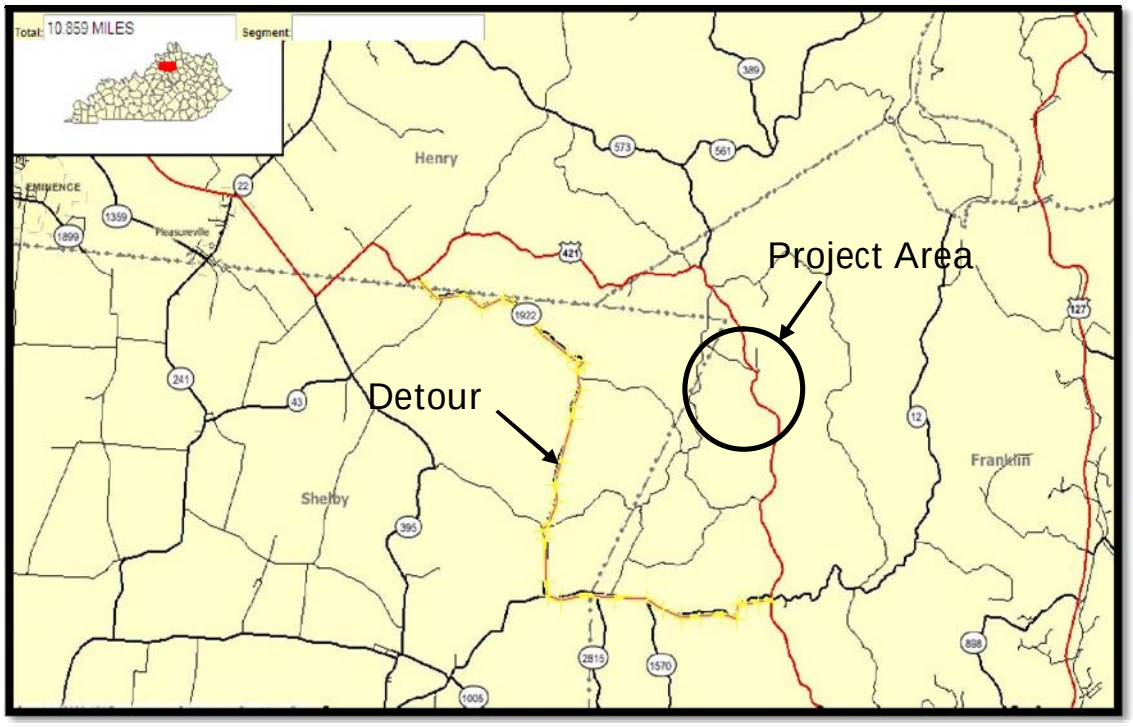


Figure 24: Detour Using Existing State Routes

The problem with this detour is that KY 12 is narrow, has no striping, and has multiple sharp curves for approximately the first two miles of the detour. Past this section the detour has striping and lesser degree curves but continues to be narrow. It would be less than desirable to send the amount of traffic and any large trucks that use US 421 on this detour.

The county road detour was also examined to determine if it was a more feasible option compared to the state route detour. The county road detour would be approximately 5 miles long. In addition, this detour could provide access between Bridge #037B00025N and Bridge #037B00024N using Flag Fork Road. However, this detour would not be adequate to handle the amount of traffic and any large trucks that travel on US 421. The road has no striping, is narrow, and has sharp curves. However, this detour could potentially be a better detour than the state detour. This is due to the fact that both routes are similarin nature with the county road being the shorter detour of the two.

While closing the road and detouring traffic is the optimal option, this may not be possible due to the lack of sufficient detours in the area. It is recommended that the project team meet with the Franklin County Engineer to determine if a detour in this area is feasible or not. Preliminary cost estimates for this alternative can be seen below in Table 4.

Table 4: Preliminary Cost Estimates for Detour Using Existing Routes

Detour Using Existing Routes			
	037B00023N	037B00024N	037B00025N
Design	$ 200,000.00	$ 125,000.00	$ 150,000.00
Right of Way	$ 30,000.00	$ 30,000.00	$ 30,000.00
Utilities	$ 30,000.00	$ 30,000.00	$ 30,000.00
Construction	$ 450,000.00	$ 300,000.00	$ 400,000.00
Total	$ 735,000.00	$ 485,000.00	$ 610,000.00

C. Alternative #3 – Build in place Using a Diversion

This alternative would build a diversion to allow US 421 to remain open during construction of the bridges. If a diversion was built at each site all three bridges could be built at the same time. The downside to this alternative is the extra cost associated with building a diversion.

For Bridge #037B00023N and Bridge #037B00024N a diversion is feasible due to land being available to use to the west of each existing structure. However, for Bridge #037B00023N a large amount of fill will be required for the diversion. This could result in a realignment being as good of an option as a diversion. For Bridge #037B00024N some trees will need to be cleared and possibly excavating a hill. The positive to a diversion at this bridge is that the stream is small which makes the temporary crossing easier to construct.

For Bridge #037B00025N the county road Flag Fork Road would have to be used in conjunction with a crossing to get back on US 421 after the project area. More than likely this section of Flag Fork Road would need to be filled in to be brought up to the level of US 421 and widened to accommodate the traffic that is diverted. This would likely require Flag Fork Road to be shut down which should not be a problem considering there are other access points. Since Bridge #037B00025N does not appear to have a feasible realignment a diversion will be needed if US 421 must remain open. Preliminary cost estimates for this alternative can be seen below in Table 5.

Table 5: Preliminary Cost Estimates for Diversion

Diversion			
	037B00023N	037B00024N	037B00025N
Design	$ 225,000.00	$ 150,000.00	$ 175,000.00
Right of Way	$ 40,000.00	$ 40,000.00	$ 40,000.00
Utilities	$ 30,000.00	$ 30,000.00	$ 30,000.00
Construction	$ 650,000.00	$ 450,000.00	$ 600,000.00
Total	$ 945,000.00	$ 670,000.00	$ 845,000.00

D. Alternative #4 – Build on a New Alignment

This alternative would build the bridges on a new alignment. For Bridge #037B00023N fill would be needed to bring the realignment up to the current level of US 421. The proposed realignment for this bridge can be seen below in Figure 25. The total length from tie in to tie in is 900 ft with 500 ft of this consisting of new roadbed. Approximately ½ acre of right of way would need to be purchased with this scenario. The curve to the south meets a 55 MPH design criteria while the curve to the north only meets a 45 MPH design criteria. However, a design exception for this curve should not be a problem considering that the existing curve is not any better. Considering that a diversion at this bridge would be similar to realignment, building the bridge on a new realignment should be considered.

Figure 25: Proposed Realignment for Bridge #037B00023N

For Bridge #037B00024N excavation work would be required. The proposed realignment for this bridge can be seen below in Figure 26. The total length from tie in to tie in is 1100 ft with the majority of this consisting of new roadbed. Approximately 1 acre of right of way would need to be purchased with this scenario. The curve to the south meets a 55 MPH design criteria while the curve to the north only meets a 45 MPH design criteria. However, a design exception for this curve should not be a problem considering that the existing curve only meets a 35 MPH design criteria. The cost for this realignment is greater due to a longer length of new roadbed required. A diversion at this bridge may be more feasible.

Figure 26: Proposed Realignment for Bridge #037B00024N

Bridge #037B00025N does not appear to have a feasible realignment. Any possible realignment would be outside the current budget limits for this project. Preliminary cost estimates for this alternative can be seen below in Table 6.

Table 6: Preliminary Cost Estimates for Realignment

Realignment			
	037B00023N	037B00024N	037B00025N
Design	$ 250,000.00	$ 200,000.00	
Right of Way	$ 50,000.00	$ 75,000.00	
Utilities	$ 30,000.00	$ 30,000.00	Not Feasible
Construction	$ 700,000.00	$ 700,000.00	
Total	$ 1,030,000.00	$ 1,005,000.00	

Tables of all the cost estimates along with the costs associated with recent bridge replacements in District 5 can be found in Appendix M.

VII. SUMMARY

This study is a Data Needs Analysis (DNA) of three projects located on US 421 in the northern part of Franklin County. Bridge #037B00023N is located over Flat Creek at MP 13.090. Bridge #037B0024N is located over Hudson Creek at MP 14.059. Bridge #037B00025N is located over Little Flat Creek at MP 15.091. Through analysis of existing roadway geometrics, bridge ratings, crash data, site visits, and discussion with the project team the following needs were identified:

- All three bridges are structurally deficient and need to be replaced.

The purpose of this project is to provide safe travel along US 421.

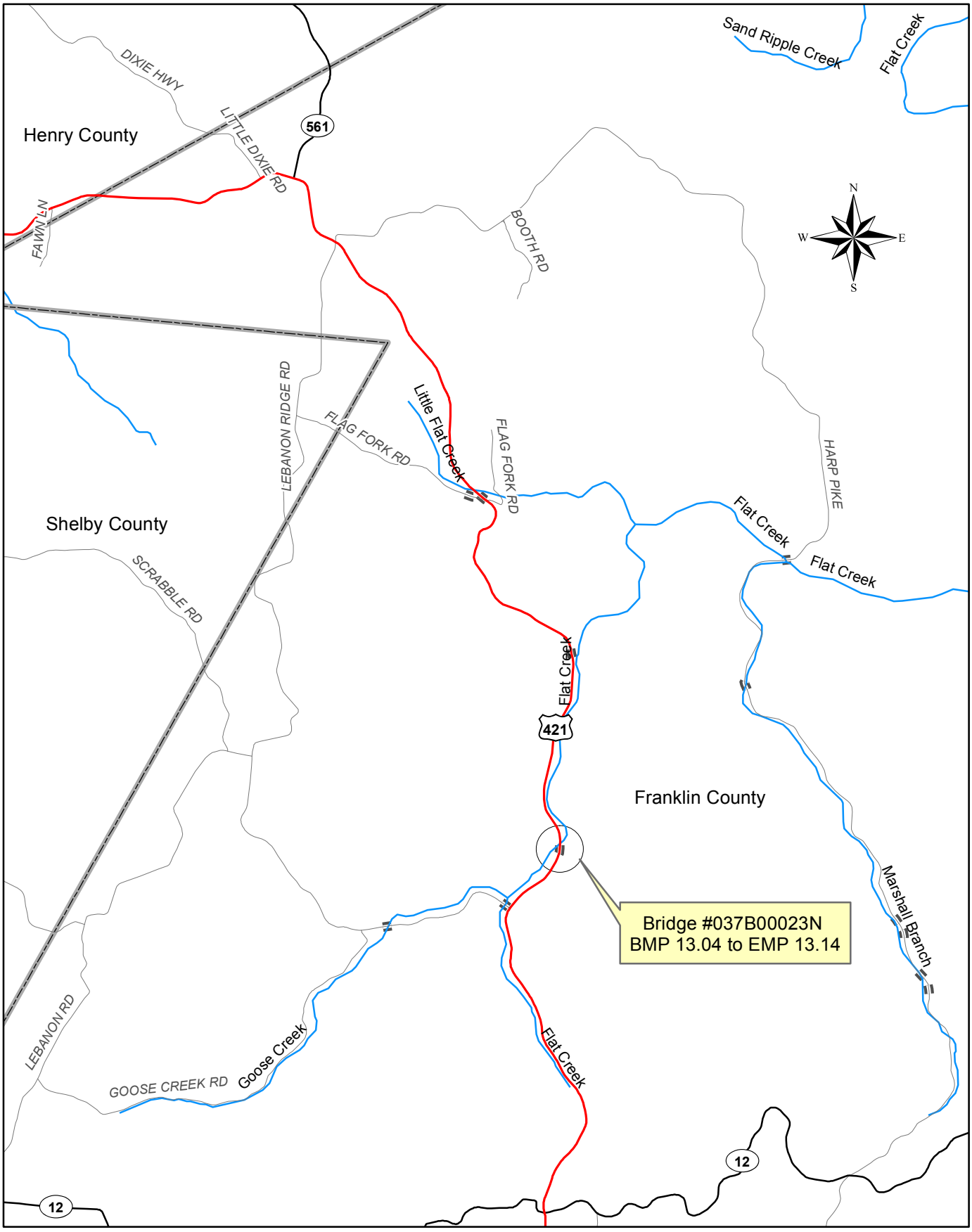
In order to determine which alternative will be the best to use, whether or not US 421 can be closed during construction needs to be determined. If US 421 can be temporarily closed and detoured around during construction then it makes the most sense to build the bridges on the existing alignment. If this is the case precast structures could be built to allow for shorter construction times. This option would save money and could probably be completed within the budget that the highway plan currently estimates. With this option no more than two of the bridges can be built at once due to ensuring access for local residents.

If US 421 cannot be temporarily closed during construction then the options are to create a diversion around the construction of the bridges or build the bridges on a new alignment. For Bridge #037B00023N it appears that a diversion would cost around the same as realignment. For this case realignment may be the most feasible alternative. For Bridge #037B00024N it appears that a diversion would cost less than realignment. For this case a diversion may be the most feasible alternative. For Bridge #037B00025N neither a diversion nor realignment works very well in the area. If it is necessary a diversion will most likely be the better of the two options. If these alternatives are used it would be possible to construct all of the bridges at once. Furthermore, cast in place structures may be as good if not better of an option than precast structures since time to construct is not as major of an issue. More detailed cost estimates should be done to determine if a diversion or realignment is more feasible at each bridge if one of these alternatives will have to be used.

For more information regarding this study please contact:

Kentucky Transportation Cabinet
Division of Planning, 5th Floor West
200 Mero St.
Frankfort, KY 40622
Phone: (502) 564-7183

Appendix A – Maps of Project Area



Legend

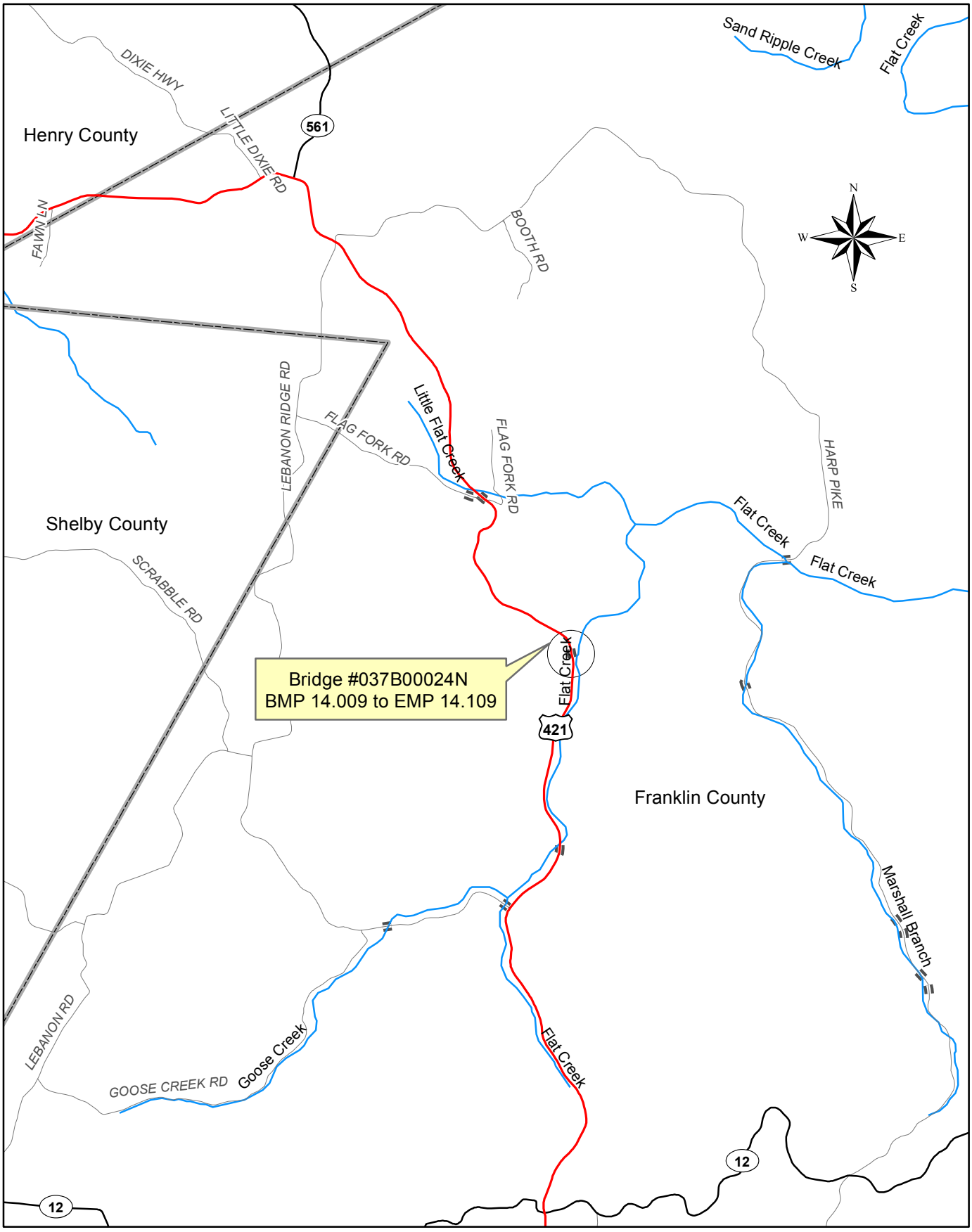
- Interstate
- US Highway
- State Road
- Local Road
- County Boundary Lines
- Streams
- Active Railroad
- Bridge (Line)

KENTUCKY TRANSPORTATION CABINET

Kentucky UNBRIDLED SPIRIT

0 1,750 3,500 7,000 Feet

Item Number: 05-1057.00
Franklin County
US 421
Bridge Replacement
Flat Creek



Legend

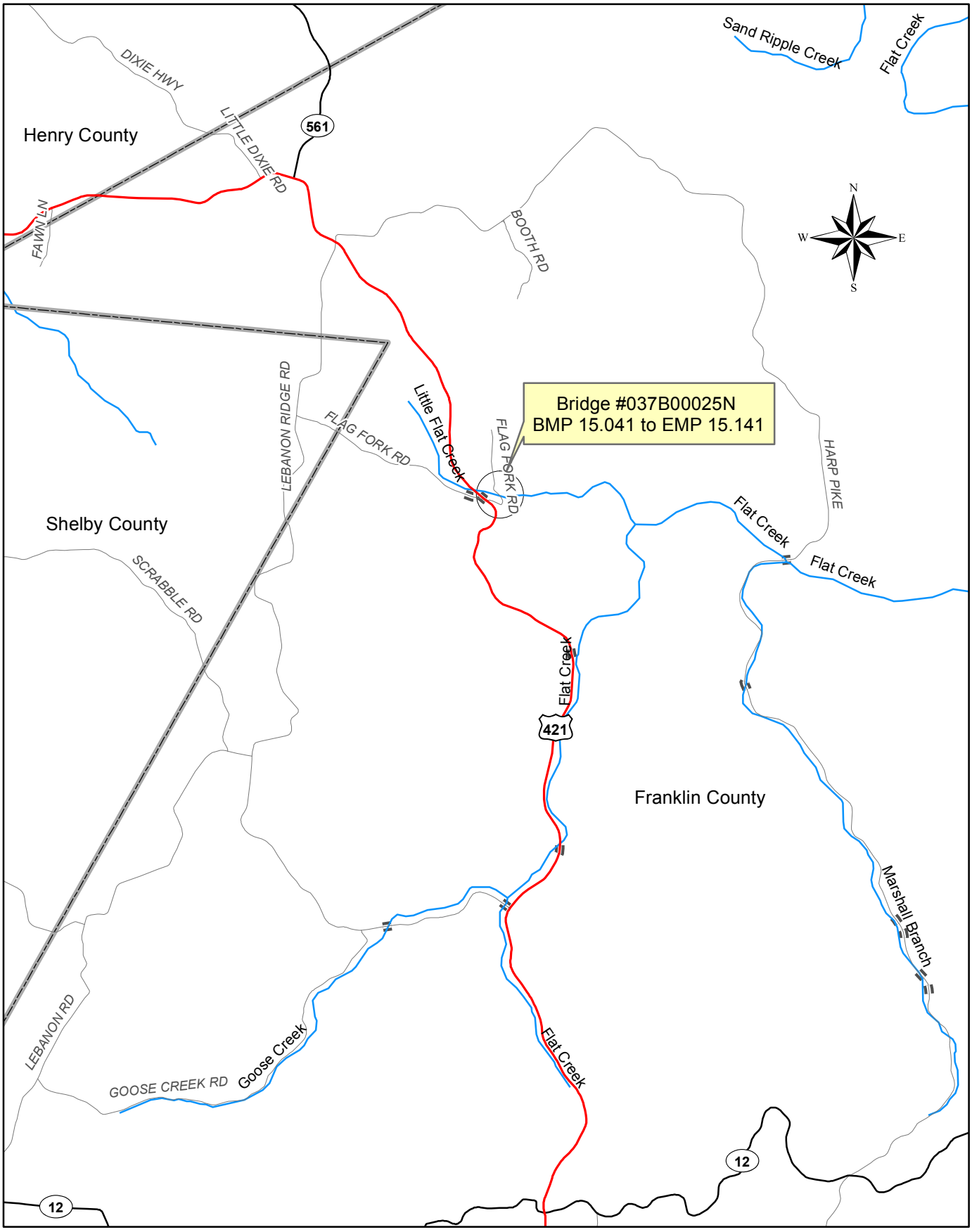
- Interstate
- US Highway
- State Road
- Local Road
- County Boundary Lines
- Streams
- Active Railroad
- Bridge (Line)

KENTUCKY TRANSPORTATION CABINET

Kentucky UNBRIDLED SPIRIT

0 1,750 3,500 7,000 Feet

Item Number: 05-1058.00
Franklin County
US 421
Bridge Replacement
Hudson Creek



Legend

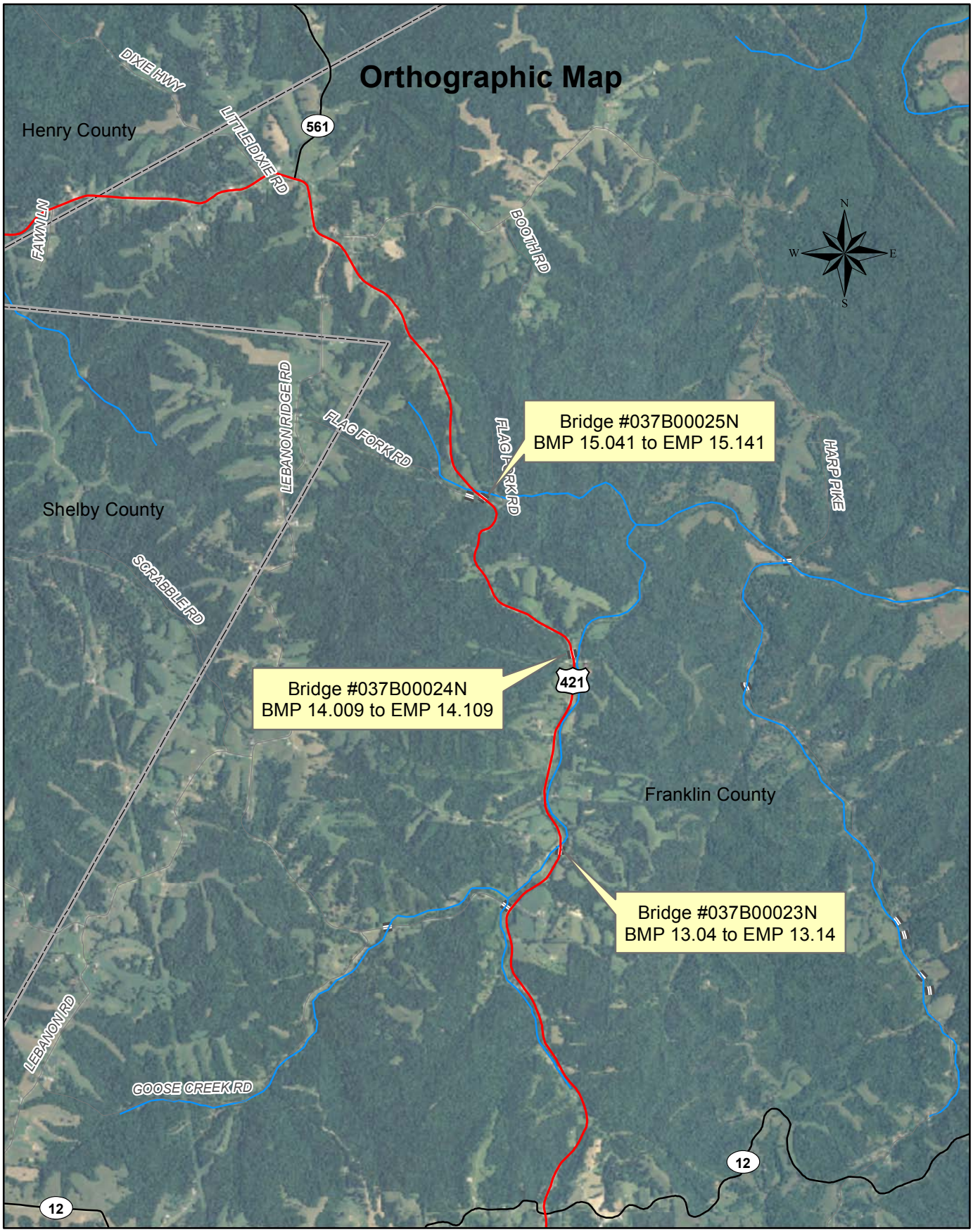
- Interstate
- US Highway
- State Road
- Local Road
- County Boundary Lines
- Streams
- Active Railroad
- Bridge (Line)

KENTUCKY TRANSPORTATION CABINET

Kentucky UNBRIDLED SPIRIT

0 1,750 3,500 7,000 Feet

Item Number: 05-1059.00
Franklin County
US 421
Bridge Replacement
Little Flat Creek



Legend

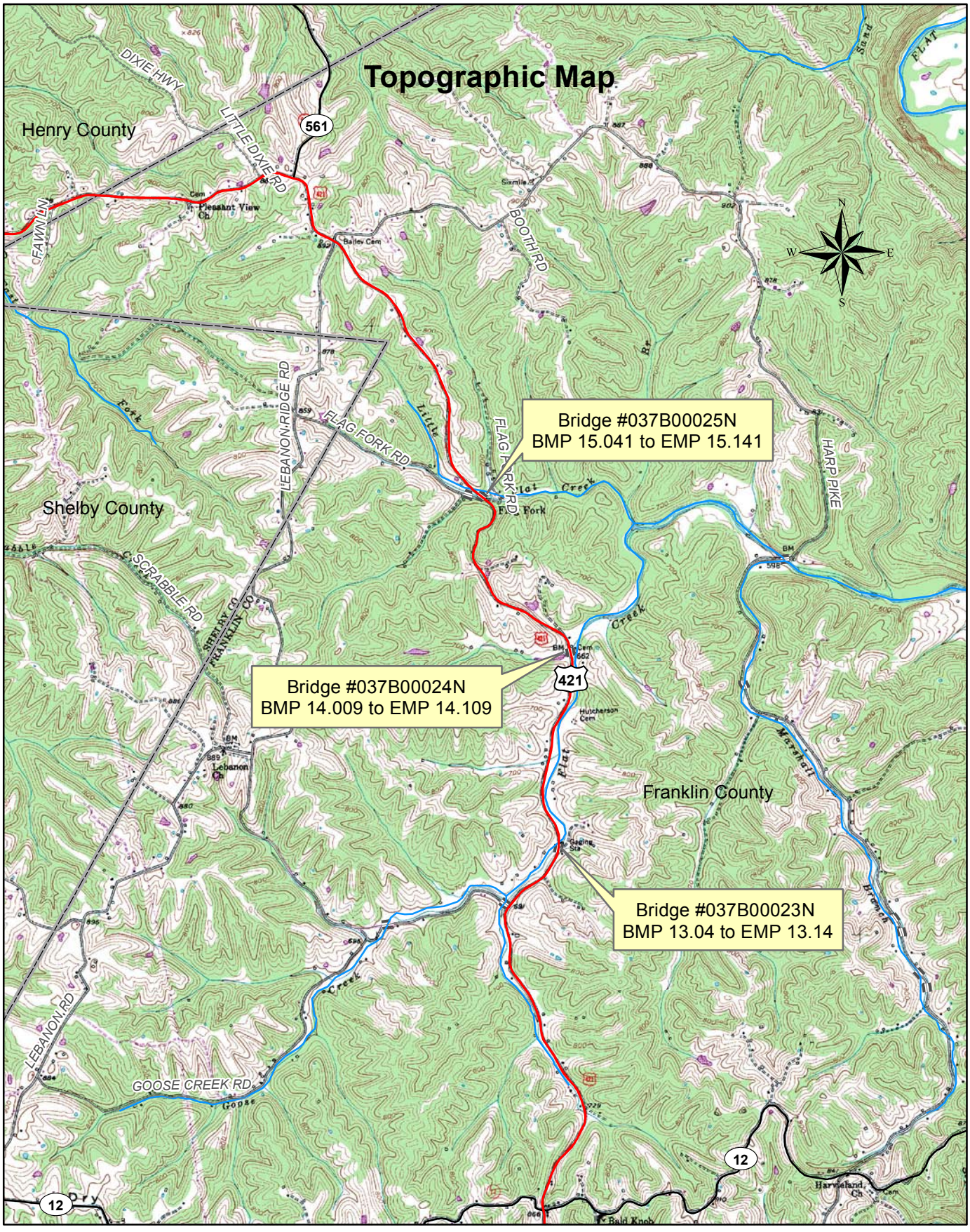
- Interstate
- US Highway
- State Road
- Local Road
- County Boundary Lines
- Streams
- Active Railroad
- Bridge (Line)

KENTUCKY TRANSPORTATION CABINET

Kentucky UNBRIDLED SPIRIT

0 1,750 3,500 7,000 Feet

Item Numbers: 05-1057.00, 05-1058.00, 05-1059.00
Franklin County
US 421
Bridge Replacements



Legend

- Interstate
- US Highway
- State Road
- Local Road
- County Boundary Lines
- Streams
- Active Railroad
- Bridge (Line)

KENTUCKY TRANSPORTATION CABINET

Kentucky UNBRIDLED SPIRIT

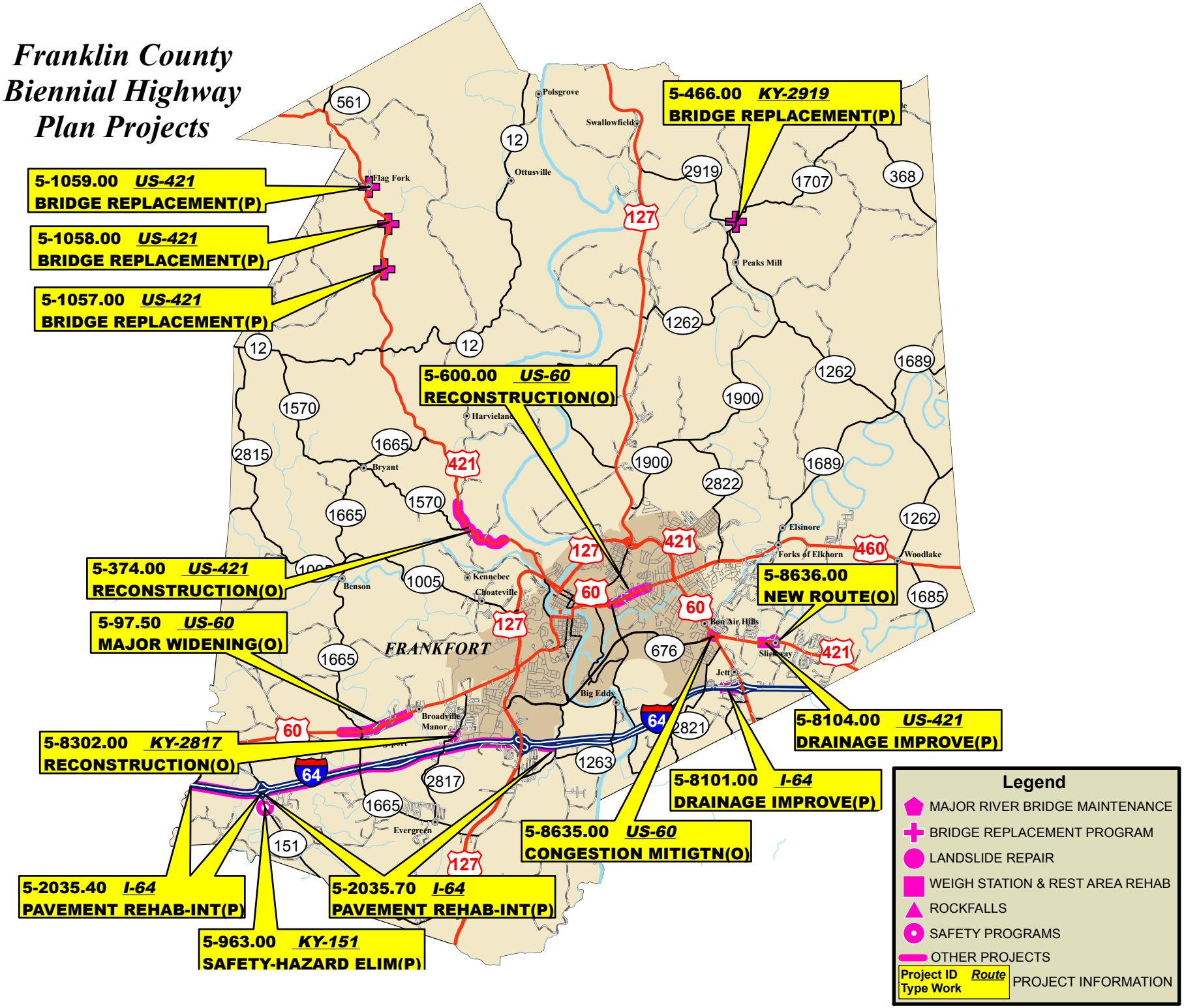
0 1,750 3,500 7,000 Feet

Item Numbers: 05-1057.00, 05-1058.00, 05-1059.00
Franklin County
US 421
Bridge Replacements

Appendix B – Six Year Highway Plan Project Listings

COUNTY	ITEM NO. & PARENT NO.	ROUTE	LENGTH	DESCRIPTION	FUND-SCHEDULING INFORMATION
FRANKLIN	2000 05 - 963.00 Parent No.: 1996 99 - 206.20	KY-151	.400	CORRECT SIGHT DISTANCE ISSUES ON KY-151 S OF I-64, IMPROVE SAFETY AND OPERATION OF I-64/KY-151 I-CHNG AND WIDEN KY-151 TO ACCOMODATE LEFT TURN LANES. (2000BOP) Milepoints: From:1.8 To: 2.2 Purpose and Need: SAFETY / SAFETY-HAZARD ELIM(P)	FUNDING PHASE YEAR AMOUNT HES R 2010 $290,000 HES U 2010 $70,000 HES C 2011 $1,250,000 Total $1,610,000
FRANKLIN	2010 05 - 1057.00 Parent No.: 2010 05 - 1057.00	US-421	.100	REPLACE BRIDGE ON US-421 (MP 13.09) OVER FLAT CREEK; 2.0 MI NORTH OF JCT KY 12; (STRUCTURALLY DEFICIENT, SR=46.8) 037B00023N Milepoints: From:13.04 To: 13.14 Purpose and Need: RELIABILITY / BRIDGE REPLACEMENT(P)	FUNDING PHASE YEAR AMOUNT BRO D 2012 $170,000 BRO R 2014 $150,000 BRO U 2014 $30,000 BRO C 2016 $390,000 Total $740,000
FRANKLIN	2010 05 - 1058.00 Parent No.: 2010 05 - 1058.00	US-421	.100	REPLACE BRIDGE ON US-421 (MP 14.059) OVER HUDSON CREEK; 2.8 MI NORTH OF JCT KY 12; (STRUCTURALLY DEFICIENT, SR=48.9) 037B00024N Milepoints: From:14.009 To: 14.109 Purpose and Need: RELIABILITY / BRIDGE REPLACEMENT(P)	FUNDING PHASE YEAR AMOUNT BRO D 2012 $120,000 BRO R 2014 $100,000 BRO U 2014 $60,000 BRO C 2016 $200,000 Total $480,000
FRANKLIN	2010 05 - 1059.00 Parent No.: 2010 05 - 1059.00	US-421	.100	REPLACE BRIDGE ON US-421 (MP 15.091) OVER LITTLE FLAT CREEK; 3.8 MI NORTH OF JCT KY 12; (STRUCTURALLY DEFICIENT, SR=48.7) 037B00025N Milepoints: From:15.041 To: 15.141 Purpose and Need: RELIABILITY / BRIDGE REPLACEMENT(P)	FUNDING PHASE YEAR AMOUNT BRO D 2012 $140,000 BRO R 2014 $75,000 BRO U 2014 $30,000 BRO C 2016 $300,000 Total $545,000
FRANKLIN	2004 05 - 2035.70 Parent No.: 2004 05 - 2035.00	I-64	5.420	PAVEMENT REHAB AND BRIDGE WIDENING ON I-64 FROM MP 47.70 TO MP 53.75. (2004BOPC)(DESIGN FUNDED UNDER 5-2035.40) Milepoints: From:47.7 To: 53.75 Purpose and Need: RELIABILITY / PAVEMENT REHAB-INT(P)	FUNDING PHASE YEAR AMOUNT IM R 2012 $120,000 IM U 2012 $110,000 Total $230,000
FRANKLIN	2002 05 - 8101.00 Parent No.: 2002 05 - 8101.00	I-64		CONSTRUCTION OF RETENTION/DETENTION BASIN ON I-64 MILEPOST 58 ASSOCIATED WITH FLOODING DUE TO ROAD CONSTRUCTION. (02CCN)(04CCN)(06CCN) Milepoints: From:57.6 To: 57.8 Purpose and Need: RELIABILITY / DRAINAGE IMPROVE(P)	FUNDING PHASE YEAR AMOUNT SP C 2010 $260,000 Total $260,000
FRANKLIN	2002 05 - 8104.00 Parent No.: 2002 05 - 8104.00	US-421		CONSTRUCTION OF RETENTION/DETENTION BASIN ON US-421 AT MILEPOST 2 SOUTH SIDE ASSOCIATED WITH FLOODING DUE TO ROAD CONSTRUCTION. (02CCN)(04CCN)(06CCN) Milepoints: From:2 To: 2.1 Purpose and Need: RELIABILITY / DRAINAGE IMPROVE(P)	FUNDING PHASE YEAR AMOUNT SP C 2010 $520,000 Total $520,000

Franklin County Biennial Highway Plan Projects



Appendix C – Project Identification Form for UPL Project within Project Area

PIF Revised: Aug. 2004

KYTC Project Identification Form

Cycle Year: **New**
Priority: L : ___ R: ___ D: ___
Tier: ___
Tier Rank: R: ___ D: ___
Overall Top Ten: R: ___ D: ___

Section I – General Information

Requested by: **Unknown**
Title/Organization:
Date:

Form Completed by: **B.Duncan/T.Hall**
Title/Organization: **BGADD/DOH5**
Date: **September 9, 2008**

Revision 1 by:
Title/Organization:
Date:

Revision 2 by:
Title/Organization:
Date:

UPL Control #: **05 037 B0421 16.23** Co. #: **037**
Parent Control #: ___
RSE Unique Number: **037 US-421**

District: **5** County: FRANKLIN Route: **US 421**
ADD: **BGADD** MPO: ___ SUA: ___

Mode: **Highway** State System: **State Primary**
Type: **Major Widening** Funct'l Class: **Rural Min Art**

Project Length: 5.515 **Total Cost Estimate: $ 55500**
(P:300 D:3900 R:8300 U:4000 C:39000)

Possible Funding Sources (Check all that apply):
☐IM ☐NH ☐HES ☐BR ☒STP ☐SP ☐TE ☐CMAQ
☐PLH ☐Other: ___

Highway Networks (Check all that apply):
☒Non NHS ☐NHS
☐NN ☐Scenic Byway ☐Coal Haul ☐Bike ☐Forest
☐Defense ☐Strahnet ☐Ext. Wt. ☐ADHS ( )

Existing Project Studies (Year):

Section II – Problem Statement

Route Number: **US 421**
Beginning MP: **11.132**
Ending MP: **16.947**
Total Length: **5.515**

Primary Purpose: **Upgrade Existing System(Major)**

(Use Report Year)	Original	Rev. 1	Rev. 2
AdequacyRating:	**69.80**: (**06**)	: ( )	: ( )
• CRF: (Year)	**0.88**: (**06**)	: ( )	: ( )
• IRI: (Year)	**120**: (**06**)	: ( )	: ( )
• V/SF: (Year)	**0.09**: (**06**)	: ( )	: ( )
Current ADT: (Year):	**1,132**: (**07**)	: ( )	: ( )
Percent Trucks: (Year):	**4.2**: (**07**)	: ( )	: ( )
Projected ADT (HDO): Year:	**2027**	%Growth: **2.70**	ADT: **1,929**

Please provide a clear problem statement for this project:

US 421 in the principal route from New Castle to Frankfort. The segment from KY 12 north of Frankfort to KY 561 has numerous safety issues as indicated narrow lanes and no shoulders present, along with a troublesome CRF. Substandard geometrics are indicated by Horizontal Alignment Ratings of 3 and 4 in both counties.

Section III – Project Description

Project Description Narrative:

Improve safety and level of service on US 421 from KY 12 to KY 561 in Franklin County.

Regional Goals/Objectives Addressed: **To promote the safe and efficient movement of people, goods, and services to benefit all of the residents of the region.**

UPL #: 05 037 B0421 16.23
County: FRANKLIN Co. #: 037 Route: US 421

Section IV – Project Area Information:

1. Miscellaneous Roadway Conditions

Access Control:	Existing: **Permit** Proposed: **Permit**	Median Type:	Existing: **N/A** Proposed: _____	Width: **NA** Width: _____
Lane No./Width:	Existing: **2/10'** Proposed: ____/____	Shoulders:	Existing: **DGA** Proposed: _____	Width: **0** Width: _____
No. of Bridges:	Existing: **3** Proposed: _____	Other Improvement Projects in Area:	☒None ☐SYP ☐Resurface ☐Other _____	
Comments:	**Bridges at MP 13.088, 14.061 and 15.083**			

2. Right of Way

Avg. Width: Existing: **40'** Source: ☒ HIS ☐Plans ☐Microfilm ☐Other _____

Current Primary Use: ☐Industrial ☐Commercial ☐Residential ☒Farmland ☐Other: _____

☐ No ☒ Yes Project may require additional R/W. | Possible Relocations : Homes: _____ Businesses: _____

Comments:

3. Utilities

Existing Utilities: ☒Power ☐Gas ☒Telephone ☐Cable ☐Sewer ☒ Water ☐ ITS ☐None ☐ Other: _____

☐ No ☒ Yes Project may require Utility Relocations. | Comments:

4. Environmental Impacts

(Check all that apply):

☒Blueline Streams	☐Wetlands	☐Floodplain	☐Wildlife Managed Areas	☐Historic Properties
☐Cemeteries	☐Schools	☒Churches	☐Endangered Species	☐Public Land/Park
☐Noise Impact	☐Arch. Sites	☐NR Properties	☐Potential NR Properties	☐Other:

☒ Potential Contaminated sites: ☒ Gas Stations ☐ Landfills ☐ Auto Repair ☐ Junkyards ☐Other

Comments:

5. Air Quality

☒No ☐Yes	Project is located in a Maintenance or Nonattainment Area	☐ Ozone ☐ PM 2.5
☒No ☐Yes	Project adds through lane capacity	
☒No ☐Yes	Project results from a Congestion Management Plan	
☒No ☐Yes	Project is included in TIP/STIP	TIP Page # STIP Page #

Comments:

6. Economic Impacts

☐No ☒Yes Planning/Zoning Regulations exist in Community | ☒No ☐Yes Project may affect established Business, Commercial or Industrial Districts.

☒ No ☐ Yes This project has economic impacts on regional/local economy:
☒ Development ☒Tax Revenues ☐Employment Opportunity ☐Retail Sales ☐ Other

Please Describe: **Could present development opportunities**

☒ No ☐ Yes This project provides direct access to major points of interest:
☐ Nat'l/State Parks ☐Monuments ☐Historic Sites ☐Amusement Parks ☐US Public Land ☐ Other

Please Describe:

☐ No ☐ Yes This project provides direct access to major traffic generators:
☒ Shopping Centers ☒Schools ☒Industries ☐Military Installations ☐ Other

Please Describe: **Employment opportunities in Frankfort**

7. Multimodal Opportunities	This project is a candidate for: (check all that apply)	☐ Bicycle Paths ☐ Sidewalks ☒ Shared-Use Paths ☐ Park/Ride Lots ☐ N/A
	This project improves direct access to: (check all that apply)	☐ Airports ☐ Railways ☐ Riverports ☐ Trucking Routes ☒ N/A
	Type of Public Transportation available:	☐ Fixed Route ☒ Demand Response
	Comments:	
8. Social Impacts	This project may affect: (Check all that apply)	☐ Neighborhood or Community Cohesion ☒ Travel Patterns (Vehicular, commuter, bicycle, pedestrian) ☐ Household Relocations ☐ Elderly, disabled, nondrivers, minorities, low-income persons ☒ No adverse effects to neighborhoods apparent.
	Comments/Impact Descriptions:	

Section V – Cost Estimate Information (to be completed by Hwy District Office):

Cost Estimate by Phase:

Phase	Original Estimate	By:	Revision 1	Date	By:	Revision 2	Date	By:
Planning	$300,000	th						
Design	$3,900,000	th						
ROW	$8,300,000	th						
Utilities	$4,000,000	th						
Construction	$39,000,000	th						
Total Cost	**$55,500,000**							

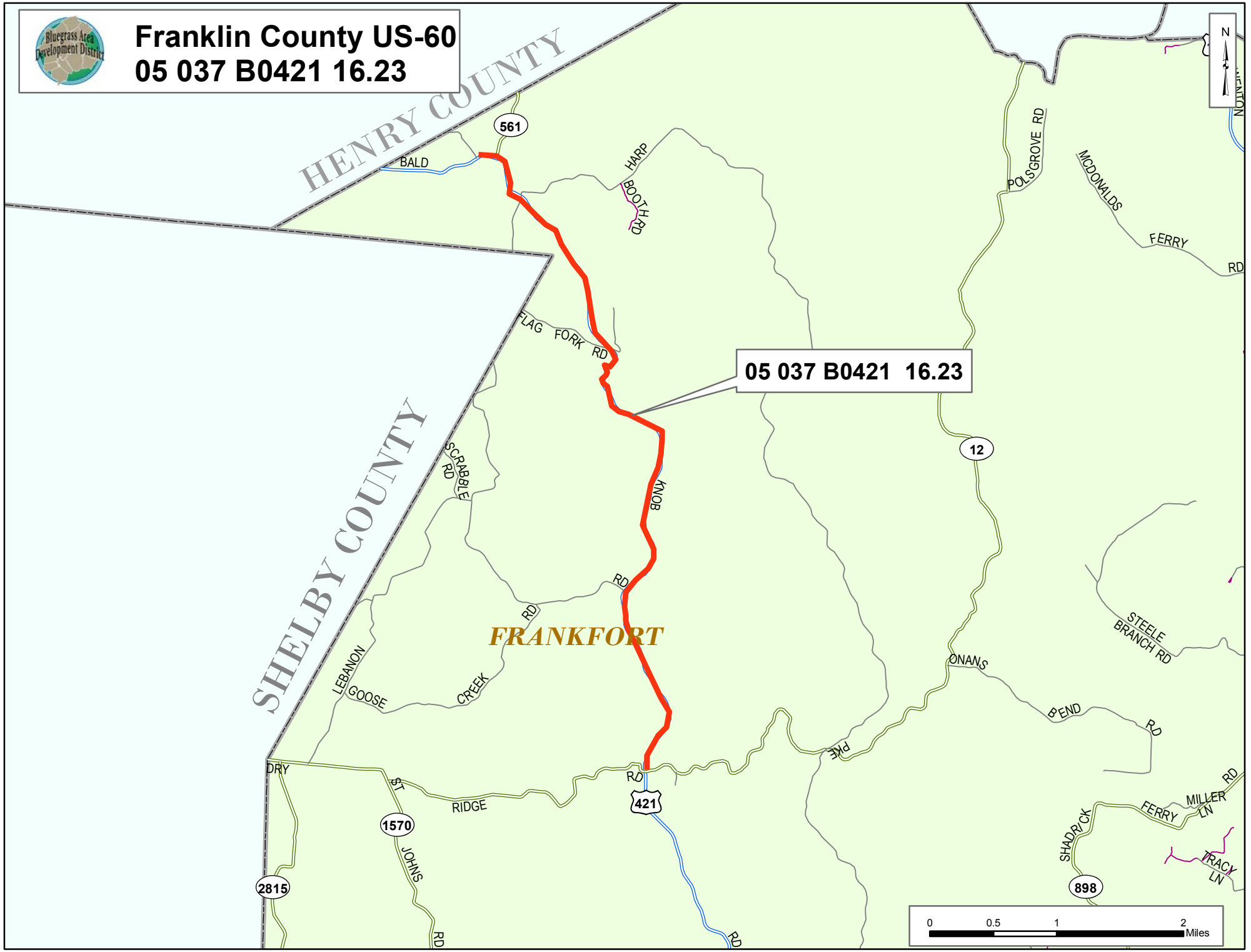
Estimate Procedure Used:

Original Estimate:	Revision 1:	Revision 2:
☐ Per Mile@ $ **9.9M** Terrain: **Rolling**	☐ Per Mile@ $ _____ Terrain: _____	☐ Per Mile@ $ _____ Terrain: _____
☐ Detailed Estimate with Calculations Attached	☐ Detailed Estimate with Calculations Attached	☐ Detailed Estimate with Calculations Attached
Estimate Assumptions: **2008 estimate** **Super 2** **D $0.7M/mi** **R 1.5M/mi** **U 1.0M/mi** **C 7.0M/mi**	Estimate Assumptions:	Estimate Assumptions:
Estimate Class: _____	Estimate Class: _____	Estimate Class: _____

Section VI – Attachments:

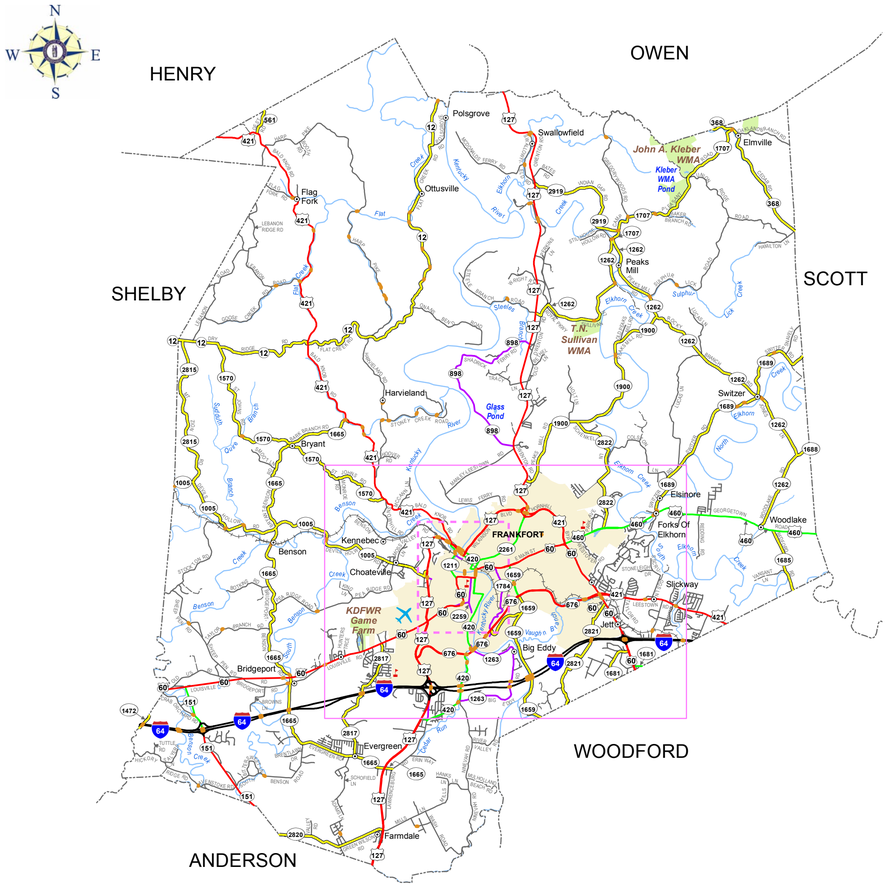
The following items are attached to this document: ☒ Location Map ☒ Photograph(s) ☐ Other:

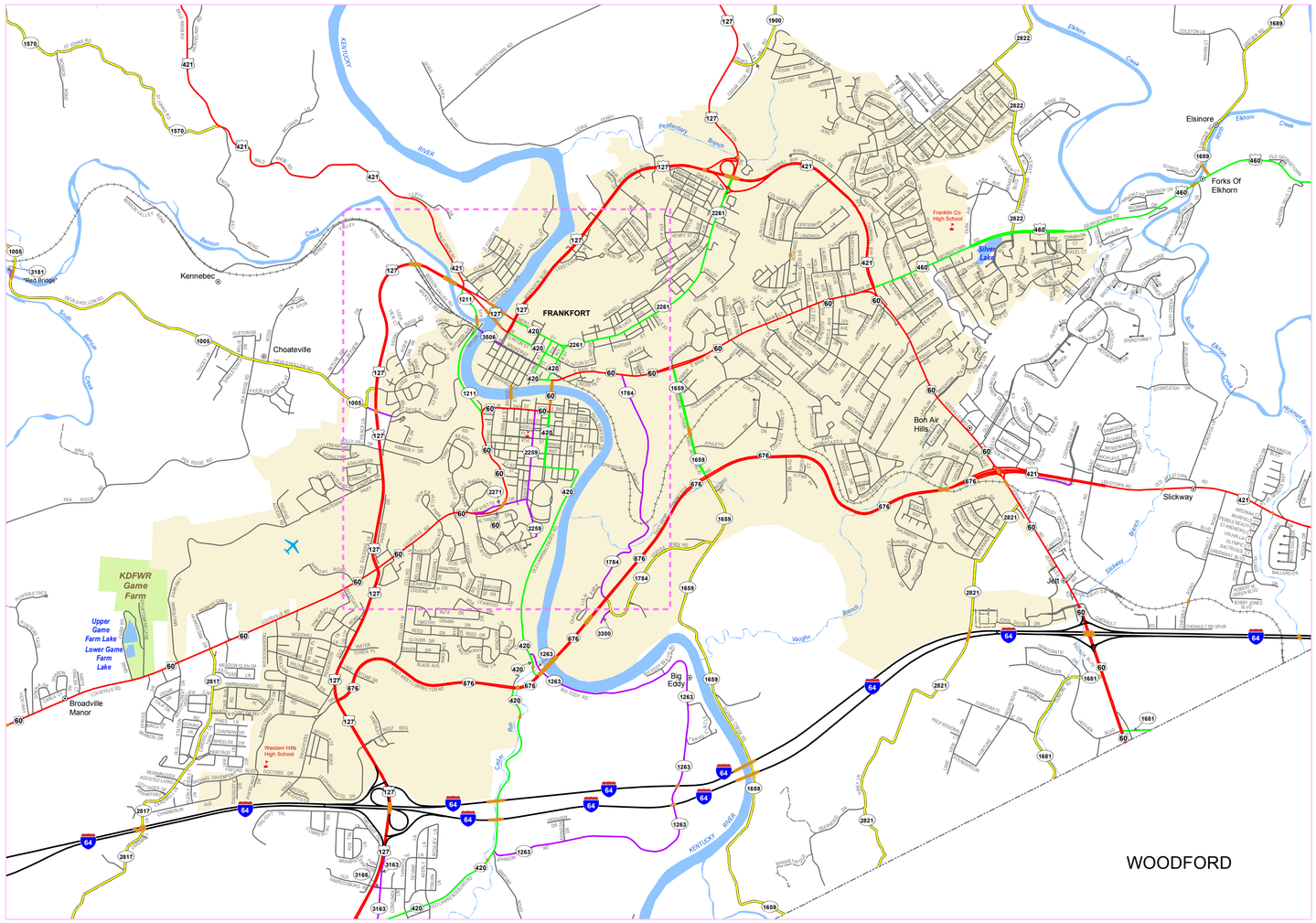
Comments:


Franklin County US-60
05 037 B0421 16.23
HENRY COUNTY
SHELBY COUNTY
05 037 B0421 16.23
FRANKFORT
561
12
421
1570
2815
898
BALD
HARP
BOOTH RD
POLSGROVE RD
MCDONALDS
FERRY
RD
FLAG FORK RD
SCRABBLE RD
KNOB
RD
LEBANON
GOOSE
CREEK
ONANS
BEND
RD
STEELE BRANCH RD
DRY
RIDGE
JOHNS
RD
PKE
MILLER LN
FERRY
SHADRICK
TRACY LN
N
0
0.5
1
2
Miles


CHURCH
ENTRANCE
NO
PASSING

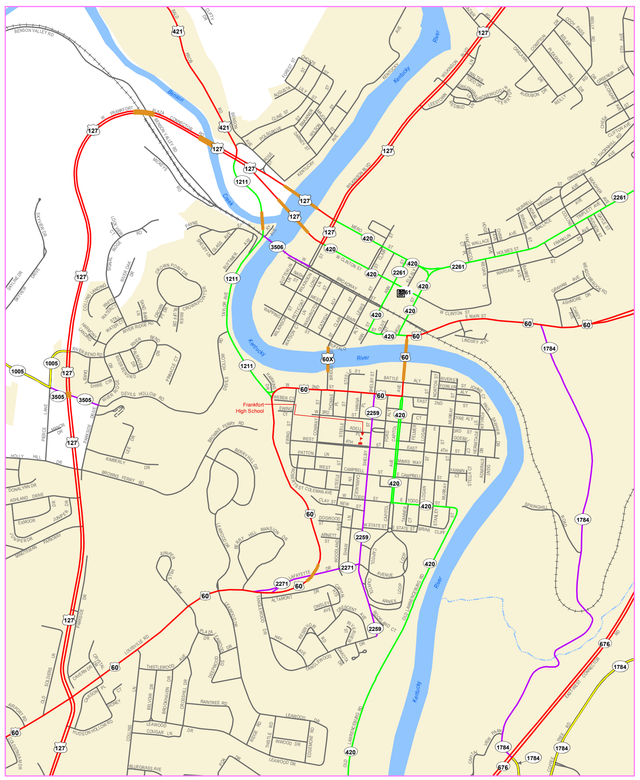
Appendix D – Franklin County Map





FRANKFORT

0.75 0.375 0 0.75 1.5 Miles



DOWNTOWN FRANKFORT

0.25 0.125 0 0.25 Miles

State Primary Road System

- Interstate
- Parkway
- Other State Primary
- State Secondary
- Rural Secondary
- Supplemental Road
- Unimproved
- Paved or Concrete
- Bridge
- Railroad
- Stream
- City/Town
- Airport
- Incorporated Area
- Lake
- State Park
- National Park or Recreation Area
- Defense Facility
- Wildlife Area
- Geological Area
- State, National, or Private Forest

Division of Planning

State Primary Road System

FRANKLIN COUNTY

2 1 0 2 4 6 Miles

Last map revision: APRIL 2011

Road centerlines collected using GPS technology

Kentucky State Plane Coordinate System (NAD83)

www.planning.kytc.ky.gov/

State Primary Road System FRANKLIN COUNTY KENTUCKY 037

Appendix E – Traffic Count Data

Kentucky Traffic Counts

Route: US 421 **Street:**

From MP: 11.132 **At:** KY 12

To MP: 16.947 **At:** KY 561

District: 5

County: FRANKLIN

City: FRANKFORT

Last Actual Count:
957 **in** 2010

Station ID: 751 **Station Cnty:** FRANKLIN

Station Type: Full Coverage

Functional Class: RURAL - Minor Arterial

New Road Year:

Impact Year:

Year	Count	Type
2011	1,020	Computer Estimate
2010	957	Actual Count
2009		
2008		
2007	1,130	Actual Count
2006		
2005		
2004		
2003		
2002		
2001	1,150	Actual Count
2000		
1999		
1998		
1997		
1996		
1995	1,200	Actual Count
1994		
1993		
1992	1,140	Actual Count
1991		
1990		
1989		
1988	933	Actual Count
1987		
1986		
1985	921	Actual Count
1984	805	Actual Count
1983	876	Actual Count
1982	850	Actual Count
1981	869	Actual Count
1980		
1979	747	Actual Count
1978		
1977	1,040	Actual Count
1976		
1975	973	Actual Count
1974		
1973	711	Actual Count
1972		
1971	1,130	Actual Count

Kentucky Traffic Counts

1970	632	Actual Count
1969	621	Actual Count
1968		
1967	640	Actual Count
1966	616	Actual Count
1965		

Appendix F – Collision Data

Crash Data

MILEPOINT DERIVED	COLLISION DATE	COLLISION TIME	MOTOR VEHICLES INVOLVED	UNITS INVOLVED	KILLED	INJURED	WEATHER	ROADWAY CONDITION	MANNER OF COLLISION	ROADWAY CHARACTER	LIGHT CONDITION
12.7	12/13/2003	1942	1	1	0	0	SNOWING	ICE	SINGLE VEHICLE	CURVE & GRADE	DARK-HWY LIGHTED/ON
12.717	8/5/2007	1654	2	2	0	2	CLOUDY	DRY	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
12.753	12/10/2007	850	1	1	0	1	RAINING	WET	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
12.917	5/22/2005	1900	1	1	0	1	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
13.003	8/4/2009	1245	1	1	0	0	RAINING	WET	SINGLE VEHICLE	STRAIGHT & GRADE	DAYLIGHT
13.088	6/21/2003	1510	1	1	0	2	CLEAR	DRY	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
13.088	11/22/2006	2239	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
13.132	9/23/2006	1731	1	1	0	0	RAINING	WET	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
13.317	6/7/2006	655	1	1	0	2	CLEAR	DRY	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
13.319	5/18/2011	1235	1	1	0	1	RAINING	WET	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
13.588	9/1/2002	520	1	1	0	2	CLEAR	DRY	SINGLE VEHICLE	CURVE & HILLCREST	DARK-HWY NOT LIGHTED
13.717	7/28/2004	1445	1	1	0	1	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.067	12/26/2003	2350	1	1	0	2	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DARK-HWY NOT LIGHTED
14.088	12/30/2005	900	1	2	0	1	CLOUDY	WET	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.131	10/12/2002	1405	1	1	0	1	CLOUDY	WET	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.132	6/10/2007	1234	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
14.25	6/13/2006	1618	2	2	0	0	CLEAR	DRY	SIDESWIPE	CURVE & HILLCREST	DAYLIGHT
14.386	9/14/2009	1135	1	1	0	1	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.467	12/16/2005	920	1	1	0	0	CLEAR	ICE	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.496	3/18/2011	2257	1	1	0	1	RAINING	WET	SINGLE VEHICLE	CURVE & GRADE	DARK-HWY NOT LIGHTED
14.504	7/1/2009	1225	1	1	0	1	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.511	8/1/2008	1057	2	2	0	0	CLEAR	DRY	SIDESWIPE	CURVE & GRADE	DAYLIGHT
14.567	4/19/2007	705	1	1	0	1	CLOUDY	DRY	SINGLE VEHICLE	CURVE & GRADE	DAWN
14.719	12/29/2010	639	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	CURVE & LEVEL	DAWN
14.767	6/28/2003	1919	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.767	6/26/2004	1457	1	1	0	1	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.77	5/21/2006	1123	1	1	0	2	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.817	9/17/2001	1724	1	1	0	1	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.861	9/6/2003	1115	2	2	1	0	CLEAR	DRY	HEAD ON	CURVE & GRADE	DAYLIGHT
14.867	9/4/2006	1549	1	1	0	1	CLEAR	DRY	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.867	6/4/2007	1516	1	1	0	0	RAINING	WET	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
14.886	11/28/2004	2145	1	1	0	0	CLEAR	DRY	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
15.011	5/24/2007	547	2	2	0	1	CLEAR	DRY	SIDESWIPE	CURVE & GRADE	DARK-HWY NOT LIGHTED

Appendix G – KYTC's Common Geometric Practices for Rural Arterial Roads

COMMON GEOMETRIC PRACTICES
RURAL ARTERIAL ROADS (OTHER THAN FREEWAYS) (4)

		TRAFFIC VOLUME			
		UNDER 400 A.D.T.	400-1500 A.D.T.	1500-2000 A.D.T.	OVER 2000 A.D.T.
	DESIGN SPEED (6)	40-50 M.P.H.	40-70 M.P.H.	40-70 M.P.H.	40-70 M.P.H.
PAVEMENT WIDTH (FEET)	40 MPH	22	22	22	24
	45 MPH				
	50 MPH			24	
	55 MPH				
	60 MPH	24	24		
	65 MPH				
	70 MPH				
MINIMUM GRADED SHOULDER WIDTH (FT) (5)	ALL SPEEDS	4	6	6	8
MINIMUM CLEAR ROADWAY WIDTH OF NEW AND RECONSTRUCTED BRIDGES	ALL SPEEDS	APPROACH ROADWAY WIDTH			

MINIMUM RADIUS (FEET)	DESIGN SPEED	eMAX. 4%	eMAX. 6%	eMAX. 8%
	30 MPH	300	275	250
	35 MPH	420	380	350
	40 MPH	565	510	465
	45 MPH	730	660	600
	50 MPH	930	835	760
	55 MPH	1190	1065	965
	60 MPH	1505	1340	1205
	65 MPH	—	1660	1485
	70 MPH	—	2050	1820

NORMAL PAVEMENT CROSS SLOPES (3)	RATE OF CROSS SLOPE = 2%											
NORMAL SHOULDER CROSS SLOPES	EARTH = 8%							PAVED = 4%				
MAXIMUM GRADE (PERCENT)	M.P.H.	30	35	40	45	50	55	60	65	70	75	80
	LEVEL	-		5		4		3				
	ROLLING	-		6		5		4				
	MOUNTAIN	-		8	7		6		5			
MINIMUM STOPPING SIGHT DISTANCE (1)	(FEET)	200	250	305	360	425	495	570	645	730	820	910
MINIMUM PASSING SIGHT DISTANCE (2)	(FEET)	1090	1280	1470	1625	1835	1985	2135	2285	2480	2580	2680

(1) MINIMUM STOPPING SIGHT DISTANCES ARE BASED ON HEIGHT OF EYE OF 3.5 FT AND HEIGHT OF OBJECT OF 2.0FT. BOTH HORIZONTAL AND VERTICAL ALIGNMENTS ARE CONSIDERED.

(2) MINIMUM PASSING SIGHT DISTANCES ARE BASED ON HEIGHT OF EYE 3.5 FT AND HEIGHT OF OBJECT OF 3.5 FT. BOTH HORIZONTAL AND VERTICAL ALIGNMENTS ARE CONSIDERED.

(3) NORMAL PAVEMENT CROSS SLOPES ON BRIDGES SHALL BE 2%.

(4) FOR GUIDANCE ON FREEWAYS, REFER TO AASHTO, "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS", CURRENT EDITION.

(5) WIDEN 3 FT FOR GUARDRAIL.

(6) JUSTIFICATION FOR A DESIGN SPEED LESS THAN THE REGULATORY OR POSTED SPEED MUST BE DOCUMENTED AND AVAILABLE FOR REVIEW IN THE PROJECT FILES.

Appendix H – Structure Inventory and Appraisal Sheets

Bridge Maintenance

Structure Inventory and Appraisal Sheet (English Units)

Bridge Key: 4174 Agency ID: 037B00023N SR: 47.1 SD/FO: SD

IDENTIFICATION

State 1:	21 Kentucky	Struc Num 8:	037B00023N
Facility Carried 7:	US-421	Location 9:	2.0 MI NOR. OF JCT KY 12
Rte.(On/Under)5A:	Route On Structure	Rte. Signing Prefix 5B:	2 U.S. Numbered Hwy
Level of Service 5C:	1 Mainline	Rte. Number 5D:	00421
Directional Suffix 5E:	0 N/A (NBI)	% Responsibility :	Unknown
SHD District 2:	District 5	County Code 3:	Franklin (037)
Place Code 4:	FIPS 0000	Mile Post 11:	13.090 mi
Feature Intersected 6:	FLAT CREEK		
Latitude 16:	38d 17' 52"	Longitude 17:	084d 56' 33"
Border Bridge Code 98:	Unknown (P)		
Border Bridge Number 99:			

STRUCTURE TYPE AND MATERIALS

Number of Approach Spans 46: 0 Number of Spans Main Unit 45: 2

Main Span Material/Design 43A/B:

1 Concrete 04 Tee Beam

Deck Type 107:	1 Concrete-Cast-in-Place
Wearing Surface 108A:	6 Bituminous
Membrane 108B:	0 None
Deck Protection 108C:	None

AGE AND SERVICE

Year Built 27: 1929 Year Reconstructed 106: 0

Type of Service on 42A: 1 Highway

Type of Service under 42B: 5 Waterway

Lanes on 28A: 2 Lanes Under 28B: 0 Detour Length 19: 9.9 mi

ADT 29: 1,030 Truck ADT 109: 11 % Year of ADT 30: 2010

GEOMETRIC DATA

Length Max Span 48: 32.0 ft Structure Length 49: 66.0 ft

Curb/Sdwlk Width L 50A: 1.3 ft Curb/Sidewalk Width R 50B: 1.3 ft

Width Curb to Curb 51: 23.0 ft Width Out to Out 52: 26.0 ft

Approach Roadway Width 32: 20.0 ft (w/ shoulders) Median 33: 0 No median

Deck Area: 1,716. sq. ft

Skew 34: 30.00 ° Structure Flared 35: 0 No flare

Vertical Clearance 10: 99.99 ft Horiz. Clearance 47: 23.00 ft

Minimum Vertical Clearance Over Bridge 53: 328.1 ft

Minimum Vertical Underclearance Reference 54A: N Feature not hwy or RR

Minimum Vertical Underclearance 54B: 0.0 ft

Minimum Lateral Underclearance Reference R 55A: N Feature not hwy or RR

Minimum Lateral Underclearance R 55: 0.0 ft

Minimum Lateral Underclearance L 56: 0.0 ft

INSPECTION

Frequency 91:	24 months	Inspection Date 90:	7/7/2010	Next Inspection:	07/07/2012
FC Frequency 92A:	NA	FC Inspection Date 93A:	NA	Next FC Inspection:	NA
UW Frequency 92B:	NA	UW Inspection Date 93B:	NA	Next UW Inspection:	NA
SI Frequency 92C:	NA	SI Date 93C:	NA	Next SI:	NA
Element Frequency:	24 months	Element Inspection Date:	07/07/2010	Next Elem. Insp. Due:	07/07/2012

CLASSIFICATION

Defense Highway 100:	0 Not a STRAHNET hwy	Parallel Structure 101:	No || bridge exists
Direction of Traffic 102:	2 2-way traffic	Temporary Structure 103:	Not Applicable (P)
Highway System 104:	0 Not on NHS	NBIS Length 112:	Long Enough
Toll Facility 20:	3 On free road	Functional Class 26:	06 Rural Minor Arterial
Defense Hwy 110:	0 Not a STRAHNET hwy	Historical Significance 37:	5 Not eligible for NRHP
Owner 22:	01 State Highway Agency		
Custodian 21:	01 State Highway Agency		

CONDITION

Deck 58: 3 Serious Super 59: 4 Poor Sub 60: 5 Fair

Culvert 62: N N/A (NBI) Channel/Channel Protection 61: 6 Bank Slumping

LOAD RATING AND POSTING

Inventory Rating Method 65:	1 LF Load Factor	Operating Rating Method 63:	1 LF Load Factor
Inventory Rating 66:	HS21.1	Operating Rating 64:	HS36.1
Design Load 31:	2 M 13.5 (H 15)	Posting 70:	5 At/Above Legal Loads
Posting status 41:	A Open, no restriction		

APPRAISAL

Bridge Rail 36A:	0 Substandard	Approach Rail 36C:	0 Substandard
Transition 36B:	0 Substandard	Approach Rail Ends 36D:	0 Substandard
Str. Evaluation 67:	4	Deck Geometry 68:	3 Intolerable - Correct
Underclearance, Vertical and Horizontal 69:	N Not applicable (NBI)		
Waterway Adequacy 71:	8 Equal Desirable	Approach Alignment 72:	8 Equal Desirable Crit
Scour Critical 113:	8 Stable Above Footing		

PROPOSED IMPROVEMENTS

Bridge Cost 94:	$ 0	Type of Work 75:	Unknown (P)
Roadway Cost 95:	$ 0	Length of Improvement 76:	0.0 ft
Total Cost 96:	$ 0	Future ADT 114:	1,534
Year of Cost Estimate 97:	Unknown	Year of Future ADT 115:	2030

NAVIGATION DATA

Navigation Control 38: 0 Permit Not Required

Vertical Clearance 39: 0.0 ft Horizontal Clearance 40: 0.0 ft

Pier Protection 111: Not Applicable (P) Lift Bridge Vertical Clearance 116:

ELEMENT CONDITION STATE DATA

Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4	% in 5	Qty. St. 5
1	13/1	Unp Conc Deck/AC Ovl	(SF)	1,518	0 %	0	100 %	1,518	0 %	0	0 %	0	0 %	0
1	110/1	R/Conc Open Girder	(LF)	330	30 %	99	63 %	207	7 %	24	0 %	0	0 %	0
1	205/1	R/Conc Column	(EA)	2	0 %	0	0 %	0	100 %	2	0 %	0	0 %	0
1	215/1	R/Conc Abutment	(LF)	110	79 %	87	18 %	20	3 %	3	0 %	0	0 %	0
1	234/1	R/Conc Cap	(LF)	35	60 %	21	11 %	4	29 %	10	0 %	0	0 %	0
1	334/1	Metal Rail Coated	(LF)	132	50 %	66	50 %	66	0 %	0	0 %	0	0 %	0

Structure Inventory and Appraisal Sheet (English Units)

Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4	% in 5	Qty. St. 5
1	359/1	Soffit Smart Flag	(EA)	1	0 %	0	0 %	0	100 %	1	0 %	0	0 %	0
1	361/1	Scour Smart Flag	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0
1	503/1	RC Curb	(LF)	132	0 %	0	0 %	0	0 %	0	100 %	132	0 %	0

Str Unit	Elm/Env	Description	Element Notes
1	13/1	Concrete Deck - Unprotected w/ AC	Asphalt wearing surface is in satisfactory condition, some cracking, except where concrete deck overhang has failed under it. Overhangs have severe spalling and deterioration. The overhang on the west side of the bridge has large amount of resteel exposed with advanced section loss. Local failures of the deck overhang have occurred on the west side over the pier and toward the south abutment. The west edge of the south span is spalled completely leaving a void in front of the guardrail. A 3/8" steel plate has been placed over the two worse areas on the west edge of the deck. Cones remain along the west edge to encourage drivers to steer clear of the failed areas. The majority of deck has map cracking with possible full depth deterioration and some spalls with resteel exposed, slightly worse at the pier. Severe joint leakage at the pier. Drains have been paved over.
1	110/1	Reinforced Conc Open Girder/Bear	Beams have cracks, some with moderate efflorescence. Exterior beams have heavy deterioration, some heavy efflorescence and spalls with exposed resteel and section loss. Possible full depth deterioration in some of the beams. The diaphragms have severe deterioration, map cracks and heavy efflorescence; worse at the pier in the exterior bays.
1	205/1	Reinforced Conc Column or Pile Ex	Both columns are cracked and spalled.
1	215/1	Reinforced Conc Abutment	There is deterioration at the abutments. Both abutments have map cracks and efflorescence at the wing turns.
1	234/1	Reinforced Conc Cap	Both ends of the cap are severely spalled and deteriorated with resteel exposed and section loss.
1	334/1	Metal Bridge Railing - Coated	The rail posts at the south end on each side are very loose due to deteriorated curbs. The remaining posts are anchored to the crumbling curbs. Railings are rusty, especially the east side.
1	359/1	Soffit of Concrete Deck or Slab	The majority of deck has map cracking with possible full depth deterioration and some spalls with resteel exposed, slightly worse at the pier. Severe joint leakage at the pier.
1	361/1	Scour	Some scour around the pier footing and west end of Abutment 3.
1	503/1	Reinforced Concrete Curb	Curbs are all crumbled away.

BRIDGE NOTES

-62.6

PAST INSPECTION

Inspection Date: 07/07/2010 Type: 2 Standard (24 months)

Inspector: EHOUSE Pontis User Key: EHOUSE - Eddie H

Scope:

NBI: ☒ Other: ☐ Element: ☒

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

–

Structure Inventory and Appraisal Sheet (English Units)

PAST INSPECTION

Inspection Date: 07/01/2008 Type: 2 Standard (24 months)

Inspector: DDUDGEON Pontis User Key: DDUDGEON - Dar

Scope:

NBI: ☒ Other: ☐ Element: ☒

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

–

PAST INSPECTION

Inspection Date: 09/01/2006 Type: 2 Standard (24 months)

Inspector: TKING Pontis User Key: TKING - Terry King

Scope:

NBI: ☒ Other: ☐ Element: ☐

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

–

INSPECTOR WORK CANDIDATES

Work Candidate ID	Action	Object	Agency Status	Agency Priority	Assigned to a Project	Rec. Date
A-KYTC-13CD79C4-00000013	Replace	Bridge	unknown	Medium	No	7/7/2010

Bridge Maintenance

Structure Inventory and Appraisal Sheet (English Units)

Bridge Key: 4175 Agency ID: 037B00024N SR: 49.2 SD/FO: SD

IDENTIFICATION

State 1:	21 Kentucky	Struc Num 8:	037B00024N
Facility Carried 7:	US-421	Location 9:	2.8 MI NOR. OF JCT KY 12
Rte.(On/Under)5A:	Route On Structure	Rte. Signing Prefix 5B:	2 U.S. Numbered Hwy
Level of Service 5C:	1 Mainline	Rte. Number 5D:	00421
Directional Suffix 5E:	0 N/A (NBI)	% Responsibility :	Unknown
SHD District 2:	District 5	County Code 3:	Franklin (037)
Place Code 4:	FIPS 0000	Mile Post 11:	14.059 mi
Feature Intersected 6:	HUDSON CREEK		
Latitude 16:	38d 18' 40"	Longitude 17:	084d 56' 29"
Border Bridge Code 98:	Unknown (P)		
Border Bridge Number 99:			

STRUCTURE TYPE AND MATERIALS

Number of Approach Spans 46: 0 Number of Spans Main Unit 45: 1

Main Span Material/Design 43A/B:

1 Concrete 04 Tee Beam

Deck Type 107:	1 Concrete-Cast-in-Place
Wearing Surface 108A:	6 Bituminous
Membrane 108B:	0 None
Deck Protection 108C:	None

AGE AND SERVICE

Year Built 27: 1929 Year Reconstructed 106: 0

Type of Service on 42A: 1 Highway

Type of Service under 42B: 5 Waterway

Lanes on 28A: 2 Lanes Under 28B: 0 Detour Length 19: 9.9 mi

ADT 29: 1,030 Truck ADT 109: 11 % Year of ADT 30: 2010

GEOMETRIC DATA

Length Max Span 48: 21.0 ft Structure Length 49: 23.0 ft

Curb/Sdwlk Width L 50A: 0.0 ft Curb/Sidewalk Width R 50B: 0.0 ft

Width Curb to Curb 51: 22.0 ft Width Out to Out 52: 22.0 ft

Approach Roadway Width 32: 21.0 ft (w/ shoulders) Median 33: 0 No median

Deck Area: 505.2 sq. ft

Skew 34: 0.00 ° Structure Flared 35: 0 No flare

Vertical Clearance 10: 99.99 ft Horiz. Clearance 47: 22.00 ft

Minimum Vertical Clearance Over Bridge 53: 328.1 ft

Minimum Vertical Underclearance Reference 54A: N Feature not hwy or RR

Minimum Vertical Underclearance 54B: 0.0 ft

Minimum Lateral Underclearance Reference R 55A: N Feature not hwy or RR

Minimum Lateral Underclearance R 55: 0.0 ft

Minimum Lateral Underclearance L 56: 0.0 ft

INSPECTION

Frequency 91:	24 months	Inspection Date 90:	6/21/2010	Next Inspection:	06/21/2012
FC Frequency 92A:	NA	FC Inspection Date 93A:	NA	Next FC Inspection:	NA
UW Frequency 92B:	NA	UW Inspection Date 93B:	NA	Next UW Inspection:	NA
SI Frequency 92C:	NA	SI Date 93C:	NA	Next SI:	NA
Element Frequency:	24 months	Element Inspection Date:	06/21/2010	Next Elem. Insp. Due:	06/21/2012

CLASSIFICATION

Defense Highway 100:	0 Not a STRAHNET hwy	Parallel Structure 101:	No || bridge exists
Direction of Traffic 102:	2 2-way traffic	Temporary Structure 103:	Not Applicable (P)
Highway System 104:	0 Not on NHS	NBIS Length 112:	Long Enough
Toll Facility 20:	3 On free road	Functional Class 26:	06 Rural Minor Arterial
Defense Hwy 110:	0 Not a STRAHNET hwy	Historical Significance 37:	5 Not eligible for NRHP
Owner 22:	01 State Highway Agency		
Custodian 21:	01 State Highway Agency		

CONDITION

Deck 58: 4 Poor Super 59: 4 Poor Sub 60: 5 Fair

Culvert 62: N N/A (NBI) Channel/Channel Protection 61: 7 Minor Damage

LOAD RATING AND POSTING

Inventory Rating Method 65:	1 LF Load Factor	Operating Rating Method 63:	1 LF Load Factor
Inventory Rating 66:	HS21.7	Operating Rating 64:	HS35.6
Design Load 31:	2 M 13.5 (H 15)	Posting 70:	5 At/Above Legal Loads
Posting status 41:	A Open, no restriction		

APPRAISAL

Bridge Rail 36A:	0 Substandard	Approach Rail 36C:	1 Meets Standards
Transition 36B:	0 Substandard	Approach Rail Ends 36D:	0 Substandard
Str. Evaluation 67:	4	Deck Geometry 68:	3 Intolerable - Correct
Underclearance, Vertical and Horizontal 69:	N Not applicable (NBI)		
Waterway Adequacy 71:	8 Equal Desirable	Approach Alignment 72:	8 Equal Desirable Crit
Scour Critical 113:	8 Stable Above Footing		

PROPOSED IMPROVEMENTS

Bridge Cost 94:	$ 64,000	Type of Work 75:	34 Widen w/ Deck Reha
Roadway Cost 95:	$ 0	Length of Improvement 76:	2.3 ft
Total Cost 96:	$ 63,000	Future ADT 114:	1,534
Year of Cost Estimate 97:	1994	Year of Future ADT 115:	2030

NAVIGATION DATA

Navigation Control 38: 0 Permit Not Required

Vertical Clearance 39: 0.0 ft Horizontal Clearance 40: 0.0 ft

Pier Protection 111: Not Applicable (P) Lift Bridge Vertical Clearance 116:

ELEMENT CONDITION STATE DATA

Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4	% in 5	Qty. St. 5
1	13/1	Unp Conc Deck/AC Ovl	(SF)	472	0 %	0	100 %	472	0 %	0	0 %	0	0 %	0
1	110/1	R/Conc Open Girder	(LF)	92	25 %	23	62 %	57	13 %	12	0 %	0	0 %	0
1	215/1	R/Conc Abutment	(LF)	76	0 %	0	82 %	62	18 %	14	0 %	0	0 %	0
1	334/1	Metal Rail Coated	(LF)	46	0 %	0	0 %	0	0 %	0	100 %	46	0 %	0
1	359/1	Soffit Smart Flag	(EA)	1	0 %	0	0 %	0	100 %	1	0 %	0	0 %	0
1	503/1	RC Curb	(LF)	46	0 %	0	0 %	0	0 %	0	100 %	46	0 %	0

Structure Inventory and Appraisal Sheet (English Units)

Str Unit	Elm/Env	Description	Element Notes
1	13/1	Concrete Deck - Unprotected w/ AC	Structure should be considered for replacement. Asphalt surface has cracks and deterioration. Drains have been paved over and are no longer functional. All railing posts are no longer attached to the bridge on the east and west side.
1	110/1	Reinforced Conc Open Girder/Bear	Beams have cracks, some with efflorescence. The west exterior beam has moderate cracks and deterioration with efflorescence for its entire length and some spalls with exposed resteel that has section loss. The east exterior beam at the south abutment has moderate longitudinal cracking with efflorescence at the bearing and runs north for about 4 feet. Beam 2 at the north abutment has about 3 feet of cracking and efflorescence. End diaphragms have cracking, some with efflorescence and minor spalling.
1	215/1	Reinforced Conc Abutment	Abutments have cracks and are deteriorated near the west exterior beam. The breastwalls have some honeycombing and cracking. The north abutment and wing footing is spalled almost its entire length. All wings have cracking and efflorescence, deterioration and scaling on top; the southeast wing is the worse. Some rock buildup in channel. Flow hits the southwest wing wall footing.
1	334/1	Metal Bridge Railing - Coated	The guardrail posts are not anchored at all due to the condition of the concrete the anchors were in.
1	359/1	Soffit of Concrete Deck or Slab	Bottom of deck has minor cracks, some with efflorescence and moderate amounts of possible full depth deterioration. Overhangs and edges of deck are severely spalled and deteriorated with resteel exposed that has advanced section loss.
1	503/1	Reinforced Concrete Curb	Curbs are severely spalled and crumbling.

BRIDGE NOTES

-60.1

PAST INSPECTION

Inspection Date: 06/21/2010 Type: 2 Standard (24 months)

Inspector: DDUDGEON Pontis User Key: DDUDGEON - Dar

Scope:

NBI: ☒ Other: ☐ Element: ☒

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

–

Structure Inventory and Appraisal Sheet (English Units)

PAST INSPECTION

Inspection Date: 06/26/2008 Type: 2 Standard (24 months)

Inspector: DDUDGEON Pontis User Key: DDUDGEON - Dar

Scope:

NBI: ☒ Other: ☐ Element: ☒

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

–

PAST INSPECTION

Inspection Date: 09/01/2006 Type: 2 Standard (24 months)

Inspector: TKING Pontis User Key: TKING - Terry King

Scope:

NBI: ☒ Other: ☐ Element: ☐

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

–

INSPECTOR WORK CANDIDATES

Work Candidate ID	Action	Object	Agency Status	Agency Priority	Assigned to a Project	Rec. Date
A-KYTC-13B379BF-0000000D	Repl Elem	Metal Rail Coated	Approved	High	No	6/21/2010

Bridge Maintenance

Structure Inventory and Appraisal Sheet (English Units)

Bridge Key: 4176 Agency ID: 037B00025N SR: 47.6 SD/FO: SD

IDENTIFICATION

State 1:	21 Kentucky	Struc Num 8:	037B00025N
Facility Carried 7:	US-421	Location 9:	3.8 MI NOR. OF JCT KY 12
Rte.(On/Under)5A:	Route On Structure	Rte. Signing Prefix 5B:	2 U.S. Numbered Hwy
Level of Service 5C:	1 Mainline	Rte. Number 5D:	00421
Directional Suffix 5E:	0 N/A (NBI)	% Responsibility :	Unknown
SHD District 2:	District 5	County Code 3:	Franklin (037)
Place Code 4:	FIPS 0000	Mile Post 11:	15.091 mi
Feature Intersected 6:	LITTLE FLAT CREEK		
Latitude 16:	38d 19' 18"	Longitude 17:	084d 56' 56"
Border Bridge Code 98:	Unknown (P)		
Border Bridge Number 99:			

STRUCTURE TYPE AND MATERIALS

Number of Approach Spans 46: 0 Number of Spans Main Unit 45: 1

Main Span Material/Design 43A/B:

1 Concrete 04 Tee Beam

Deck Type 107:	1 Concrete-Cast-in-Place
Wearing Surface 108A:	6 Bituminous
Membrane 108B:	0 None
Deck Protection 108C:	None

AGE AND SERVICE

Year Built 27:	1929	Year Reconstructed 106:			
Type of Service on 42A:	1 Highway				
Type of Service under 42B:	5 Waterway				
Lanes on 28A:	2	Lanes Under 28B:	0	Detour Length 19:	9.9 mi
ADT 29:	1,030	Truck ADT 109:	11 %	Year of ADT 30:	2010

GEOMETRIC DATA

Length Max Span 48:	30.0 ft	Structure Length 49:	35.0 ft
Curb/Sdwlk Width L 50A:	0.0 ft	Curb/Sidewalk Width R 50B:	0.0 ft
Width Curb to Curb 51:	27.0 ft	Width Out to Out 52:	29.0 ft
Approach Roadway Width 32: (w/ shoulders)	23.0 ft	Median 33:	0 No median
Deck Area:	1,015. sq. ft		
Skew 34:	45.00 °	Structure Flared 35:	0 No flare
Vertical Clearance 10:	99.99 ft	Horiz. Clearance 47:	27.00 ft

Minimum Vertical Clearance Over Bridge 53:	328.1 ft
Minimum Vertical Underclearance Reference 54A:	N Feature not hwy or RR
Minimum Vertical Underclearance 54B:	0.0 ft
Minimum Lateral Underclearance Reference R 55A:	N Feature not hwy or RR
Minimum Lateral Underclearance R 55:	0.0 ft
Minimum Lateral Underclearance L 56:	0.0 ft

INSPECTION

Frequency 91:	24 months	Inspection Date 90:	6/21/2010	Next Inspection:	06/21/2012
FC Frequency 92A:	NA	FC Inspection Date 93A:	NA	Next FC Inspection:	NA
UW Frequency 92B:	NA	UW Inspection Date 93B:	NA	Next UW Inspection:	NA
SI Frequency 92C:	NA	SI Date 93C:	NA	Next SI:	NA
Element Frequency:	24 months	Element Inspection Date:	06/21/2010	Next Elem. Insp. Due:	06/21/2012

CLASSIFICATION

Defense Highway 100:	0 Not a STRAHNET hwy	Parallel Structure 101:	No || bridge exists
Direction of Traffic 102:	2 2-way traffic	Temporary Structure 103:	Not Applicable (P)
Highway System 104:	0 Not on NHS	NBIS Length 112:	Long Enough
Toll Facility 20:	3 On free road	Functional Class 26:	06 Rural Minor Arterial
Defense Hwy 110:	0 Not a STRAHNET hwy	Historical Significance 37:	5 Not eligible for NRHP
Owner 22:	01 State Highway Agency		
Custodian 21:	01 State Highway Agency		

CONDITION

Deck 58:	4 Poor	Super 59:	4 Poor	Sub 60:	4 Poor
Culvert 62:	N N/A (NBI)	Channel/Channel Protection 61:	7 Minor Damage		

LOAD RATING AND POSTING

Inventory Rating Method 65:	1 LF Load Factor	Operating Rating Method 63:	1 LF Load Factor
Inventory Rating 66:	HS14.5	Operating Rating 64:	HS23.9
Design Load 31:	2 M 13.5 (H 15)	Posting 70:	5 At/Above Legal Loads
Posting status 41:	A Open, no restriction		

APPRAISAL

Bridge Rail 36A:	0 Substandard	Approach Rail 36C:	0 Substandard
Transition 36B:	0 Substandard	Approach Rail Ends 36D:	0 Substandard
Str. Evaluation 67:	4	Deck Geometry 68:	4 Tolerable
Underclearance, Vertical and Horizontal 69:	N Not applicable (NBI)		
Waterway Adequacy 71:	8 Equal Desirable	Approach Alignment 72:	8 Equal Desirable Crit
Scour Critical 113:	8 Stable Above Footing		

PROPOSED IMPROVEMENTS

Bridge Cost 94:	$ 0	Type of Work 75:	Unknown (P)
Roadway Cost 95:	$ 0	Length of Improvement 76:	0.0 ft
Total Cost 96:	$ 0	Future ADT 114:	1,534
Year of Cost Estimate 97:	Unknown	Year of Future ADT 115:	2030

NAVIGATION DATA

Navigation Control 38:	0 Permit Not Required		
Vertical Clearance 39:	0.0 ft	Horizontal Clearance 40:	0.0 ft
Pier Protection 111:	Not Applicable (P)	Lift Bridge Vertical Clearance 116:	

ELEMENT CONDITION STATE DATA

Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4	% in 5	Qty. St. 5
1	13/1	Unp Conc Deck/AC Ovl	(SF)	945	0 %	0	0 %	0	100 %	945	0 %	0	0 %	0
1	104/1	P/S Conc Box Girder	(LF)	80	98 %	78	0 %	0	3 %	2	0 %	0	0 %	0
1	110/1	R/Conc Open Girder	(LF)	160	46 %	73	39 %	62	16 %	25	0 %	0	0 %	0
1	215/1	R/Conc Abutment	(LF)	141	40 %	57	35 %	50	24 %	34	0 %	0	0 %	0
1	334/1	Metal Rail Coated	(LF)	80	83 %	66	15 %	12	3 %	2	0 %	0	0 %	0
1	359/1	Soffit Smart Flag	(EA)	1	0 %	0	0 %	0	100 %	1	0 %	0	0 %	0

Structure Inventory and Appraisal Sheet (English Units)

Str Unit	Elm/Env	Description	Element Notes
1	13/1	Concrete Deck - Unprotected w/ AC	Asphalt surface has cracks, a hole near the northwest corner and another hole at the west corner further south.
1	104/1	P/S Conc Closed Web/Box Girder	One box beam was added to each side. The west exterior box beam is spalled on the bottom at the south bearing area. The west box beam has 1" +/- gap between the old overhang. There is a spalled area at the north abutment allowing water to erode behind the bearing areas at the 1" gap joint. There are no actual bearing devices, the beams bear on the abutments and the modifications made to the abutments to add the box beams.
1	110/1	Reinforced Conc Open Girder/Bear	The exterior beams in old section are cracked, spalled and deteriorated; with resteel exposed and section loss. The east "old exterior" RCDG beam has minor spall on the bottom at the south bearing area. Beams otherwise have minor cracks.
1	215/1	Reinforced Conc Abutment	The endwalls have some deterioration. The bearing areas at both box beams are crushed and spalling at the bearing areas, the northwest being the worst since the box beam ends have very little length over the north abutment. Both abutments, all wings and the wing extensions have cracks and some spalling. The south abutment has an approximate 16 square feet spall at the west end just above the footing with some horizontal and vertical steel exposed - heavy deterioration at this location. The top of the southwest wing at the turn is severely spalled and has resteel exposed due to widening. The top of the footing at the south abutment is spalled. The northeast corner under the precast box beam is spalled, crushing and deteriorated and there is a void behind the bearing area. The southwest wing wall extension is tilted toward the creek and separated from the asphalt.
1	334/1	Metal Bridge Railing - Coated	Railings are W-Beam guardrail.
1	359/1	Soffit of Concrete Deck or Slab	Deck has severe full depth deterioration along the edge of overhangs in the old section, the west edge is the worse. The west edge of overhang has severe concrete spalling and large amounts of resteel exposed with advanced section loss that gets worse from south abutment to the north abutment.

BRIDGE NOTES

-7.5

PAST INSPECTION

Inspection Date: 06/21/2010 Type: 2 Standard (24 months)

Inspector: DDUDGEON Pontis User Key: DDUDGEON - Dar

Scope:

NBI: ☒ Other: ☐ Element: ☒

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

–

Structure Inventory and Appraisal Sheet (English Units)

PAST INSPECTION

Inspection Date: 06/26/2008 Type: 2 Standard (24 months)

Inspector: DDUDGEON Pontis User Key: DDUDGEON - Dar

Scope:

NBI: ☒ Other: ☐ Element: ☒

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

–

PAST INSPECTION

Inspection Date: 09/01/2006 Type: 2 Standard (24 months)

Inspector: TKING Pontis User Key: TKING - Terry King

Scope:

NBI: ☒ Other: ☐ Element: ☐

Underwater: ☐ Fracture Critical: ☐

INSPECTION NOTES

–

INSPECTOR WORK CANDIDATES

Work Candidate ID	Action	Object	Agency Status	Agency Priority	Assigned to a Project	Rec. Date
A-KYTC-13B379BF-0000001C	Repl Elem	R/Conc Abutment	Approved	High	No	6/21/2010

Appendix I – Pictures of Bridges and Roadway

037B00023N

Looking south along US 421.

Looking north.

West edge supported by steel plates.

West edge supported by steel plates.

037B00023N

East curb spalled away.

DS channel.

US channel.

Span 1 west edge; Girder 1 spalled.

037B00023N

West edge at P2: pier column & cap spalled, G1 spalled.

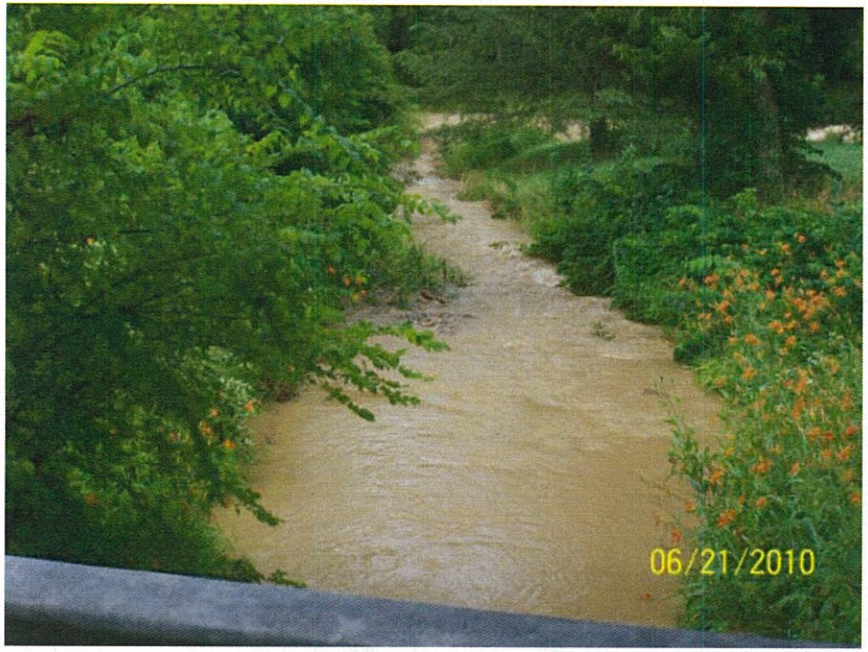
Span 1 G5 spalled.

East edge at P2: pier column & cap spalled.

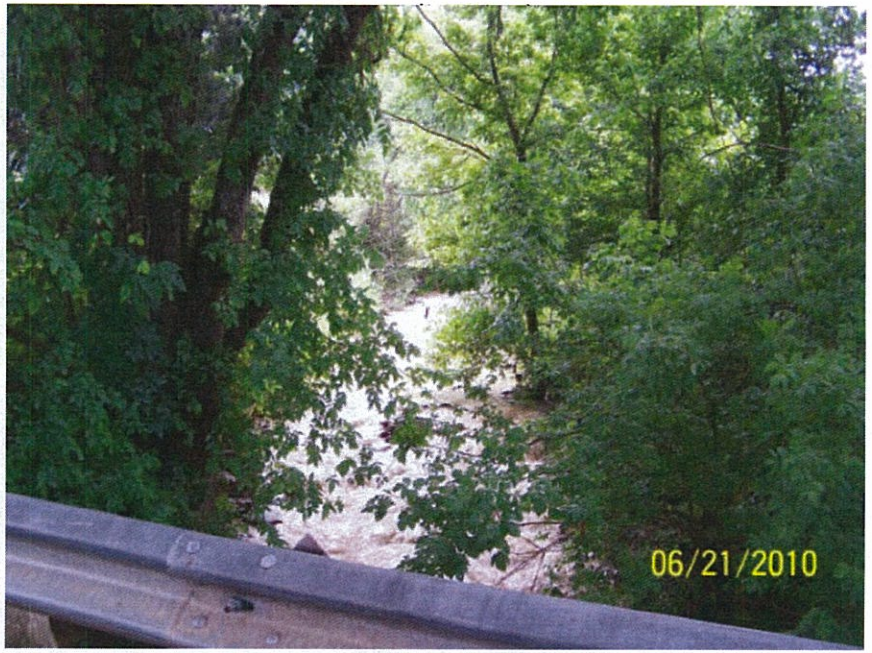
037B00024N

View looking north (cardinal direction)

View looking south (non-cardinal



View east (downstream)



View west (upstream)

037B00024N

East (downstream) profile

West (upstream) profile

Underside of bridge and south abutment

Underside of bridge and south abutment

037B00024N

Railing posts are not attached

Railing posts are hanging from the rails

Railing posts are mis-aligned

Rail posts are dangling from the railing

037B00025N

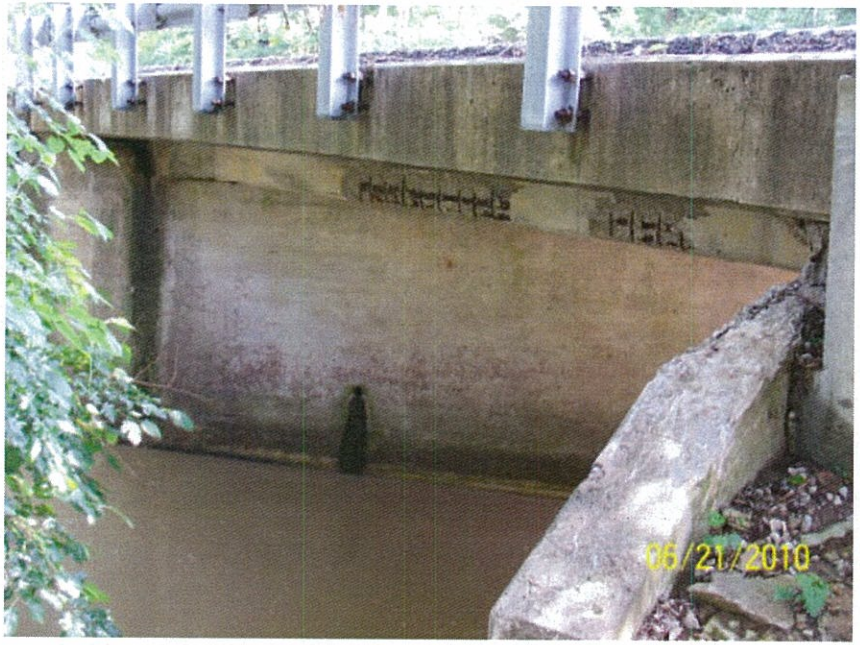
View north (cardinal direction)

View south (non-cardinal direction)

View east (downstream)

View west (upstream)

037B00025N



East (downstream) profile

West (upstream) profile

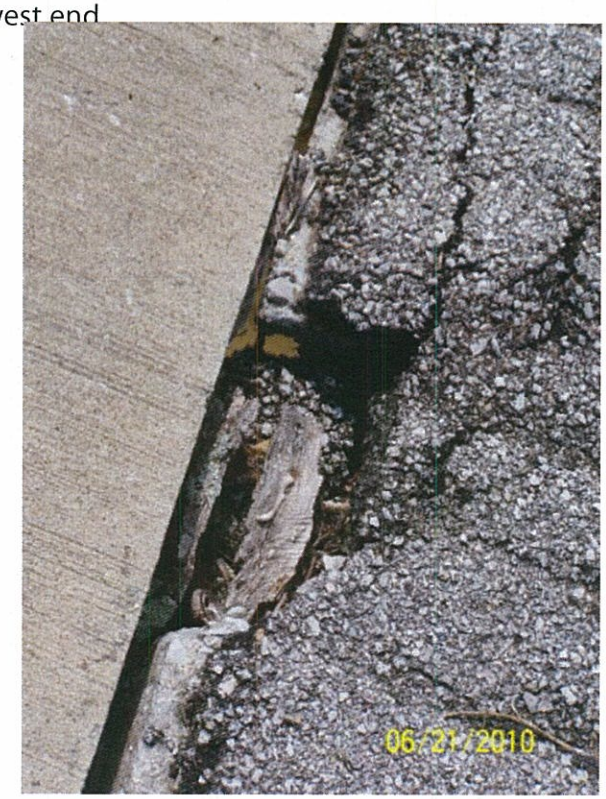
Underside of bridge from east side

Approximatel 20" X 16" hole in deck at west edge

037B00025N

< Steel exposed in west beam (and deck)

Exposed resteel in bottom of deck at west end



< Smaller (8" X 24") spall and hole in deck at west side

Appendix J – Flood Insurance Rate Maps

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of Special Flood Hazard formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no base flood elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0015C

FIRM

FLOOD INSURANCE RATE MAP

FRANKLIN COUNTY, KENTUCKY AND INCORPORATED AREAS

PANEL 15 OF 205

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN COUNTY	210280	0015	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 21073C0015C

EFFECTIVE DATE SEPTEMBER 28, 2007

Federal Emergency Management Agency

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
97°07′30", 32°22′30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{42}76^{000m}$E	1000-meter Universal Transverse Mercator grid values, zone 16
600000 FT	5000-foot grid ticks: Kentucky State Plane coordinate system, Single zone (FIPSZONE 1600), Transverse Mercator
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORIES

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 28, 2007

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

SEPTEMBER 28, 2007 – to update corporate limits, to change Base Flood Elevations, to add Base Flood Elevations, to change Special Flood Hazard Areas, to update map format, to update

...oral Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0015C

FIRM

FLOOD INSURANCE RATE MAP

FRANKLIN COUNTY,
KENTUCKY
AND INCORPORATED AREAS

PANEL 15 OF 205

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

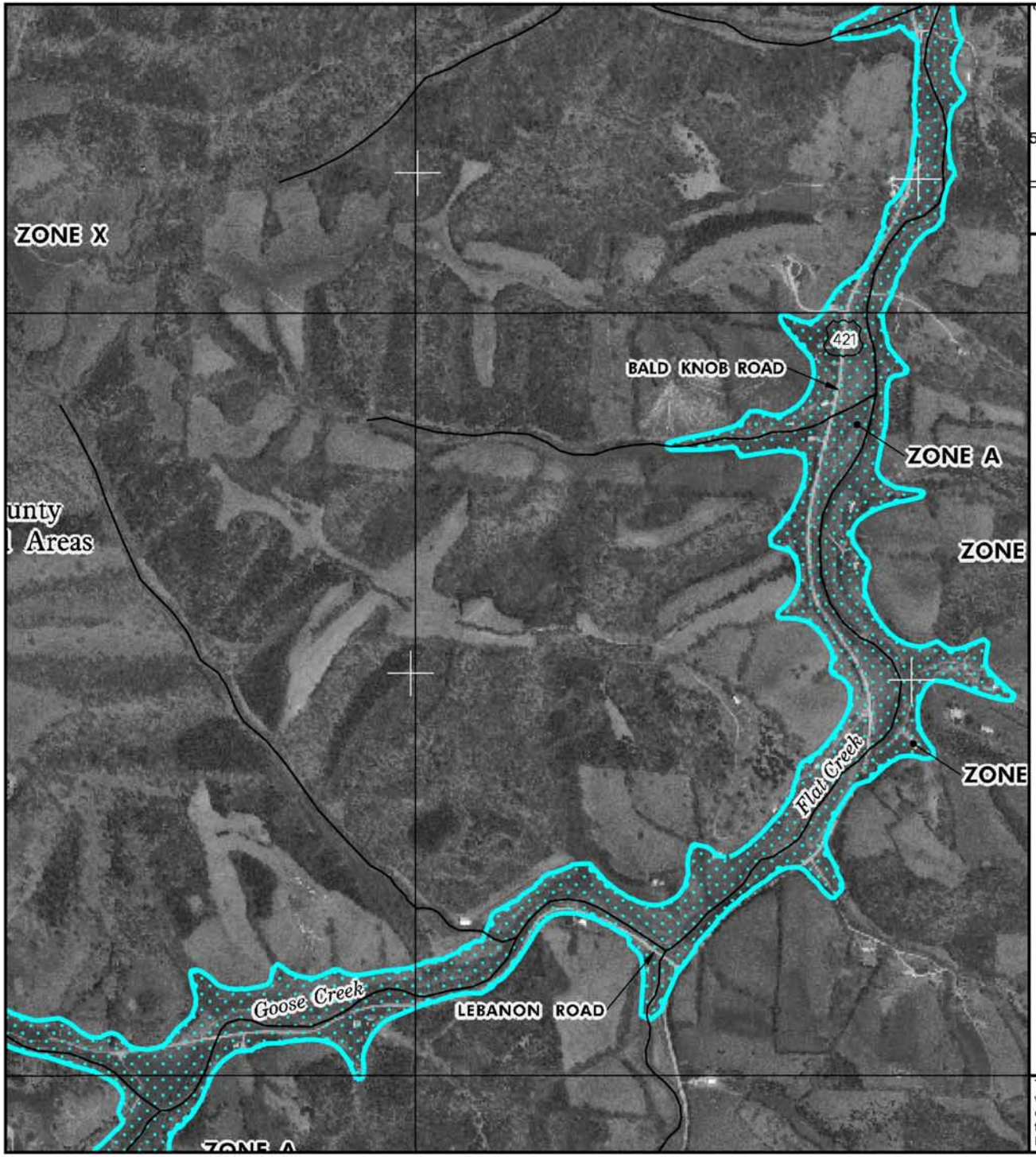
COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN COUNTY	210280	0015	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
21073C0015C

EFFECTIVE DATE
SEPTEMBER 28, 2007

Federal Emergency Management Agency



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0015C

FIRM

FLOOD INSURANCE RATE MAP

FRANKLIN COUNTY, KENTUCKY AND INCORPORATED AREAS

PANEL 15 OF 205

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

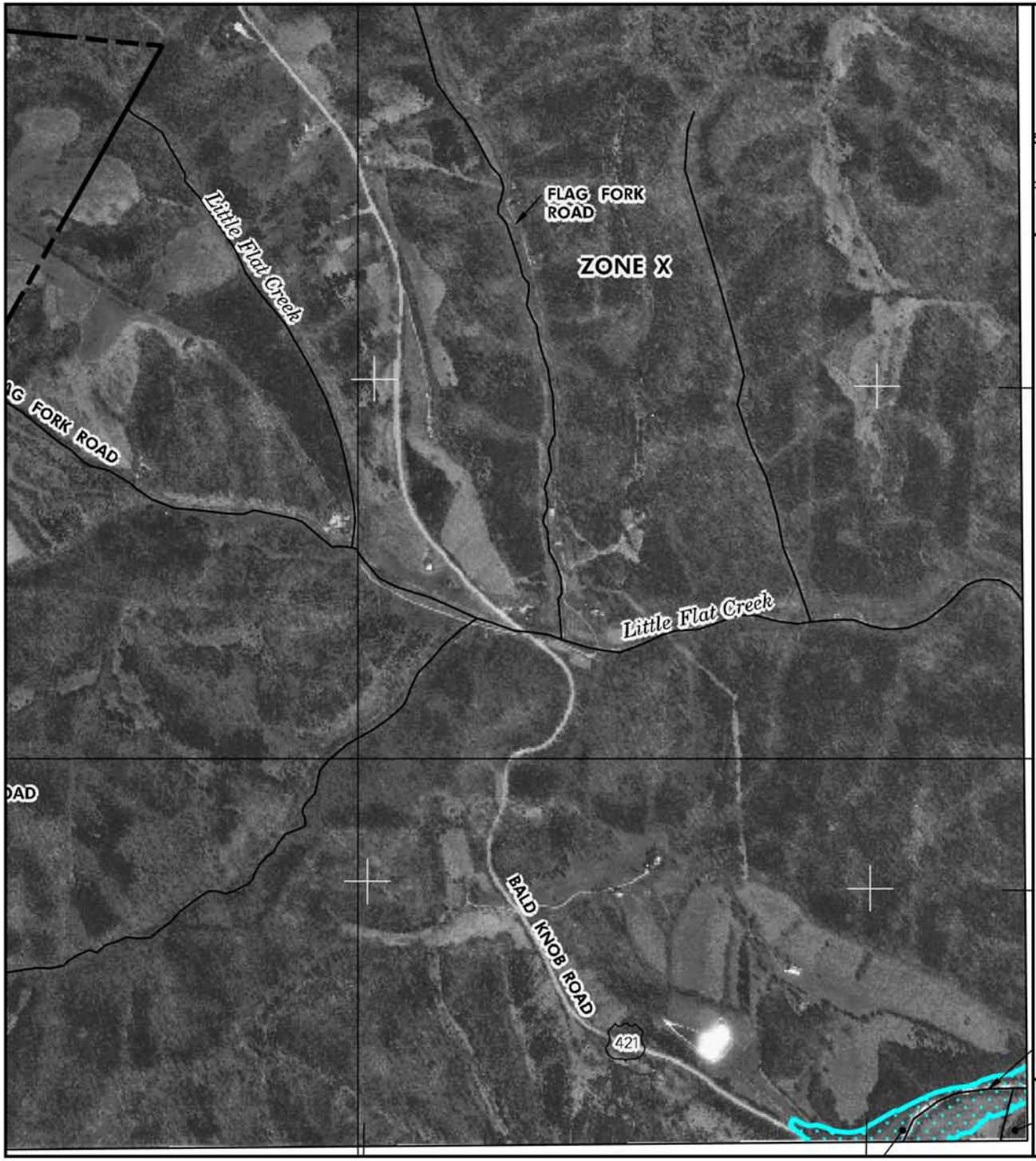
COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN COUNTY	210280	0015	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
21073C0015C

EFFECTIVE DATE
SEPTEMBER 28, 2007

Federal Emergency Management Agency



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0005C

FIRM

FLOOD INSURANCE RATE MAP

FRANKLIN COUNTY, KENTUCKY AND INCORPORATED AREAS

PANEL 5 OF 205

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FRANKLIN COUNTY	210280	0005	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
21073C0005C

EFFECTIVE DATE
SEPTEMBER 28, 2007

Federal Emergency Management Agency

Appendix K - Threatened and Endangered Species Reports

Species Information

Federal Threatened, Endangered, and Candidate Species observations for selected counties

Linked life history provided courtesy of NatureServe Explorer.
Records may include both recent and historical observations.
US Status Definitions Kentucky Status Definitions

List Federal Threatened, Endangered, and Candidate Species observations in 1 selected county.
Selected county is: Franklin.

Scientific Name and Life History	Common Name and Pictures	Class	County	US Status	KY Status	WAP	Reference
Epioblasma torulosa rangiana	Northern Riffleshell	Bivalvia	Franklin	LE	E	Yes	Reference
Myotis grisescens	Gray Myotis	Mammalia	Franklin	LE	T	Yes	Reference
Myotis sodalis	Indiana Bat	Mammalia	Franklin	LE	E	Yes	Reference
Oceanodroma castro	Band-rumped Storm-petrel	Aves	Franklin	PS:C	N		Reference

4 species are listed

Report of
Endangered, Threatened, and Special Concern
Plants, Animals, and Natural Communities
for Franklin County, Kentucky

Kentucky State Nature Preserves Commission
801 Schenkel Lane
Frankfort, KY 40601
(502) 573-2886 (phone)
(502) 573-2355 (fax)

www.naturepreserves.ky.gov

Kentucky State Nature Preserves Commission
Key for County List Report

Within a county, elements are arranged first by taxonomic complexity (plants first, natural communities last), and second by scientific name. A key to status, ranks, and count data fields follows.

STATUS

KSNPC: Kentucky State Nature Preserves Commission status:

N or blank = none E = endangered T = threatened S = special concern H = historic X = extirpated

USESA: U.S. Fish and Wildlife Service status:

blank = none C = candidate LT = listed as threatened LE = listed as endangered
SOMC = Species of Management Concern

RANKS

GRANK: Estimate of element abundance on a global scale:

G1 = Critically imperiled
G2 = Imperiled
G3 = Vulnerable
G4 = Apparently secure
G5 = Secure
GH = Historic, possibly extinct
GX = Presumed extinct
GU = Unrankable
G#? = Inexact rank (e.g. G2?)
G#Q = Questionable taxonomy
G#T# = Infraspecific taxa (Subspecies and variety abundances are coded with a 'T' suffix; the 'G' portion of the rank then refers to the entire species)
GNR = Unranked
GNA = Not applicable

SRANK: Estimate of element abundance in Kentucky:

S1 = Critically imperiled
S2 = Imperiled
S3 = Vulnerable
S4 = Apparently secure
S5 = Secure
SH = Historic, possibly extirpated
SX = Presumed extirpated
SU = Unrankable
S#? = Inexact rank (e.g. G2?)
S#Q = Questionable taxonomy
S#T# = Infraspecific taxa
SNR = Unranked
SNA = Not applicable

Migratory species may have separate ranks for different population segments (e.g. S1B, S2N, S4M):
S#B = Rank of breeding population
S#N = Rank of non-breeding population
S#M = Rank of transient population

COUNT DATA FIELDS

OF OCCURRENCES: Number of occurrences of a particular element from a county. Column headings are as follows:

E - currently reported from the county
H - reported from the county but not seen for at least 20 years
F - reported from county & cannot be relocated but for which further inventory is needed
X - known to have extirpated from the county
U - reported from a county but cannot be mapped to a quadrangle or exact location.

The data from which the county report is generated is continually updated. The date on which the report was created is in the report footer. Contact KSNPC for a current copy of the report.

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed, and new species of plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

KSNPC appreciates the submission of any endangered species data for Kentucky from field observations. For information on data reporting or other data services provided by KSNPC, please contact the Data Manager at:

Kentucky State Nature Preserves Commission
801 Schenkel Lane
Frankfort, KY 40601
(502) 573-2886 (phone)
(502) 573-2355 (fax)
email: naturepreserves@ky.gov
internet: www.naturepreserves.ky.gov

County	Taxonomic Group	Scientific name	Common name	Statuses	Ranks	# of Occurrences E	H	F	X	U
Franklin	Vascular Plants	*Arabis perstellata*	Braun's Rockcress	T / LE	G2 / S2	39	0	0	4	0
Franklin	Vascular Plants	*Elymus svensonii*	Svenson's Wildrye	T / SOMC	G3 / S2S3	16	0	0	3	0
Franklin	Vascular Plants	*Gentiana flavida*	Yellow Gentian	E /	G4 / S1S2	1	0	0	0	0
Franklin	Vascular Plants	*Lesquerella globosa*	Globe Bladderpod	E / C	G2 / S1	6	2	3	2	0
Franklin	Vascular Plants	*Lonicera reticulata*	Grape Honeysuckle	T /	G5 / S2	1	1	0	0	0
Franklin	Vascular Plants	*Oenothera triloba*	Stemless Evening-primrose	T /	G4 / S1S2	1	0	0	0	0
Franklin	Vascular Plants	*Onosmodium hispidissimum*	Hairy False Gromwell	E /	G4G5T4 / S1	0	1	0	0	0
Franklin	Vascular Plants	*Onosmodium occidentale*	Western False Gromwell	E /	G4? / S1	1	0	0	0	0
Franklin	Vascular Plants	*Perideridia americana*	Eastern Yampah	T /	G4 / S2	3	0	0	0	0
Franklin	Vascular Plants	*Philadelphus inodorus*	Mock Orange	T /	G4G5 / S1S2	1	0	0	0	0
Franklin	Vascular Plants	*Sagina fontinalis*	Water Stitchwort	E /	G3 / S1S2	2	0	0	0	0
Franklin	Vascular Plants	*Veratrum woodii*	Wood's Bunchflower	T /	G5 / S2	7	1	0	0	0
Franklin	Vascular Plants	*Viburnum molle*	Softleaf Arrowwood	S /	G5 / S3?	1	0	0	0	0
Franklin	Freshwater Mussels	*Alasmidonta marginata*	Elktoe	T / SOMC	G4 / S2	1	2	1	0	0
Franklin	Freshwater Mussels	*Epioblasma torulosa rangiana*	Northern Riffleshell	E / LE	G2T2 / S1	0	0	0	1	0
Franklin	Freshwater Mussels	*Simpsonaias ambigua*	Salamander Mussel	T / SOMC	G3 / S2S3	0	1	1	0	0
Franklin	Insects	*Dryobius sexnotatus*	Six-banded Longhorn Beetle	T / SOMC	GNR / S1	0	1	0	0	0
Franklin	Fishes	*Nocomis biguttatus*	Hornyhead Chub	S /	G5 / S2	1	4	0	0	0
Franklin	Amphibians	*Cryptobranchus alleganiensis alleganiensis*	Eastern Hellbender	E / SOMC	G3G4T3T4 / S1	1	0	0	0	0
Franklin	Amphibians	*Rana pipiens*	Northern Leopard Frog	S /	G5 / S3	1	0	1	0	0
Franklin	Breeding Birds	*Accipiter striatus*	Sharp-shinned Hawk	S /	G5 / S3B,S4N	1	0	0	0	0
Franklin	Breeding Birds	*Actitis macularius*	Spotted Sandpiper	E /	G5 / S1B	0	1	0	0	0
Franklin	Breeding Birds	*Ammodramus henslowii*	Henslow's Sparrow	S / SOMC	G4 / S3B	1	0	0	0	0
Franklin	Breeding Birds	*Gallinula chloropus*	Common Moorhen	T /	G5 / S1S2B	0	0	0	1	0

County	Taxonomic Group	Scientific name	Common name	Statuses	Ranks	# of Occurrences E	H	F	X	U
Franklin	Breeding Birds	*Haliaeetus leucocephalus*	Bald Eagle	T / Delisted	G5 / S2B,S2S3N	1	0	0	0	0
Franklin	Breeding Birds	*Lophodytes cucullatus*	Hooded Merganser	T /	G5 / S1S2B,S3S4N	1	0	0	0	0
Franklin	Breeding Birds	*Pooecetes gramineus*	Vesper Sparrow	E /	G5 / S1B	0	1	0	0	0
Franklin	Breeding Birds	*Thryomanes bewickii*	Bewick's Wren	S / SOMC	G5 / S3B	1	1	0	0	0
Franklin	Mammals	*Myotis grisescens*	Gray Myotis	T / LE	G3 / S2	1	0	0	0	0
Franklin	Communities	*Calcareous mesophytic forest*		N /	GNR / S5	1	0	0	0	0
Franklin County Total:						**90**	**16**	**6**	**11**	**0**

Appendix L – Site Visit Pictures (June 20, 2011)

Bridge #037B00023N

Figure 1: West Side of Structure

Figure 2: East Side of Structure

Figure 3: House to the Southeast

Figure 4: Field to the Southwest

Figure 5: Hill to the Northwest

Figure 6: House and Pedestrian Bridge to the Southeast

Figure 7: Church to the Southwest

Figure 8: Home and Garage to the East

Figure 9: Taxidermy to the Northeast

Figure 10: Brush to the Northwest

Figure 11: Hill to the Southwest

Figure 12: Overhead Utilities at Structure

Figure 13: Flags Fork Road to the Southwest

Figure 14: Home on Flags Fork Road

Figure 15: Home to the East

Figure 16: Southwest Wingwall

Appendix M – Utility Contacts for Franklin County

Utility Owners and Contact Persons

1. AT&T KY
29 Wills Branch
Prestonsburg, KY 41653

Jack Salyer, P.E.
JS2299@att.com
Office (606) 874-2715
Cell (606)424-9328

2. Frankfort Plant Board - **Electric**
P O Box 308
Frankfort, KY 40601

Vent Foster
(502) 352-4402
vfoster@fewpb.com

3. Frankfort Plant Board - **CATV**
P O Box 308
Frankfort, KY 40601

Carl Mitchell
(502) 352-4458
clmitchell@fewpb.com

4. Frankfort Plant Board - **Water**
P O Box 308
Frankfort, KY 40601
(502) 875-4501

David Billings
(502) 352-4468
dbillings@fewpb.com

5. Frankfort Municipal Sewer Board
1200 Kentucky Ave.
Frankfort, KY 40601

William Scalf
wscalf@frankfort.ky.gov
(502) 875-2448

6. Bluegrass Energy
P O Box 990 1201
Lexington Rd.
Nicholasville, KY 40356

Chris Brewer
chrisb@bgenergy.com
(859) 885-4191
(888) 224-7322

7. Peaks Mill Water District
2566 Perkins Rd.
Frankfort, KY 40601

Dale Gatewood
(502) 227-5740
(502) 695-2641 – Maint. Office

8. Farmdale Water District
100 Highwood Drive
Frankfort, KY 40601

David Robinson or
Burl Robinson
(502) 223-3562

10. Columbia Gas of Kentucky, Inc.
2001 Mercer Rd., PO Box 14241
Lexington, KY 40512
(859) 288-0249

David Lemons
dnlemons@nisource.com
cell – (859) 940-9210

11. LG&E KU
820 West Broadway
Louisville, KY 40202

Greg Geiser
work: (502) 627-3708
Greg.Geiser@lge-ku.com

LG&E Emergency Number (502) 589-1444
KU Emergency Number 1-800-331-7370

\

12. Elkhorn Water District
Telephone (502) 695-26412

Dale Gatewood

13. Atmos Energy
130 Stonecrest Road Suite105
Shelbyville, KY 40065
(502) 633-2831 ext. 104

Bernie Anderson
cell: 502-321-8073
bernie.anderson@atmosenergy.com

14. North Shelby Water
North Shelby Water District
P O Box 97
Bagdad, KY 40003

Pete Hedges
PeteHedges@bellsouth.net
(502) 747-8942

15. Kentucky Data Link (KDL now Windstream)
Project Manager
3701 Communications Way
Evansville, IN 47715

Rick Cunico
ph: (618) 648-2420
Cell:812-760-6602
Fax: (812) 456-4731
(812) 759-7844(Maintenance)
WCI.maintenance.south@windstream.com

16. East Kentucky Power Coop
P O Box 707
Winchester, KY 40391

OR

Jason Witt
jason.witt@ekpc.coop
Cell: (859) 749-9110
Office (859) 745-9596

Barry Warner
Barry.warner@ekpc.coop
(859)745-9304

17. Windstream Kentucky, Inc.
229 Lees Valley Road
Shepherdsville, KY 40165
OR
Barry Roberts

111 S. Main St.
Elizabethtown, KY 42071

Roger Redford
cell – (270) 723-7549
roger.redford@windstream.com
(502) 957-7127

(270) 723-7358

18. Insight Communications Company
4701 Commerce Crossings Dr.
Louisville, KY 40229

Deno Barbour
(502) 357-4376
barbour.d@insightcom.com

19. Sprint - Fiber Optics
11370 Enterprise Park Dr.
Sharonville, OH 45241

Joe Thomas
Joseph.J.Thomas@Sprint.com
Office (513) 612-4204
Cell (937) 209-9754

20. AT&T Legacy
5390 Overbend Trail
Suwanee, GA 30024

Scott Logeman
SL1213@att.com
(770) 335-8255

21. Kentucky American Water Company
2300 Richmond Rd
Lexington, KY 40502

Wes Felts
Jon.felts@amwater.com
(859) 537-0762 cell
(859) 268-6360 office

22. Shelby Energy Cooperative
P.O. Box 311, 620 Old Finchville Road
Shelbyville, KY 40065
(502) 633-4420

Jason Ginn
Jason@shelbyenergy.com
cell: 502-643-2778

Railroad Companies

1. **C.S.X. Transportation, Inc.**
Contacts:
David Hall, KY Liaison, (502) 815-1865
Milton Holder – crossings – cell (502) 817-2011
John Williams – crossings – cell (502) 376-8745, Office (502) 364-1133
Joe Malandruco (Florida) – signals (904) 245-1160

Appendix N - Cost Estimates and Recent Costs of Bridge Replacements in District 5

Preliminary Cost Estimates			
Detour Using Existing Routes			
	037B00023N	037B00024N	037B00025N
Design	$ 200,000.00	$ 125,000.00	$ 150,000.00
Right of Way	$ 30,000.00	$ 30,000.00	$ 30,000.00
Utilities	$ 30,000.00	$ 30,000.00	$ 30,000.00
Construction	$ 450,000.00	$ 300,000.00	$ 400,000.00
Total	$ 710,000.00	$ 485,000.00	$ 610,000.00
Diversion			
	037B00023N	037B00024N	037B00025N
Design	$ 225,000.00	$ 150,000.00	$ 175,000.00
Right of Way	$ 40,000.00	$ 40,000.00	$ 40,000.00
Utilities	$ 30,000.00	$ 30,000.00	$ 30,000.00
Construction	$ 650,000.00	$ 450,000.00	$ 600,000.00
Total	$ 945,000.00	$ 670,000.00	$ 845,000.00
Realignment			
	037B00023N	037B00024N	037B00025N
Design	$ 250,000.00	$ 200,000.00	
Right of Way	$ 50,000.00	$ 75,000.00	
Utilities	$ 30,000.00	$ 30,000.00	Not Feasbile
Construction	$ 700,000.00	$ 700,000.00	
Total	$ 1,030,000.00	$ 1,005,000.00	
Current Estimates Listed in the Highway Plan			
	037B00023N	037B00024N	037B00025N
Design	$ 170,000.00	$ 120,000.00	$ 140,000.00
Right of Way	$ 150,000.00	$ 100,000.00	$ 75,000.00
Utilities	$ 30,000.00	$ 60,000.00	$ 30,000.00
Construction	$ 390,000.00	$ 200,000.00	$ 300,000.00
Total	$ 740,000.00	$ 480,000.00	$ 545,000.00

Recent Bridge Replacements in District 5										
County	Item #	Old Bridge #	New Bridge #	Length (ft)	Width (ft)	Type	Design ($1000)	Right of Way ($1000)	Utilities ($1000)	Construction ($1000)
Bullitt	1030	B58	B98	32	27	Arch	184	41	78	585
Franklin	1034	B40	B103	98	20	Box Beam	202	37	90	490
	1037	B79	B102	39	20	Box Beam	129	53	-	371
	1046	B48	B104	59	22	Box Beam	231	10	31	331
Henry	1035	B20	B80	32	30	Arch	127	32	13	401
	1042	C01	C49	32	16	Box Beam	153	21	-	257
	1043	B02	B81	60	39	Box Beam	264	-	49	1282
Jefferson	1038	C55	C253	33	22	Single/Spread Box	176	22	2	479
	1044	C08	C256	31	24	Culvert	123	7	3	441
	1047	C48	C258	45	30	Steel Girder	149	34	3	455
	1048	C163	C261	42	27	Single/Spread Box	145	20	9	363
	1049	C88	C259	22	27	Culvert	131	11	28	286
Spencer	1022	B14	B48	65	33	Single/Spread Box	161	-	15	396