



2011

Pre-Design Scoping Study

Data
Needs
Analysis



KY 1554, Daviess County
Item No. 2-8632.00

Construct a new section of KY 1554
from Audubon Parkway to KY 56

Prepared by the KYTC
Division of Planning and
KYTC District 2

September 2011



Table of Contents

| | |
|---|-----------|
| I. INTRODUCTION | 1 |
| A. Study Purpose..... | 1 |
| B. Location | 1 |
| II. PROJECT PURPOSE AND NEED | 2 |
| A. Legislation..... | 2 |
| B. Project Status | 2 |
| C. System Linkage | 2 |
| D. Modal Interrelationships | 3 |
| E. Social Demands & Economic Development | 3 |
| F. Transportation Demand | 3 |
| G. Capacity | 4 |
| H. Safety | 4 |
| I. Roadway Deficiencies | 5 |
| a. Mainline Geometrics..... | 5 |
| b. Intersection | 7 |
| III. PRELIMINARY ENVIRONMENTAL OVERVIEW | 9 |
| A. Air Quality..... | 9 |
| B. Archaeology..... | 9 |
| C. Threatened and Endangered Species | 10 |
| D. Hazardous Materials | 10 |
| E. Historic Resources | 11 |
| F. Permitting..... | 11 |
| G. Noise | 11 |
| H. Socioeconomic..... | 12 |
| I. Section 4(f) Resources | 12 |
| J. Section 6(f) Resources | 12 |

| | | |
|-------------|--|-----------|
| IV. | PRELIMINARY PROJECT INFORMATION | 12 |
| A. | Utilities | 12 |
| B. | Agency Coordination | 13 |
| V. | PROJECT PURPOSE AND NEED STATEMENT | 13 |
| VI. | POSSIBLE ALTERNATIVES | 13 |
| A. | Alternate #1 - No Build | 13 |
| B. | Alternate #2 – New Corridor | 13 |
| C. | Alternate #3 – Widen KY 1554 | 14 |
| D. | Alternate #4 – Minor Improvements to the KY 1554/KY 56 Intersection | 14 |
| E. | Alternate #5 – Realignment of the KY 1554/KY 56 Intersection | 14 |
| VII. | SUMMARY | 15 |

LIST OF FIGURES

| | |
|--|----|
| Figure 1 Project Location Map | 1 |
| Figure 2 System Linkage Map | 3 |
| Figure 3 Historic Traffic Counts | 4 |
| Figure 4 Collision Locations | 5 |
| Figure 5 Photo of KY 54 Cross-Section | 7 |
| Figure 6 KY 1554/ KY 56 Intersection | 8 |
| Figure 7 View from KY 1554 at KY 56 Intersection | 8 |
| Figure 8 View of the KY 54 Intersection Split | 9 |
| Figure 9 Potentially Eligible for the National Register of Historic Places | 11 |
| Figure 10 Alternate #2 | 14 |
| Figure 11 Alternate #5 | 15 |

Table of Contents (Continued)

LIST OF TABLES

| | |
|--|----|
| Table 1 Existing Conditions and Data Summary | 6 |
| Table 2 USFWS Listing of Threatened and Endangered Species on Daviess County | 10 |

LIST OF APPENDICES

| | |
|------------|---|
| Appendix A | Exhibits |
| Appendix B | Collision Data |
| Appendix C | KYTC Common Geometric Practice Guidelines |
| Appendix D | FIRM Map(s) of the Study Area |
| Appendix E | Project Team Meeting Minutes |
| Appendix F | Photographs |

I. INTRODUCTION

This study is a Data Needs Analysis (DNA) of a roadway project for the KY 1554 corridor in Daviess County, Item Number 2-8632.00.

A. Study Purpose

The purpose of the DNA is to address the nine elements of Purpose and Need as defined by NEPA in order to develop a draft Purpose and Need Statement for the project. This study will also provide a more defined project scope, possible alternatives, planning-level cost estimates, an identification of potential environmental impacts, and other information that will be of assistance in future phases of the development of this project.

B. Location

This project is located on KY 1554 with project limits extending from KY 56 at Sorgho (MP 0.000) to Curdsville-Delaware Road near the Audubon Parkway Interchange (MP 0.648). See **Figure 1** and Exhibit 1 in **Appendix A**. A topographic map of the study area, Exhibit 2, can also be viewed in **Appendix A**.



Figure 1: Project Location Map

II. PROJECT PURPOSE AND NEED

A. Legislation

This project was entered into the Highway Plan in 2010. According to the plan, there is \$660,000 in state bond (SB2) funds allocated for the design phase. There are currently no other phases listed in the Highway Plan. The following is a description of the project as it is listed in the 2010 General Assembly's Enacted Highway Plan.

- **Item #2-8632.00, Daviess County**

| <u>Phase</u> | <u>Fund</u> | <u>Year</u> | <u>Estimate</u> |
|--------------|-------------|-------------|-----------------|
|--------------|-------------|-------------|-----------------|

| | | | |
|----|-----|------|-----------|
| D: | SB2 | 2012 | \$660,000 |
|----|-----|------|-----------|

CONSTRUCT A NEW SECTION OF KY-1554 FROM AUDUBON PARKWAY TO KY-56
(10CCN)

Milepoints: From: 0 To: 0.648

Purpose and Need: RELIABILITY/ NEW ROUTE(O)

B. Project Status

Design funds in the amount of \$660,000 for this project have been authorized. The Highway Plan Design year is listed as 2012.

This project is on the inactive Unscheduled Needs List (UNL). The current Owensboro-Daviess County Transportation Improvement Program (TIP), does not list a project in this area.

C. System Linkage

The segment of KY 1554 within the limits of this project connects KY 56 in the community of Sorgho to the Audubon Parkway (See **Figure 2** and Exhibit 3 in **Appendix A**). The Audubon Parkway connects Owensboro and Henderson.

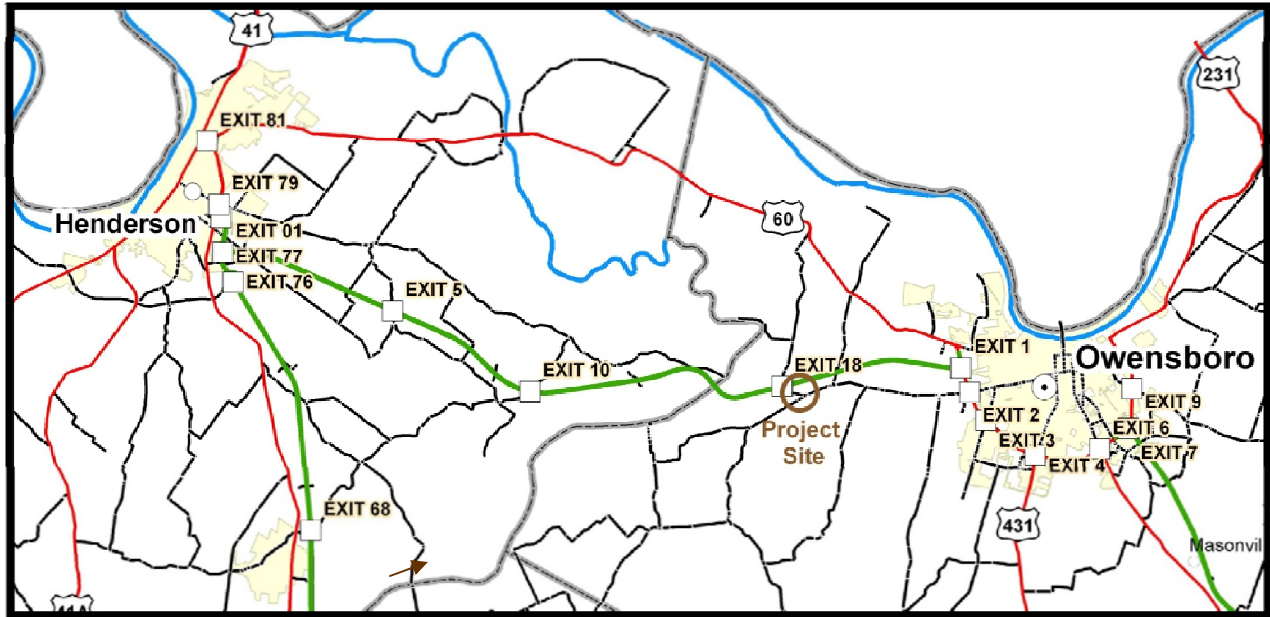


Figure 2: System Linkage Map

This segment of KY 1554 has the following roadway classifications:

- **Functional Classification** – Rural Minor Collector
- **State System** – Rural Secondary
- Not on the National Truck Network
- **Truck Weight Classification** – A
- Designated Bike Route – Ramblin’ River Tour
- Access by permit

D. Modal Interrelationships

There is no public transit on this route. This route is part of the Ramblin’ River Tour, a designated bike route.

E. Social Demands & Economic Development

There is no known future development that may affect this route. It is used primarily by residents in the Sorgho community and the surrounding area.

F. Transportation Demand

The last actual traffic count at the study area was an ADT of 1,200 in 2009. A forecast can be requested during Phase I Design if required. **Figure 3** displays historic traffic count data for KY 1554 from MP 0.000 to MP 0.648.

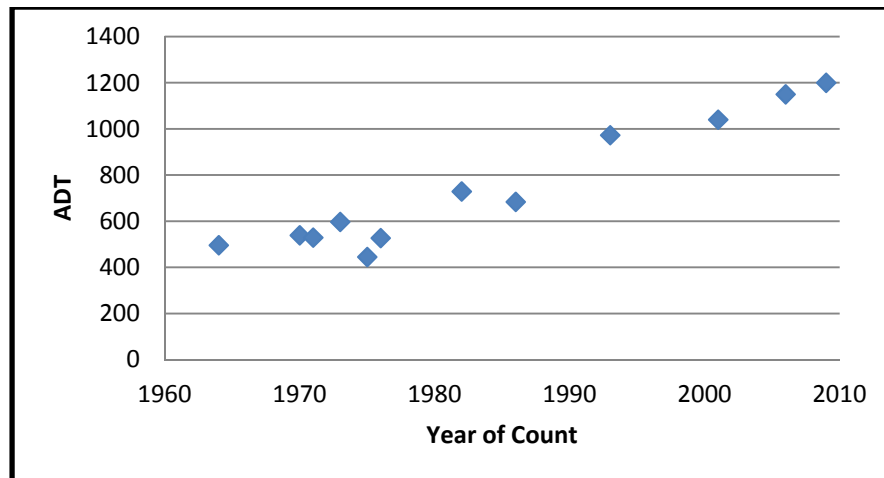


Figure 3: Historic Traffic Counts

G. Capacity

Given the recent traffic counts, the capacity of the existing roadway is not currently an issue. It also doesn't appear that capacity will be an issue in the near future.

H. Safety

A search for collisions in the most recent 3 year period only resulted in a couple of events; therefore, a longer analysis period was used. Collision data was obtained from the Kentucky State Police database for an **eleven** year period from January 1, 2000 to December 31, 2010 for the project limits of KY 1554 and the segments of Curdsville-Delaware Road and KY 56 at the intersections with KY 1554. On KY 1554, there were five reported collisions in the project area during this eleven year period. No night/day or weather pattern could be determined. There were 4 property damage only (PDO) collisions reported and one injury. No fatalities occurred on this segment of KY 1554 during the analysis period. There were no collisions reported on Curdsville-Delaware Road near the intersection with KY 1554. There were three collisions reported on KY 56 at the intersection with KY 1554. Two of these collisions were injury collisions and one was reported as property damage only (PDO). The location of the collisions and other details can be seen in **Figure 4**.

More detailed collision data can be viewed in **Appendix B**.

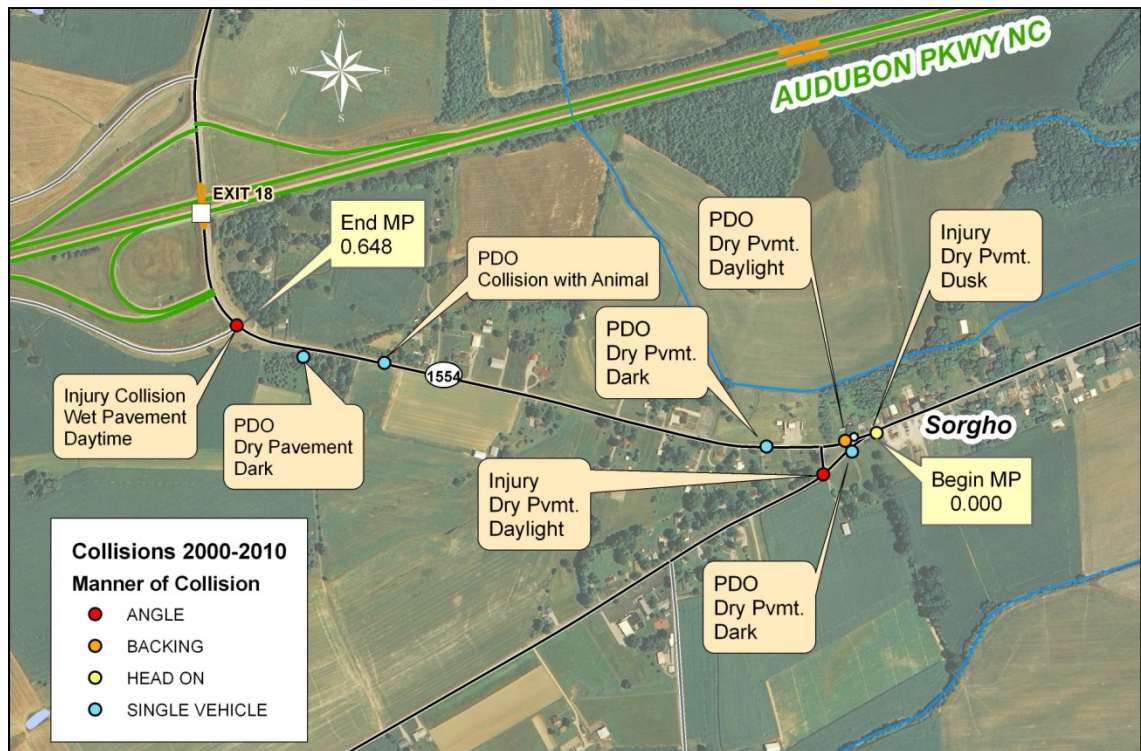


Figure 4: Collision Locations

I. Roadway Deficiencies

a. Mainline Geometrics

Most of the roadway currently has 9-ft lanes and 3-ft shoulders, with the exception of a small segment of KY 1554 at the end of the project near the Curdsville-Delaware Road which has 11-ft lanes and 6-ft shoulders. KYTC's Common Geometric Practices for Rural Collector Roads recommends 11-ft lanes and 5-ft shoulders for a 55 MPH Design Speed and a maximum grade of 7% for rolling terrain (see **Appendix C**). The only noticeable grade change occurs near the interchange with the Audubon Parkway. The curve at the end of the project near the interchange has a radius of approximately 490 feet which is less than the recommended minimum radius of 965 feet in the KYTC's Common Geometric Practices for Rural Arterials at a 55 MPH design speed. There are no bridges within the project limits. Existing roadway plans were not available for this segment of KY 1554. A summary of existing conditions can be viewed in *Table 1*. **Figure 5** displays a photo of the typical section.

Table 1: Existing Conditions and Data Summary

| | | | |
|------------------|------------------------------|-----------------|----------------------------------|
| County: | <u>Daviess</u> | | |
| Route Number(s): | <u>KY 1554</u> | | |
| Item No.: | <u>02-8632.00</u> | | |
| BMP: | <u>0.000</u> | EMP: | <u>0.648</u> |
| Project Length: | <u>0.648 miles</u> | | |
| Rdwy. Class.: | <u>Rural Minor Collector</u> | State Class.: | <u>Rural</u> <u>Secondary</u> |
| Truck Class: | <u>A</u> | | |
| ADT (current): | <u>1,220</u> | | |
| Terrain: | <u>Rolling</u> | Access Control: | <u>By Permit</u> |
| Posted Speed: | <u>35-55 MPH</u> | Median Type: | <u>Undivided</u> |
| Funding Type: | <u>D-SB2</u> | | |

Roadway Data:

| | <u>Existing Conditions</u> | <u>Design Criteria*</u> |
|--------------------|----------------------------|------------------------------|
| No. of Lanes | 2 | 2 |
| Lane Width | 9-11 ft | 11 ft |
| Shoulder Width | 3-6 ft | 5 ft |
| Minimum Radius | 490 ft | 965 ft |
| Maximum Grade | Not Available | 7% |
| | | <i>* 55 MPH Design Speed</i> |
| Adequacy Rating %: | Not Available | |



Figure 5: Photo of KY 1554 Cross-Section

b. Intersection

The intersection of KY 1554 and KY 56 at the end of the study area is at a skew angle. KY 1554 splits into two different directions at the intersection. See **Figure 6**. If a vehicle is traveling east on KY 1554, although there is a stop condition, it appears that KY 1554 continues on the same alignment at the intersection with KY 56 (see **Figures 6-7**).

There is also a leg of KY 1554 at the intersection that a driver must turn right onto before intersecting with KY 56. If a vehicle is traveling toward KY 56 on KY 1554 and needs to travel west on KY 56, or if it is traveling east on KY 56 and needs to turn onto KY 1554, this may be the only way the vehicle can make the turn. However, there is no signage to indicate to the driver the purpose of this segment of roadway. **Figure 8** is a photo showing the intersection split.



Figure 6: KY 1554/KY 56 Intersection



Figure 7: View from KY 1554 at KY 56 Intersection



Figure 8: View of the KY 1554 Intersection Split

c. Drainage

Flooding has not been reported as a problem in the area. The Flood Insurance Rate Maps (FIRMs) indicate that there is a flood zone over part of this section of KY 1554 with a Base Flood Elevation of around 386 feet. The FIRM Maps of the project site can be viewed in **Appendix D**.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

Currently this potential project is listed as being state funded, therefore not requiring an environmental document. No streams as defined by the U.S. Army Corps of Engineers were observed. If a permit is required then an environmental document will be necessary.

A. Air Quality

Daviess County is currently in attainment for all monitored air pollutants.

B. Archaeology

All additional right of way or permanent easement will require a Phase I archaeology survey.

C. Threatened and Endangered Species

The United States Fish and Wildlife Service (USFWS) have identified the known and potential presence of threatened and endangered species in Daviess County (Table 2). During the site visit on February 17, 2011 potential habitat was observed for the bat species. A biological assessment should be completed prior to construction to assess the potential impact to threatened and endangered species.

Table 2 – USFWS Listing of Threatened and Endangered Species in Daviess County

| Group | Species | Common Name | Legal Status | Known Potential |
|---------|--------------------------------|-----------------------|--------------|-----------------|
| Mammals | <i>Myotis sodalis</i> | Indiana bat | E | K |
| Mussels | <i>Plethobasus cooperianus</i> | orangefoot pimpleback | E | P |
| | <i>Plethobasus cyphus</i> | sheepnose | E | P |
| | <i>Pleurobema clava</i> | clubshell | E | P |
| | <i>Pleurobema plenum</i> | rough pigtoe | E | P |
| | <i>Potamilus capax</i> | fat pocketbook | E | P |
| | <i>Cyprogenia stegaria</i> | fanshell | E | P |
| | <i>Lampsilis abrupta</i> | pink mucket | E | P |

D. Hazardous Materials

During the February 17, 2011 site visit no sources of potential hazardous materials were observed.

E. Historic Resources

There were several homes noted within the viewshed of the project that were 50 years old or older. A thorough assessment of local residences would be required to gauge their eligibility for listing on the National Register of Historic Places. The alternative of a potential new route would bisect a farmstead and impact several outbuildings. See **Figure 9**. The farm would need to be ruled out as historic.



Figure 9: Potentially Eligible for the National Register of Historic Places

F. Permitting

Corps permitting is not expected to be an issue on this proposed new section of KY-1554.

G. Noise

The alternative of a potential new route could require additional noise analyses since the proposed new section would bring traffic closer to some residences/noise receptors.

H. Socioeconomic

Socioeconomic impacts should not be an issue on this project.

I. Section 4(f) Resources

If either the archaeology sites or residences located nearby are ruled eligible for the National Register of Historic Places they could also be afforded protection under Section 4(f). KYTC has options to mitigate and avoid impacts to Section 4 (f) resources including a Programmatic Agreement for mitigating historic properties, using 'de minimus' guidance for minor strip takings.

J. Section 6(f) Resources

No potential Section 6(f) resources were observed on this potential project.

IV. PRELIMINARY PROJECT INFORMATION

A. Utilities

A summary of the utility contacts provided by the KYTC District Office for the project area is below.

Kenergy
JR Robey 270-689-6100

Kentucky Utilities
Terry Moore 270-383-6000

Time Warner Cable
Brent Rafferty 270-222-0861

Atmos Energy
Jim Capps 270-685-8103

ATT
Larry Crabtree 270-685-7609

KDL Communications
Jesse Chapman 812-759-7955

West Daviess County Water
270-685-5594

A search of GIS files available indicates that there is a 3-inch waterline that is on the south side of KY 1554. During a site visit to the study area it was noted that the overhead utility lines ran mostly on the north side of KY 1554. The location of utilities will need to be further verified as the project survey is completed in Phase I Design.

B. Agency Coordination

The Project Team met on April 18, 2011 to review and discuss the project and the DNA. Existing conditions information was discussed. Some alternatives were also discussed. The minutes of this meeting can be reviewed in **Appendix E**.

V. PROJECT PURPOSE AND NEED STATEMENT

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

The geometrics of KY 54 currently do not meet recommended guidelines. The intersection of KY 1554 with KY 56 is at a skew angle which could affect sight distance. **The purpose of this project is to improve the safety and geometrics of KY 1554, with emphasis at the intersection of KY 56 and KY 1554.**

VI. POSSIBLE ALTERNATIVES

The following are alternatives analyzed and discussed during the development of this study.

A. Alternate #1 - No Build

The ADT is low and there have not been a significant number of collisions on this roadway. Capacity is not an issue, and currently there are no plans for future development along this corridor. A No Build alternative may be a consideration at this location.

B. Alternate #2 – New Corridor

This alternate would include a new corridor from near the Audubon Parkway to KY 56, as described in the Highway Plan. It would consist of approximately 0.55 miles of 11 ft lanes and 5 ft shoulders through farmland. There are homes noted within the view shed of the proposed corridor that may be eligible for listing on the National Register of Historic Places. The potential new route would also bisect a farmstead and impact several outbuildings. It is also possible that the farm could be determined to be historic.

The project team expressed concern that residents in this area would not be supportive of this alternative. Sketches of possible alternative locations can be viewed in *Figure 10*.

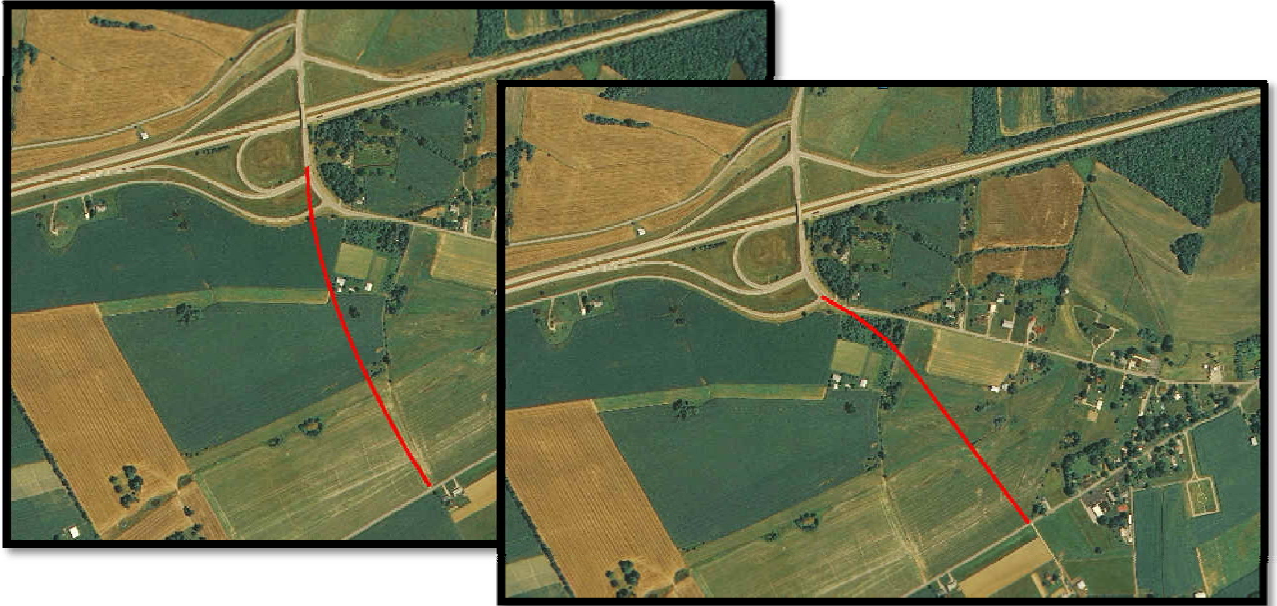


Figure 10: Alternate #2

C. Alternate #3 – Widen KY 1554

This alternative would widen the existing route (0.648 miles) from 9 ft to 11 ft and would add 5 ft shoulders. This would result in major right of way and utility impacts. There are multiple, closely spaced homes along this route that are potentially eligible for the National Register that would be impacted by this alternate.

D. Alternate #4 – Minor Improvements to the KY 1554/KY 56 Intersection

This alternate would add some signing at the fork in the intersection explaining KY 56 westbound traffic needs to take a right and will improve a pavement edge drop-off around the radii at this intersection. This alternative would provide minor, low-cost improvements to the intersection with little to no negative impacts.

E. Alternate #5 – Realignment of the KY 1554/KY 56 Intersection

Alternate #5 is the realignment of KY 1554 to come in at a T with KY 56. Although there haven't been many collisions along this route, the majority have occurred at the intersection. Drivers traveling from KY 1554 to eastbound KY 56 may have difficulty

seeing oncoming, eastbound traffic. However, this alternate would take KY 1554 close to the house on the corner; potentially disturbing the view shed of a home that may be eligible for the National Historic Register. A sketch of the possible location of the realignment can be seen in **Figure 11**.

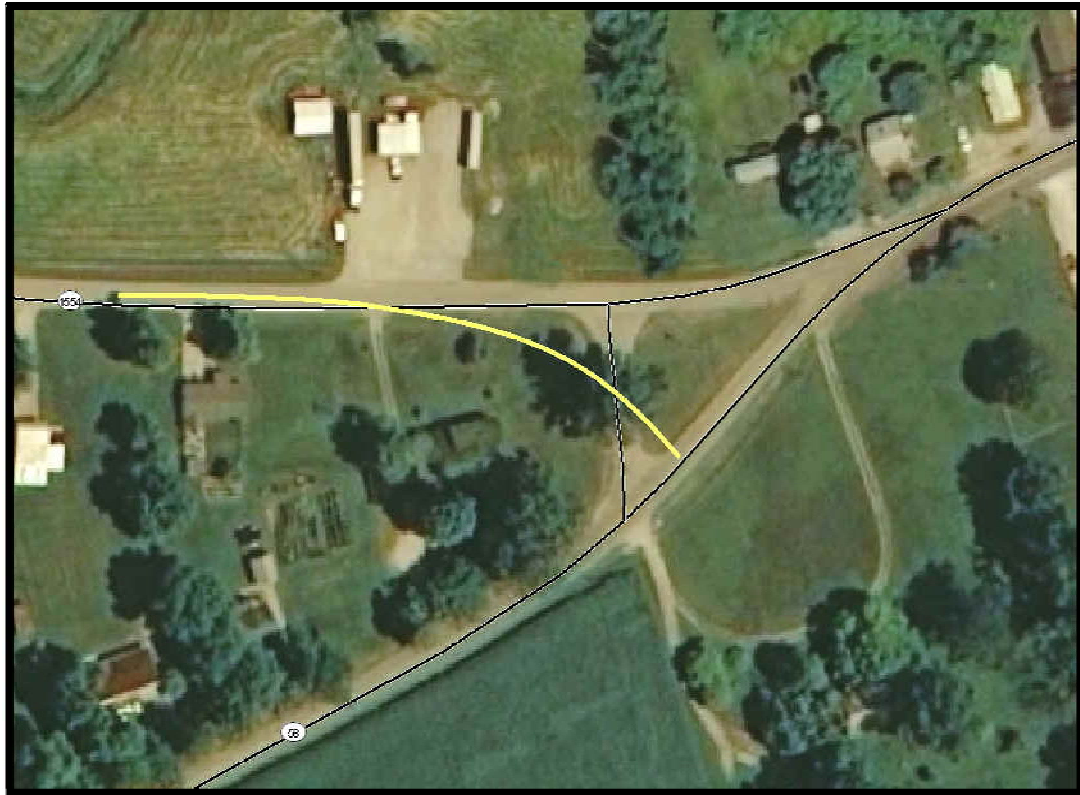


Figure 11: Alternate #5

VII. SUMMARY

This study is a Data Needs Analysis (DNA) of a project located on KY 54 in Daviess County, Item Number 2-8632.00, from KY 56 at Sorgho (MP 0.000) to Curdsville-Delaware Road near the Audubon Parkway Interchange (MP 0.648). Through analysis of the existing roadway geometrics, crash data, site visits, and discussion with the project team, needs were identified within the project limits. The following was identified as a project purpose and need statement:

- The KY 1554/KY 56 intersection geometry is undesirable for some traffic maneuvers. The purpose of this project is to improve the safety and geometrics of KY 1554, with emphasis at the intersection of KY 56 and KY 1554.

Considering this route is well under capacity, and has a lack of significant crash history, the project team did not recommend proceeding with a new corridor or widening the existing corridor, Alternatives #2 and #3.

The alternatives that the project team recommended to be considered in future phases of project development include Alternative #1 – No Build, Alternative #4 – Minor Intersection Improvements, and Alternative #5 – Intersection Realignment. Alternative #4 would be a very low-cost improvement which could be completed with maintenance funds. The following is the preliminary cost estimated for Alternate #5:

| <u>Phase</u> | <u>Estimate</u> |
|--------------|--------------------|
| Design | \$250,000 |
| Right of Way | \$250,000 |
| Utilities | \$100,000 |
| Construction | <u>\$680,000</u> |
| Total | \$1,280,000 |

This is a 2011 planning level cost estimate. The construction estimate was based on cost per unit. The current Highway Plan allocates \$660,000 in SB2 funds for design of this project. This amount has been authorized. If Alternative #5 moves forward, an additional \$600,000 to \$700,000 would need to be included in future Highway Plans to fund all phases of the project.

Appendix A - Exhibits

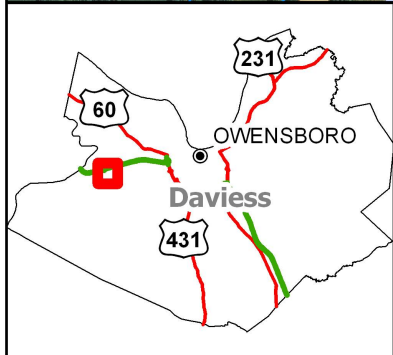
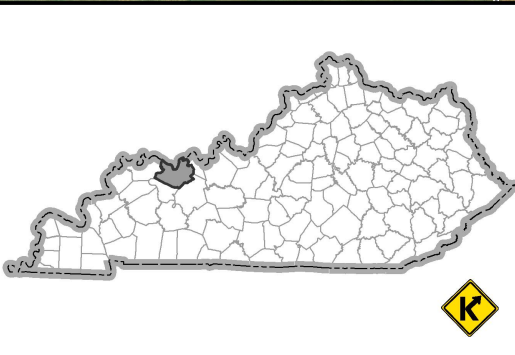


Exhibit 1: Location Map
Daviess County
Item # 2-8632.00
KY 1554

0.10.05 0 0.1 0.2Miles



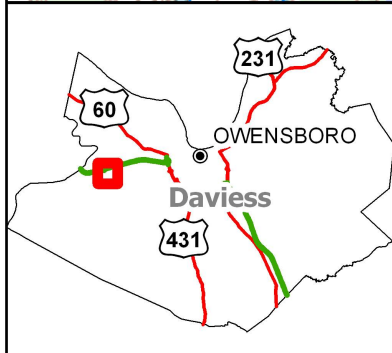
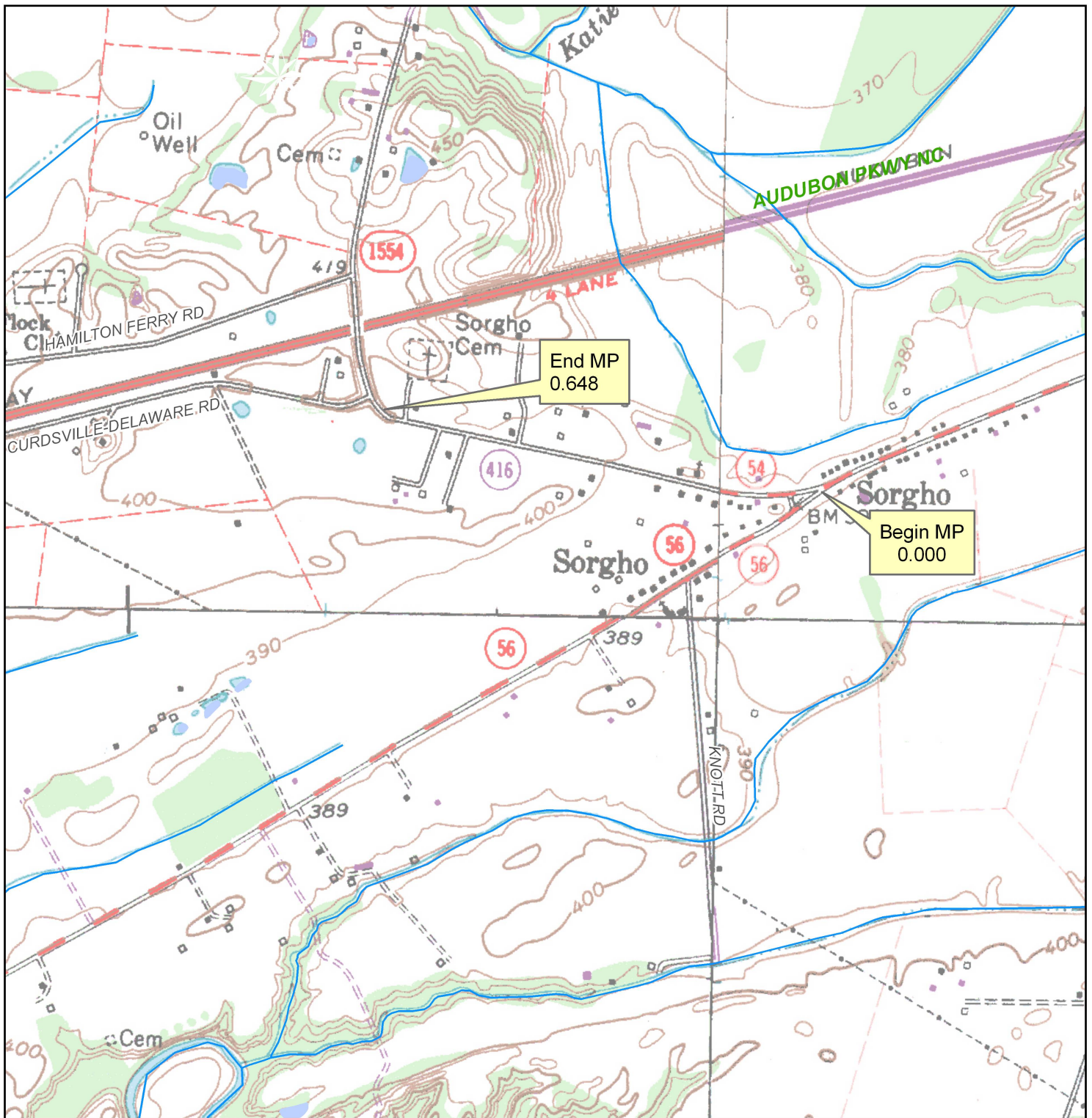
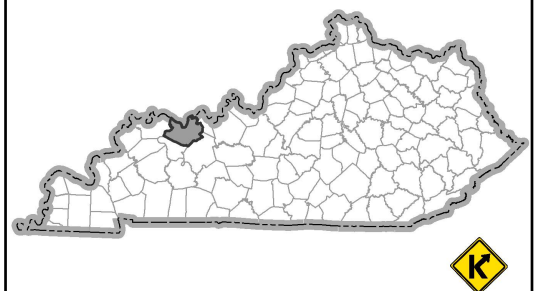


Exhibit 2: Topographic Map
Davies County
Item # 2-8632.00
KY 1554

0.10.05 0 0.1 0.2 Miles



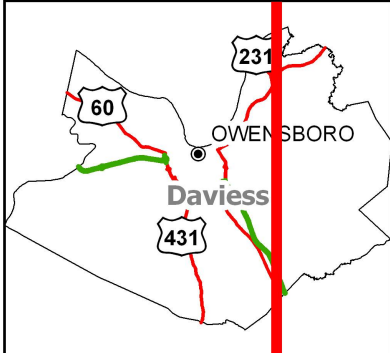
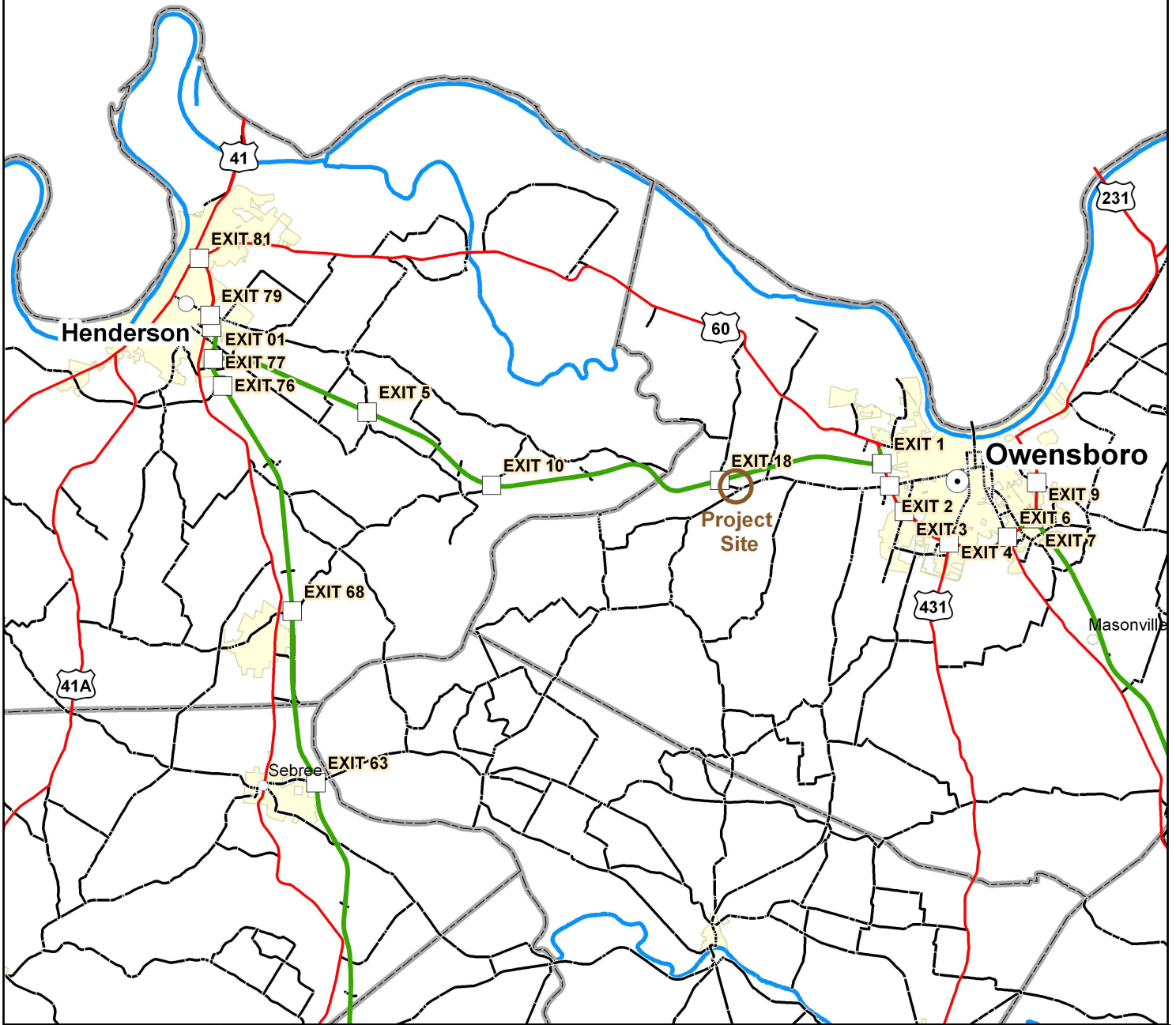
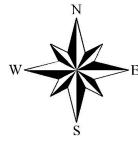
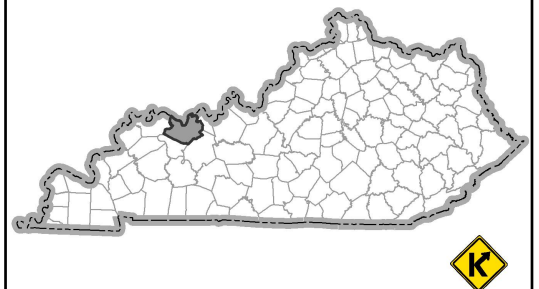


Exhibit 3: Systems Linkage Map
Davies County
Item # 2-8632.00
KY 1554

2 1 0 2 4Miles



Appendix B – Collision Data

| MASTER _FILE_N UMBER | INVESTIGATING_ AGENCY | COUNTY_N AME | ROADWAY_ NUMBER | LATITUDE | LONGITUDE | MILEPOINT DERIVED | COLLISION_ DATE | COLLISION_ TIME | UNITS_INV OLVED | MOTOR_VE HICLES_INV OLVED | KILLED | INJURED | WEATHER | ROADWAY_ CONDITION | DIRECTIONAL_ANALYSIS | MANNER_OF_COL LISION | ROADWAY_CHARA CTER | LIGHT_CONDITION |
|----------------------------|--------------------------|-----------------|--------------------|-------------|-----------|----------------------|--------------------|--------------------|--------------------|---------------------------------|--------|---------|---------|-----------------------|--|-------------------------|-----------------------|----------------------|
| 00623527 | DAVIESS COUNTY S030 | KY1554 | 37.754183 | -87.2582333 | 0.348 | 4/17/2004 | 2347 | | 1 | 1 | 0 | 0 | CLEAR | DRY | COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT C | SINGLE VEHICLE | CURVE & GRADE | DARK-HWY NOT LIGHTED |
| 00664019 | DAVIESS COUNTY S030 | KY1554 | 37.752883 | -87.2489667 | 0.005 | 10/23/2002 | 0630 | | 1 | 1 | 0 | 0 | CLEAR | DRY | COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT C | SINGLE VEHICLE | CURVE & LEVEL | DARK-HWY NOT LIGHTED |
| 70499446 | DAVIESS COUNTY S030 | KY1554 | 37.754667 | -87.2595703 | 0.646 | 11/13/2007 | 0733 | | 2 | 2 | 0 | 1 | RAINING | WET | ANGLE COLLISION - ONE VEHICLE TURNING LEFT | ANGLE | CURVE & GRADE | DAYLIGHT |
| 70560293 | DAVIESS COUNTY S030 | KY1554 | 37.754111 | -87.2566111 | 0.492 | 4/30/2008 | 0445 | | 1 | 1 | 0 | 0 | CLEAR | DRY | COLLISION WITH ANIMAL | SINGLE VEHICLE | CURVE & GRADE | DARK-HWY NOT LIGHTED |
| 70677654 | DAVIESS COUNTY S030 | KY1554 | 37.752995 | -87.247401 | 0.021 | 3/12/2009 | 0647 | | 2 | 2 | 0 | 0 | CLEAR | DRY | VEHICLE BACKING | BACKING | CURVE & GRADE | DAYLIGHT |
| 01034626 | DAVIESS COUNTY S030 | KY0056 | 37.75115 | -87.25085 | 10.1 | 5/28/2003 | 2042 | | 1 | 1 | 0 | 0 | RAINING | WET | COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT C | SINGLE VEHICLE | STRAIGHT & LEVEL | DARK-HWY NOT LIGHTED |
| 01647560 | DAVIESS COUNTY S030 | KY0056 | 37.757117 | -87.2167333 | 10 | 9/25/2004 | 1729 | | 1 | 1 | 0 | 1 | CLEAR | DRY | RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH) | SINGLE VEHICLE | CURVE & LEVEL | DAYLIGHT |
| 01657527 | DAVIESS COUNTY S030 | KY0056 | 37.754817 | -87.1992 | 10.016 | 4/16/2005 | 0120 | | 2 | 2 | 0 | 0 | CLEAR | DRY | COLLISION WITH NON-FIXED OBJECT | HEAD ON | STRAIGHT & LEVEL | DARK-HWY NOT LIGHTED |
| 70276272 | DAVIESS COUNTY S030 | KY0056 | 37.7469 | -87.2591167 | 9.9 | 12/9/2005 | 0801 | | 1 | 1 | 0 | 0 | CLEAR | ICE | COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT C | SINGLE VEHICLE | STRAIGHT & LEVEL | DAYLIGHT |
| 70325453 | KY STATE POLICE, F030 | KY0056 | 37.752 | -87.24915 | 9.981 | 5/26/2006 | 1025 | | 1 | 1 | 0 | 0 | CLEAR | DRY | COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT C | SINGLE VEHICLE | STRAIGHT & LEVEL | DAYLIGHT |
| 70335438 | DAVIESS COUNTY S030 | KY0056 | 37.751483 | -87.2497167 | 9.991 | 5/28/2006 | 2131 | | 1 | 1 | 0 | 2 | CLEAR | DRY | COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT C | SINGLE VEHICLE | STRAIGHT & LEVEL | DARK-HWY NOT LIGHTED |
| 70441769 | DAVIESS COUNTY S030 | KY0056 | 37.587417 | -87.0485 | 10.1 | 5/25/2007 | 0435 | | 1 | 1 | 0 | 0 | CLEAR | DRY | RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH) | SINGLE VEHICLE | STRAIGHT & LEVEL | DARK-HWY NOT LIGHTED |
| 70628743 | DAVIESS COUNTY S030 | KY0056 | 37.75204 | -87.2485521 | 9.907 | 11/6/2008 | 1136 | | 2 | 2 | 0 | 0 | CLEAR | DRY | SIDESWIPE COLLISION - OPPOSITE DIRECTION | SIDESWIPE-OPPOS | CURVE & LEVEL | DAYLIGHT |
| 70720978 | DAVIESS COUNTY S030 | KY0056 | 37.753125 | -87.2467713 | 10.034 | 6/26/2009 | 1947 | | 2 | 2 | 0 | 4 | CLEAR | DRY | OPPOSITE DIRECTION - BOTH VEHICLES GOING STRAIGHT AHEAD | HEAD ON | STRAIGHT & LEVEL | DUSK |
| 70736726 | DAVIESS COUNTY S030 | KY0056 | 37.752458 | -87.2478235 | 9.961 | 8/10/2009 | 1545 | | 2 | 2 | 0 | 1 | CLEAR | DRY | 1 VEHICLE ENTERING/LEAVING ENTRANCE | ANGLE | CURVE & LEVEL | DAYLIGHT |
| 70808992 | KY STATE POLICE, F030 | KY0056 | 37.753325 | -87.2463301 | 10.062 | 1/26/2010 | 0700 | | 2 | 2 | 0 | 0 | SNOWING | ICE | REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING | REAR END | STRAIGHT & LEVEL | DAYLIGHT |
| 70824552 | DAVIESS COUNTY S030 | KY0056 | 37.752826 | -87.2472584 | 10.001 | 3/5/2010 | 1911 | | 1 | 1 | 0 | 0 | CLEAR | DRY | RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH) | SINGLE VEHICLE | CURVE & LEVEL | DARK-HWY LIGHTED/ON |

Appendix C – KYTC Common Geometric Practice Guidelines

COMMON GEOMETRIC PRACTICES RURAL COLLECTOR ROADS

| | | | TRAFFIC VOLUME | | | | | | | | |
|---|--------------------------|-----|------------------------|------|--------------------|----------|---------------------|------|---------------------|------|--|
| | TERRIAN | | UNDER 400 A.D.T. | | 400-2000 A.D.T. | | | | OVER 2000 A.D.T. | | |
| MINIMUM DESIGN SPEED (M.P.H.) ⑦ | LEVEL | | 40 | | 50 | | | | 60 | | |
| | ROLLING | | 30 | | 40 | | | | 50 | | |
| | MOUNTAIN | | 20 | | 30 | | | | 40 | | |
| PAVEMENT WIDTH (FEET) ① ⑧ | DESIGN SPEED | | UNDER 400 A.D.T. | | 400-1500 A.D.T. | | 1500-2000 A.D.T. | | OVER 2000 A.D.T. | | |
| | 20 MPH | | 20 ⑨ | | 20 | | 22 | | 24 | | |
| | 25 MPH | | | | | | | | | | |
| | 30 MPH | | | | | | | | | | |
| | 35 MPH | | | | | | | | | | |
| | 40 MPH | | 20 | | 22 | | 24 | | | | |
| | 45 MPH | | | | | | | | | | |
| | 50 MPH | | | | | | | | | | |
| | 55 MPH | | 22 | | 22 | | 24 | | | | |
| 60 MPH | | | | | | | | | | | |
| MINIMUM GRADED SHOULDER WIDTH (FEET) ⑥ | ALL SPEEDS | | 2 | | 5 ⑩ | | 6 | | 8 | | |
| MIN. CLEAR ROADWAY WIDTH OF NEW AND RECONSTRUCTED BRIDGES | ALL SPEEDS | | APPROACH ROADWAY WIDTH | | | | | | | | |
| | DESIGN SPEED | | eMAX. 4% | | | eMAX. 6% | | | eMAX. 8% | | |
| MINIMUM RADIUS (FEET) | 20 MPH | | 125 | | | 115 | | | 105 | | |
| | 25 MPH | | 205 | | | 185 | | | 170 | | |
| | 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 | | |
| NORMAL PAVEMENT CROSS SLOPES ④ | RATE OF CROSS SLOPE = 2% | | | | | | | | | | |
| NORMAL SHOULDER CROSS SLOPES | EARTH = 8% PAVED = 4% | | | | | | | | | | |
| MAXIMUM GRADE (PERCENT) ⑤ | M.P.H. | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | |
| | LEVEL | 7 | | | | | | | 6 | 5 | |
| | ROLLING | 10 | | 9 | | 8 | | | 7 | 6 | |
| | MOUNTAIN | 12 | 11 | 10 | | | | | 9 | 8 | |
| MINIMUM STOPPING SIGHT DISTANCE ② | (FEET) | 115 | 155 | 200 | 250 | 305 | 360 | 425 | 495 | 570 | |
| MINIMUM PASSING SIGHT DISTANCE ③ | (FEET) | 710 | 900 | 1090 | 1280 | 1470 | 1625 | 1835 | 1985 | 2135 | |

- ① WIDEN PAVEMENT ON CURVES IN ACCORDANCE WITH APPROVED DESIGN STANDARDS. REFER TO CURRENT STANDARD DRAWING FOR ADDITIONAL DETAIL.
- ② MINIMUM STOPPING SIGHT DISTANCE BASED ON HEIGHT OF EYE OF 3.5 FT AND HEIGHT OF OBJECT OF 2.0 FT. CONSIDER BOTH HORIZONTAL AND VERTICAL ALIGNMENTS.
- ③ MINIMUM PASSING SIGHT DISTANCES BASED ON HEIGHT OF EYE 3.5 FT AND HEIGHT OF OBJECT OF 3.5 FT. CONSIDER BOTH HORIZONTAL AND VERTICAL ALIGNMENTS.
- ④ NORMAL PAVEMENT CROSS SLOPES ON BRIDGES IS 2%.
- ⑤ MAY USE ONE PERCENT STEEPER MAXIMUM GRADES ON SHORT LENGTHS (LESS THAN 500 FT) AND ON ONE-WAY DOWN GRADES.
- ⑥ WIDEN 3 FT FOR GUARDRAIL.
- ⑦ DOCUMENT AND RETAIN JUSTIFICATION FOR A DESIGN SPEED LESS THAN THE REGULATORY OR POSTED SPEED IN THE PROJECT FILES.
- ⑧ ON ROADWAYS TO BE RECONSTRUCTED, A 22 FT TRAVELLED WAY MAY BE RETAINED WHERE THE SAFETY RECORDS AND ALIGNMENT ARE SATISFACTORY.
- ⑨ 18 FT MINIMUM WIDTH MAY BE USED FOR ROADWAYS WITH DESIGN VOLUMES UNDER 250 A.D.T.
- ⑩ SHOULDER WIDTH MAY BE REDUCED FOR DESIGN SPEEDS GREATER THAN 30 MPH PROVIDED A MINIMUM ROADWAY WIDTH OF 30 FT IS MAINTAINED.

Appendix D – FIRM Map(s) of the Study Area

LEGEND



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

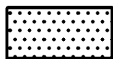
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, 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 Elevation 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 event 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 of greater flood event.
- ZONE A99** Areas to be protected from 1% annual chance flood event 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.

Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'



NFIP

PANEL 0239D

FIRM

**FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS**

PANEL 239 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|----------------------|--------|-------|--------|
| BELL COUNTY | 210010 | 0239 | D |
| MIDDLESBORO, CITY OF | 215190 | 0239 | D |

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
21013C0239D**

**EFFECTIVE DATE
SEPTEMBER 29, 2006**

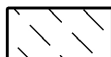
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

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



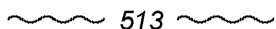
Zone D boundary



CBRS and OPA boundary



Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

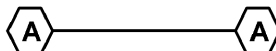


Base Flood Elevation line and value; elevation in feet*

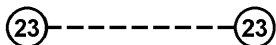
(EL 987)

Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)



Cross section line



Transect line

97°07'30", 32°22'30"

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

4275⁰⁰⁰ M
6000000 FT

1000-meter Universal Transverse Mercator grid ticks, zone 17
5000-foot grid values: Kentucky State Plane coordinate system,
South Zone (FIPSZONE = 1602), Lambert projection

DX5510_X

Bench mark (see explanation in Notes to Users section of this FIRM panel)

● M1.5

River Mile

MAP REPOSITORY

Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 29, 2006

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

Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'



NFIP

PANEL 0239D

FIRM

FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS

PANEL 239 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|----------------------|--------|-------|--------|
| BELL COUNTY | 210010 | 0239 | D |
| MIDDLESBORO, CITY OF | 215190 | 0239 | D |

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
21013C0239D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 1000'

0 0 1000 2000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0095D

FIRM

FLOOD INSURANCE RATE MAP

DAVIESS COUNTY,
KENTUCKY
AND INCORPORATED AREAS

PANEL 95 OF 435

(SEE LOCATOR DIAGRAM OR MAP INDEX FOR
FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|----------------|--------|-------|--------|
| DAVIESS COUNTY | 210062 | 0095 | D |

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.

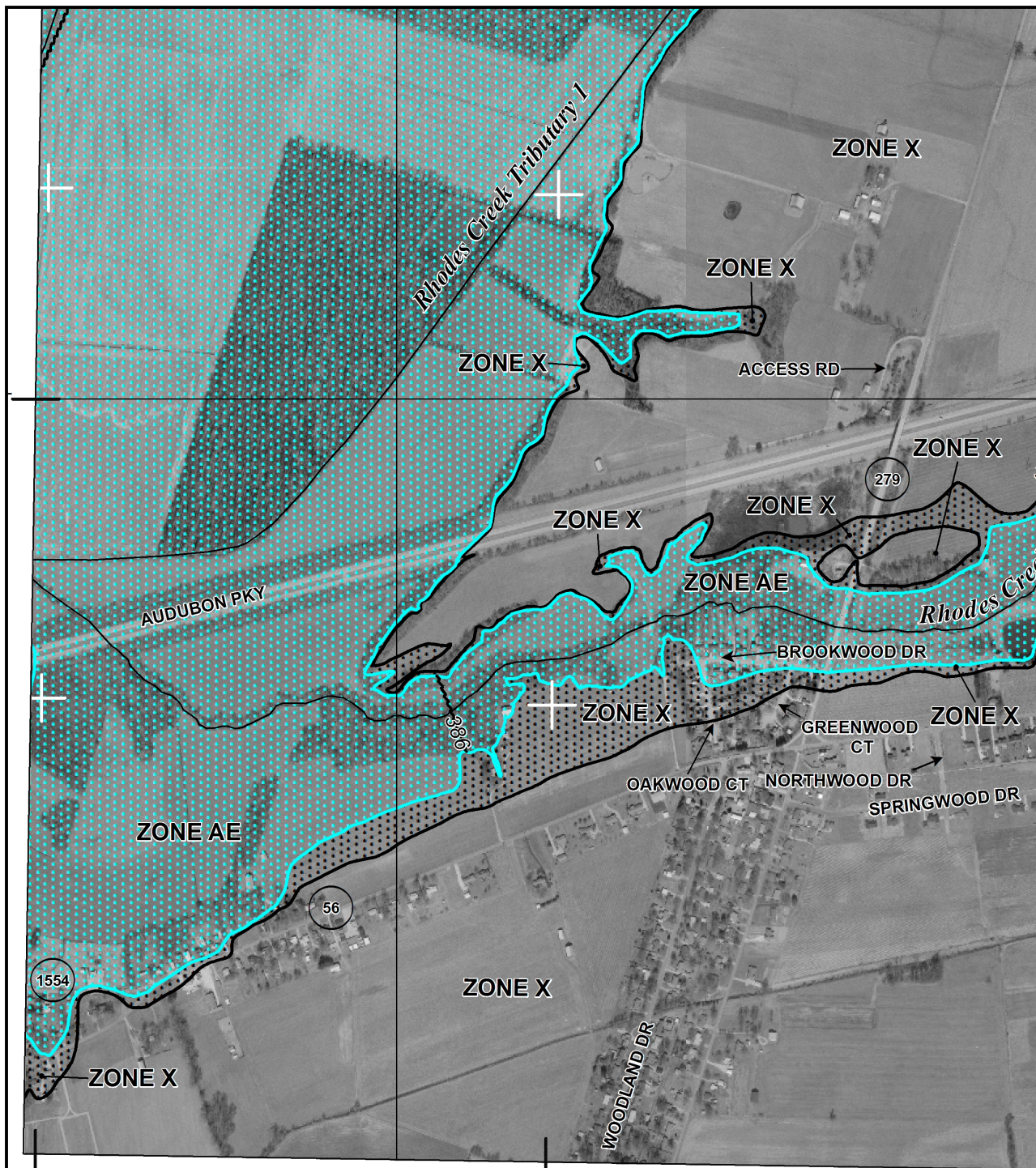
MAP REVISED
APRIL 16, 2009

MAP NUMBER
21059C0095D



State of Kentucky
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 1000'

0 0 1000 2000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0115D

FIRM FLOOD INSURANCE RATE MAP

DAVIESS COUNTY,
KENTUCKY
AND INCORPORATED AREAS

PANEL 115 OF 435
(SEE LOCATOR DIAGRAM OR MAP INDEX FOR
FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|--------------------|--------|-------|--------|
| DAVISS COUNTY | 210062 | 0115 | D |
| OWENSBORO, CITY OF | 210063 | 0115 | D |

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 REVISED
APRIL 16, 2009

MAP NUMBER
21059C0115D



State of Kentucky
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Appendix E – Project Team Meeting Minutes

MEETING MINUTES

Project: Pre-Design Scoping Study for 2-8300, 2-8631, 2-8632

Purpose: Project Team Meeting

Place: Kentucky Transportation Cabinet (KYTC), District 2 Conference Room, Madisonville, Ky.

Meeting Date: April 18, 2011

In Attendance:

| | |
|------------------|-----------------------------|
| Nick Hall | KYTC-D2 Planning |
| Kevin McClearn | KYTC-D2 C.D.E. |
| Everett T. Green | KYTC-D2 Project Development |
| John Rudd | KYTC-D2 Design |
| Steve Ross | KYTC-CO Planning |
| Jill Asher | KYTC-CO Planning |

INTRODUCTIONS: Jill opened the Project Team Meeting by discussing the purpose of the DNA Studies. Similar studies to these, formerly known as First Look Studies and Pre-Design Scoping Studies, have been done in the past by some of the districts. It is anticipated that a study of this type will be done for every project preceding the design phase if there is no planning study associated with the project. The nine elements of Purpose and Need as defined by NEPA will be addressed and used to create a purpose and need statement for each project. Pre-Design Scoping Studies will also provide more defined project scopes, cost estimates for possible alternatives, potential environmental impacts, and other information that will be of assistance in the Phase I Design process. This study was done for Item Numbers 2-8300, 2-8631, 2-8632 in Daviess County. A handout of the meeting presentation was given to all meeting attendees. A copy of the information presented is attached to the meeting notes. A sign-in sheet was also passed around.

During the meeting, each project was discussed separately. The meeting notes will also present each project separately. Please refer to the attached presentations for each project for information discussed. The following is information from discussions during the meeting that are not documented on the attached presentations.

Item #2-8300, KY 54 in Daviess County

- Kevin McClearn gave a brief overview of some of the work planned at the ramps of the US 60/KY 54 intersection and the US 60 Extension that is currently under construction. These projects have separate funding sources than Item #2-8300. The SE quadrant of the US 60/KY 54 intersection has developed rapidly and 67 acres are currently being developed in the SW quadrant
- There is congestion in the area of the five-lane section of KY 54 near the bypass especially in the area of the Highland Elementary School. When school is in session, the back-up from the school reduces the roadway to one through lane. In

the past the ramp backed up to US 60(formerly US 60 Bypass) during school time. A loop was put in place to give added green time to the signal in the afternoons to eliminate back-ups onto US 60.

- Of the three projects discussed, this one is most likely to be designed first.
- There was a drop in ADT for what is referenced as Section 2 in the attached presentation. Nick stated that this may be due to a back way to Wal-Mart opening up for local residents.

Item #2-8631, KY 144 in Daviess County

- In 2005, coal was being hauled regularly on this road. There was a safety concern, especially for school busses, sharing this road with large coal haul trucks.
- In 2005 The Daviess County Fiscal Court asked KYTC if they could provide construction funds if the county used its coal severance money for design, property acquisition, and utility relocation to straighten out eight curves near Pleasant Valley Road. Since then, the amount and frequency of coal hauled on the road has decreased. It is unknown if the County is still willing to provide money for the project.
- Item #2-8631 is additional funds for Item #2-194.
- The preferred alternative for this project is the revision of the curves that have been identified. There is not enough money allocated to improve the length of the corridor.

Item #2-8631, KY 1554 in Daviess County

- This project was probably placed in the Highway Plan by a former Legislator from Sorgho.
- Although the project calls for a new route, the crash and traffic data do not support the need. The probable location of the new corridor may result in property owner disputes.
- Widening the existing corridor would result in major impacts to residents in the study area.
- This project has a PIF, but Nick believes it is on the inactive list.
- Improvements to the intersection of KY 1554/KY 56 may be a more logical approach.

NEXT STEPS: The district agreed to provide planning level, phased cost estimates for the alternates they would like to see move forward.

The meeting was followed by a visit to the site by Central Office Planning staff.

END OF MINUTES

KY 1554
Daviess County
Item #2-8632.00



Data Needs Analysis
April 18, 2011

Project Limits



9 Elements of a Purpose and Need Statement

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

Legislation

2010 General Assembly's Enacted Roadway Plan

- **Item #2-8632.00, Daviess County**

| <u>Phase</u> | <u>Fund</u> | <u>Year</u> | <u>Estimate</u> |
|--------------|-------------|-------------|-----------------|
| D | SB2 | 2012 | \$660,000 |

CONSTRUCT A NEW SECTION OF KY-1554 FROM AUDUBON PARKWAY TO KY-56 (10CCN)

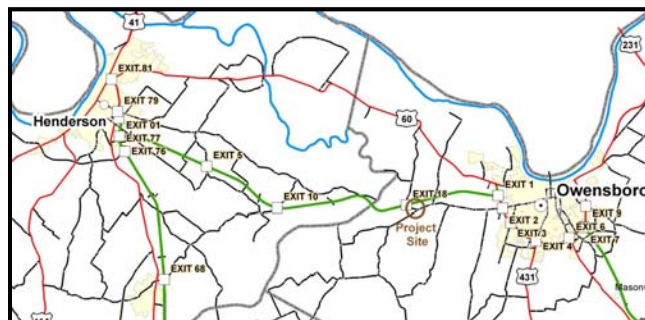
Milepoints: From: 0 To: 0.648

Purpose and Need: RELIABILITY/ NEW ROUTE(O)

Project Status

- Design funds authorized on March 30, 2011.
- This project is on the inactive UNL list.

System Linkage



- KY 1554 connects KY 56 in the community of Sorgho to the Audubon Parkway. The parkway connects Owensboro and Henderson.

KY 1554 Road Classifications

- Functional Classification – Rural Minor Collector
- State System – Rural Secondary
- Truck Weight Classification – A
- Access - By Permit

Modal Interrelationships

- Designated Bike Route – Ramblin' River Tour
- There is no public transit on this route.

Social Demands & Economic Development

Social Demands

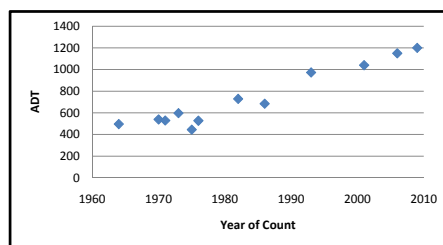
- ?

Economic Development

- There is no known future development that may affect this route.

Transportation Demand

- The **current ADT is approximately 1,200.**

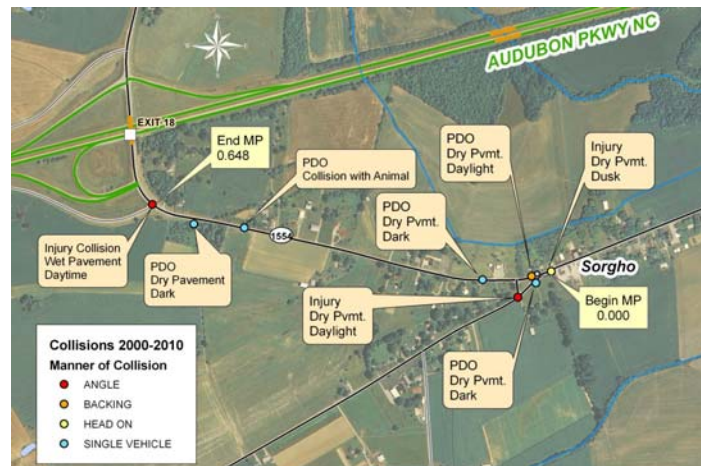


Capacity

- The current capacity of the existing roadway should be acceptable for the near future. VSF was not available.

Safety

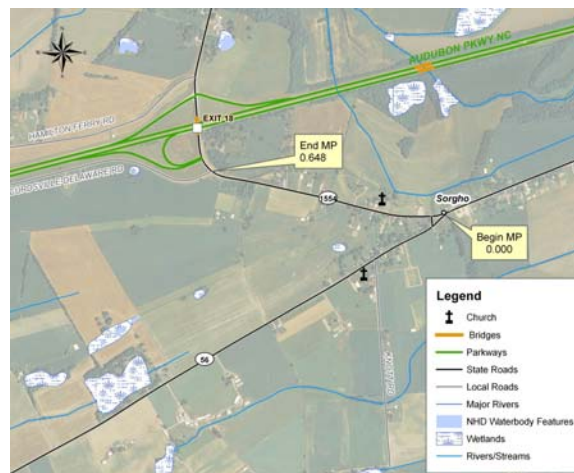
Collision Locations (over 10 Yrs - January 1, 2000 to December 31, 2010)



Roadway Deficiencies

- Existing Roadway Data
 - 9-11 Ft. Lanes
 - 3-6 Ft. Shoulder
 - Max Grade = ??
 - Min Radius = 490 Ft.
 - 35-55 MPH posted speed limit
 - Adequacy Ratings not Available
- Geometric Practices for Rural Collectors
 - 11 Ft. Lanes
 - 5 Ft. Shoulders
 - Max Grade = 7%
 - Min Radius = 1065 Ft.

Environmental Considerations



Environmental Considerations (cont.)

- Environmental Overview noted:
 - Phase 1 archaeology survey will be required with additional r/w or permanent easement
 - Several Threatened or Endangered Species in the area
 - Several potentially historic homes in the viewshed of the project area

Utilities



Water

South East Daviess County Water

Electric

Kenergy
Kentucky Utilities

Gas

Atmos Energy

Telephone

ATT

Television

Time Warner Cable
KDL Communication



Observations

(Video & Pictures)

Audubon Interchange and Curdsville-Delaware Road Intersection



Audubon Interchange and Curdsville-Delaware Road Intersection



KY 1554 Cross Section Change



KY 1554



KY 1554/KY 56 Intersection



KY 1554/KY 56 Intersection



Possible Corridor?



Possible Alternatives

- No Build
- Construct new corridor to the west of the existing corridor
- Widen existing route
- Improve intersection at KY 56

New Corridor



Other possible Corridors?

Widen KY 1554



Improvements to KY 1554/KY 56 Intersection



Realign Intersection



Better Signing

Potential Conflicts

- Utilities
- R/W issues

Purpose & Need Statement(s)

- Needs
 - Roadway and Shoulder do not meet recommended widths
 - The intersection at KY 56 is awkward and confusing for a driver who is unfamiliar with the area
- Purpose
 - The purpose of this project is to improve the safety and geometrics at the intersection of KY 56 and KY 1554.

Appendix E – Photographs



KY 556/ KY 1554 Intersection



KY 1554



Location of Possible New Route



KY 1554



Intersection with House on Corner



KY 1554



KY 1554 Approaching Audobon Pkwy.