



KENTUCKY TRANSPORTATION CABINET
 Department of Highways
DIVISION OF HIGHWAY DESIGN

TC 61-9
 Rev.07/2013
 Page 1 of 2

DESIGN EXECUTIVE SUMMARY

COUNTY Simpson / Allen	ITEM # 3-0319.00	FEDERAL PROJECT #	eMARS PROGRAM # 8687801D
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STATE PROJECT NUMBER(S)
 107 0100 016-020
 002 0100 000-001

PROJECT DESCRIPTION
 Improvements to KY 100: Reconstruct KY 100 from KY 622 to Lee Keen Road east of Sulphur Fork Creek.

ROADWAY CLASSIFICATION
 Local Collector Arterial Interstate Rural Urban

ADT (current) 2,200 (2014)	ADT 2,800 (2037)	DHV 260 (2014), 340 (2037)
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POSTED SPEED LIMIT
 55 (*rural*) 35 (*urban*) Other (*Specify.*)

DESIGN SPEED (selected by the project team)
 55 MPH

Concurrence in noted typical exceptions to be obtained from the Director of Highway Design

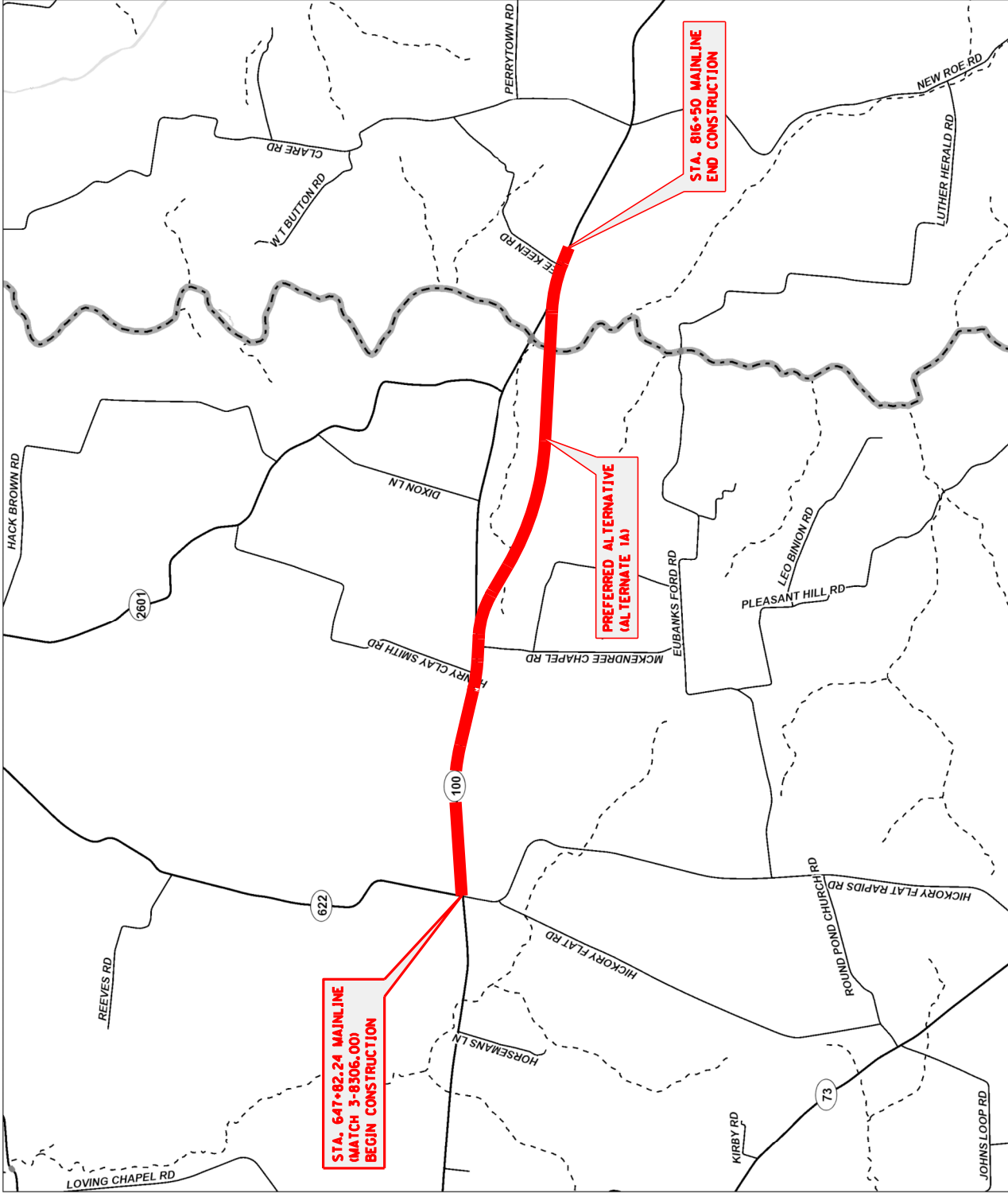
DESIGN CRITERIA	EXISTING	TYPICAL	PROJECT TEAM RECOMMENDATION
Number of lanes	2	2	2
Pavement width	20'	24'	24'
Shoulder width, slope	Varies	8' Graded, 4% (Paved) 8% (Earth)	8'-9' Graded, 4% (Paved)/8% (Earth) 6'-8' Usable, 4% (Paved)/8% (Earth)
Bridge width	22'	36' (24' Driving Lanes + 2-6' Usable Sh.)	36' (24' Driving Lanes + 2-6' Usable Sh.)
Minimum radius ($e_{max}=8\%$)	1000'	965'	2,470' (e=5.00%)
Maximum grade	10%	7%	7%
Minimum sight dist.	240'	495'	588'
Border area (<i>urban</i>)			
Other			

DESIGN CRITERIA NOTES
 The typical section for this project provides a 5:1 fill slope and ditch foreslope, therefore, as per section 4.4.1 of 2011 A Policy on Geometric Design of Highways and Streets this results in an 8' graded and usable shoulder. The only exception to this will be at the proposed bridge where guardrail will be installed and a 6' usable shoulder will be provided from approximately Sta. 787+50 to Sta. 794+50. At this location where guardrail is present the roadway will have a 6' usable shoulder with a 9' graded shoulder.



DESIGN EXECUTIVE SUMMARY

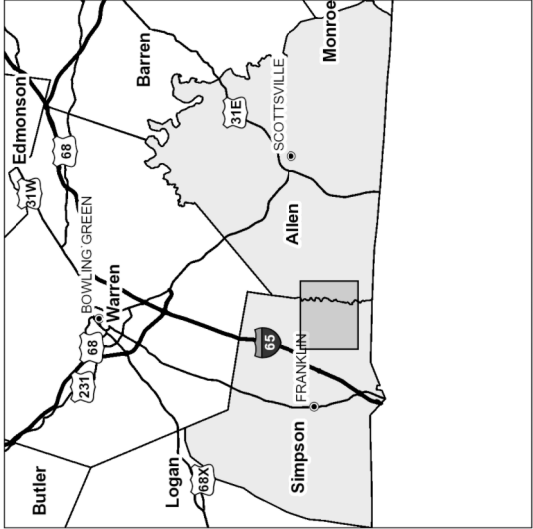
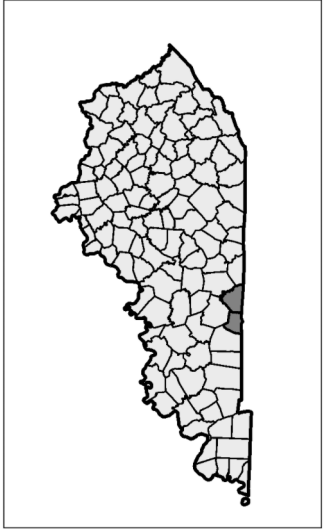
ACCESS CONTROL TYPE Permit	
ENVIRONMENTAL ACTION Environmental Overview	COMPLETION DATE <i>(scheduled or actual)</i> N/A
EXISTING PAVEMENT DEPTHS Unknown	
ATTACHMENTS	<ol style="list-style-type: none"> 1. Map showing project location 2. Typical sections, including bridges <i>(on 8.5 X 11)</i> 3. Cost comparison table of alternatives vs. Six-year
DISCUSSIONS	<ol style="list-style-type: none"> 1. Alternatives considered including preferred and no build 2. If preferred alternate cost is 15% or more above Six-Year Plan cost 3. Maintenance of traffic plan 4. Avoidance alternatives to water-related impacts 5. Consideration for bicycle and pedestrian facilities 6. Purpose and need statement
SUBMITTED BY PROJECT ENGINEER <input checked="" type="checkbox"/> <i>Dept. of Highways</i> or <input type="checkbox"/> <i>Consultant</i>	DATE 9-22-14
RECOMMENDED BY PROJECT MANAGER	DATE 9-22-14
RECOMMENDED BY LOCATION ENGINEER	DATE
RECOMMENDED BY TEBM <i>(for location)</i>	DATE
COMMENTS	
GEOMETRIC APPROVAL GRANTED BY	
SIGNATURE <i>(Director, Division of Highway Design)</i>	DATE
_____	_____



**STA. 647+82.24 MAINLINE
(MATCH 3-8306.00)
BEGIN CONSTRUCTION**

**PREFERRED ALTERNATIVE
(ALTERNATE 1A)**

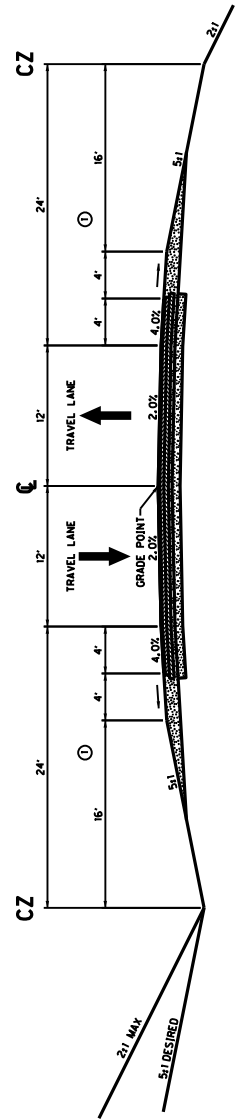
**STA. 816+50 MAINLINE
END CONSTRUCTION**



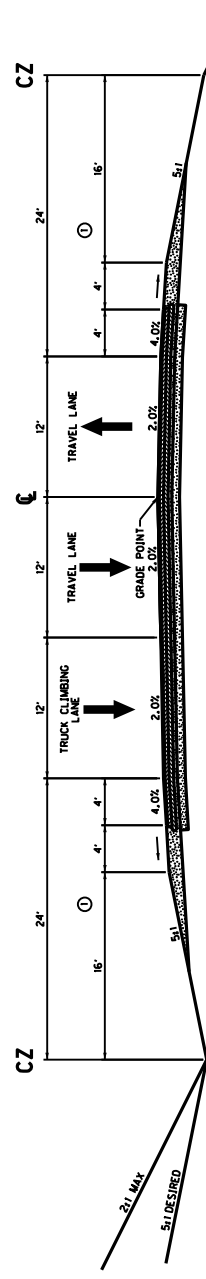
**3-0319.00
ALLEN & SIMPSON COUNTIES
KY 100 RECONSTRUCTION**

TYPICAL SECTIONS

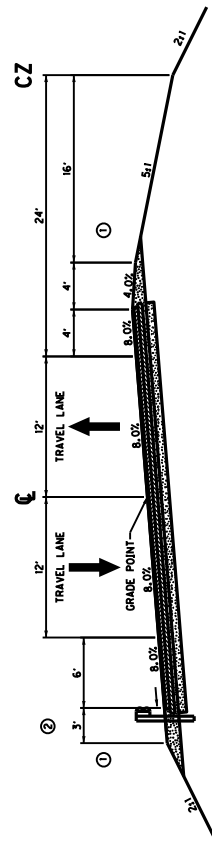
COUNTY OF **WARREN** ITEM NO. **3-0391.00** SHEET NO. **R2**



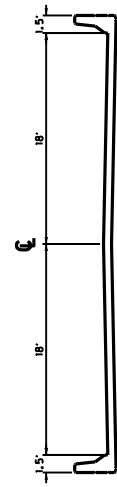
NORMAL SECTION (KY 100)



NORMAL SECTION WITH TRUCK CLIMBING LANE (KY 100)
(STA. 751+50 TO STA. 778+00)



MAXIMUM SUPERELEVATED SECTION (KY 100)



BRIDGE SECTION (KY 100)

- NOTES
- ① THE CROSS SECTIONS FOR SLOPES OUTSIDE THE SHOULDERS SHALL BE AS SHOWN FOR THE SHOULDERS TO BE WIDENED 1 FOOT WHERE GUARDRAIL IS TO BE INSTALLED.
 - ②

KY 100
MAINLINE
TYPICAL SECTIONS

SCALE: 1"=5'

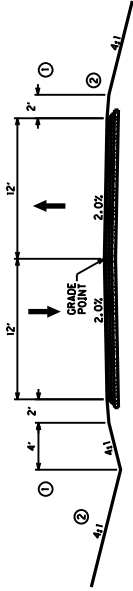
TYPICAL SECTIONS

SCOTTSVILLE ROAD (KY 100)

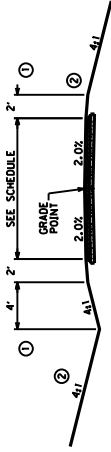
COUNTY OF
SPENCER

ITEM NO.
03-099.00

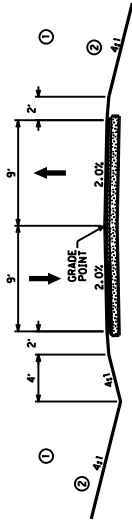
SHEET NO.
R21



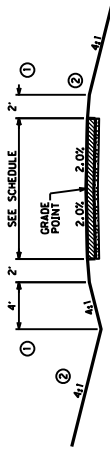
MAJOR APPROACH



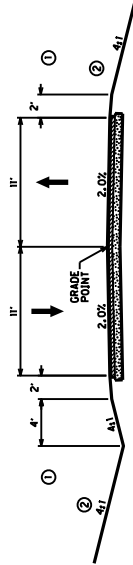
PAVED ENTRANCE



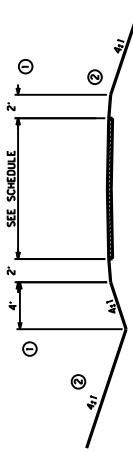
MINOR APPROACH



RIGID PCC ENTRANCE



DIVERSION/DIVERSION APPROACH



CSB ENTRANCE

USER: g7ewp7.lch

DATE PLOTTED: September 29, 2014

FILE NAME: C:\WORK\SS\TE\MAR\T\CH\0699933\R024015.DGN

E-SHEET NAME:

POSITION: 08.11.7.443

NOTES

- ① SEE CROSS SECTIONS FOR SLOPES OUTSIDE THE LIMITS OF THE SHOULDER.
- ② ABOVE THE CLEARANCE OF THE MAINLINE CONSTRUCTED WITH VECTOR FLARE SLOPES

APPROACH/ENTRANCE TYPICAL SECTIONS

SCALE: 1"=5'

Item No. 03-0319.00
Improvements to KY 100: Reconstruct KY 100 from KY 622
to Lee Keen Road east of Sulphur Fork Creek
Simpson & Allen Counties, Kentucky

Project Description

The purpose of this project is to improve safety and provide a better connection for travelers along KY 100 from the intersection with KY 622 in Simpson County eastward to Sulphur Creek in Allen County as part of an overall improvement strategy for the entire KY 100 corridor. The existing KY 100 has narrow 10' driving lanes, no shoulders and limited sight distance at multiple vertical crest curves. These substandard geometric features in conjunction with 2,200 ADT and 10% truck traffic combine to create a very hazardous roadway. The proposed roadway will have 12' driving lanes, 8' (6' usable) shoulders and will meet all current design standards in order to accommodate the existing motorists as well as the expected increase of 2,800 ADT and 13% trucks.

1. Alternatives Considered/Public Involvement

No Build Alternate:

- This alternate would not address the purpose and need and leaves an offset intersection with a high accident rate.

Build Alternatives:

Public Meeting Summary

On March 25, 2014, an open house style public information meeting was held at the Franklin-Simpson Center from 4:00pm to 6:00pm, CDT. Large display exhibits of the two proposed alignments including typical sections were on display for the 26 meeting attendees. Project handouts were provided as well as survey questionnaires. Upon the expiration of the public comment period on April 9, 2014, there were 30 survey questionnaires received from the public. The following table shows a breakdown of the responses and if they preferred Alternate 1, Alternate 2, or a No Build option. Responses were identified as a result of clear sentiment on the part of the respondent.

Response Type	Quantity	People Represented (individual)	Alternate 1 Preference (Individual)	Alternate 2 Preference (individual)	No Build Preference (Individual)
Survey Questionnaire	30	35	11	18	1

The survey questionnaires from the public meeting show more support for Alternate 2 than Alternate 1 or the No Build Alternate. All public responses said there was a dire need for major

road improvement in the project area. We learned of one cemetery in the project limits that was not located in our aerial survey.

Existing Road Concerns

- Safety
- Dangerous vertical curves
- Heavy tractor trailer truck traffic
- Dangerous hill with limited sight distance at Clay Smith Road intersection
- Several accidents including fatalities
- Narrow driving lanes

General Comments

- The intersection of KY 100 and Clay Smith Road (Hop Over Hill) was cited by several individuals as a dangerous intersection with inadequate sight distance, especially at night.
- The majority of the respondents acknowledged that the road is unsafe and needs to be improved.
- KY 100 has high traffic with a lot of big truck traffic between Scottsville and I-65.
- Farm equipment safety
- Kathryn Gibson said their farm has a cave, a spring, and several sinkholes that would probably be negatively impacted by Alternate 1.
- Jimmy & Vicki Law said their property has a natural water supply spring that will be impacted by Alternate 1 and a natural spring that will be impacted by Alternate 2. They prefer a “no build” with a couple spot improvements.
- Bobby Hughes said there is an unmarked cemetery on the south side of KY 100 near the intersection of Clay Smith Road. This cemetery has been verified through other landowners.

Alternate 1 Comment Summary

- The large majority of the comments that supported Alternate 1 said they felt that it was the safer of the two alternates.
- The residents that did not support Alternate 1 did not want their property to be split and felt that Alternate 1 would severely de-value their property. They did not feel that a new cross country route was needed in order to fix the problem.

Alternate 2 Comment Summary

- Several had concerns that the existing KY 100 would become a county road or a secondary state highway and would not be well maintained like it is now. Their main concern was snow removal. Kathryn Gibson is concerned about the disruption to their farming operations and their ability to move livestock and farm equipment from one side of the road to another.

Alternate 1

Alternate 1 connects to the proposed 3-8306 project and continues its horizontal tangent. This alternate remains parallel to the existing KY 100 alignment and then diverges on a cross county route to the south at Sta. 710+00. Alternate 1 provides a straighter, better geometric route than Alternate 2 and has right of way impacts to only 24 parcels and 2 relocations. On Monday, April 21, 2014, the Simpson County Judge Executive, Jim Henderson, came to the KYTC District Office and had a meeting with Greg Meredith, Joe Plunk, and Stewart Lich. During this meeting, the Public Meeting Exhibits were laid out and various issues were discussed with the Judge Executive about the project. Judge Henderson also informed us that the Simpson County Court had passed unanimously Resolution #2014-04-15HWY100E which states that Alternate 1 will severely negatively impact the quality of life of several residents and landowners along the eastern most part of the corridor. It also stated that the Simpson County Fiscal Court requests that decision-makers select "Alternate 2" as the route for improvements to above mentioned section of Highway 100 East, and abandon any efforts to choose "Alternative 1". This resolution was discussed and considered during the meeting. The following are some of the main issues discussed during the meeting. (See Exhibit 1)

- Residential house located at Right Sta. 685+00 is a potential historic property but is not on the national registry. Alternative 1 will impact this property.
- Clay Smith Road and McKendree Church Road is an area of concern geometrically. Have had sight distance complaints in the past. Recommended to refine this area during Final Design.
- Alternate 1 & 2 cross two major gas transmission lines. Comment was made to check these areas closely during Final Design to ensure that we have roadway embankment and that there are no roadway ditches here.
- Earthwork does balance, however most of the excavation is located on the east end of the project which would result in long hauls for the excavation equipment.
- The current alignment has an approach road at left Sta. 796+50 which will serve as a connector to the existing KY 100. It was discussed as to whether this should be eliminated and the existing bridge removed and close the existing road just west of the Simpson/Allen County line. The design team chose to look at shifting this connector to the west of Sulphur Creek to eliminate the existing bridge to see if this is a cost effective option. After further investigation, it was determined that an approach road at Sta. 787+75 Lt. would cost approximately \$550,000 for construction and \$390,000 for stream impacts, which results in a total of \$940,000 more than if the existing bridge was left in place. It was also estimated that if the existing bridge had to be replaced in the future, the estimated replacement cost would be approximately \$525,000. Kevin Gearlds (PD&P Branch Manager) also brought up the issue that construction of this approach along the bluff line would be very difficult and would result in a higher chance of roadway slides in the future. After considering the difference in cost and the construction issues the project team agreed to leave the Existing KY 100 bridge in place.
- It was noted that this alternate has no telephone impacts in Simpson County, which could result in a more expedited construction schedule.

Alternate 2

Alternate 2 also connects to the proposed 3-8306 project at Hickory Flats Road (KY 622) and continues its horizontal tangent. Alternate 1 and Alternate 2 are identical until Sta. 670+41.14 where Alternate 2 continues along the existing KY 100 corridor. The proposed Alternate 2 route parallels on the north and south and crosses the existing KY 100 roadway at 5 locations. This creates a complex design which will result in difficulties of maintaining the existing KY 100 traffic during construction. From Sta. 750+00 to Sta. 785+00, the existing roadway has a down grade of approximately 8%-9%. According to current KYTC design standards, this type of roadway should be limited to a 7% maximum grade. In order to maintain a 7% down grade and vertical crest curve with the appropriate sight distance, the proposed vertical alignment creates elevation differences between existing and proposed of approximately 10'-15'. This results in steep driveways that range in grade from 10%-13% and some required the addition of sharp horizontal curves to increase the length of the driveway just to keep the vertical grades within an acceptable limit. Alternate 2 has right of way impacts to 42 parcels and 3 relocations. The following are some of the main issues discussed during the meeting. (See Exhibit 2)

- Switches to the north side of the road at Sta. 685+00 and does not impact historic property.
- This alternative has approximately half of the earthwork as Alternate 2; however when the diversions and maintenance of traffic is considered, Alternate 2 is more expensive and much more complicated to construct.
- Alternate 2 has more stream impacts and mitigation requirements than Alternate 1.
- Alternate 2 also impacts a natural spring that will require a spring box to be installed in the proposed embankment.
- Alternate 2 has much more significant impacts to the telephone, water, and overhead power utilities. This not only adds cost to the project but will add time to the construction schedule.
- Alternate 2 results in only one roadway and bridge to maintain.

Alternate 1A

During a meeting with Judge Henderson, the idea of a modified Alternate 1 was developed which was referred to as Alternate 1A. This alternate will take the Alternate 1 alignment and shift it farther to the south from Sta. 669+64.59 to Lee Keen Road to lessen the impacts on the Ewell, Gibson, and Law properties. This would also shift the end of the project approximately 1000' to the east and eliminate the relocation of the Harold & Barbara Walker parcel. The following exhibit represents the proposed Alternate 1A in blue. (See Exhibit 3)

Additional Property Owner Meeting

On June 18, 2014, a meeting was held in the KYTC District 3 main conference room to show concerned property owners the Preferred Alignment 1A and how it compared to the original Alternate 1 that was presented at the Public Meeting. In attendance were as follows:

Kenneth & Anita Ewell	Property Owner
Ralph & Kathryn Gibson	Property Owner
David Broderick, attorney	Representative for Mr. & Mrs. Gibson
Harry Law	Property Owner
Mickey & Melissa Gregory	Property Owner
Harold & Barbara Walker	Property Owner
Philip Walker	Property Owner
Will & Eleanor Brown	Property Owner
Judge Jim Henderson	Simpson County Judge Executive
Marty Chandler	Simpson County Magistrate
Greg Meredith	KYTC
Joe Plunk	KYTC
Andrew Stewart	KYTC
Stewart Lich	KYTC
Kevin Gearlds	KYTC

During this meeting the property owners in attendance were shown exhibits showing the differences between Alternate 1 and Alternate 1A. During this meeting the property owners expressed their support for Alternate 2 and did not support the selection of Alternate 1A as the preferred alignment. Their support for Alternate 2 was mainly due to the fact that Alternate 1A would impact three farms, and that after the construction of Alternate 1A some of the residents would live on a secondary state highway that would not receive the same maintenance that it currently does. It should be noted that this meeting was only intended to show the affected property owners the difference between Alternate 1 and Alternate 1A and therefore the potential relocatees involved on Alternate 2 were not invited to this meeting, and thus were not able to voice their support for an alternative. It should also be noted that the majority (or all) of the potential relocatees involved on Alternate 2 are located in Allen County and did not have an elected official at the meeting like the Simpson County property owners did.

Alternate 1B

During this meeting Judge Jim Henderson developed the idea of an Alternate 1B that would continue along the existing KY 100 route for an additional ¼ of a mile before detouring south across the Harry Law property, thus minimizing impacts to the Ewell and Gibson parcels. Over the next few days, Alternate 1B was analyzed geometrically and a construction cost estimate was developed. Due to the terrain that Alternate 1B crossed and the additional earthwork and drainage structures that would be required, it resulted in approximately \$1,100,000 of increased construction cost. This alternate would also have additional utility relocation cost as well due to

the additional length of roadway that follows the existing KY 100 route. Due to these issues the design team determined that Alternate 1B was not a feasible design alternative. (See Exhibit 4)

Preferred Alternative – Alternate 1A

It is the opinion of the design team that **Alternate 1A** would provide the best alternative for the relocation of KY 100 from KY 622 to Lee Keen Road. This alternative is the least intrusive to the community, impacts the fewest number of residents, and provides the safest geometric alignment for the roadway. The Project Team also recommends that the existing bridge be left in place versus constructing a new connector on the east end to serve the existing route.

2. Cost – As compared to the SYP budgeted amount

Phase I Design has revealed the extent of utility and Right of Way impacts which has led to the higher-than-anticipated cost estimates for Utility and Right of Way phases. This project will have impacts to five large cross country high pressure gas lines. The first crossing at Sta. 669+00 consists of two 30” lines that operate at approximately 600-700 psi. The second crossing at Sta. 707+00 consists of a 26” and 24” line which both operate at 600-700 psi and an additional 30” line which operates at 900 psi. It has been estimated that these five gas line relocations will cost approximately \$4 million. These gas lines were not accounted for during the planning phase of the project and account for the majority of the discrepancy between the approved highway plan utility estimate and the Phase 1 design estimate.

Cost Comparison						
	Alternate 1	(Preferred) Alternate 1A	(W/out Existing Bridge) Alternate 1A	Alternate 1B	Alternate 2	Latest Approved Highway Plan
Right-of-Way	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$1,950,000	\$640,000 (2016, SPP)
Utilities	\$6,940,000	\$6,940,000	\$6,940,000	\$7,340,000	\$7,740,000	\$1,500,000 (2016, SPP)
Construction	\$8,400,000	\$8,600,000	\$9,540,000	\$9,700,000	\$8,600,000	\$9,600,000 (2018, SPP)
Total	\$17,340,000	\$17,540,000	\$18,480,000	\$19,040,000	\$18,290,000	\$11,740,000
% Above SYP	48%	50%	57%	62%	56%	

3. Maintenance of Traffic Plan

This project will be constructed under traffic. Since the majority of the construction will be new route traffic impacts will be minimal. The west end tie-in at KY 622 will require traffic to be limited to one lane with a flagger. The east end tie-in will require the construction of a temporary detour due to the difference in grades at the tie-in point. All approach roads associated with this project have alternative connects to other roads which will result in short detours during required closures.

4. Avoidance to Water-Related Impacts

WATER RELATED IMPACTS SUMMARY

County	Allen & Simpson	Route No.	KY 100	Item No.	3-0319.00
Date	9-12-2014	Program #	8687801D		
Federal Project No.					
State Project No.	107 0100 016-020, 002 0100 000-001				
Location Engineer	Travis Carrico				

Section 1: Impact Checklist

Complete this section for each alternative considered at the conclusion of Phase 1 design.

Alternate 1

FLOODPLAIN IMPACTS		
FEMA Study Type	Yes	Community No.
Detailed FEMA Study with delineated floodway*	X	21213C, 21003C
Detailed FEMA Study without delineated floodway*		
Approximate FEMA Study		
No FEMA Study		

* May require initiation of the map revision process if impacts to water surface elevations cannot be avoided. Potential impacts to floodplains and/or floodways shall be assessed early in the project. Refer to Sections DR 203 and DR 204 of the Drainage Manual.

The project is located on the FEMA Flood Map Panel 21213C0225C (Simpson County) & FEMA Flood Map Panel 21003C0225C (Allen County) and the project is in a "Zone A" flood area.

SIGNIFICANT RESOURCE IMPACTS				
Are open sinkholes impacted? If so, how many sinkholes are impacted?	Yes		No	X
Are wetlands impacted? If so, how many total acres are estimated? _____ acres	Yes		No	X
Are any of the streams in the project area designated "Special Use Waters" (e.g. Wild Rivers, Exceptional Waters, Outstanding State Resource Water, etc.)?	Yes		No	X

Where possible, alignments should be developed that avoid significant resources. When it becomes impossible to avoid a significant resource, the project should be designed to minimize these impacts. Significant resource impacts are discussed in DR 202 of the drainage manual. Wetland impacts and their costs are also discussed in DR 500 of the Drainage Manual.

Projects that impact special use waters may require an individual KPDES Erosion Control Permit. Contact the Division of Environment analysis for more information.

STREAM CHANNEL IMPACTS				
Will stream relocations (channel changes) be needed? If so, how many total linear feet are estimated? _____ LF	Yes		No	X
Will new culverts or culvert extensions be constructed? If so, how many total linear feet are estimated? <u>1300</u> LF	Yes	X	No	
Will temporary stream crossings be needed?	Yes		No	X
Will excess material sites that require permitting be needed?	Yes		No	X
Will bridges be constructed?	Yes	X	No	
On highway projects that involve stream crossings such as bridge and culverts, it is often not feasible to totally avoid stream channel impacts. In these cases, design the project to minimize the impacts. Stream relocations should be avoided if possible. If stream relocations are unavoidable design to project to minimize their impacts. Stream channel impacts are discussed in DR 506, 601-3, 608-2, and 802-3 of the drainage manual.				

Alternate 1A

FLOODPLAIN IMPACTS		
FEMA Study Type	Yes	Community No.
Detailed FEMA Study with delineated floodway*	X	21213C, 21003C
Detailed FEMA Study without delineated floodway*		
Approximate FEMA Study		
No FEMA Study		
* May require initiation of the map revision process if impacts to water surface elevations cannot be avoided. Potential impacts to floodplains and/or floodways shall be assessed early in the project. Refer to Sections DR 203 and DR 204 of the Drainage Manual.		

The project is located on the FEMA Flood Map Panel 21213C0225C (Simpson County) & FEMA Flood Map Panel 21003C0225C (Allen County) and the project is in a "Zone A" flood area.

SIGNIFICANT RESOURCE IMPACTS				
Are open sinkholes impacted? If so, how many sinkholes are impacted?	Yes	<input type="checkbox"/>	No	X
Are wetlands impacted? If so, how many total acres are estimated? _____ acres	Yes	<input type="checkbox"/>	No	X
Are any of the streams in the project area designated "Special Use Waters" (e.g. Wild Rivers, Exceptional Waters, Outstanding State Resource Water, etc.)?	Yes	<input type="checkbox"/>	No	X
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<p>Where possible, alignments should be developed that avoid significant resources. When it becomes impossible to avoid a significant resource, the project should be designed to minimize these impacts. Significant resource impacts are discussed in DR 202 of the drainage manual. Wetland impacts and their costs are also discussed in DR 500 of the Drainage Manual.</p> <p>Projects that impact special use waters may require an individual KPDES Erosion Control Permit. Contact the Division of Environment analysis for more information.</p>				

STREAM CHANNEL IMPACTS				
Will stream relocations (channel changes) be needed? If so, how many total linear feet are estimated? _____ LF	Yes	<input type="checkbox"/>	No	X
Will new culverts or culvert extensions be constructed? If so, how many total linear feet are estimated? <u>1400</u> LF	Yes	X	No	<input type="checkbox"/>
Will temporary stream crossings be needed?	Yes	<input type="checkbox"/>	No	X
Will excess material sites that require permitting be needed?	Yes	<input type="checkbox"/>	No	X
Will bridges be constructed?	Yes	X	No	<input type="checkbox"/>
<p>On highway projects that involve stream crossings such as bridge and culverts, it is often not feasible to totally avoid stream channel impacts. In these cases, design the project to minimize the impacts. Stream relocations should be avoided if possible. If stream relocations are unavoidable design to project to minimize their impacts. Stream channel impacts are discussed in DR 506, 601-3, 608-2, and 802-3 of the drainage manual.</p>				

Alternate 1B

FLOODPLAIN IMPACTS		
FEMA Study Type	Yes	Community No.
Detailed FEMA Study with delineated floodway*	X	21213C, 21003C
Detailed FEMA Study without delineated floodway*		
Approximate FEMA Study		
No FEMA Study		
* May require initiation of the map revision process if impacts to water surface elevations cannot be avoided. Potential impacts to floodplains and/or floodways shall be assessed early in the project. Refer to Sections DR 203 and DR 204 of the Drainage Manual.		

The project is located on the FEMA Flood Map Panel 21213C0225C (Simpson County) & FEMA Flood Map Panel 21003C0225C (Allen County) and the project is in a “Zone A” flood area.

SIGNIFICANT RESOURCE IMPACTS				
Are open sinkholes impacted? If so, how many sinkholes are impacted? 1	Yes	X	No	
Are wetlands impacted? If so, how many total acres are estimated? _____ acres	Yes		No	X
Are any of the streams in the project area designated “Special Use Waters” (e.g. Wild Rivers, Exceptional Waters, Outstanding State Resource Water, etc.)?	Yes		No	X
<p>Where possible, alignments should be developed that avoid significant resources. When it becomes impossible to avoid a significant resource, the project should be designed to minimize these impacts. Significant resource impacts are discussed in DR 202 of the drainage manual. Wetland impacts and their costs are also discussed in DR 500 of the Drainage Manual.</p> <p>Projects that impact special use waters may require an individual KPDES Erosion Control Permit. Contact the Division of Environment analysis for more information.</p>				

STREAM CHANNEL IMPACTS				
Will stream relocations (channel changes) be needed? If so, how many total linear feet are estimated? _____ LF	Yes		No	X
Will new culverts or culvert extensions be constructed? If so, how many total linear feet are estimated? <u>2050</u> LF	Yes	X	No	

Will temporary stream crossings be needed?	Yes	<input type="checkbox"/>	No	X
Will excess material sites that require permitting be needed?	Yes	<input type="checkbox"/>	No	X
Will bridges be constructed?	Yes	X	No	<input type="checkbox"/>
<p>On highway projects that involve stream crossings such as bridge and culverts, it is often not feasible to totally avoid stream channel impacts. In these cases, design the project to minimize the impacts. Stream relocations should be avoided if possible. If stream relocations are unavoidable design to project to minimize their impacts. Stream channel impacts are discussed in DR 506, 601-3, 608-2, and 802-3 of the drainage manual.</p>				

Alternate 2

FLOODPLAIN IMPACTS		
FEMA Study Type	Yes	Community No.
Detailed FEMA Study with delineated floodway*	X	21213C, 21003C
Detailed FEMA Study without delineated floodway*		
Approximate FEMA Study		
No FEMA Study		
<p>* May require initiation of the map revision process if impacts to water surface elevations cannot be avoided. Potential impacts to floodplains and/or floodways shall be assessed early in the project. Refer to Sections DR 203 and DR 204 of the Drainage Manual.</p>		

The project is located on the FEMA Flood Map Panel 21213C0225C (Simpson County) & FEMA Flood Map Panel 21003C0225C (Allen County) and the project is in a "Zone A" flood area.

SIGNIFICANT RESOURCE IMPACTS				
Are open sinkholes impacted? If so, how many sinkholes are impacted? 1	Yes	<input type="checkbox"/>	No	X
Are wetlands impacted? If so, how many total acres are estimated? _____ acres	Yes	<input type="checkbox"/>	No	X
Are any of the streams in the project area designated "Special Use Waters" (e.g. Wild Rivers, Exceptional Waters, Outstanding State Resource Water, etc.)?	Yes	<input type="checkbox"/>	No	X
		<input type="checkbox"/>		<input type="checkbox"/>

Where possible, alignments should be developed that avoid significant resources. When it becomes impossible to avoid a significant resource, the project should be designed to minimize these impacts. Significant resource impacts are discussed in DR 202 of the drainage manual. Wetland impacts and their costs are also discussed in DR 500 of the Drainage Manual.

Projects that impact special use waters may require an individual KPDES Erosion Control Permit. Contact the Division of Environment analysis for more information.

STREAM CHANNEL IMPACTS				
Will stream relocations (channel changes) be needed? If so, how many total linear feet are estimated? <u>200</u> LF	Yes	X	No	
Will new culverts or culvert extensions be constructed? If so, how many total linear feet are estimated? <u>1460</u> LF	Yes	X	No	
Will temporary stream crossings be needed?	Yes		No	X
Will excess material sites that require permitting be needed?	Yes		No	X
Will bridges be constructed?	Yes	X	No	
On highway projects that involve stream crossings such as bridge and culverts, it is often not feasible to totally avoid stream channel impacts. In these cases, design the project to minimize the impacts. Stream relocations should be avoided if possible. If stream relocations are unavoidable design to project to minimize their impacts. Stream channel impacts are discussed in DR 506, 601-3, 608-2, and 802-3 of the drainage manual.				

Section 2 : Impact Discussion

The alternates that were considered for this project cross several small drainage areas but the two crossing of main concern are an intermittent stream and a perennial river. Due to the length of the streams and the fact that the proposed construction must stay close to the existing KY 100 route these stream crossing are unavoidable. The preferred Alternate 1A will cross the intermittent stream with a 60" culvert pipe and will cross the perennial river with an approximately 250' long bridge. As a temporary measure to minimize impacts to the stream and river during construction, erosion and sediment control structures will be utilized. These structures will include temporary diversion ditches, silt traps, and silt fences. Permanent solutions to minimize erosion and thereby lessening any long-term effects to the affected stream will include, but not be limited to: permanent seeding, turf reinforcement, mat protection, culvert outlet scour protection.

It is believed that the proposed construction impact to the environment, specifically the stream, will be minimal.

5. Consideration for Bicycle and Pedestrian Facilities

This project is located in a rural area with no existing bicycle or pedestrian facilities that would provide connectivity in this area. The long range plan for this area does not include the addition of such facilities and there are no local or regional bicycle plans that have designated bicycle improvements for this area. Therefore, the design team did not see the need to include bicycle facilities as a part of this project.

6. Purpose and Need

As part of the Kentucky primary highway network, KY 100 is a rural two-lane facility which connects US 31E near Scottsville in Allen County to I-65 near Franklin in Simpson County. KY 100 is functionally classified as a rural major collector, and it provides a link between the employment, education, governmental, health and recreation service centers in Allen and Simpson Counties. While existing and projected traffic volumes indicate that the level of service will remain acceptable at least until Year 2030, the existing geometrics increase travel times and create safety concerns at certain locations. Traffic consists primarily of passenger cars, but there is a relatively large proportion of heavy vehicles, and horse and buggy traffic is fairly common due to the Mennonite communities in the area. This mixture of vehicles combined with the roadway geometrics and narrow cross-section creates safety concerns, and several locations were identified as having potentially high crash rates.

The “2008 Alternatives Study on KY 100 from KY 622 to US 31E (3-8303.00)” identified the section of KY 100 from the intersection with KY 622 in Simpson County to Sulphur Creek in Allen County as the number one priority for potential improvement.

The purpose of this project is to improve safety and provide a better connection for travelers along KY 100 from the intersection with KY 622 in Simpson County eastward to Sulphur Creek in Allen County as part of an overall improvement strategy for the entire KY 100 corridor.

