U.S. Department of Transportation
Federal Highway Administration

Missouri Department Of Transportation

Environmental Assessment

Interstate 55
Scott County, Missouri

I-55 Interchange Project, J0I0956

August 2015

MISSOURI ROUTE 55, SCOTT COUNTY, MISSOURI

Scott City Interchange Project

JOB NUMBER J0I0956

ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to 42 U.S.C 4332(2)(c)
And 49 U.S.C 303 by the

U.S. Department of Transportation
Federal Highway Administration

And

The Missouri Department of Transportation

9-15-15
Date of Approval

*For FHWA — Program Development Team Leader
Title

8-26-15
Date of Approval

For MoDOT — for Ed Hassinger, Chief Engineer
Title

The following persons may be contacted for additional information concerning this document:

Ms. Raegan Ball
Program Development Team Leader
FHWA Division Office
3220 West Edgewood, Suite H
Jefferson City, Missouri 65109
(573) 636-7104

Mr. Ed Hassinger
Chief Engineer
Missouri Dept. of Transportation
P.O. Box 270
Jefferson City, Missouri 65102
(573) 751-2803

*The FHWA signature gives approval to distribute this information for public and agency review and comment. Such approval does not commit to approve any future grant requests to fund the preferred alternative..

Table of Contents

List of Tables

List of Figures

Appendices

Appendix A: Accident and Safety Data Disclaimer and Accident Summary Table

Appendix B: Farmland

Appendix C: Noise Study

Appendix D: Threatened and Endangered Species

Appendix E: Stream Impacts Information

Appendix F: Architectural Resource 6 Outbuildings

Appendix G: Tribal and Agency Correspondence

Appendix H: Public Involvement

Project Background

Interstate 55 (I-55) within the study area was built in phases in the early 1960's and is part of the National Highway System connecting Chicago, Illinois with New Orleans, Louisiana. More locally, St. Louis, Missouri and Memphis, Tennessee are the two major metropolitan areas on the I-55 corridor. I-55 intersects nine other interstates in five different states serving as a major conduit for the distribution of goods and services in the central United States.

In 2004, the Southeast Missouri Regional Planning Commission (SEMO RPC) identified improvements to the portion of I-55 in the project area as a high priority functional need for both the SEMO RPC's Regular Transportation Plan as well as MoDOT's Planning Framework process. Subsequently, MoDOT added the development of the J0P0970 (Scoping for purpose and need statement of I-55 to relieve congestion and to improve connectivity) Purpose and Need statement to the 2007-2011 Statewide Transportation Improvement Plan (STIP). The J0P0970 purpose and need document was written strictly for the purpose of studying the traffic issues on I-55 from Scott City to Fruitland and to find potential solutions to help ease congestion through the area. The purpose and need statement was approved by the Federal Highway Administration (FHWA) on April 16, 2007. Three projects were recommended in the J0P0970 Purpose and Need study, J0I0943 (extension of I-55 east outer road to connect with Route K in Scott City) which was constructed as recommended in 2010, the proposed project (J0I0956) involving the construction of a new interchange south of Scott City, and improvements (adding turn lanes) at the existing K/M/61 interchange.

Since the time of the purpose and need study, both the outer road extension and turn lanes mentioned above have been constructed. These projects helped reduce congestion for the time being, but will not keep congestion at an acceptable level into the future. These projects, combined with the proposed interchange project south of Scott City, will help to reduce future congestion and keep it at an acceptable level.

The proposed project (J0I0956) is included in the current STIP. MoDOT is in the process of surveying the project with design plans beginning in the summer of 2016. The selected alternative for this project, if approved, is scheduled to begin construction in March of 2017. An access justification report (AJR) has been conceptually approved (July 30, 2013) pending the approval of this Environmental Assessment (EA).

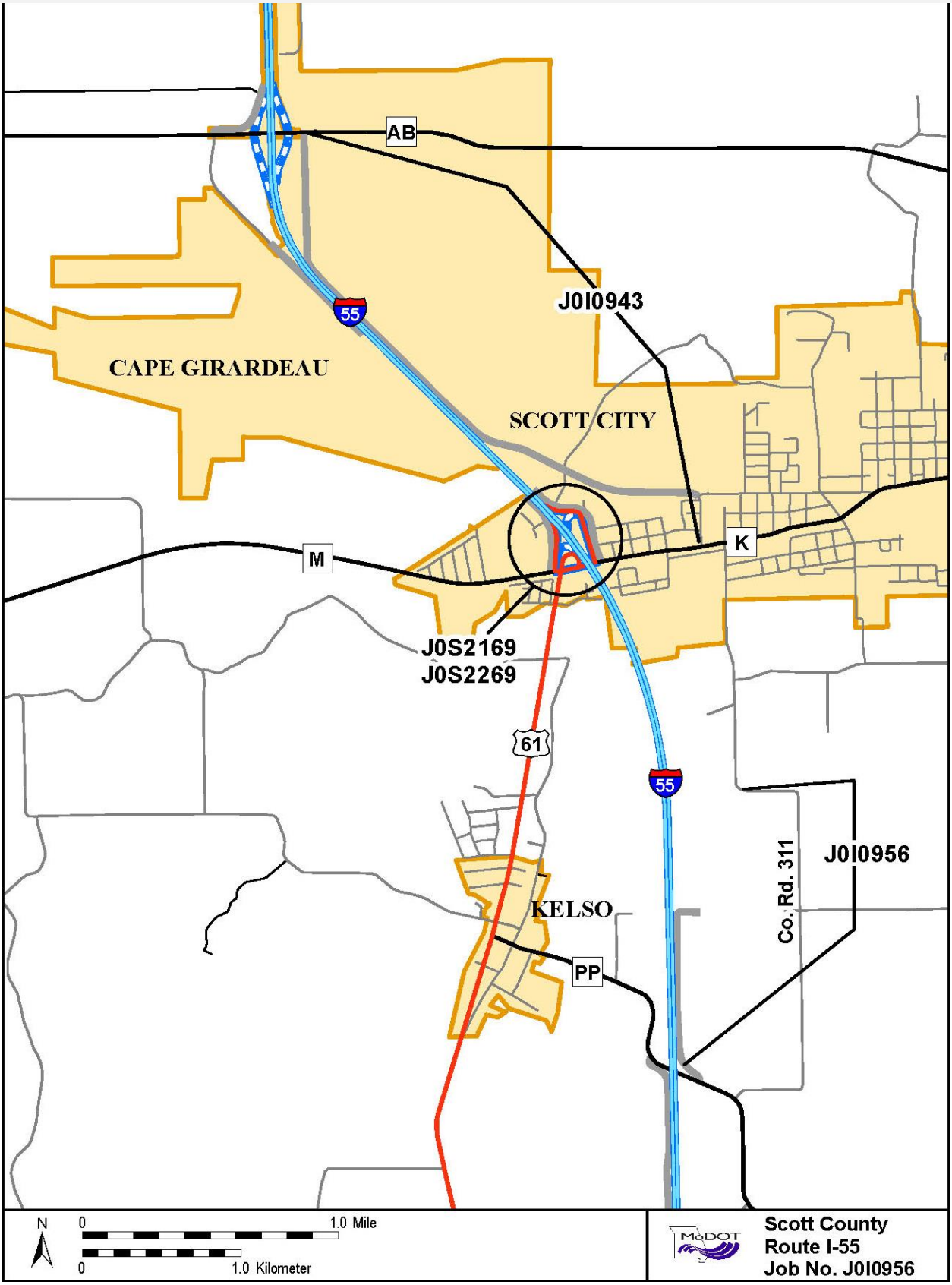
Purpose of the Proposed Project

The primary purpose of the proposed project is to relieve congestion on I-55 and improve connectivity in the Kelso and Scott City area.

Project Needs

Congestion at the AB/I-55 and K/M/61/I-55 interchanges cause traffic to merge and diverge off and onto I-55. Because of this, traffic on I-55 in this area operates at a less efficient capacity.

Figure 1: Project Area from Route AB to Route PP



Description of Existing Facilities

Interstate 55 in the study area is a four-lane divided highway with a 60-foot median and fully controlled access right of way. Lane widths are 12 feet with 10 feet outside shoulders and 4 feet inside shoulders with a speed limit of 70 miles per hour (mph).

Route PP in the study area is a two-lane state roadway with normal right off way east and west of the I-55 corridor. The existing Route PP roadway crosses over I-55 at a grade separation. The roadway is classified as a minor collector roadway with a posted speed limit of 55 mph. The existing Route PP bridge that crosses I-55 was built in 1962. This bridge as well as others in the area, which were built within the same time frame, are in need of some rehabilitation, but will not be addressed due to being in the supplementary system. Conditions that need to be addressed are substandard railing, narrow width, and poor bridge deck conditions.

Congestion and Capacity (Traffic Operation)

The term "Level of Service" (LOS) is given to the measure used to describe roadway congestion. Using LOS is a way to describe what a driver would encounter while traveling through an intersection, interchange, or open section of roadway during peak-hour traffic.

Level of service classifies the traffic operation on a roadway with an A to F rating system. LOS A is defined as the ideal traffic operation with free flow traffic; LOS F is defined as the poorest traffic operation with severe congestion.

Table 1. Level of Service (LOS) Descriptions

Level of Service	Description	Delay (Seconds/Vehicle)
A	Free Flow. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream	0.0-5.0
B	Reasonably free flow. Ability to maneuver is slightly restricted; presence of other vehicles begins to be noticeable.	5.1-15.0
C	Stable flow. Maneuvering requires more vigilance on the driver's part and is affected by other vehicles; queues form behind any significant blockages.	15.1-25.0
D	Approaching unstable Flow. Speeds decrease with increasing flows; traffic stream has little space to absorb disruptions.	25.1-40.0
E	Unstable Flow. Little room to maneuver within the traffic stream; volumes at or near capacity.	40.1-60.0
F	Forced or breakdown flow. Slow speeds and stoppages; traffic volumes exceed the capacity of the facility.	60.1 and Above

Levels A, B, and C are generally considered acceptable because they allow for adequate traffic flow. Once the LOS for a roadway segment moves beyond level C to levels D, E, or F, problems with functionality and efficiency can develop and changes to the segment of roadway could be needed. The result of these lower LOS ratings can be slower speeds and greater probability of accidents.

The purpose of this study is to justify the need for access to/from I-55 through the addition of an interchange south of the existing 61/K/M interchange. Access to the south is needed to allow northbound Route 61 traffic to access I-55 before it gets to the 61/M/K/I-55 interchange. By eliminating most of the Route 61 traffic to the existing 61/K/M interchange, congestion will be reduced and allow for better traffic movement through the existing interchange and connectivity from south Route 61 to I-55 will be greatly improved.

Crash rates per hundred million vehicle miles traveled (HMVMT) were compared with statewide rates for similar roadway classifications. Based on the data comparison, the roadway is not considered unsafe. Accident data from the area did not show any patterns indicating roadway deficiencies or congestion were the cause for the type or frequency of accidents. The purpose of the proposed project is to relieve congestion. By reducing future congestion and improving connectivity in the project area, a general increase in roadway safety will be obtained and maintained for a longer period of time.

Table 2. Current and Forecasted ADT and LOS for Interstate 55

Corridor Segment	2017 ADT SBL(LOS)	2037 ADT SBL (LOS)	2017 ADT NBL (LOS)	2037 ADT NBL (LOS)
Route 74 E to Route AB	27,359 (B)	35,587 (C)	25,463 (B)	33,121 (C)
Route AB to Route 61/K/M (Scott City)	25,042 (B)	38,000 (C)	21,356 (B)	32,500 (C)
Route 61/K/M (Scott City) to Route 77	12,803 (A)	16,653 (A)	11,583 (A)	15,067 (A)

Table 3. Current and Forecasted LOS for Merge/Diverge Areas (without new interchange)

Interchange	Movement	2017 LOS	2037 LOS
Route AB & I-55	NB Off	C	D
	NB On	C	F
	SB Off	C	D
	SB On	D	F
Route K/M/61 & I-55	NB Off	B	B
	NB On	C	E
	SB Off	D	F
	SB On	B	C

Table 4. Current and Forecasted LOS for Merge/Diverge Areas (with new interchange)			
Interchange	**Movement**	**2017 LOS**	**2037 LOS**
Route AB & I-55	NB Off	C	D
	NB On	C	D
	SB Off	C	D
	SB On	D	E
Route K/M/61 & I-55	NB Off	B	B
	NB On	C	D
	SB Off	C	D
	SB On	B	B

Table 5. Current and Forecasted LOS for Merge/Diverge Areas (at the location of the new interchange)			
Interchange	**Movement**	**2017 LOS**	**2037 LOS**
Route PP & I-55	NB Off	B	C
	NB On	B	C
	SB Off	B	C
	SB On	B	C

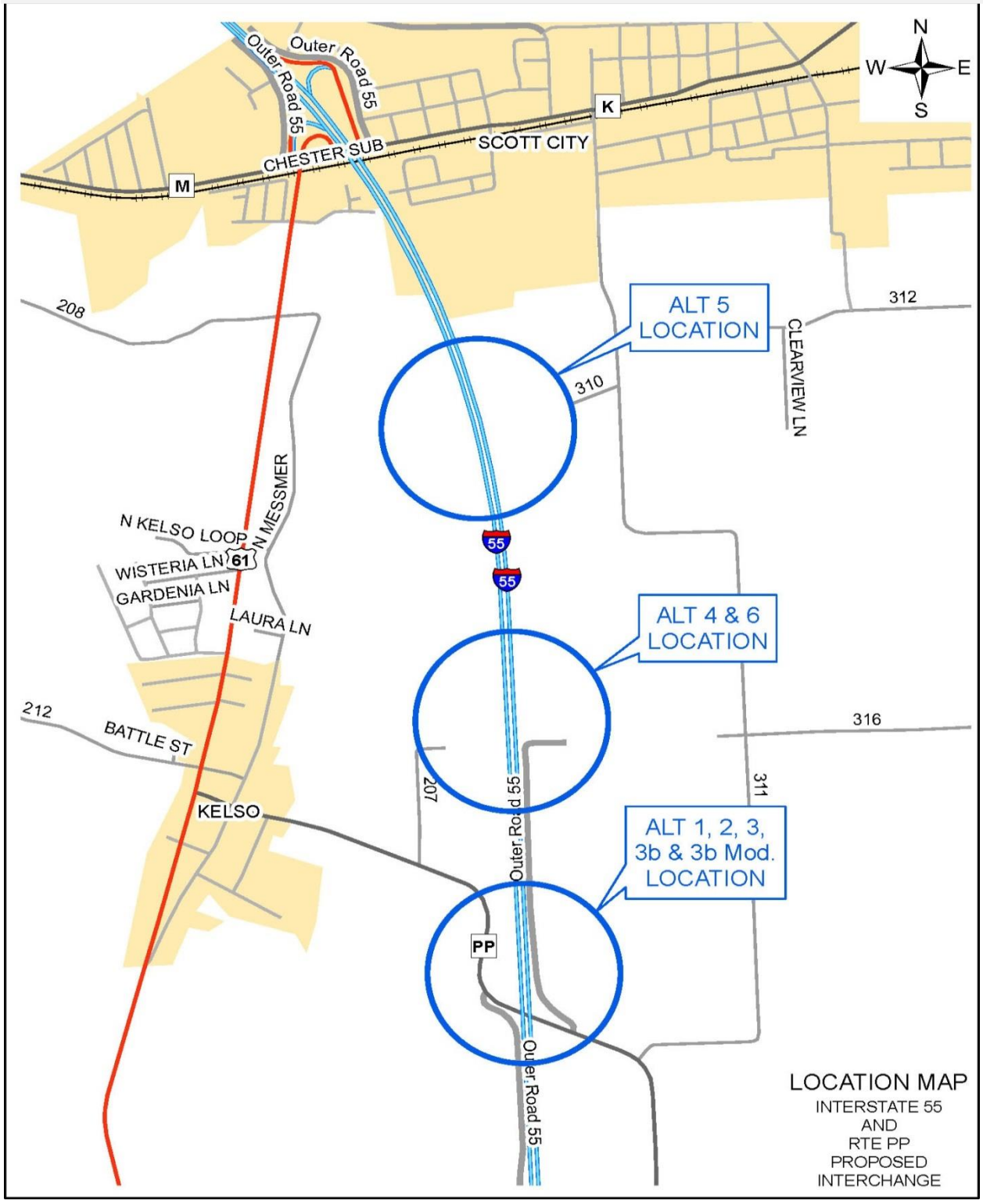
Connectivity

The current interchange servicing Scott City from I-55 and Route 61 is configured in such a way that it causes driver confusion resulting in congestion and slower traffic speeds. Traffic traveling north on Route 61 has to pass through the small town of Kelso to access the interchange with I-55 resulting in a reduction in speed and a large influx of traffic during peak hours at the existing K/M/61/I-55 interchange. This influx of traffic results in the existing interchange to function at an unacceptable level of service at peak traffic hours.

Alternatives Considered

The alternatives initially considered include the No-Build Alternative and six build alternatives. The original six alternatives and two additional build alternatives location are shown below in Figure 2.

Figure 2: Alternative Locations



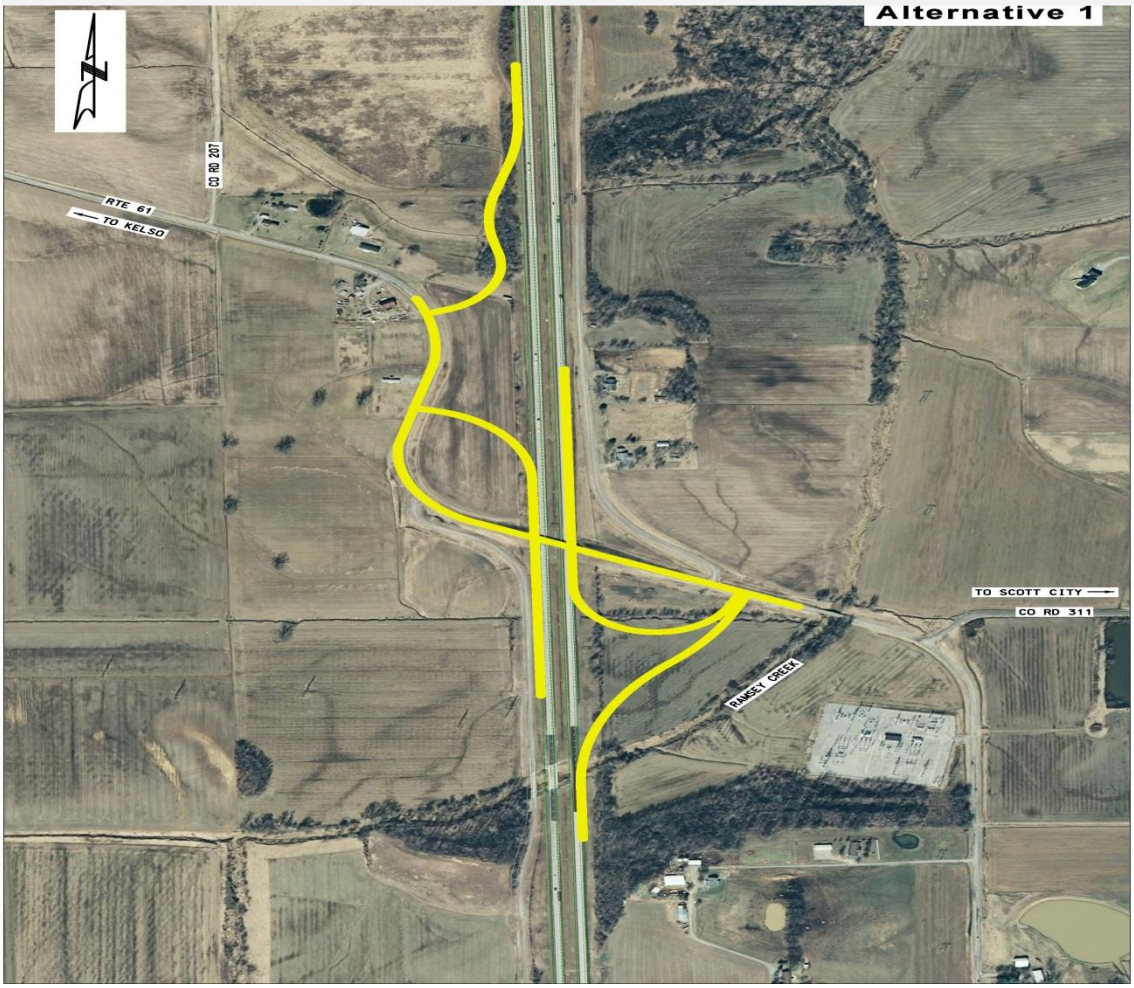
No-Build Alternative

The No-Build Alternative would make no improvements to I-55 in the project area other than normal highway maintenance. Normal maintenance includes pothole patching, pavement replacement, striping, and overlays. No new major construction would be included with this alternative.

Alternative 1

This alternative requires the existing Route PP overpass bridge to be replaced (functionally obsolete and structurally deficient), but allows the roadway for Route PP and existing outer roads to be used in place. Ramps accessing Route 55 from Route PP will be added to create a new interchange. Also included in the alternative is the widening of the existing northbound bridge crossing Ramsey Creek for I-55.

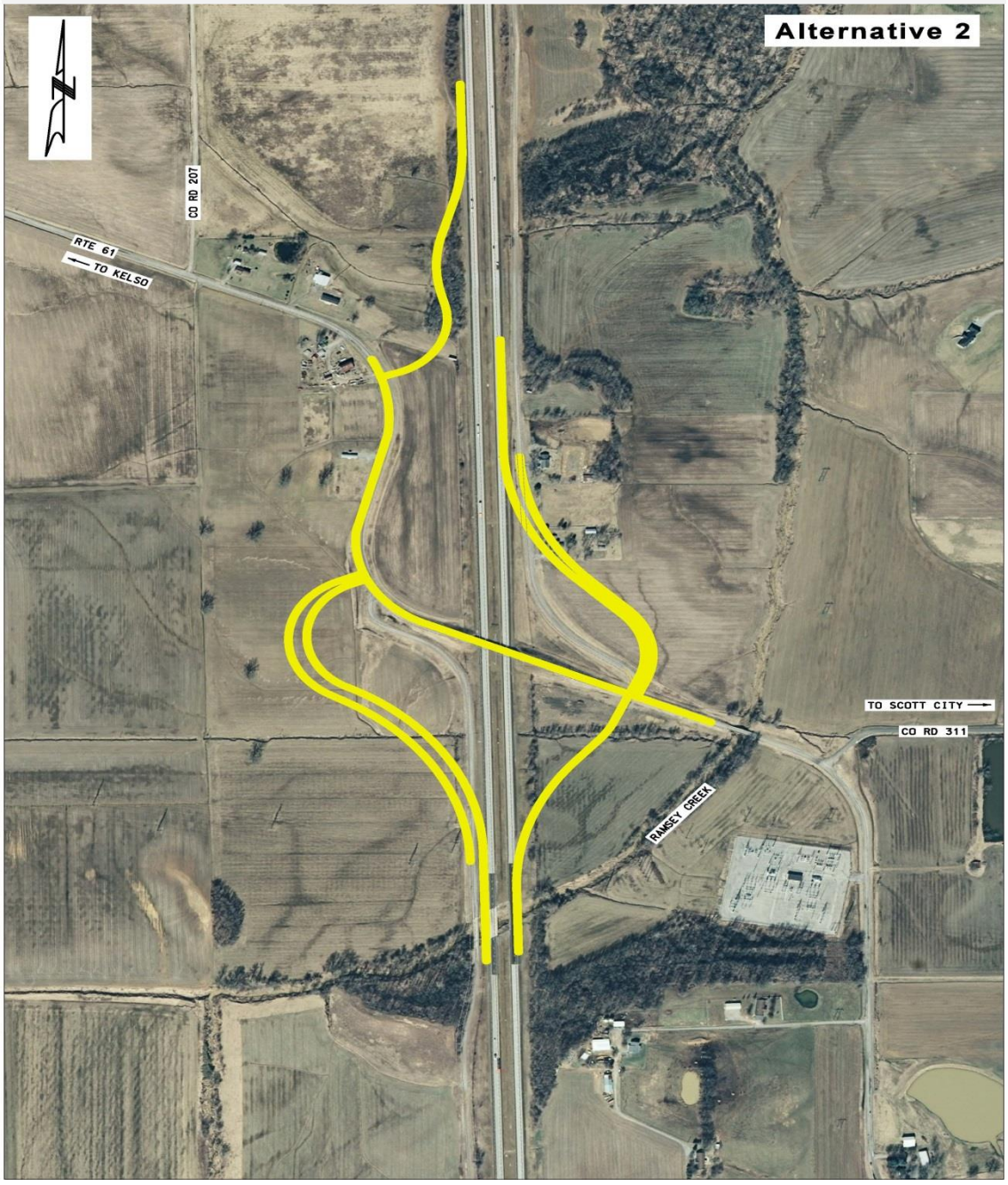
Figure 3: Alternative 1



Alternative 2

Alternative 2 allows for the roadway for Route PP and existing overpass bridge to be used in place with only normal rehabilitation completed to ensure structural integrity. This alternate requires approximately 3,500 feet of new outer road and widening of the two existing bridges crossing Ramsey Creek for I-55. Included in this alternative is the addition of both on and off-ramps to create a new interchange to access I-55.

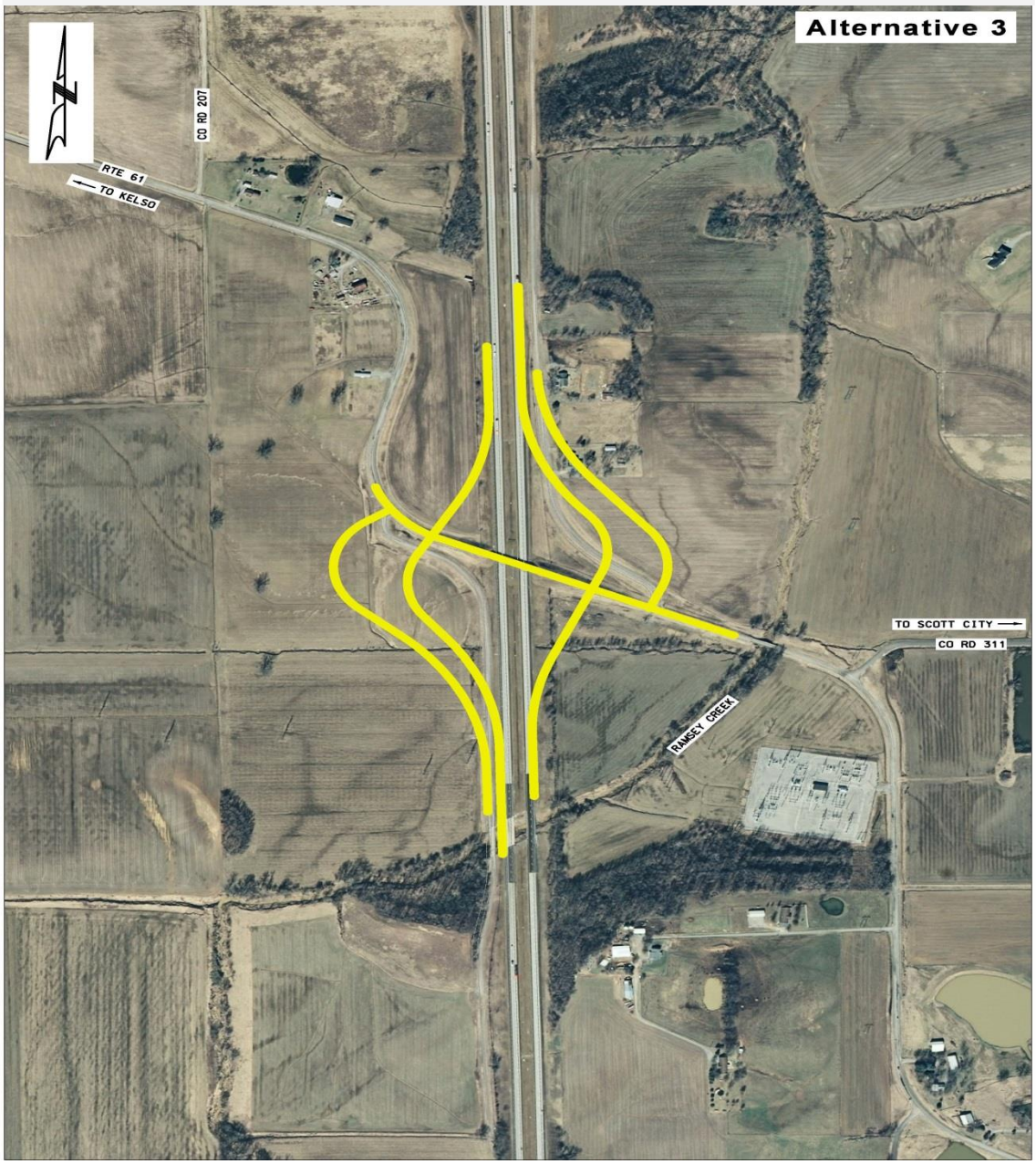
Figure 4: Alternative 2



Alternative 3

Alternative 3 allows sections of Route PP and the existing overpass bridge to be used in place with only normal rehabilitation completed to ensure structural integrity. New section of Route PP will be built east and west of the existing overpass to allow good sight distance at the ramp terminals. This alternative requires approximately 3,500 feet of new outer road and widening of the two existing bridges across Ramsey Creek for I-55.

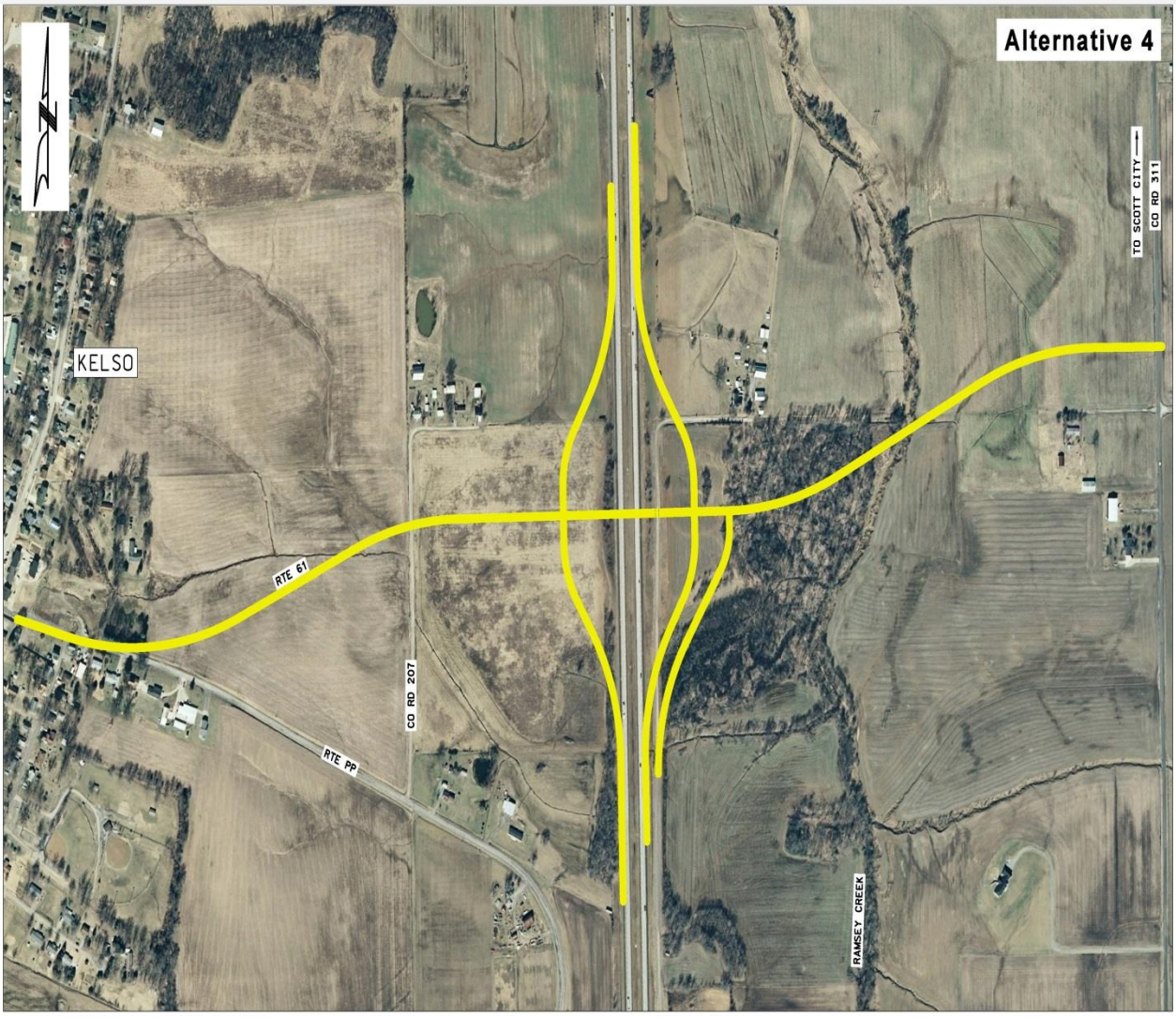
Figure 5: Alternative 3



Alternative 4

Alternative 4 includes the construction of a new diamond interchange located on a tangent section of I-55 and ties into an existing county road system on the east side of I-55 with 2,500 feet of new roadway and Route PP on the west side of I-55 with 3,300 feet of new roadway. Also included in this alternative is approximately 2,000 feet of new outer road.

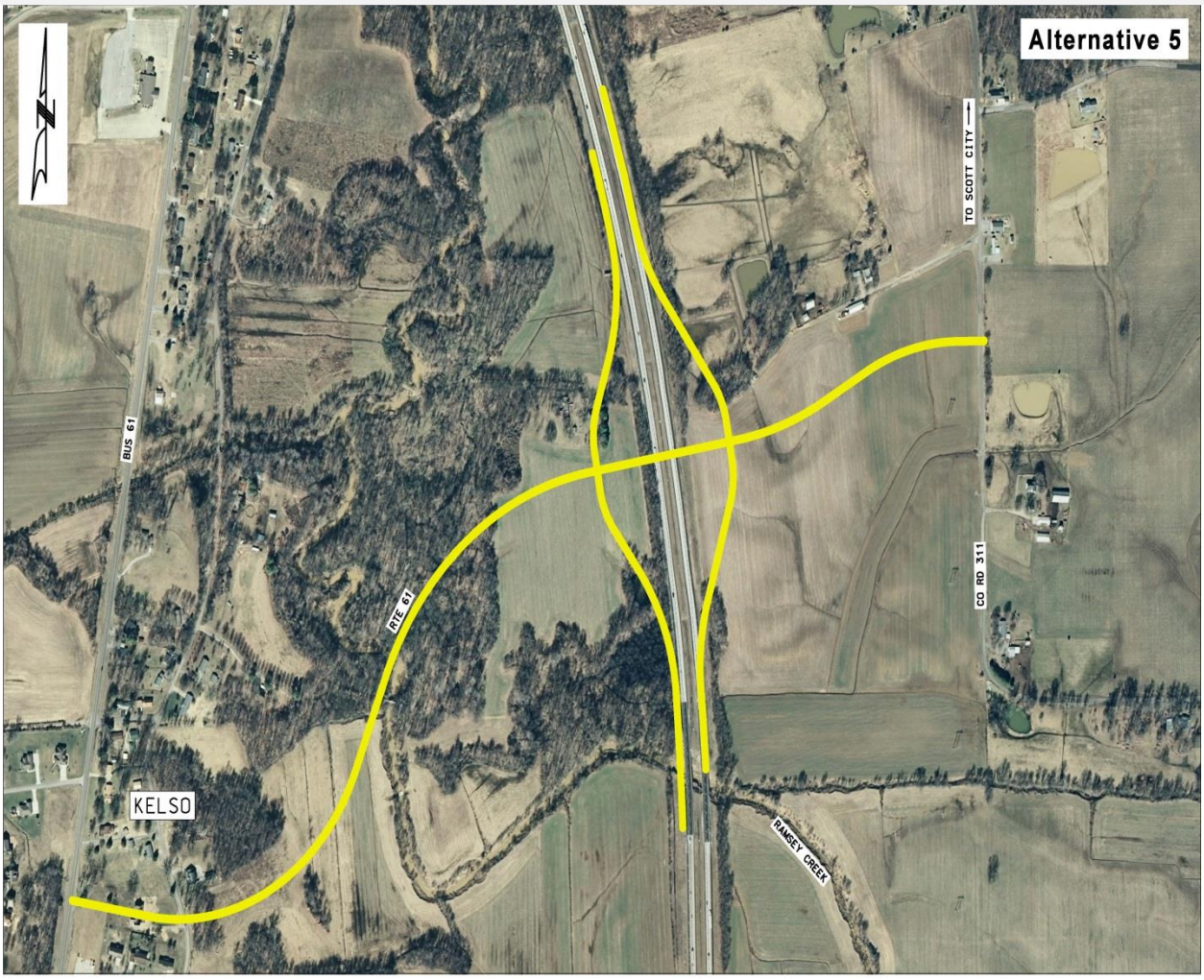
Figure 6: Alternative 4



Alternative 5

Alternative 5 includes the construction of a new diamond interchange located in a curve along I-55. The alternative ties into an existing county road system on the east side of I-55 with 1,500 feet of new roadway and Route 61 on the west side with 3,400 feet of new roadway. This alternative also includes a new bridge across Ramsey Creek for the new roadway and widening of the two existing bridges across Ramsey Creek for I-55.

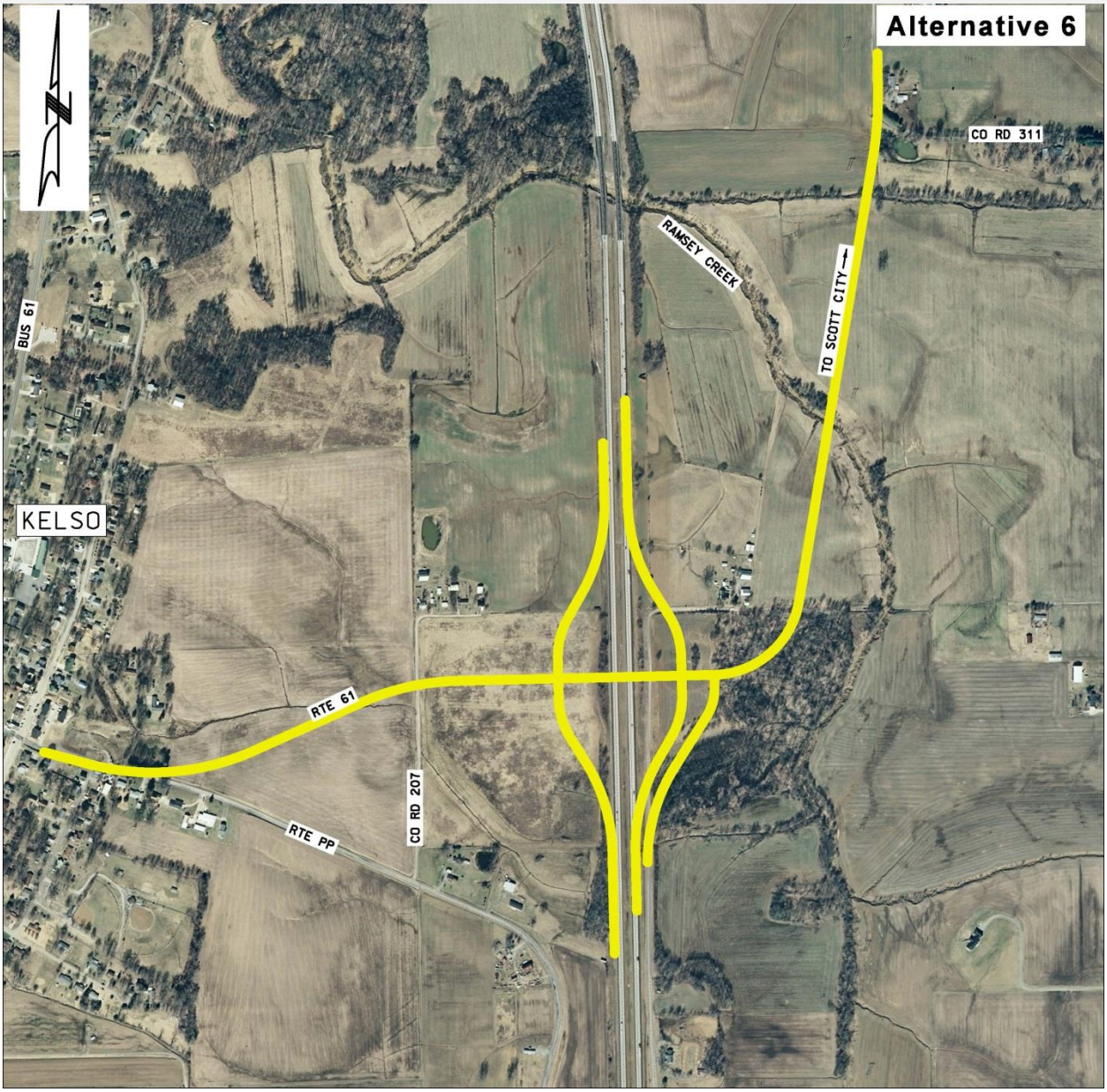
Figure 7: Alternative 5



Alternative 6

Alternative 6 involves the construction of a new diamond interchange located on a tangent section of I-55 and ties into an existing county road system on the east side of I-55 with 2,500 feet of new roadway and Route PP on the west side of I-55 with 5,000 feet of new roadway. This alternative requires two new bridges across Ramsey Creek for the new roadway and approximately 2,000 feet of new outer road.

Figure 8: Alternative 6



Alternative 3b

Following the public meeting on August 7, 2012 it was apparent that the public would like to see the Route PP connection to Route 61 relocated south of the city of Kelso. Several people who attended the public meeting were concerned about more traffic being directed onto existing Route PP. One of the reasons for concern was because of the school located in the south east quadrant of the Route PP/Route 61 intersection and the extra traffic onto existing Route PP would increase congestion near the school. The other concern stated was traffic leaving Kelso to the east has a steep hill to drive down, if farm machinery or other large equipment has to use both lanes of Route PP then it causes a hazard for cars traveling west up the hill because they can't see that both lanes at the top of the hill are being used. Increasing the traffic on PP would increase the likelihood of traffic problems at this location. Because of such a high demand for this connection to be relocated, Alternative 3b was developed.

Alternative 3b will build a new interchange at the location of the existing Route PP overpass. Building this requires that ramps be added and a new wider bridge built at the same location as the existing Route PP bridge. Approximately 5,000 feet of new Route PP will be built from Route 61 to I-55 on the west side of I-55. Approximately 7,500 feet of outer road will be built and/or rehabilitated to connect the new interchange to County Road 311 on the east side of I-55.

Figure 9: Alternative 3B

Alternatives Dismissed from Further Evaluation

No-Build Dismissal

The No-Build Alternative would make no improvements to I-55 in the project area other than normal highway maintenance. Because of this, the No-Build Alternative will not address the projects purpose and need of alleviating congestion and improving connectivity.

Alternative 1 Dismissal

Alternative 1 has been dismissed from further evaluation due to the non-standard interchange design having the potential to cause driver confusion resulting in substandard functionality of the interchange. Because of this driver confusion, the interchange proposed with Alternative 1 will not meet the projects purpose and need of reducing congestion and improving connectivity.

Alternative 2 Dismissal

Like Alternative 1, Alternative 2 was partially dismissed due to the non-standard interchange design being confusing to drivers. Also, Alternative 2's connection into Kelso via Route PP would take all traffic accessing Route 61 from I-55 and place it in the middle of town causing an increase in traffic and reduced functionality of the existing highway system resulting in increased congestion. Having traffic from I-55 go through the middle of town was a concern raised by the city of Kelso. With the construction of this alternative, the projects purpose and need will not be addressed. Connectivity will not be improved and congestion will not be improved at the 61/K/M/55 interchange.

Alternative 4 Dismissal

Alternative 4 has been dismissed from further evaluation due to impacts to the Robert farmstead (that is eligible for listing on the National Register of Historic Places) and having to abandon a section of Route PP due to the relocation of the overpass over I-55. Also, Alternative 4 does not improve connectivity in the Scott City area which is part of the purpose for the project.

Alternative 5 Dismissal

The dismissal of Alternative 5 is due to the proximity of the alternative to the existing K/M/61/I-55 interchange. The short distance between the two interchanges would diminish traffic flow along I-55 resulting in increased congestion which is part of the purpose of the project. Also, this alternative had the greatest amount of environmental impacts of the six alternatives.

Alternative 6 Dismissal

Like Alternative 4, Alternative 6 has been dismissed because of impacts to the Robert farmstead (that is eligible for listing on the National Register of Historic Places), having to abandon a section of Route PP due to the relocation of the overpass over I-55, and the lack of connectivity to Scott City.

For the above mentioned reasons, Alternatives 1, 2, 4, 5, and 6 will not be carried forward in this EA for further evaluation.

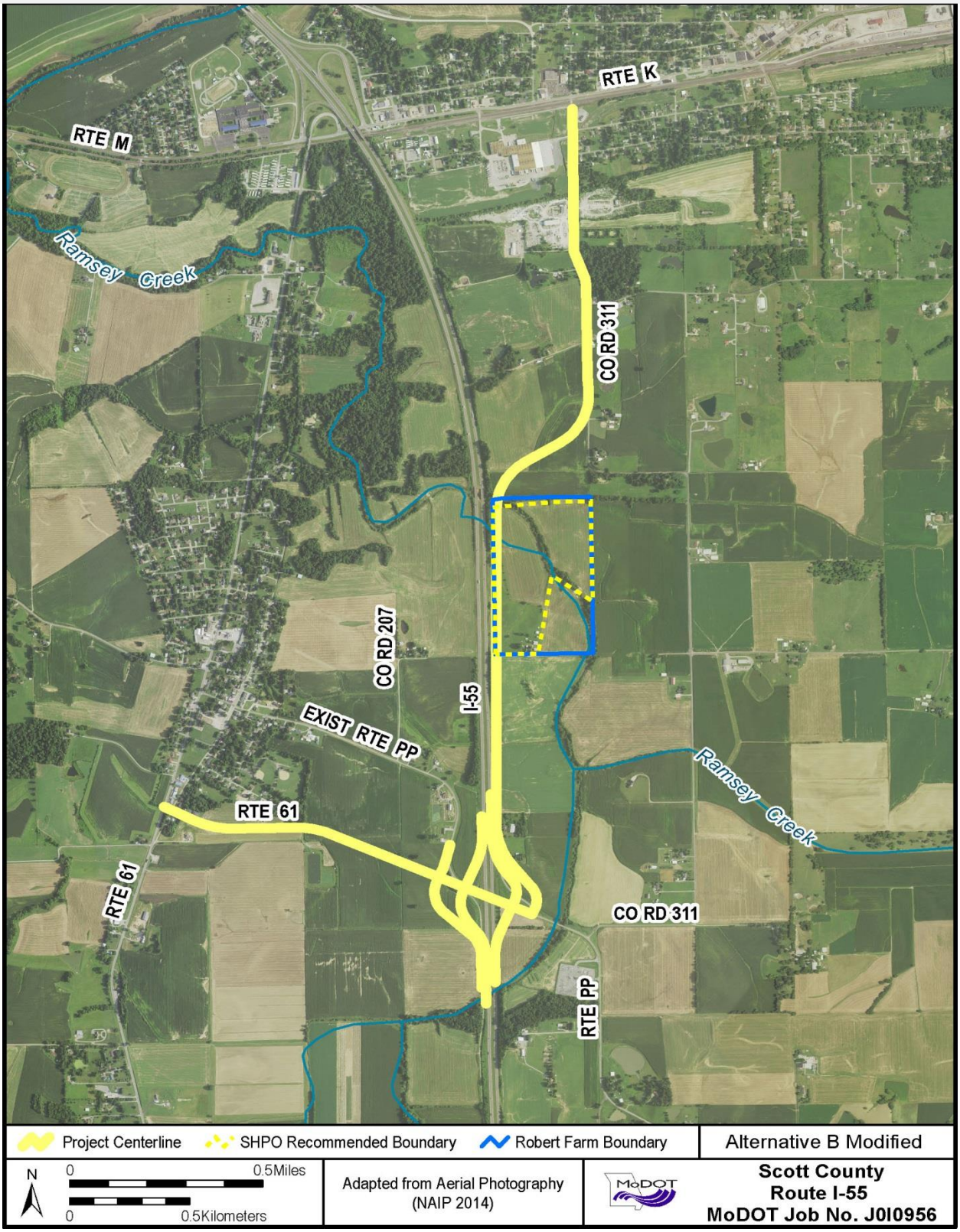
Dismissal of Alternative 3b

Alternative 3b was originally retained for preferred alternative consideration because of its ability to successfully meet the purpose and need of the proposed project. Although the alternative met the criteria to fulfill the purpose and need for the project, the SHPO deemed the farm fields associated with the Robert property contributing factors to the eligibility of the property for inclusion on the NRHP. For this reason, the alternative has been modified to avoid the farm fields creating a new alternative, Alternative 3b Modified.

Alternative 3b Modified

Alternative 3b Modified will build a new interchange at the location of the existing Route PP overpass. Building this requires that ramps be added and a new wider bridge built at the same location as the existing Route PP bridge. Approximately 5,000 feet of new Route PP will be built from Route 61 to I-55 on the west side of I-55. Approximately 7,500 feet of outer road will be built and/or rehabilitated to connect the new interchange to County Road 311 on the east side of I-55. Because of the SHPO's determination of the farm fields associated with the Robert property being contributing factors for the properties inclusion on the NRHP, the outer road has been modified to avoid any impact to the fields.

Figure 10: Alternative 3B Modified



Alternatives Retained in this EA

Alternatives 3 and 3b Modified will be retained and evaluated in detail for this EA along with the No-Build Alternative, which serves as a baseline for evaluating the proposed build alternative. These alternatives are being retained because they meet the purpose and need established earlier, reducing congestion and improving connectivity, and preliminarily look to have fewer environmental and socioeconomic impacts.

Preferred Alternative

MoDOT has designated Alternative 3B modified as the Preferred Alternative to address transportation needs to relieve congestion on I-55 and improve connectivity in the Kelso and Scott City area. Alternative 3B modified will build a new interchange at the location of the existing Route PP grade separation. Building this requires that ramps be added and a new wider bridge built at the same location as the existing Route PP bridge. Approximately 5,000 feet of new Route PP will be built from Route 61 to I-55 on the west side of I-55. Approximately 7,500 feet of outer road will be built and/or rehabilitated to connect the new interchange to County Road 311 on the east side of I-55. Although this is the current Preferred Alternative, the final selection of an alternative will not be made until after consideration of impact along with any public and agency comments made during the comment period.

Table 6: Summary of Potential Impacts For Reasonable Alternatives			
	No-Build Alternative	**Alternative 3**	**Alternative 3b Modified**
Costs (Millions)			
Construction	0	7.0	11.8
Right of Way	0	1.1	1.6
Total	0	8.1	13.4
Right of Way Impacts			
Residential Relocations	0	1	1
Commercial Relocations	0	0	0
Right of Way (New) Acres	0	24.0	74.0
Environmental Impacts			
Potential Section 4 (f) Properties (Parklands)	0	0	0
Wetlands	0	0	0
Creek/Stream/River Crossings	0	1	2
Farmland (acres)	0	23	74
Floodplain (acres)	0	16	19
Threatened and Endangered Species	0	0	0
Hazardous Waste	0	0	0
Cultural Resources Impacts			
Cemeteries	0	0	0
Previously Recorded Archaeological Sites	0	12	12
Potential Historic/4 (f) Properties	0	1	1

Proposed Project's Potential Effects on the Natural and Social Environment

Land Use

The primary use for land within the study corridor is for farming. Other land uses surrounding the project include single-family residential, multiple family residential, and public facilities.

The majority of the land within the project corridor is undeveloped agricultural land. Small tracts of trees and streams are also found within the corridor. Although right of way would be required for the proposed alternatives, for the most part the surrounding land would continue to be available for its current and intended use.

Prime and Unique Farmland

Recognizing the importance of protecting farmland from conversion to non-agricultural uses, Congress passed the Farmland Protection Act (FPPA) in 1981. Before a federal project or federally funded program can use farmland, the farmland that would be affected must be assessed in a collaborative process with the Natural Resources Conservation Service (NRCS). NRCS classifies farmland as prime, unique or of statewide or local importance based on soil type. If the project would convert any prime, unique, statewide, or locally important farmland to non-agricultural uses in excess of parameters developed by NRCS, then the federal agency must take measures to minimize farmland impact.

There is a long history of farming in the project area, with Scott County producing approximately $165 million in agricultural revenue. The average farm size in Scott County is 424 acres. Row crops within the project limits are a source of agricultural income to local farmers. The I-55 interchange project area has both prime and unique farmland, as well as lands of statewide and local importance.

Two alternatives for the Scott County, I-55 Interchange project were evaluated, using the Farmland Conversion Impact Rating Form AD-1006. Alternate 3 and Alternate 3b Modified, were chosen for consideration. Alternative 3 will impact approximately 55 acres; Alternate 3b and 3b Modified approximately 74 acres. The total conversion impact ratings for the alternatives were 124 and 143 points respectively and well below the 160-point threshold NRCS established for consideration of farmland protection. Any small variation of alternatives that might occur during detailed design is unlikely to differ significantly from this evaluation. A copy of the Farmland Impact Conversion Rating Impact Form is located in Appendix A.

The project area is not protected by any state, local government, or private nonprofit policy or program. Any project impacts to on-farm investments, such as water diversion systems or terracing, will be minimized as design is further refined. After project completion, any farms with uneconomic remnants (parcels of land that can no longer be farmed) will be offered just compensation based on an appraisal. All farm support services are available to the area and will not be negatively impacted by the project. The project will be fully compatible with existing agriculture.

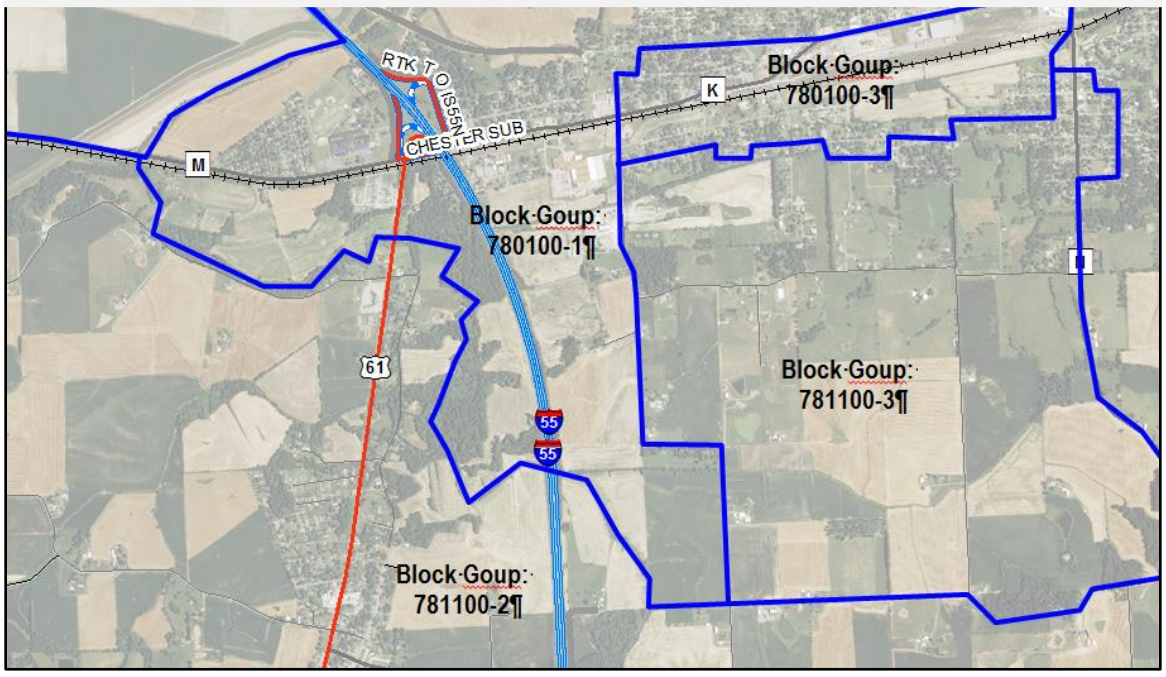
Past correspondence with NRCS indicates that they do not regard temporary easements as conversions of farmland. Therefore, any temporary easements such as might be required for the contractor's staging area with all build alternatives will not be further evaluated for farmland impact.

Social/Economic Characteristics

Demographic Characteristics

This section provides insight into the population characteristics of the immediate project area and the region. Accordingly, demographic information was compiled by Census Block Groups shown below in Figure 11 (Census Bureau, 2010).

Figure 11: Census Block Groups



Population statistics for the city, county, and state from 2010 are provided in Table 7. The population has increased from 2000 to 2010 for the city of Kelso and the state of Missouri, but decreased for Scott County as a whole since the 2000 Census.

Table 7. Population			
Year	**Kelso**	**Scott County**	**State**
2000	527	40,422	5,595,211
2010	586	39,191	5,988,927
% Change	11.20%	-3.05%	7.04%

As detailed in Table 8, the population of the three age groups is fairly consistent between the Census Block Groups with approximately 25%-60%-15% split between persons less than 18, those between 18 and 64, and those over 64 years of age respectively.

Table 8: Age Characteristics							
Census Block Groups	**Total Population**	**<18**	**% <18**	**18-64**	**% 18-64**	**>64**	**% >64**
292017811002	1,452	290	20.0%	890	61.3%	272	18.7%
292017801001	1,694	404	23.8%	1,041	61.5%	249	14.7%
292017801003	662	163	26.2%	384	61.7%	75	12.1%
292017811003	696	190	27.3%	430	61.8%	76	10.9%

In terms of racial characteristics for the area, Table 9 shows that that racial make-up of the Census Block Groups is also very consistent, with only a small (3% average) minority population.

Table 9: Racial Characteristics					
Census Block Groups	**Total Population**	**Minority (No.)**	**Minority (%)**	**White (No)**	**White (%)**
292017811002	1,452	19	1.3%	1,439	99.1%
292017801001	1,694	81	4.8%	1,6244	95.9%
292017801003	622	14	2.3%	614	98.7%
292017811003	696	21	3.0%	675	97.0%

NOTE: The numbers (and percentages) do not necessarily add up. While Hispanic is considered a minority group, it is an "ethnic" category that can be counted under various "racial" categories.

Other demographic characteristics that were noted in the 2010 Census indicates that English is the primary language within these Census Block Groups as less than 0.01% speak English less than well. The percentage of those falling below the poverty level was included in the 2010 American Community Survey (different from the U.S. Census) and was only identified to the larger Census Tract level. At this level, the project falls partially within two Census Tracts: 9201780100 with a poverty level of 16.8% and 29201781100 with a poverty level of 15.0%.

Employment Impacts

Employment impacts are measured by jobs lost and jobs generated by the proposed project. Under the proposed action, no employers in the project area will be displaced.

Positive economic effects may be realized during the construction period due to the expenditure of public funds within the project area. This includes direct income for construction workers which may be expended for goods and services within the area. Indirect economic benefits are expected due to multiplier effects of capital investments whereby local materials and suppliers may benefit from providing goods to the construction contractor for the project.

Pedestrian and Bicycle Traffic

Currently there is no strong evidence of existing use in the project vicinity by either pedestrians or bicycles. Furthermore, a review of existing maps fails to identify existing destinations within a reasonable distance from the project. At this time, there are no plans to include pedestrian or bicycle facilities as part of this project.

Environmental Justice

Title VI of the 1964 Civil Rights Act prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance. Title VI seeks to ensure that all groups and individuals have the right to access and participate in the transportation decision-making process. The 1994 Executive Order 12898 directs federal agencies to take steps to ensure that minority or low-income neighborhoods are not subjected to disproportionate impacts from projects.

Environmental justice seeks to:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on low-income populations.
- Ensure full and fair treatment of all people and their involvement in the transportation decision-making process regardless of race, color, national origin, age, or income.
- Prevent the denial of, reduction in, or significant delay in benefits received by minority and low-income populations.

Impacts caused by the project such as health risks, loss of neighborhood cohesion, excessive noise, reduced mobility, or loss of residence are considered and efforts are made to avoid or minimize these issues. If negative impacts cannot be resolved through avoidance or minimization, they may be mitigated through such solutions as sound walls or designing alternative methods of access to avoid isolating communities or important elements within a community.

Groups that are included in the analysis for environmental justice include minority persons defined as any person who is African American, Hispanic, Asian American, American Indian, or Alaskan Native. Also included in the groups for environmental justice are low income populations. The U.S. Department of Health and Human Services 2010 Poverty Guideline is $22,050 for a family of four.

The project corridor was evaluated to identify the presence of low income or minority populations and the potential impacts to them in accordance with Executive Order 12898. While both low income and minority populations were identified in the general area surrounding the proposed project, no disproportionately high and adverse human health or environmental effects to these groups will occur from the proposed action. The minority levels in the project area are far below that of Scott County, the State of Missouri, and the United States as a whole. The poverty levels, while important, are in line for Scott County and for the State of Missouri. It was therefore determined that this project did not present any specific Environmental Justice issues.

Community Cohesion

Geographically, a community can refer to anything from a neighborhood, to a city, state, or even a nation. The most consistent aspect of any of these communities is that they all have a residential component. Within the exception of limited portions of the community of Kelso, this project is primarily within a rural, agricultural community.

While requiring a number of acres to construct, the proposed action does not significantly disrupt current land use patterns or community components, cause a considerable change in the community, or result in community segmentation. The proposed action should improve the local travel network.

Community Facilities

The proposed action would have both positive and negative impacts on the Kelso area. This includes negative short-term impacts associated with construction activities, and positive long-term impacts once construction is completed. These impacts have been documented throughout the preceding analysis and the discussion of construction impacts beginning on page 41.

There will be no impacts to public parks, recreational facilities, schools, private recreational areas or churches. While people that regularly work or visit the area may need to learn new directions of travel; with the exception of temporary impacts during construction, the overall patterns should remain very similar and the proposed action should benefit access. Police and fire protection should benefit from the proposed action due to improved access and reduced congestion that will improve response time of emergency vehicles.

Acquisition Impacts

While the No-Build Alternative would have no acquisitions, and therefore no acquisition impacts, both of the alternatives being carried forward (Alternative 3 and Alternative 3B Modified) will require new right of way. Alternative 3 would require approximately 20 acres of new right of way to provide for a new interchange and limited outer roads. Alternative 3B Modified would require substantially more right of way (74 acres) to provide for the same new interchange but including a substantially larger outer road system. Because of the rural location, either alternative would require only a single residential displacement.

Noise

The 1972 Federal-aid Highway Act required FHWA to develop noise regulations for new Federal-aid highway projects. FHWA Noise Standards give highway agencies flexibility in conforming to national requirements. MoDOT's noise policy (found in the Engineering Policy Guide at 127.13) on highway traffic noise and construction noise describes MoDOT's implementation of the requirements of the FHWA Noise Standard at 23 Code of Federal Regulations (CFR) Part 772. The policy was developed by MoDOT and approved by FHWA.

The primary sources of highway traffic noise are the tire-pavement interface, engine noise and exhaust noise. In very general terms, the lower threshold of highway noise impact is roughly the point at which interference with normal human speech is appreciable.

This project's improvements meet the definition to designate it as a Type I project, thereby making it subject to MoDOT's noise policy that requires a noise analysis. The noise analysis was conducted on the Preferred Alternative, only. However, since the Preferred Alternative includes the same improvements as the other retained alternative (Alternative 3), plus additional enhancements, noise impacts caused by Alternative 3 have also been covered in this analysis.

Noise sensitive land uses exist at several locations along the improvements. See Exhibit 1 and 2 of the Noise Study (Appendix B) for the sites of the noise sensitive receptors. Four noise sensitive areas, composed primarily of residences, were examined. There was a pre-school playground in one noise sensitive area. To be considered for noise abatement, a receiver must be categorized under FHWA Noise Abatement Criteria (NAC) activity categories A-E, shown in the NAC Table, below. Impacts occur when the predicted traffic noise levels approach or exceed the Noise Abatement Criteria (NAC) or when the predicted traffic noise levels substantially exceed the existing noise levels. Predicted noise levels that approach the NAC are those that represent the worst traffic hour, $L_{(h)}$, which are 1 decibel (dBA) below the levels in the NAC Table of MoDOT's Noise Policy. A noise impact is defined as a noise level of 66 dBA on the exterior for category B (residences) and category C (playground). Or if there is a substantial increase over the existing noise level, which is an increase of at least 15 dBA. This level of increase is difficult to achieve. Generally, this sort of impact would only be expected for larger highways on new alignment or new highways.

Table 10 Noise Abatement Criteria				
Activity Category	Activity Criteria[1]		Evaluation Location	Activity Description
	$L_{eq(h)}$	$L_{10(h)}$		
A	57	60	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67	70	Exterior	Residential
C	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails and trail crossings
D	52	55	Indoor	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E[2]	72	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F
F	-	-	-	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical) and warehousing
G	-	-	-	Undeveloped lands that are not permitted for development
[1] The $L_{eq(h)}$ and $L_{10(h)}$ Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures. [2] Includes undeveloped lands permitted for development for this activity category.				

The FHWA Traffic Noise Model, TNM 2.5, was used to model all relevant roadways, receivers, barriers, building rows, terrain lines, and ground zones in the project area for the existing condition. The field measurements and their corresponding traffic counts validated the model by ensuring less than a 3 dBA difference (plus or minus) between the measured Leq and the modeled Leq (h) at each location.

Thirty-seven receptors were evaluated for noise impacts along the corridor. Of those, only one receptor (130 N State HWY PP) was found to be impacted by NAC criteria. None were impacted by a substantial increase.

The one receptor that was shown to be impacted was considered and evaluated for feasibility and reasonableness for noise abatement.

Feasibility is the ability to provide abatement in a given location considering the acoustic and engineering limitations of the site. Acoustic feasibility refers to noise abatement measure(s) ability to achieve the minimum noise reduction at impacted receptors. MoDOT requires at least a 5 dBA insertion loss for a minimum of 67 percent of first-row, impacted receivers for noise abatement to be considered feasible. Engineering feasibility refers primarily to physical constraints and other constructability constraints, such as topography, access, drainage, safety, maintenance, and presence of other noise sources. In general, if these factors are too extreme or cannot be accommodated in providing the minimum noise reduction, noise abatement will be deemed unfeasible. For reasons of safety (primarily wind load and clear space concerns), a noise wall's height is limited to 20 feet. This criterion alone cannot be used to consider noise abatement unreasonable.

Reasonableness is determined by three factors that must be met. The factors are:

- Noise abatement measures shall not exceed 1,300 square feet per benefitted receptor, in the case of noise walls. Where noise walls are not options, other noise abatement techniques may be considered, but cannot exceed $36,000 per benefitted receptor.
- Noise abatement measures must provide a benefit of a minimum of 7 dBA for 67 percent of benefitted first-row receptors.
- The last factor is considered if the previous two are met. With this factor the viewpoints of owners and residents of the benefitted receptors will be obtained. For noise abatement to be considered reasonable, over 50 percent of the aggregate response must be in favorable.

A two-barrier system (see Exhibit 2 in Appendix B) extending along the shoulder of northbound I-55 and the I-55 on ramp was modeled to determine abatement feasibility and reasonableness. With almost 2200′ of wall length at 20′ high for a total of nearly 44,000 square feet of wall, the model results showed that the receptor only receives a 6.8 dBA reduction.

Therefore, noise abatement for this impacted receptor, while feasible, is not reasonable based on square footage greater than 1300 square feet of noise wall per receptor, and also not being able to obtain the 7 dBA required reduction.

Threatened and Endangered Species

The Endangered Species Act of 1973 provides for the protection of threatened and endangered species (both plants and animals) and the habitats that are considered critical to the survival of these species (e.g., breeding, nesting, roosting, and foraging areas). The U.S. Fish and Wildlife Service (FWS) is empowered as the chief administrative, regulatory, and enforcement agency regarding threatened and endangered species and their critical habitats. The State of Missouri also maintains endangered species legislation that protects those species which have been determined to be endangered in the state. The Missouri Department of Conservation (MDC) is the administrative, regulatory, and enforcement agency for state species of concern. The following section explains the potential impacts that this project could have on threatened or endangered species, species of concern, designated critical habitat, and unique natural communities.

The MDC maintains a Natural Heritage Database (NHD) that tracks known locations of all rare species (state and federal) and sensitive habitats in the state as well as significant or unique natural communities. The NHD was used to determine if there are any known locations of rare species or unique natural communities within the corridor of the proposed alternatives. Caves are one of the unique natural communities found in Missouri. The NHD lists some of the cave locations in Missouri. However, the Missouri Speleological Survey maintains a database of all known cave locations in the state of Missouri. This database was used to determine if any caves would be directly impacted by any of the alternatives for this project. A MoDOT biologist conducted initial field observations from existing roadways in June 2013. A follow up sight visit was conducted in September 2014. Information from all of these sources was used to determine the projects potential impacts to threatened or endangered species and unique natural communities.

Two alternatives were evaluated for this project: the construction of a new interchange with Route PP at Interstate 55 with associated outer road improvements (Alternative 3b Modified) and the interchange only construction option (Alternative 3). The proposed improvements are located in a primarily agricultural area of open fields and rural homes. There is one perennial stream, Ramsey Creek, and two small tributaries to Ramsey Creek in the project area. Associated riparian woody vegetation includes mature trees greater than five inches in diameter in some locations. The only small block of woods that did exist in the Alternative 3b Modified corridor has been removed in 2013 within the proposed impact area (logged or cleared by landowner). The remaining tree lines along property fences, along water features, and in the residential yards along the east outer road represent less than one acre of trees that may need to be cleared for the maximum footprint of any alternative. Impacts to wooded habitat would not differ significantly for either alternative.

Review of the NHD (Missouri Department of Conservation, current as of November 2014) revealed no threatened or endangered species, no federally designated critical habitat, no species of concern, and no unique habitat types in or near the proposed project area. There are no spawning restrictions for sensitive resources in Ramsey Creek or its tributaries. A review of the Missouri Speleological Survey database (current as of 2014) does not indicate any caves in or near the project area. June 2013 and September 2014 field checks by a MoDOT environmental specialists of the existing I-55 northbound, southbound, and existing west outer road bridges revealed the absence of any nesting birds on the bridge structures. As this survey was conducted during and just following the breeding season, and there was no evidence of previous or current nesting (no nest residue on the bridges), there will be no restrictions for work on bridges in regard to the Migratory Bird Treaty Act.

The US Fish and Wildlife Service Information, Conservation, and Planning (IPAC) website was queried for an official list of federal listed threatened, endangered, candidate, and proposed species and critical habitats in the project area on May 28, 2015. The following list of species could occur in the project area.

Birds	**Status**
Least Tern (*Sterna antillarum*) interior population	Endangered
Piping Plover (*Charadrius melodus*) all except Great Lakes watershed populations	Threatened
Red Knot (*Calidris canutus rufa*)	Threatened
Mammals	
Gray bat (*Myotis grisescens*)	Endangered
Indiana bat (*Myotis sodalis*)	Endangered
Northern long-eared bat (*Myotis septentrionalis*)	Threatened

Interior Least Tern

The Missouri River and Mississippi River in Missouri can provide habitat during migration flights and does have habitat suitable for breeding. There is a single record from northwestern Missouri on a national wildlife refuge pond from summer 1997 where a few birds were observed throughout the summer but with unknown breeding status. All other records bordering the state of Missouri are along the Mississippi River in southeastern Missouri. The majority of those records are from the summers of 1985-2006 along shorelines of Missouri, Kentucky, and Tennessee, islands, sandbars, and occasionally from nearby ponds. These are breeding season records and there was observed pairing and nesting behavior. There is no habitat for any life history stage for this species in the proposed corridor for this project. There will be No Effect on this species from the construction of the proposed project. For additional information on this species see Appendix C.

Piping Plover

The Missouri River and Mississippi River in Missouri can provide habitat during migration flights and does have habitat suitable for breeding. There are no records of Piping Plovers in Missouri in the Missouri Department of Conservation Natural Heritage Database (current as of November 2014). There have been experimental artificial breeding research areas set up in the Mississippi River by the Army Corps of Engineers Riverlands Migratory Bird Sanctuary near Alton, Missouri. There is no habitat for any life history stage for this species in the proposed corridor for this project. There will be No Effect on this species from the construction of the proposed project. For additional information on this species see Appendix C.

Rufa Red Knot

There are no records of Rufa Red Knot in Missouri in the Missouri Department of Conservation Natural Heritage Database (current as of November 2014). There is no habitat for any life history stage for this species in the proposed corridor for this project. There will be No Effect on this species from the construction of the proposed project. For additional information on this species see Appendix C.

Gray bat

Potential effects on gray bats from transportation projects can include direct disturbance of cave habitat occupied by bats, indirect disturbance at caves and mines from removal of foraging and riparian flight corridors, and possible indirect disturbance to caves from blasting vibration or increased exposure to human disturbance. Review of NHD (November 2014) and the Missouri Speleological Survey cave database (current to 2014) do not indicate any known bat or cave resources within several miles of the project area. The nearest gray bat summer capture records in Missouri are from over 40 miles to the west of the project area. There will be no disturbance to any gray bat habitat from this project. There will be No Effect on this species from the construction of the proposed project. For additional information on this species see Appendix C.

Indiana bat

The Indiana bat (*Myotis sodalis*) is a federally listed endangered species that hibernates in caves during the winter months and roost in trees during the summer months. Individuals begin congregating around the caves where they will hibernate in early fall. They emerge from hibernation in early spring and begin migrating to their summer roosting and foraging areas. Indiana bats are entirely insectivorous, eating primarily moths, but also mosquitoes and aquatic insects. In the summer, females gather beneath the loose bark of living and dead trees in maternity colonies of several individuals. Indiana bats exhibit strong fidelity to their roosting and hibernating sites and will return to the same locations year after year. Current threats to the species include declines attributable to white nose syndrome, which has been identified in caves in Missouri, and impacts to summer habitat from agricultural development and conversion of forested land which has affected the amount and quality of habitat available to the species. Harvesting suitable live trees and removing dead trees reduces the amount of available preferred habitat and less desirable habitat where reproductive and survival costs may be higher.

The FWS considers the entire state of Missouri to be within the breeding range of this species. Therefore, any project that involves tree clearing in Missouri could potentially impact this species by removing potential roosting habitat. Both proposed alternatives involve tree clearing so they could potentially impact this species. Though there is some of this habitat present in the general study area (two to three potential trees useable as roosts, negligible amount of good quality foraging habitat), the nearest known Indiana bat summer records are over 15 miles away, and tree clearing would be minimal, most probably less than 1.0 acre. There are no caves in or near the project area that could serve as winter habitat for Indiana bats. The only possible impact from this project is the loss of potential summer roost habitat. Until clearing limits are defined, the removal of suitable roost habitat is uncertain. MoDOT will reassess the presence of suitable roost habitat in the disturbance limits of this project when limits are better defined and any suitable roost trees will only be removed between November 1 and March 31. Given these existing conditions, and the small amount of potential habitat in the area that may be removed for the construction of this project, and the proposed conservation measure of seasonal tree clearing MoDOT has determined that this project May Affect, But is Not Likely to Adversely Affect the Indiana bat. If suitable habitat will be removed, MoDOT will conduct Section 7 consultation on behalf of Federal Highway Administration with the United States Fish and Wildlife Service with this determination.

Northern long-eared bat

The northern long-eared bat (*Myotis septentrionalis*) is a federally listed threatened species that hibernates in caves during the winter months and roost in trees during the summer months. Individuals begin congregating around the caves where they will hibernate in early fall. They emerge from hibernation in early spring and begin migrating to their summer roosting and foraging areas. Northern long-eared bats are entirely insectivorous. In the summer, females gather beneath the loose bark of living and dead trees, in tree cavities, and damaged tree crevices in maternity colonies. Indiana bats exhibit strong fidelity to their roosting and hibernating sites and will return to the same locations year after year. Currently the largest threat to the species is declines attributable to white nose syndrome, which has been identified in caves in Missouri. In fact, this species was listed officially at threatened in April 2014 due to this one major threat. Harvesting suitable live trees and removing dead trees reduces the amount of available preferred habitat and less desirable habitat where reproductive and survival costs may be higher.

The FWS considers the entire state of Missouri to be within the breeding range of this species. Therefore, any project that involves tree clearing in Missouri could potentially impact this species by removing potential roosting habitat. Both proposed alternatives involve tree clearing so they could potentially impact this species. Though there is some of this habitat present in the general study area (two to three potential trees useable as roosts, negligible amount of good quality foraging habitat), the nearest known northern long-eared bat summer records are over 40 miles away, and tree clearing would be minimal, most probably less than 1.0 acre. There are no caves in or near the project area that could serve as winter habitat for northern long-eared bats.

The only possible impact from this project is the loss of potential summer roost habitat. Until clearing limits are defined, the removal of suitable roost habitat is uncertain. MoDOT will reassess the presence of suitable roost habitat in the disturbance limits of this project when limits are better defined and any suitable roost trees will only be removed between November 1 and March 31.

Given these existing conditions, and the small amount of potential habitat in the area that may be removed for the construction of this project, and the proposed conservation measure of seasonal tree clearing MoDOT has determined that this project May Affect, But is Not Likely to Adversely Affect the northern long-eared bat. If suitable habitat will be removed, MoDOT will conduct Section 7 consultation on behalf of Federal Highway Administration with the United States Fish and Wildlife Service with this determination.

Floodplain

Executive Order 11988 "Floodplain Management", FHWA policy and procedures in 23 CFR 650, and other federal floodplain management guidelines, direct agencies to evaluate floodplain impacts for their proposed actions. With Executive Order 11988, the base, or one percent annual chance, flood was adopted as a standard for use by all federal agencies. The base flood is the flood that has a one percent chance of being equaled or exceeded each year. The base flood is commonly labeled as the "one percent flood".

National Flood Insurance Program Flood Hazard Boundary Maps are available for Scott County. Ramsey Creek and its associated base floodplain flow through the project study corridor. Because both I-55 and US 61 bisect the base floodplain in several locations, both alternatives will encroach upon the base floodplain. The impacts to the floodplain for the two alternatives are; Alternate 3 impacts 24 acres and 4,709 linear feet of floodplain, Alternate 3b Modified impacts an additional 19 acres and 3,566 linear feet (43 acres and 8,275 linear feet total). MoDOT will obtain a floodplain development permit for the Preferred Alternative after final design and before FHWA authorization of funds. However, widening and re-surfacing existing county roads under Alternative 3b Modified would have a negligible impact on the floodplain. There are no areas mapped as regulatory floodway within the study area, therefore, a "no-rise" certification will not be necessary for either of the alternatives.

Wetlands and Waters of the U.S.

Water Resources

The Clean Water Act of 1972 (CWA) requires an evaluation of every project to determine whether the project could have a negative impact on any waters of the U.S. including wetlands, streams, ponds and special aquatic sites. Section 404 of the CWA requires that all federal, state, and public entities obtain a permit from the U.S. Army Corps of Engineers (USACE) before placing dredged or fill materials into waters of the U.S. Section 401 (CWA) requires that water quality certifications be obtained for any activity that results in discharges into streams or jurisdictional wetlands. The MDNR manages this program.

The following overview provides an environmental summary of the jurisdictional wetlands and streams that potentially will be impacted by the project. Environmental features within the corridor were reviewed at a screening level using the US Fish and Wildlife Service's National Wetland Inventory (NWI) maps, United Stated Geologic Survey (USGS) 7.5-minute topographic maps, the Scott County Soil Survey, windshield survey, field survey and 2012 aerial photographs.

Wetlands

Wetlands are classified in accordance with the USACE 1987 Wetland Delineation Manual. According to the National Wetlands Inventory (NWI) maps there are wetlands located within the project limits of both alternatives. There are more potential wetlands located in Alternative 3b Modified than Alternative 3 due to the outer road. However after field investigation, the wetland on Alternative 3b Modified will not be impacted by the proposed alignment. The Scott County Soil Survey indicates all of the soils in the project areas are non-hydric.

Alternative 3 Wetlands

There are no wetlands impacted by this alternative.

Alternative 3b Modified Wetlands

The outer road for Alternative 3b Modified impacts a large mapped wetland feature, PFO1A (temporarily forested wetland), on the NWI maps. This area shows up on the aerial photography as forested. After field investigation of the wetland the area is actually clear cut for row crop and only the swale approximately 50 feet east of the existing outer road would meet wetland criteria. This swale is outside the project limits and will not be impacted.

Ponds

According to the NWI maps and recent aerial photographs, one pond is located within the proposed Alternative 3b Modified. This pond is outside the 100-year floodplain and was determined after field investigation to be an upland cut pond (i.e. non-jurisdictional). If impacts to the pond will occur, the land owner will be coordinated with and compensated for any impacts that occur to their property.

Stream/River Crossings

Alternative 3

One unnamed, perennial tributary to Ramsey Creek will be impacted by Alternative 3. The stream is currently impacted by an existing box culvert under I-55. This box culvert measures 8 feet x 8 feet. Alternative 3 will additionally impact this stream with either an extension of the existing box culvert under I-55 or a standalone box culvert separated from the one under I-55 with open channel. The new box culvert would be presumably the same size. Under the new USACE Nationwide Permits Regional Condition 1, culverts greater than 48 inches in diameter must be embedded at least one foot. If a new, standalone, box culvert is placed, this condition would not apply. Additionally, Ramsey Creek on the south side of the interchange will be impacted where the existing bridges will be widened for ramp tie-ins. A map depicting the location of these stream impacts is located in Appendix D.

Alternative 3b Modified

The unnamed, perennial tributary to Ramsey Creek that is impacted in Alternative 3 will also be impacted by Alternative 3b Modified, but crossed twice with the additional relocation of Route PP. Both impacts will be culverted crossings. Additionally, Ramsey Creek will be impacted on the north with an additional bridge or box culvert structure for the outer road crossing and on the south as the existing bridge will be widened where the ramps tie-in. Three additional intermittent tributaries to Ramsey Creek will be impacted with culvert extensions. The new USACE Nationwide Permits Regional Condition 1 also applies, culverts greater than 48 inches in diameter must be embedded at least one foot. If the existing culverts are extended, this condition would not apply. A map depicting the location of these stream impacts is located in Appendix D.

Riparian Corridor

A riparian corridor or riparian zone is the area of land along the banks of a stream or river. The riparian corridor is significant because of its influence on soil conservation, habitat diversity, natural filtration, flood energy dissipation, water temperature abatement, etc. It is important to preserve as much riparian corridor as possible where it exists. There is very little existing riparian corridor along the potential stream impact areas overall.

Water Quality

Water quality is the physical, chemical, and biological characteristics of water in relationship to a set of standards. Water quality standards provide a means by which attainment of water quality objectives can be measured. The objective is protection of designated uses through the application of narrative or numeric criteria. The narrative criteria are listed below in the box. The level of protection given to a stream, lake, or river is dependent on the expected or "designated use(s)," of that water. Classified waters in Missouri have been assigned the designated uses that are listed in 10 CSR 20-7.031(C) page 10 of chapter 7. The anti-degradation section requires actions to maintain the existing uses for a particular stream.

Ramsey Creek has beneficial uses as designated in the water quality standards established by the Missouri Clean Water Commission for all three alternatives. Ramsey Creek is a Class P **s**tream, which means it maintains permanent flow during drought conditions. The designated uses for Ramsey Creek include livestock and wildlife watering (LWW), protection of aquatic life (AQL) and whole body contact (WBC) category B. To prevent contamination of streams, lakes, ponds, or other water impoundments adjacent to the project area, job specifications would require temporary or permanent pollution control measures as outlined in MoDOT's Stormwater Pollution Prevention Plan (SWPPP) and within MoDOT's General Permit for Land Disturbance (MO-R100007), reissued by the MDNR on May 31, 2012.

Potential water quality impacts from the alternatives are associated with constructing, operating, and maintaining a new interchange. Water quality impacts would be similar for all build alternatives.

Short-term impacts to water quality are associated with the construction phase of the project from erosion, siltation, and an increase in contaminants during construction. Best management practices (BMPs) will be implemented to minimize sediment and erosion. The project will be subject to the National Pollution Discharge Elimination System requirements of the Clean Water Act (CWA).

Stormwater Impacts

Under MoDOT's Municipal Separate Storm Sewer System (MS4) permit, MoDOT is required to ensure that the project prevents or minimizes water quality impacts by reasonably mimicking pre-construction runoff conditions on all affected new development projects and by using water quality strategies and technologies on all affected redevelopment projects, to the maximum extent practicable.

U.S. Army Corps of Engineers Permits

Under Sections 404 and 401 of the Clean Water Act (CWA), a permit is necessary for dredge and fill activities within waters of the United States. A Section 404, USACE permit, and a Section 401, MDNR certification, would be needed prior to construction. Impacts to construct either Alternative 3 or 3b Modified would fall under a Nationwide Permit 14, Linear Transportation Projects. Impacts are expected to be under the 0.1 acre threshold at each crossing. Final determinations of impacts are typically completed during the design phase. If all impacts are below 0.1 acre a pre-construction notification to the Corps would not be necessary. All required permits will be issued prior to FHWA authorization for construction.

Mitigation

Mitigation is required after avoidance and minimization have been accomplished for impacts to streams, wetlands and some ponds in the project area. Mitigation for wetlands and ponds is calculated using a ratio system. For instance, wetlands classified as emergent are generally required to be mitigated in the range of 1 to 3 times the impacted area, depending on the quality of the wetland. Ratios are subject to the USACE and MDNR discretion. More mitigation is typically required for higher quality wetlands and unique wetland types.

The amount of mitigation for stream impacts is determined using the State of Missouri Stream Mitigation Method (MSMM). The MSMM determines the amount of credits necessary to compensate for the stream impacts. More stream mitigation is required when impacts fall within certain priority areas or higher order, larger, streams. Examples of these are when impacts are on streams with spawning restrictions or involve those providing habitat for federally listed threatened and endangered species.

The need for mitigation will be determined by the type of crossing structure utilized in final design and through further coordination with USACE and MDNR. All required permits will be issued and mitigation coordinated with jurisdictional agencies.

Historic and Archaeological Sites

Section 106 of the National Historic Preservation Act directs federal agencies to consider the effects of their projects on historic properties. Historic properties are defined as buildings, sites, structures, objects or districts that are listed on, or eligible for listing on, the National Register of Historic Places (NRHP).

To determine if there are any historic properties in the study area, the MoDOT conducts archaeological and architectural surveys, following professional standards and the guidance of the Missouri State Historic Preservation Office (SHPO) for the respective survey type. After the survey is complete consultation between the FHWA, MoDOT and the SHPO regarding the eligibility of resources and project effects on historic properties identified will take place. MoDOT has begun consultation about this project and has submitted the survey results with MoDOT's findings to the SHPO. SHPO has reviewed the submittal and has responded with comments currently being addressed by MoDOT specialists.

Architecture

The architectural survey utilized an area of potential effects (APE) of the study area plus an additional buffer of 300 feet for the consideration of both direct and indirect effects. If a parcel was not entirely within the APE, but had a resource within the APE, all the resources on the parcel were surveyed. If a parcel had no resources within the APE, it was identified as vacant/no resources. There were no parcels where the landowner had denied access and the architectural resources were not visible from the right of way.

The architectural survey included 129 total parcels. Of these parcels 52 were vacant or had no resources within the APE, 29 contained resources constructed prior to 1945, 26 contained resources constructed between 1945 and 1970, and 22 contained resources constructed after 1970.

Most of the surveyed properties were common building types or had significant alterations made to them, and clearly do not meet the eligibility criteria for listing on the NRHP. Preliminary consultation with the SHPO identified three properties warranting further study, these are described below in Table 11.

Table 11. Resources Needing Further Study

Parcel/AR Number	Number of Resources	Alt 2	Alt 3B	Alt 5	Comments
6	15	1	1	1	A ca. 1900 farmstead with house, barns and assorted agricultural outbuildings
61	6			1	1890 Gothic Revival Church (St. Augustine Catholic), cemetery, school and associated buildings
65	2			1	A ca. 1900 two-and-a-half story Queen Anne house

Only one of these resources is on alternatives being carried forward in this document, Architectural Resource (AR) 6, a farmstead in the SE1/4 NW1/4 Section 8 Township 29 N Range 14E, containing a ca. 1900 central bay house, barns and other residential and agricultural outbuildings. The house, AR 6.1, is a hall and parlor form house with a concrete foundation, wide gauge vinyl siding, asphalt-shingle side-gable roof and an irregular plan. The house has two-over-two double-hung wood windows, a gable roof center bay porch, supported by turned posts on the main façade and an interior brick chimney. A list of AR 6 associated outbuildings and a map showing their location is included in Appendix E.

The buildings were likely built by Charles Robert shortly after he acquired a 162 acres parcel from Charles Margrabe in 1898. The 1901 Atlas is the first map to show buildings on the property. Charles Robert died in 1913, although his probate file was not available, evidence suggests that his property was divided between two of his sons: in 1930 son Charles owned 80 acres that includes AR 6 and son Paul owned 80 acres including the western half of the northwest quarter of Section 8. In 1964 the interstate would be constructed separating these two parcels. Aerial photographs show that agricultural practices on the property changed after I-55 was constructed and Ramsey Creek rechanneled through the property. Land that had previously been fallow or in pasturage was tilled, fields that were tilled changed to erase the previously identifiable land contours, and the woodlot has been cleared.

In October 2013, MoDOT recommended that the property was not eligible for listing on the NRHP. The SHPO felt that the property was eligible as a good example of a 20th century farmstead. Further consultation identified contributing and non-contributing resources associated with the parcel: ARs 6.1, 6.3, 6.4, 6.6, 6.8, 6,9, 6.10, 6.11, 6.12, 6.13, 6.14, and 6.15 (described in Appendix I) as well as farm fields associated with the property were identified as contributing resources. The project was redesigned to minimize impacts on the farm fields, and the SHPO has concurred that the project will have "no adverse effect: on the historic property" on April 4, 2014. Copies of the SHPO concurrence letters are included in Appendix E.

Consultation between the Federal Highway Administration (FHWA), the Missouri Department of Transportation and the State Historic Preservation Office (SHPO) has determined that the proposed project will have no adverse effect upon the farm designated as Architectural Resource (AR) 6. AR 6 is eligible for listing in the National Register of Historic Places for Criterion A: Agriculture as a good example of a 20th century farmstead. SHPO has been notified that concurrence with the determinations of "no historic properties adversely affected" will be used by FHWA in applying the de minimis impact criteria for Historic Sites in compliance with Section 4(f) (49 U.S.C. 303**)**. Based upon the minimal use by the project on AR 6, FHWA has determined that the de minimis impact criteria have been met for this historic property.

Any change in design or construction within this property, AR 6, will need to be re-consulted on with the SHPO and concurred with before federal construction authorization is approved.

Bridges

The survey identified six bridges and one culvert on at least one of the alternates. Two are paired bridges, A0912 carrying Interstate 55; these bridges are exempt from Section 106 consideration by the *Interstate Exemption to Section 106*. Three bridges were constructed when Route PP and the outer road were reconfigured following the construction of Interstate 55 (R0138, R0125 and N0691). One county road bridge (400000) is a steel girder bridge constructed in 1962. These four bridges are all constructed after 1945 and are common concrete or steel bridge types; they are covered by the *Program Comment for Post-1945 Concrete and Steel Bridges*, which completes Section 106 review for common post-World War II concrete and steel bridges that are not located within or adjacent to historic districts. A report submitted to the SHPO that summarizes the bridge survey and recommendation of the findings has been concurred with by the SHPO in correspondence dated December 19, 2013 and April 4, 2014. A copy of the letters of concurrence from the SHPO can be found in Appendix E.

There is a ca. 1919 small, unnumbered concrete culvert with sidewalls along Messmer Road in Kelso, it is a common structural form and is not eligible for listing on the NRHP.

Table12: Bridges within the Area of Potential Effects			
Bridges	**Pre-1945**	**Post-1945**	**Comments**
A0912		2	1962 Steel Girder, Interstate Exemption
R0138		1	1962 Steel Girder, Program Comment
R0125		1	1962 Steel Girder, Program Comment
N0691		1	1960 Concrete Beam, Program Comment
4000000		1	1962 Steel Girder, Program Content
Unnumbered Culvert	1		Concrete Culvert with sidewalls, recommended as not NHRP eligible.

Archaeology

Efforts to identify historic properties and assess potential adverse effects pursuant to 36 CFR Part 800, *Protection of Historic Properties*, regulations implementing Section 106 of the National Historic Preservation Act (16 USC 470) have been completed. The archaeological survey for the proposed project has identified nine sites and three isolated found within the limits of Alternative 3 and Alternative 3B Modified. Base on the field work conducted, it is MoDOT's recommendation that none of these sites are eligible for inclusion on the National Register of Historic Places. A report submitted to the SHPO that summarizes the archaeological survey and recommendation of the findings has been concurred with by the SHPO in correspondence dated December 19, 2013 and April 4, 2014. A copy of the letter of concurrence from the SHPO can be found in Appendix E.

Public Lands and Potential Section 4(f) Recreational Properties

Section 4(f) is part of the Department of Transportation (DOT) Act of 1966 that was designed to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. To be considered Section 4(f) eligible, the property must be publicly owned, except for historic sites, which can be either publicly or privately owned. Section 4(f) eligible sites cannot be impacted by federally funded actions unless there is no feasible and prudent alternative.

Within the City of Kelso, there is one publicly owned property with recreational components in the project vicinity. This property is the Kelso City Park located east of Cherry Street, approximately three tenths of a mile west of Alternative 3 and approximately a tenth of a mile from the point where the relocated Route P on Alternative 3b connects with the existing roadway in Kelso. Neither of the alternatives will encroach upon Kelso City Park. Within Scott City, Shady Grove Park located east of Oak Street and between Fornfelt Street and Colony Park Drive is the only publicly owned park near the project vicinity. It is located approximately ½ of a mile east of Alternative 3b Modified and the project will have no effect on this property. Therefore, there are no Section 4(f) issues related to recreational facilities associated with this project.

Other Resources Considered

In addition to the above resources, the project area has also been evaluated for impacts to the following resources; however, no further evaluation is required:

- Wild and Scenic River-There are no designated wild, scenic or recreational rivers in the project area.

- Air Quality- The I-55 interchange project is located in a non-classified area as defined by the Environmental Protection Agency through the Clean Air Act. Therefore, the conformity requirements of 40 CFR part 93 do not apply to this project and no further action is needed.

- Federal Emergency Management Agency (FEMA) Buyout Properties- Available references indicate there a number of flood damages (buyout) properties in Cape Girardeau County to the north, but there are no FEMA buyout properties within the study corridor.

- Hazardous Waste Sites-A records review was conducted for the project area. Based on the sources reviewed, no sites were found within the project area.

- Section 6(f)-There are no Section 6(f) issues related to recreational facilities associated with this project.

Indirect Effects and Cumulative Impacts

Indirect and cumulative impacts can be positive or negative depending on the environmental impact of the resource being evaluated. Indirect impacts are defined as: impacts that are caused by the project and are later in time or farther removed in distance than direct impacts, but are still "reasonably foreseeable." Cumulative impacts are defined as: impacts on the environment resulting from the incremental impact of the project when added to other past, present, and reasonably foreseeable future projects regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Indirect impacts associated with the construction of the new interchange proposed in both Alternative 3 and Alternative 3B modified may include travel-oriented business growth at the new intersection with I-55. Interchanges on major routes are ideal for new business growth that would benefit from easy access to an interstate. With the potential business growth associated with the construction of the interchange, economic and population growth for the area will have the potential to increase as businesses develop within the area.

These impacts could result in land that was once zoned agricultural being rezoned to residential and/or commercial. This could result in what was once a rural area, becoming more urbanized. Any impacts that future development would have on floodplains in the area would have to be compliant with the counties floodplain development plan and would be handled through the local floodplain administrator. As with most development, converting areas of land that were once permeable surfaces to non-permeable can have a negative effect on water quality. Permanent pollution control measures will be needed in association with the development to ensure that storm water run-off and potential water pollutants are handled properly.

Cumulative impacts associated with both Alternative 3 and Alternative 3B modified will involve the relocation of one residence. The proposed relocation, in combination with past relocations, would not result in a significant cumulative impact. Nor, with the rural nature, would there be any significant impact to the cohesive nature of any community.

Construction Impacts

During construction of the preferred alternative there will be some short-term impacts to the public due to noise, dust, and pollutants discharged by construction equipment as well as impacts to motorized and non-motorized traffic in the vicinity of the construction for this project. Some parts of Route PP will likely be closed while the Route PP bridge over I-55 is being rebuilt. Although it would be virtually impossible to totally avoid the kinds of short-term impacts typically associated with the construction phase of a highway project, generally these are among the most readily mitigated impacts.

Pollution control measures outlined in the Missouri Standard Specifications for Highway Construction (http://www.modot.mo.gov/business/standards_and_specs/BEGIN.pdf) will be used to minimize impacts associated with the construction of the Preferred Alternative; these measures pertain to air, noise, and water pollution as well as traffic control (e.g., detours) and safety measures. Best management practices will be employed to minimize or mitigate potential impacts.

Traffic Control/Safety

One of a contractor's first tasks on a construction job is to set up traffic control, that is, the warning signs, channelizers, and barricades needed to keep traffic safely in the right place and out of the way of the contractor's operations. The project would require controlling I-55 traffic as well as traffic on Route PP along with the connecting outer roads. Some disruption is inevitable; however, minimizing it and planning ahead is key to a successful project.

Constructing the bridge over I-55 as well as the roadway work associated with it will have some impact on traffic in the immediate area as the contractor's personnel work around the project site. Vehicles bringing materials in and out will add to the existing traffic in the area. A Traffic Management Plan (TMP) will be developed during project design. A TMP lays out a set of coordinated traffic management stratagies to manage the work zone impacts. Proposed stratagies for managing traffic on this project include staging construction to impact traffic as little as possible, conducting active public information and outreach, scheduling high-impact work for hours off peak traffic times, installing temporary traffic control devices, and possibly enlisting the help of law enforcement if necessary.

Air Quality

Construction equipment used in highway construction use diesel engines that emit exhaust gases that vary depending on the condition of the equipment, thus making it important to keep equipment in good operating condition. Emissions from construction equipment will be controlled in accordance with emission standards prescribed under state and federal regulations.

Under dry conditions, traffic or strong winds can cause dust from the soil to become airborne, resulting in impacts to air quality. Contractors are required to control this dust to ensure that it does not leave the project limits, just as they must make efforts to control soil particles that stormwater carries away. Typically, contractors will water the area during dry periods to keep the dust down.

Contractors will be required to comply with all federal, state, and local laws and regulations. They will also work within the requirements of their operating permits issued through the Missouri Department of Natural Resources. Air Quality during construction will be protected to generally accepted levels through project site monitoring and enforcement of these various requirements.

Noise

The most noticable noise generated during construction will occur during the construction of the Route PP bridge over I-55 and the installation of bridge pilings. The installation of the steel piles will require the use of a pile driver. Driving piles is much like ringing a bell, in that the sound travels long distances. The pile-driving activity would be relatively short in duration, lasting days or weeks until the work is completed.

Noise can also be expected from the operation of equipment such as bulldozers, trucks, and other large construction equipment. This type of noise tends to blend in with the normal sounds of interstate traffic with significant truck volume traveling through the area. To reduce the impacts of construction noise, MoDOT has special provisions in the construction contract requiring that all contractors comply with all applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site.

Though it is not anticipated, the use of explosives may be used for the demolition of the bridge over I-55. These blasts would be expected to be limited in number and will be scheduled for daytime occurrence to avoid disrupting residential night time quiet.

Water Quality

During construction activities, the area in the immediate project vicinity will be reduced to bare earth. Because of this, the appropriate erosion and sediment control measures will need to be in place once construction begins to prevent and minimize pollutant and sediment loaded runoff from reaching surface waters and flood areas to ensure that the water quality is maintained in the area.

The Missouri Deparment of Natural Resources (MDNR) regulates the control of runoff from land disturbances and issues a National Pollution Discharge Elimination System (NPDES) permit for the work to MoDOT. MoDOT's Pollution Prevention Plan ensures the design, implementation, management and maintenance of Best Management Practices (BMPs) in order to reduce the amount of sediment and other pollutants in storm water discharges associated with the land disturbance activities; comply with the Missouri Water Quality Standards, and ensure compliance with the terms and conditions of the general permit.

Public Involvement

At the initial stages of the project, MoDOT and FHWA notified potentially interested Native American tribes and governmental agencies of the proposed plan. Scoping letters, as well as a map of the project area, were sent requesting that they review the proposed project and notify MoDOT of any resources of concern that may be located in the area. Out of all of the scoping letters sent to the agencies and tribes (See Appendix G for list of agencies and tribes notified), only the U.S. Environmental Protection Agency responded. Concerns raised by the EPA were that there are several EPA regulated facilities that were near the area (none impacted by the proposed project), the use of existing farmland, and the impact of constructing through an area of forested wetland. Since the time of the initial scoping letter the current landowner of the area considered as forested wetland has clear cut the property and filled in the wetlands to expand his crop field. Therefore, no impacts to the once forested wetland area will occur. As requested in EPA's response, a copy of this EA will be sent to them.

MoDOT held two public hearings to provide information to interested parties that live near the communities of Scott City and Kelso. The first was held in the City Hall of Scott City on August 7th, 2012 and the second was held in Kelso City Hall on May 23rd, 2013. These meetings were advertised in a press release prior to the hearing dates. Representatives from MoDOT answered any questions that were raised about the proposed locations of the proposed interchange and encouraged input to help determine which location was preferred.

In association with the physical meetings, there were also virtual public hearings for those who were unable to attend the physical meetings. All displays and material that was available at the public hearings were posted on the web page and an opportunity to comment was also available online.

Approximately 240 people attended the physical meetings and the online virtual public hearings. Although the comments received were positive toward a southern interchange being built, the most popular location differed between the two communities. The location for the proposed interchange is the farthest to the south. This location was preferred by people at the Kelso meeting and once the connection to Scott City was redesigned the most southern location was approved of by Scott City representatives.

There were a few public comments asking about improvements to the existing interchange. MoDOT has built two jobs at the Route 61/K/M/I-55 interchange location to improve traffic congestion, J0S2169 (2009) and J0S2269 (2011). These two projects added a turn lane to Route 61 and Route K. The eliminated some congestion problems, but traffic back-ups still occur at peak times. Project J0I0943 was constructed in 2010 and allows traffic from eastern Scott City to access the Route AB/I-55 interchange. This project is not completed at this time, but it is open to traffic and does provide some relief to the Route 61/K/M/I-55 interchange. As the industrial park in northern Scott City develops, it is expected that the Route AB/I-55 interchange will become more congested and some traffic will revert back to the Route 61/K/M/I-55 interchange. The traffic data provided earlier in this document includes all three of these projects being built. Although these projects help with traffic flow, they do not remove enough traffic from the Route 61/K/M/I-55 interchange.

Once it was known that the proposed preferred alternative (Alternative 3b) would have a negative impact on a historic property, design changes were made resulting in the development of Alternative 3b Modified. This proposed alternative was presented to the SHPO and it was determined that it would not have a negative impact on any contributing factors of the historic farmstead. Once this was determined, MoDOT held a public meeting to provide information to interested parties that live near the communities of Scott City and Kelso. This meeting was held on February 25, 2014 at the City Hall of Scott City. The purpose of this meeting was to present Alternative 3b Modified to the public as the preferred alternative. Representatives from MoDOT answered any questions that were raised about the proposed preferred alternative.

Copies of the handouts and the comments received from both public meetings are located in Appendix G.

Commitments

- Any project impacts to on-farm investments, such as water diversion systems or terracing, will be minimized as design is further refined.

- Farms with uneconomic remnants (parcels of land that can no longer be farmed) will be offered just compensation by MoDOT based on an appraisal.

- All farm support services are available to the area and will not be negatively impacted by the project.

- MoDOT will initiate Section 7 consultation once clearing limits are identified and before authorization for construction.

- Any change in design or construction within this property, AR 6, will need to be re-consulted on with the SHPO, by MoDOT, and concurred with before federal construction authorization is approved.

- MoDOT will obtain a floodplain development permit prior to authorization for construction.

- The contractor will utilize all applicable Best Management Practices (BMPs), identified on the plans and specifications, to ensure protection to any waterways in the project vicinity.

- All necessary erosion control measures identified on the plans and specifications will be employed by the contractor at all areas of soil disturbance throughout the project.

- Any previously unknown Hazardous Waste sites that are found during project construction will be handled by MoDOT and the contractor in accordance with Federal and State Laws and Regulations.

- A Traffic Management Plan (TMP) will be developed by MoDOT during project design.

- Emissions from construction equipment will be controlled by the contractor in accordance with emission standards prescribed under state and federal regulations.

- Contractors will be required to comply with all federal, state, and local laws and regulations.

- Blasts would be expected to be limited in number and will be scheduled by the contractor for daytime occurrence to avoid disrupting residential night time quiet.