Kentucky Transportation Cabinet

US 150 Scoping Study – Final Report

Nelson and Washington Counties

KYTC Item No. 4-396.00




Prepared for: Kentucky Transportation Cabinet
District 4 - Elizabethtown
Central Office Planning

KENTUCKY TRANSPORTATION CABINET

Palmer ENGINEERING

Stantec

Prepared by: Palmer Engineering and Stantec Consulting Services, Inc.

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EXECUTIVE SUMMARY

The Kentucky Transportation Cabinet (KYTC) initiated the US 150 Scoping Study (KYTC Item No. 4-396) to explore the need for and scope of improvements to the US 150 corridor, from the Bluegrass Parkway near Bardstown in Nelson County (Mile Point 2.334 to Mile Point 7.653 in Nelson County) to just west of Springfield in Washington County (Mile Point 0.000 to Mile Point 4.311 in Washington County). The project area is located in eastern Nelson County and western Washington County in central Kentucky. The KYTC contracted with the Palmer Engineering team to assist in this effort by conducting a scoping study to evaluate possible improvement concepts for US 150 throughout the study area, including spot improvements and complete reconstruction. Ideally, the recommendations from this study will include recommended buildable segments with independent cost estimates and prioritization such that the projects can be implemented over time.

US 150 stretches approximately 120 miles from Louisville to Mount Vernon, Kentucky. Carrying between 8,800 and 12,000 vehicles per day through the project corridor, US 150 is a Rural Minor Arterial. Two-hundred, thirty-four (234) crashes were reported along US 150 within the study area for a five-year period between January, 2010 and December, 2014. Improvements have already been made to the US 150 Corridor from Springfield near St. Catherine College in Washington County to I-75 in Rockcastle County, which have resulted in a more reliable and safer connection to I-75 via Danville and Stanford.

Purpose and Need

The purpose of the US 150 Improvement Project is to enhance local and regional mobility, increase capacity where necessary, and to provide a safer, more efficient connection between the Bluegrass Parkway and Springfield, Kentucky.

Project Development

Community outreach helped guide the US 150 Scoping Study, particularly in identifying potential issues and developing alternatives. The public involvement process was undertaken through a two-step process involving (1.) meetings with project stakeholders and local officials; and (2.) meetings with the general public. On Tuesday, May 26, 2015, the Project Team held a public meeting at Parkway Baptist Church, in Bardstown, Kentucky. A second public meeting was held on Thursday, May 28, 2015 at Washington County High School, in Springfield, Kentucky. The purpose of these meetings was to provide information about the study, discuss the conceptual alternatives, and solicit input from the public. The meetings were co-hosted by KYTC District 4 and Central Office Planning. The Public Meeting Summaries located in **Appendix D** include the materials presented at these meetings as well as a summary of the feedback received. Two meetings of local officials and project stakeholders were also held. The first meeting was held on Thursday, January 29, 2015 at the Washington County Cooperative Extension Office,- in Springfield, Kentucky; the second meeting was held on Tuesday, May 26, 2015 at Parkway Baptist Church, in Bardstown, Kentucky.

Improvement Strategy

Improvement strategies involved the development of five defined segments of US 150 from the Bluegrass Parkway to the already improved portion of US 150 west of Springfield. The newly improved section of US 150 at the Nelson-Washington County line was excluded from the proposed improvements. In addition to the five defined segments that cover the entirety of US 150 from the Bluegrass Parkway to Springfield, six spot improvements have also been identified that could be initially constructed. These spot improvements would be constructed to tie to future improvements covered by one of the five segments. The Improvement Strategies and Alternatives are summarized as follows and shown on **Figures ES-1** and **ES-2**:

Improvement Strategies and Alternatives

Segments

- 5 Segments
  - 3 in Nelson County
  - 2 in Washington County

Spot Improvements

- 6 Spot Improvements
  - 2 in Nelson County
  - 4 in Washington County

New Alignments

- 2 Locations
  - Conceptual Realignment North of Botland – Alternative to Segment II
  - Conceptual Realignment South of US 150 In Nelson County – Alternative to Segment II and Segment III

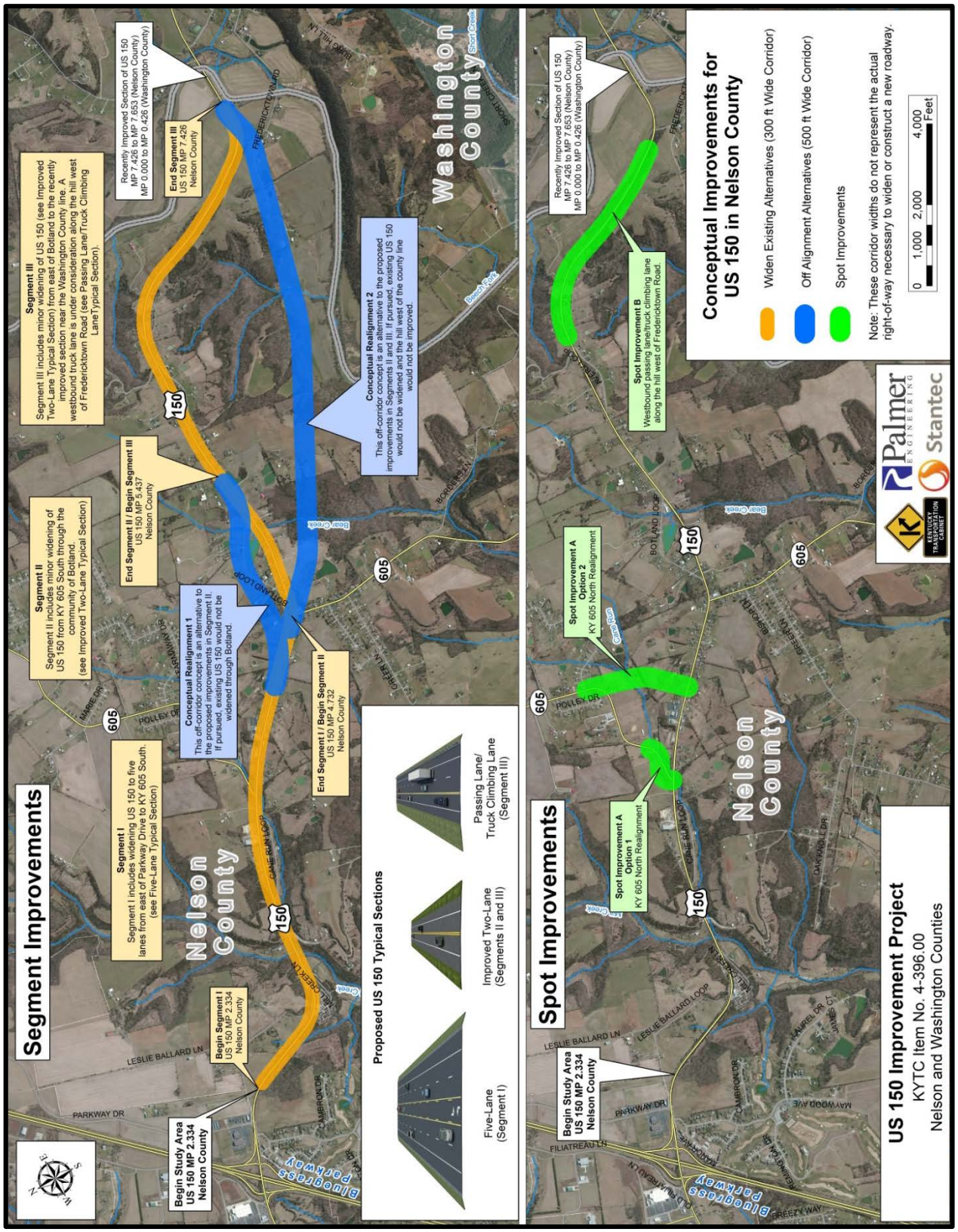


Figure ES-1 - Segment Alternatives and Spot Improvements - Nelson County

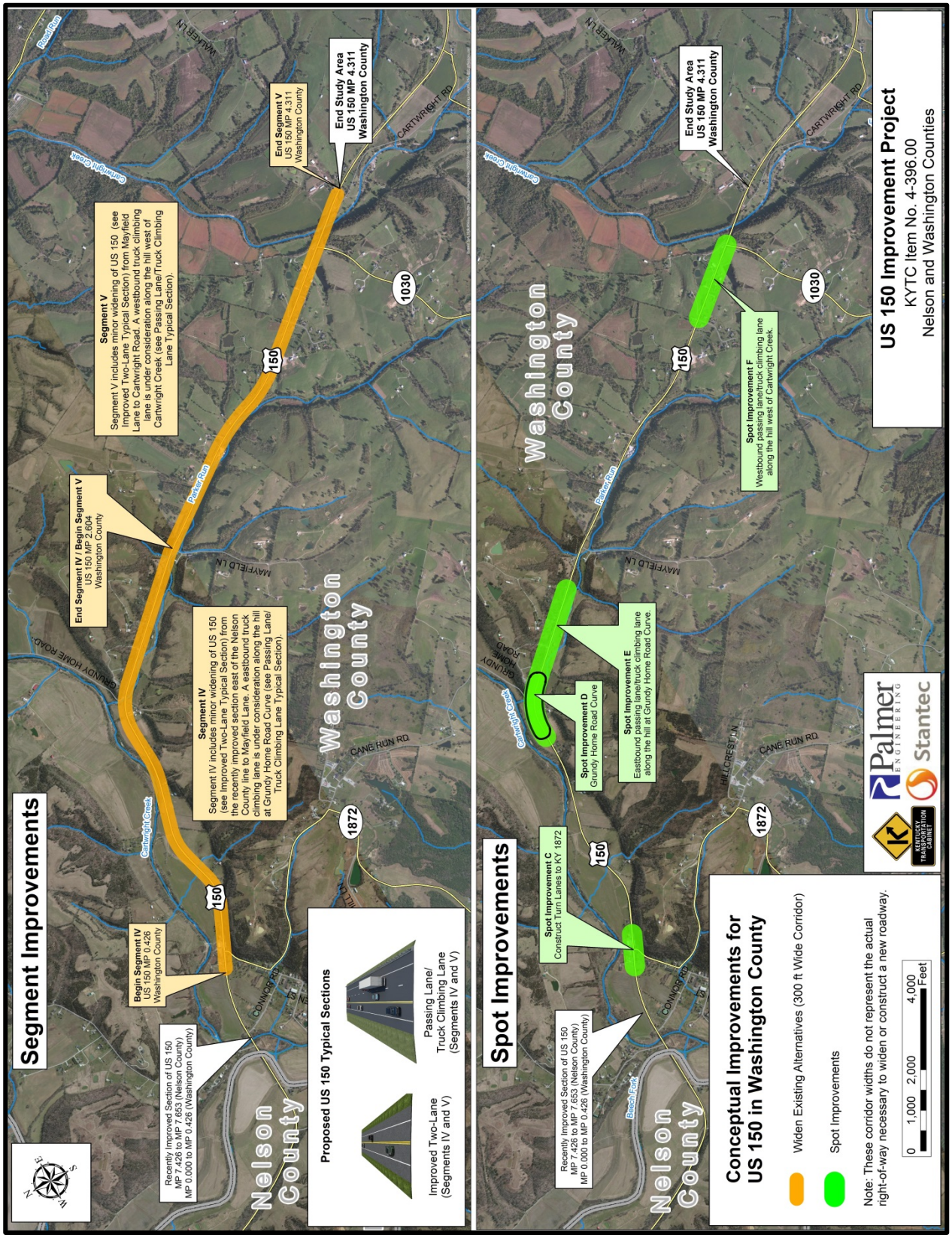
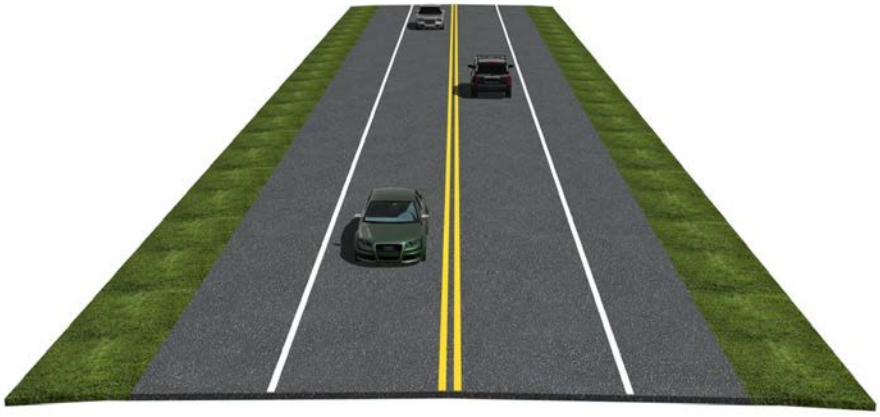


Figure ES-2 - Segment Alternatives and Spot Improvements - Washington County

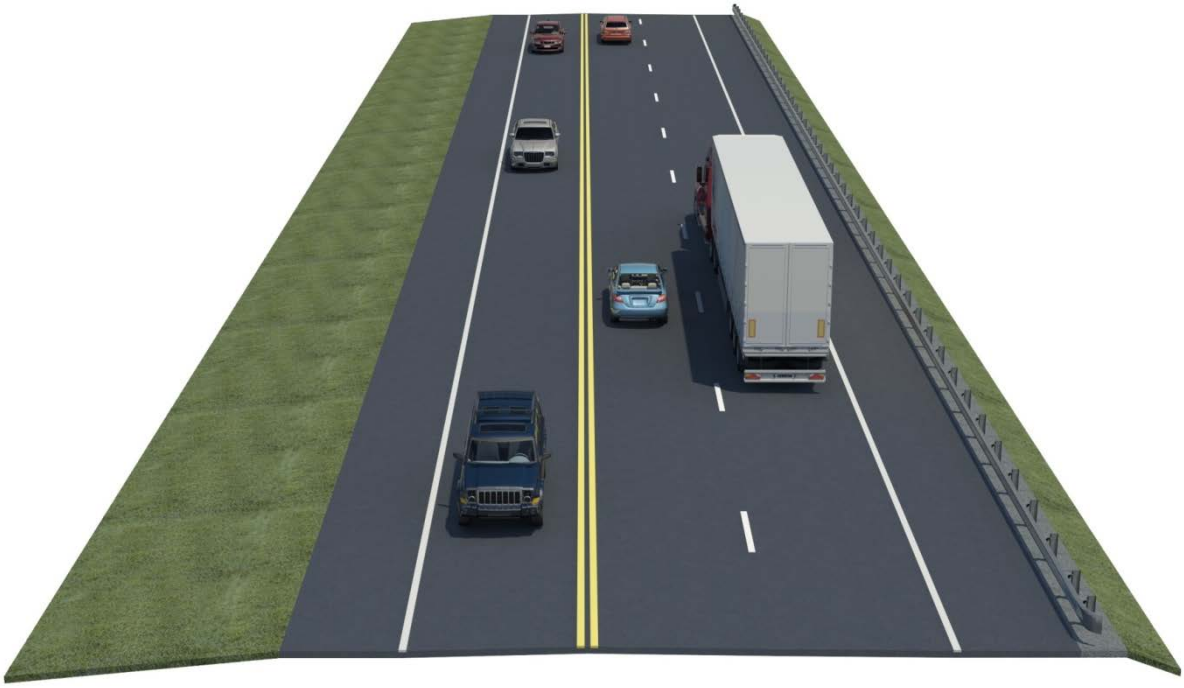
TYPICAL SECTIONS

The Project Team considered several possible typical sections for US 150, ultimately deciding to focus on options that would accommodate driver expectancy and better suit adjacent sections of roadway. The US 150 Corridor includes three options, shown in **Figures ES-3, ES-4** and **ES-5**. The first option, which would be considered in most locations, is a two-lane section (one 12-foot lane per direction) with 8 to 10-foot-wide paved shoulders. The second option would consist of similar lane and shoulder widths but would include a truck climbing or passing lane where appropriate. The third option is a five-lane section (two 12-foot lanes per direction with a center turn lane) for Segment I.



Two 12-foot lanes with 8'-10' paved shoulders

Figure ES-3 - Conceptual Typical Section for US 150



Truck climbing (passing) lane (where appropriate)

Figure ES-4 - Conceptual Typical Section for US 150

Five 12-foot lanes (including center turn lane) with 8’-10’ paved shoulders

Figure ES-5 - Conceptual Typical Section for US 150

Recommendations

The recommendations for the US 150 Corridor Project are based on their ability to meet the purpose and need, project team input, local official/stakeholder and public feedback, and technical analysis.

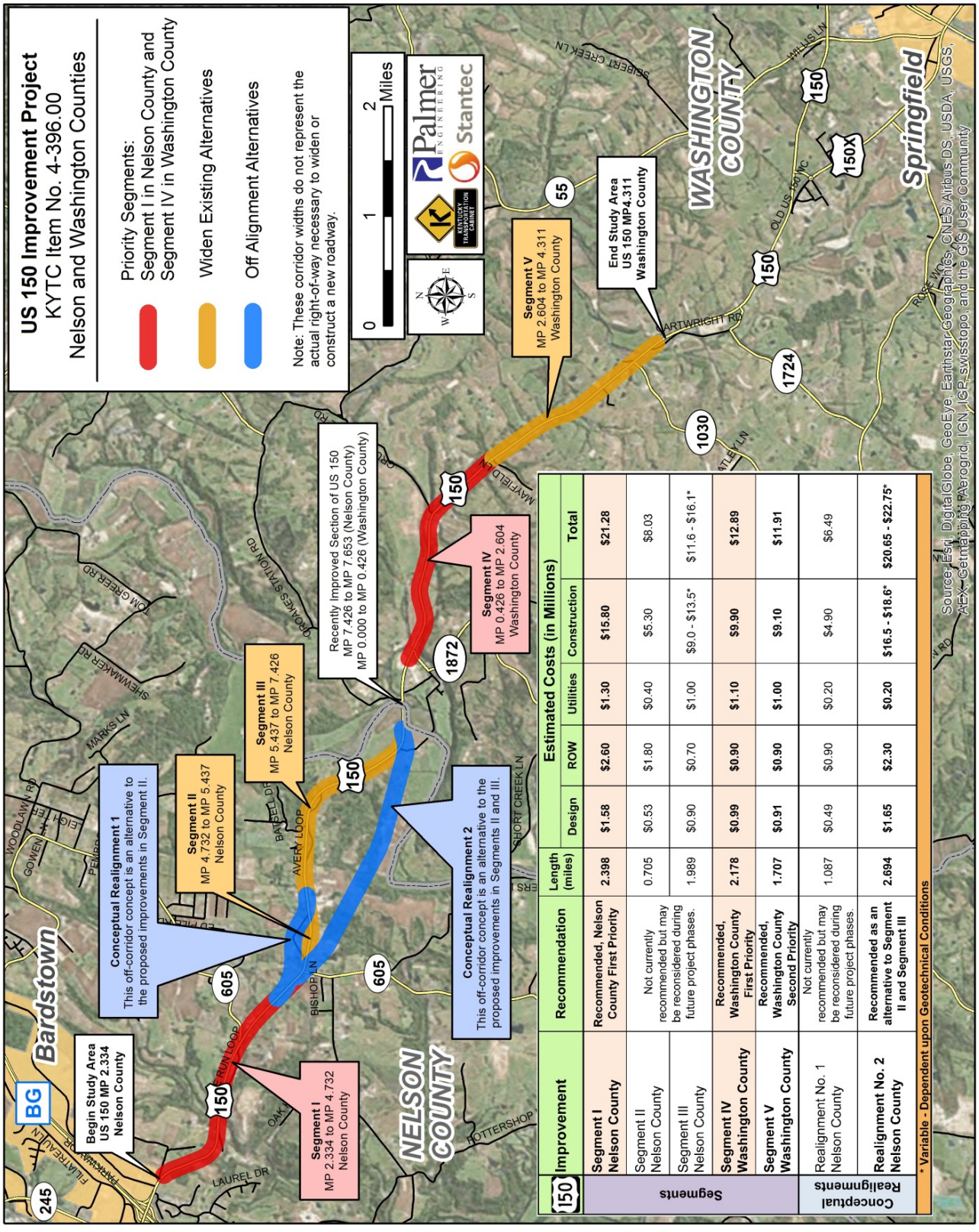
The final study recommendation for the US 150 Corridor Project is to improve the entire corridor over time using defined segments of US 150 that will cover the corridor from beginning to end, focusing first on one high priority project within each county. Segment locations are shown on **Figure ES-6**. Given the size of the US 150 Corridor Project, improvements will need to be implemented over time. Five independent alternative segments were defined, three in Nelson County (Segments I, II, and III) with a total length of 5.09 miles, and two in Washington County (Segments IV and V) with a total length of 3.89 miles. During the alternative development process, an off-corridor concept (Conceptual Realignment No. 2) that would replace existing US 150 from Botland to Fredericktown (Segments II and III) was also developed. **Table ES-1** summarizes the US 150 Corridor recommendations.

The highest priority project in Nelson County is to improve the corridor along Segment I through the eastern KY 605 (south) intersection. Segment I would effectively continue the improvements underway through the Bluegrass Parkway interchange (KYTC Item No. 4-8308.10), extending a 5-lane section that will be designed to connect to Conceptual Realignment No. 2, which takes the place of Segments II and III along the existing corridor. Conceptual Realignment No. 2 will result in reduced right-of-way, utility, and maintenance of traffic impacts compared to reconstructing the existing alignment. Additionally, the realignment of US 150 will eliminate the steep grade approaching Washington County and the Beech Fork River, a grade that cannot be reasonably reduced if the existing horizontal alignment were to be maintained. If the realignment is constructed, the portion of existing US 150 west of the Beech Fork River could potentially be closed to through traffic, and a scenic overlook could be constructed at the top of the hill.

While Segment I is the highest priority segment in Nelson County, the Project Team discussed the desire to advance the entire Nelson County portion of the corridor through Phase I design. This will allow the KYTC the opportunity to determine the optimal alignment for Conceptual Realignment No. 2 and to ensure compatibility between it and Segment I, including the details related to a likely relocation/reconfiguration of the US 150 intersection with KY 605 (south). The reconstruction of KY 605 (north) within Segment I has two possible options. Option No. 2 for connecting KY 605 (north) to US 150 was preferred and will be further evaluated during subsequent project phases.

The recommendation for this study in Washington County is to improve the corridor along Segments IV and V. The highest priority project in Washington County is to improve the corridor along Segment IV. This segment includes extending the recently improved section east of the Nelson County line, and would address the curve at Grundy Home Road, an area that was repeatedly discussed by local officials, project stakeholders, and the public.

Segments I through V appear to be feasible and beneficial projects that should be pursued further. However, based on the available design funding in the 2014 Highway Plan, the Project Team recommends that Segment IV should be the first project advanced to Phase I design.



150 Improvement		Recommendation	Length (miles)	Estimated Costs (in Millions)					
				Design	ROW	Utilities	Construction	Total
Segments	**Segment I Nelson County**	**Recommended, Nelson County First Priority**	**2.398**	**$1.58**	**$2.60**	**$1.30**	**$15.80**	**$21.28**
	Segment II Nelson County	Not currently recommended but may be reconsidered during future project phases.	0.705	$0.53	$1.80	$0.40	$5.30	$8.03
	Segment III Nelson County		1.989	$0.90	$0.70	$1.00	$9.0 - $13.5*	$11.6 - $16.1*
	Segment IV Washington County	**Recommended, Washington County First Priority**	**2.178**	**$0.99**	**$0.90**	**$1.10**	**$9.90**	**$12.89**
	Segment V Washington County	**Recommended, Washington County Second Priority**	**1.707**	**$0.91**	**$0.90**	**$1.00**	**$9.10**	**$11.91**
Conceptual Realignments	Realignment No. 1 Nelson County	Not currently recommended but may be reconsidered during future project phases.	1.087	$0.49	$0.90	$0.20	$4.90	$6.49
	Realignment No. 2 Nelson County	**Recommended as an alternative to Segment II and Segment III**	**2.694**	**$1.65**	**$2.30**	**$0.20**	**$16.5 - $18.6***	**$20.65 - $22.75***
* Variable - Dependent upon Geotechnical Conditions								

Figure ES-6 - Segment Alternatives Nelson and Washington Counties

	Improvement	County	Length (miles)	Cost Estimate							Project Priority	Priority Status
				Design	ROW	Utilities	Construction	Total				
Alternatives	**Segment I**	**Nelson**	**2.398**	**$1,580,000**	**$2,600,000**	**$1,300,000**	**$15,800,000**	**$21,280,000**		**HIGH**	**Recommended**
	Segment II	Nelson	0.705	$530,000	$1,800,000	$400,000	$5,300,000	$8,030,000		**MEDIUM**	
	Segment III	Nelson	1.989	$900,000	$700,000	$1,000,000	$9,000,000 - $13,500,000	$11,600,000 - $16,100,000	*	**LOW**	
	Segment IV	**Washington**	**2.178**	**$990,000**	**$900,000**	**$1,100,000**	**$9,900,000**	**$12,890,000**		**HIGH**	**Recommended**
	Segment V	**Washington**	**1.707**	**$910,000**	**$900,000**	**$1,000,000**	**$9,100,000**	**$11,910,000**		**MEDIUM**	**Recommended**
Conceptual Realignments	Conceptual Realignment No. 1	Nelson	1.087	$490,000	$900,000	$200,000	$4,900,000	$6,490,000		**MEDIUM**	
	Conceptual Realignment No. 2 (Segments II & III Inclusive)	**Nelson**	**2.694**	**$1,650,000**	**$2,300,000**	**$200,000**	**$16,500,000 - $18,600,000**	**$20,650,000 - $22,750,000**	*	**MEDIUM**	**Recommended**
Spot Improvements	Spot Improvement "A" (Located within Segment I)	Nelson	0.587	$490,000	$800,000 - $1,200,000	$400,000	$4,900,000 - $6,200,000	$6,590,000 - $8,290,000	**	**HIGH**	
	Spot Improvement "B" (Located within Segment III)	Nelson	1.226	$600,000	$500,000 - $700,000	$700,000	$6,000,000 - $9,000,000	$7,800,000 - $11,000,000	*	**MEDIUM**	
	Spot Improvement "C" (Located within Segment IV)	Washington	0.564	$110,000	$200,000	$100,000	$1,100,000	$1,510,000		**LOW**	
	Spot Improvement "D" (Located within Segment IV)	Washington	0.750	$420,000	$500,000	$400,000	$4,200,000	$5,520,000		**HIGH**	
	Spot Improvement "E" (Located within Segment IV)	Washington	1.250	$600,000	$500,000	$500,000	$6,000,000	$7,600,000		**HIGH**	
	Spot Improvement "F" (Located within Segment V)	Washington	1.161	$600,000	$500,000	$500,000	$6,000,000	$7,600,000		**LOW**	

* Variable - Dependent upon Geotechnical Conditions

** Variable - Dependent upon selection of Option 1 or Option 2

Table ES-1 - Summary of Alternatives, Spot Improvements and Conceptual Realignments

1.0 INTRODUCTION

1.1 STUDY AREA

The Kentucky Transportation Cabinet (KYTC) initiated the US 150 Scoping Study (KYTC Item No. 4-396) to explore the need for and scope of improvements to the US 150 corridor, from the Bluegrass Parkway near Bardstown in Nelson County (Mile Point 2.334 to Mile Point 7.653 in Nelson County) to just west of Springfield in Washington County (Mile Point 0.000 to Mile Point 4.311 in Washington County). The study area is located in eastern Nelson County and western Washington County in central Kentucky. KYTC contracted with the Palmer Engineering team to assist in this effort by conducting a scoping study to evaluate possible improvement concepts for US 150 throughout the study area, including spot improvements and complete reconstruction. The study area is shown in **Figure 1**.

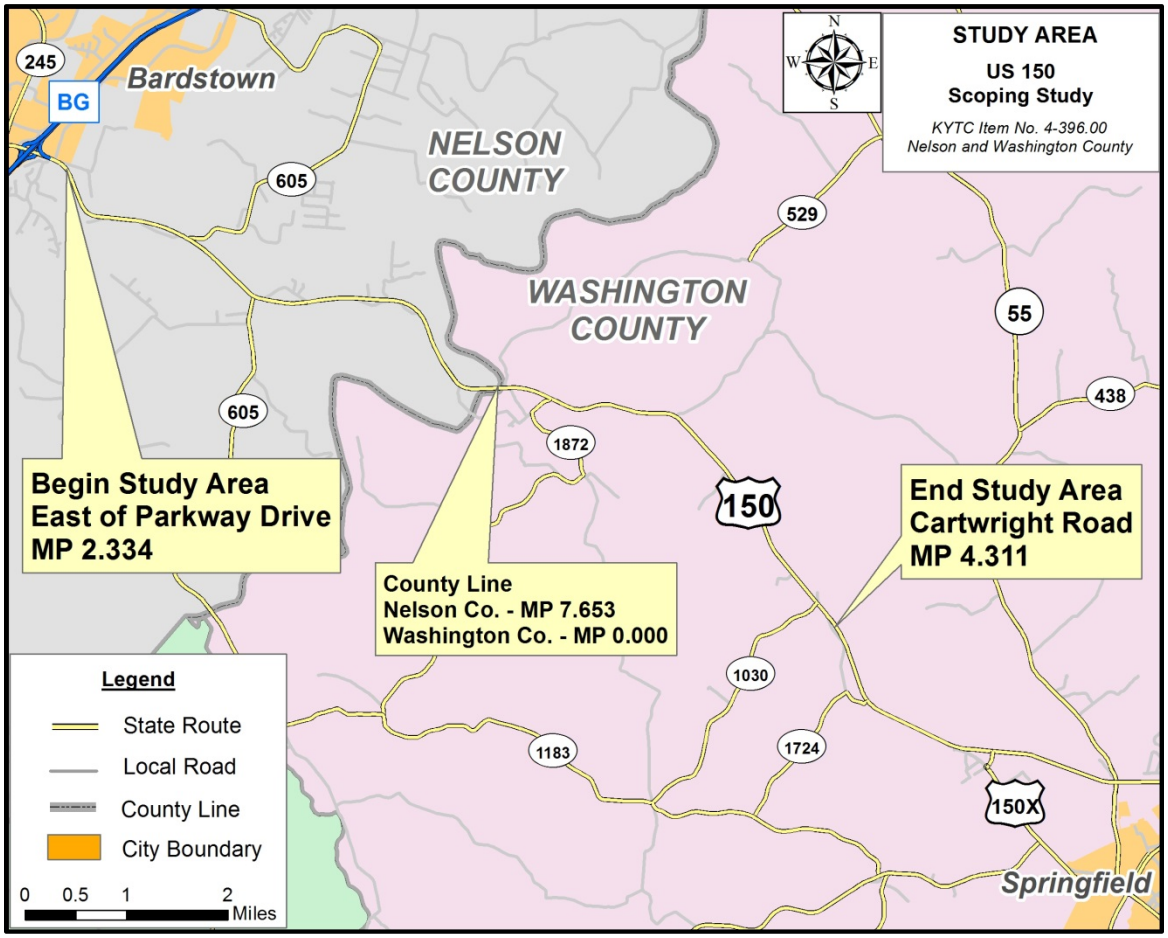


Figure 1 - Study Area - US 150 Scoping Study

1.2 PURPOSE AND NEED STATEMENT

US 150 stretches approximately 120 miles from Louisville to Mount Vernon, Kentucky. The project corridor on US 150 is a Rural Minor Arterial, 10 miles in length between the Bluegrass Parkway in Nelson County and the US 150/Cartwright Road intersection west of Springfield in Washington County. It carries between 8,800 and 12,000 vehicles per day. Two-hundred, thirty-four (234) crashes were reported along US 150 for a five-year period between January, 2010 and December, 2014 along the 10 miles of the US 150 study area. Improvements have been made to the US 150 Corridor from Springfield near St. Catherine College in Washington County to I-75 in Rockcastle County, which have resulted in a more reliable and safer connection to I-75 via Danville and Stanford.

The purpose of the US 150 Improvement Project is to enhance local and regional mobility, increase capacity where necessary, and to provide a safer, more efficient connection between the Bluegrass Parkway and Springfield, Kentucky.

1.3 COMMITTED PROJECTS

Several other projects listed in the 2014 Highway Plan in Nelson County are shown in **Figure 2**. Near the study area, there are two notable projects. The reconstruction of US 150 between Bardstown and the Bluegrass Parkway (KYTC Item No. 4-8308.10) will provide improved connectivity between Bardstown and the Parkway. The reconstruction of the US 150/Bluegrass Parkway Interchange (KYTC Item No. 4-8309.10) will provide improved connectivity to the Parkway. No other projects are listed in Washington County, shown in **Figure 3**.

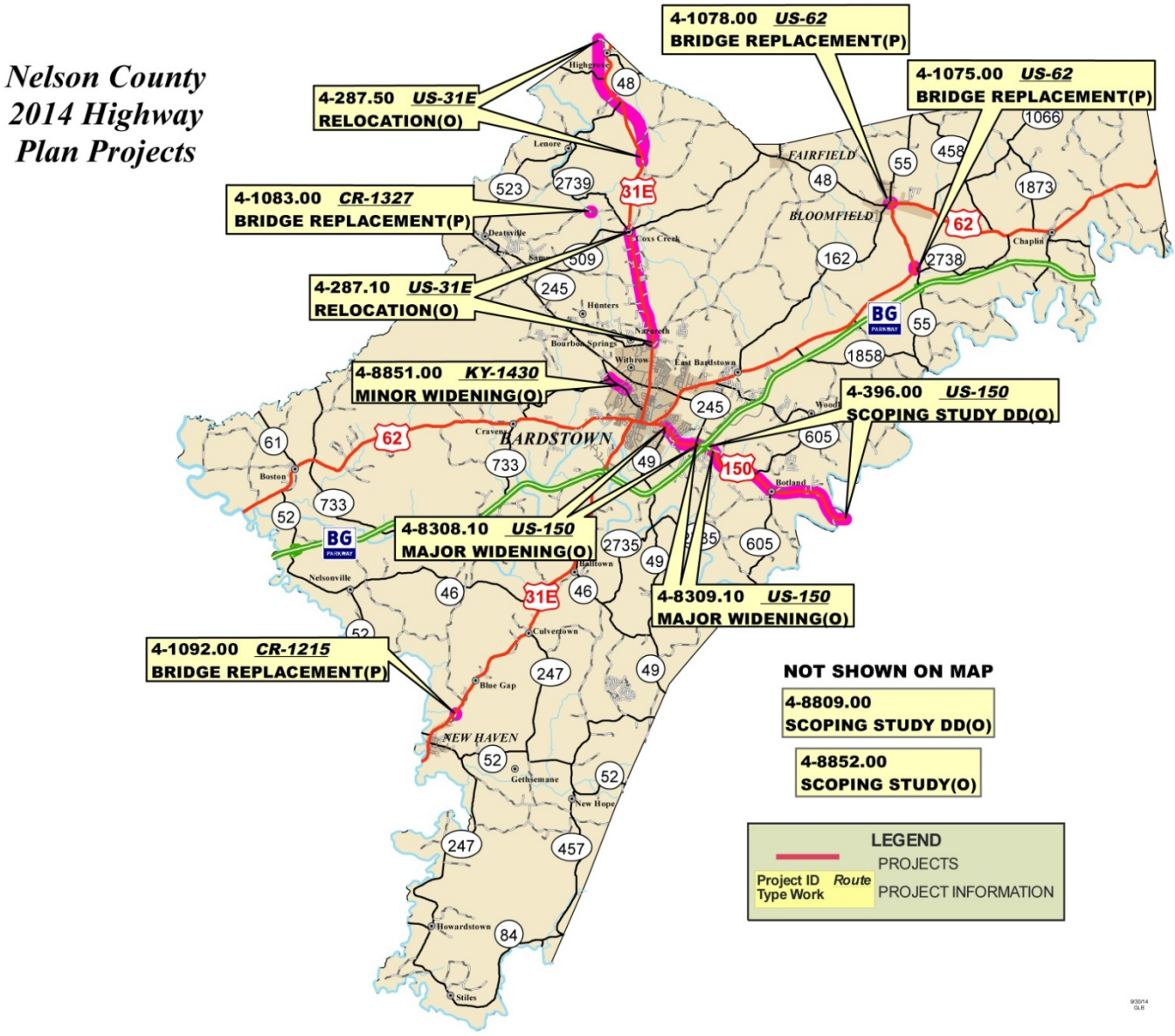


Figure 2 - Nelson County 2014 Highway Plan Projects
(Source: KYTC Division of Program Management)

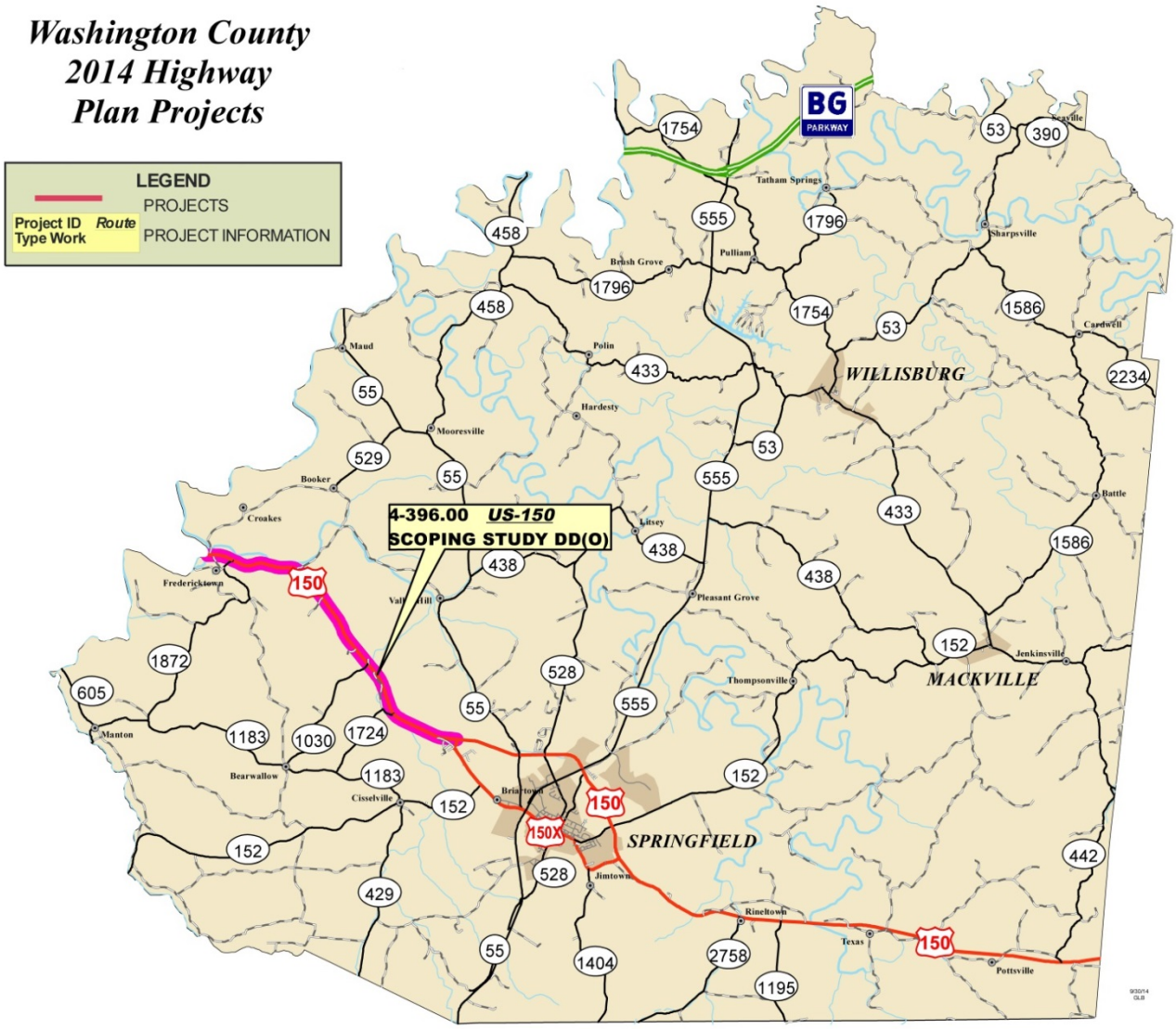


Figure 3 - Washington County 2014 Highway Plan Projects
(Source: KYTC Division of Program Management)

2.0 EXISTING CONDITIONS

Conditions of the study area's existing transportation network are examined in the following section. The information compiled includes roadway facilities and geometrics, crash history, and traffic volumes within the study area. Data for this section was collected from the KYTC's Highway Information System (HIS) database, aerial photography, as-built plans, the KY State Police and field review. A summary of the information contained within the KYTC HIS database is included in **Table 1**.

County	Segment	Begin_MP	End_MP	ADT (Year)	Truck %	Truck Route	Speed Limit	Lanes	Shoulders
Nelson County	East of Parkway Dr. to KY 605 east	2.334	4.733	11,370 (2012)	13.22%	Federal Truck Route ("AAA", 80,000 lbs.)	55*	2 - 12'	6' Combination**
	KY 605 east to Washington Co. line	4.733	7.653	8,550 (2012)	13.22%		55		
Washington County	Nelson Co. line to KY 1030	0.000	4.110		15.70%			2 - 11'	
	KY 1030 to Cartwright Rd.	4.110	4.311	6,720 (2011)	11.21%			2 - 12'	10' Paved

Project limits are from MP 2.334 in Nelson County to MP 4.311 in Washington County.
*55 MPH begins at MP 2.345
** MP - (0 - 0.434) in Washington County has 8' paved shoulders

Table 1 - US 150 Existing Conditions Summary

2.1 ROADWAY SYSTEM

Functional classification is the grouping of roads, streets, and highways into integrated systems ranked by the level of mobility for through movements and access to adjoining land. This grouping acknowledges that roads serve multiple functions and provides a basis for comparing roads. Functional classifications can be used for, but are not limited to, the following purposes:

- Provide a framework for highways serving mobility and connecting regions and cities within a state.
- Provide a basis for assigning jurisdictional responsibility according to the roadway's importance.
- Provide a basis for development of minimum design standards according to function.
- Provide a basis for evaluating present and future needs.
- Provide a basis for allocation of limited financial resources.

Figure 4 below shows the functional classification of roadways within the study area.

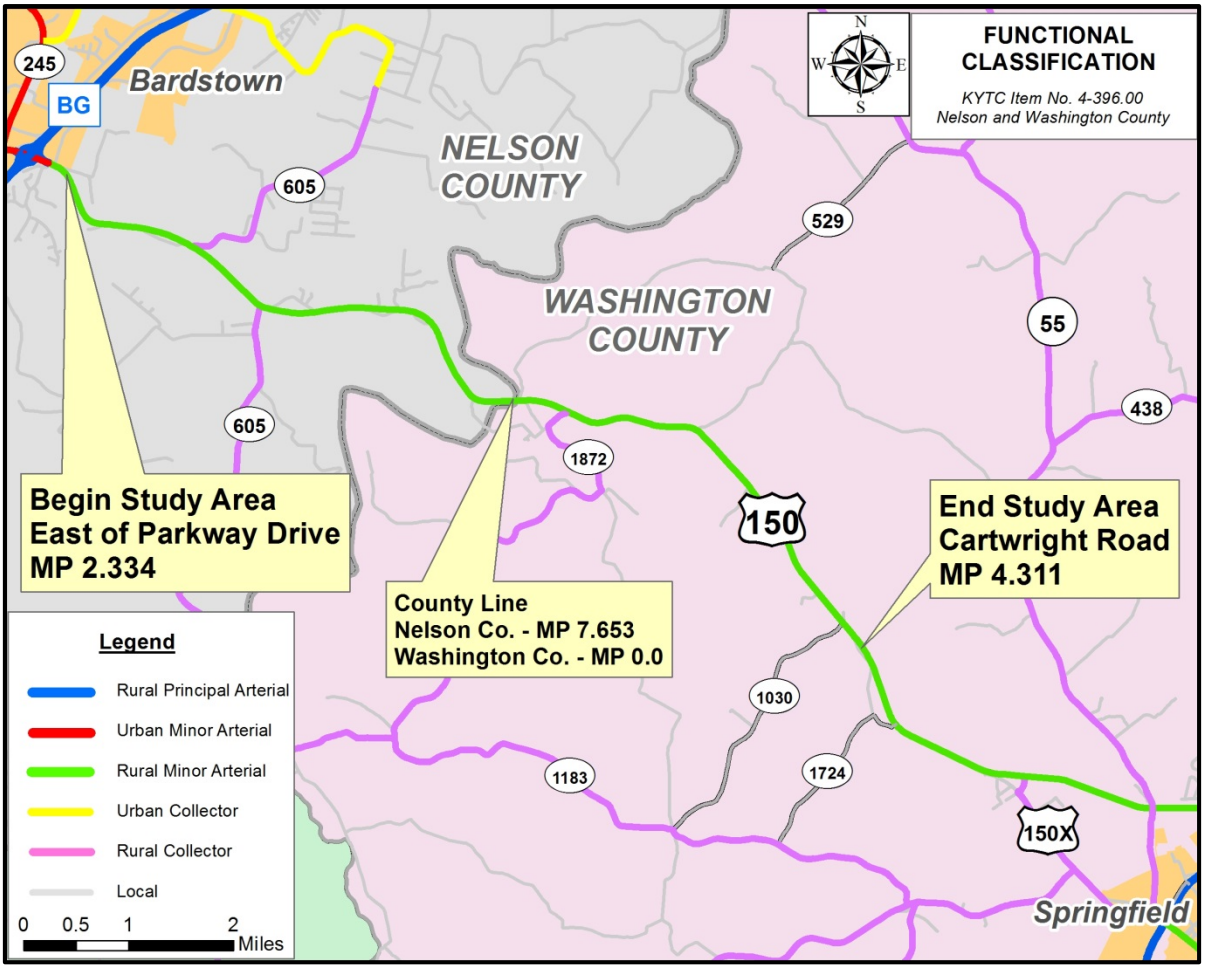


Figure 4 - Functional Classification of Roadways in Study Area

2.2 ROADWAY GEOMETRIC CHARACTERISTICS

As part of the project, a review of existing geometrics along US 150 in the study area was performed and compared against common geometric practices for Rural Arterial Roads listed in Exhibit 700-03 of the *2006 KYTC Highway Design Manual* (http://transportation.ky.gov/Highway-Design/Highway Design Manual/Geometric Design Guidelines.pdf

US 150 is a two-lane roadway that was constructed during the 1950s and early 1960s. Existing lane-widths are 11 to 12 feet. Current KYTC design guidelines recommend a minimum of 12-foot lanes if the ADT is greater than 2,000 vehicles per day (vpd).

Existing shoulder widths vary from 8 to 10 feet with the paved shoulder varying from 3 or 4 feet to full-width. Current KYTC design guidelines recommend a minimum of 8-foot graded shoulders if the ADT is greater than 2,000 vpd.

Existing horizontal and vertical data for US 150 within the study area are shown on **Figures 5** and **6** on the following pages. Two horizontal curves in Nelson County do not meet the design criteria for a 55-mph design speed. These two horizontal curves do meet the design criteria for a 45-mph design speed. Numerous vertical curves in Nelson and Washington Counties also do not have the recommended minimum stopping sight distance for a 55-mph design speed. Note that the vertical data shown on **Figures 5** and **6** represents existing grades and does not highlight the substandard vertical cuves.

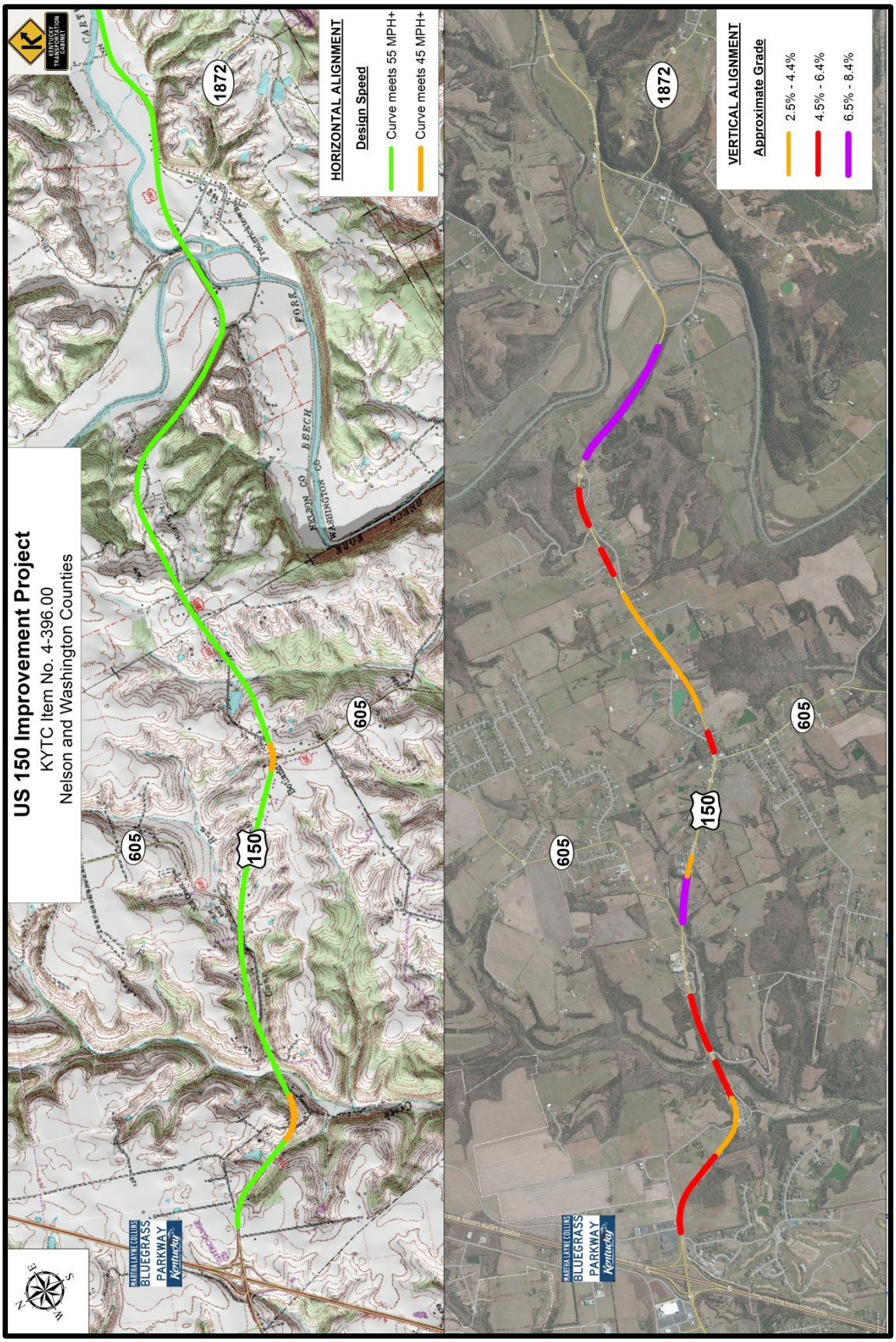


Figure 5 - Nelson County Existing Conditions-Horizontal (Top)-Vertical (Bottom)

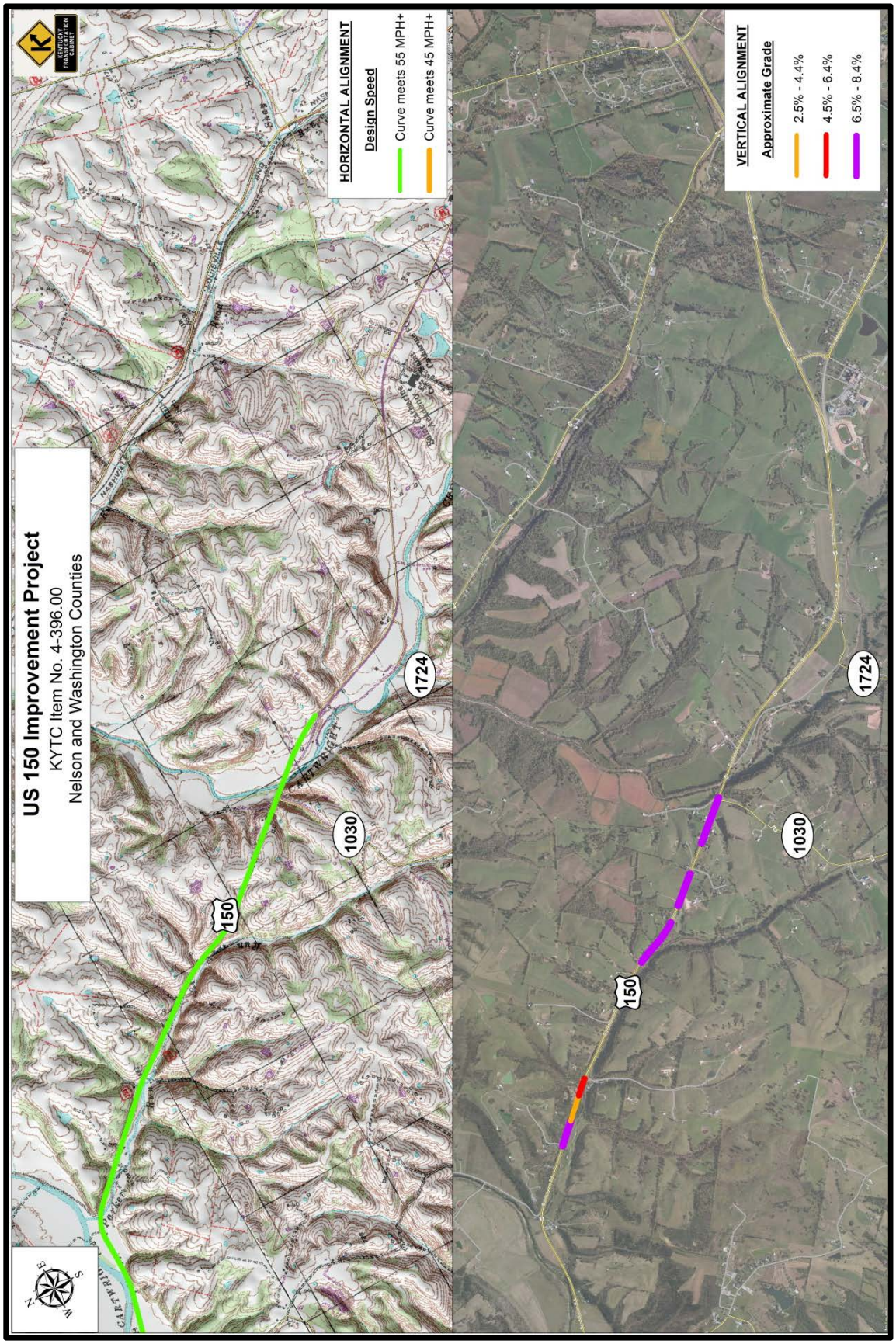
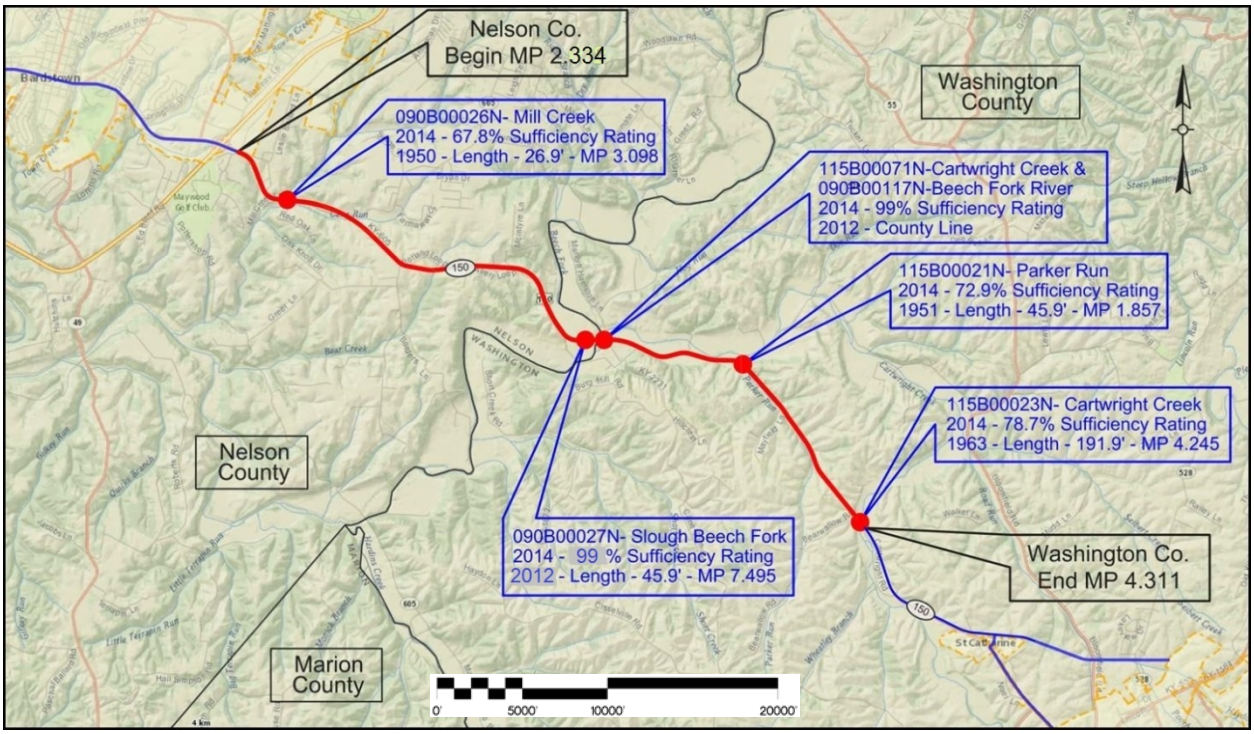


Figure 6 - Washington County Existing Conditions-Horizontal (Top)-Vertical (Bottom)

From the National Bridge Inventory (NBI), existing bridge sufficiency ratings were identified. This rating assigns individual bridges with a measure of *sufficiency* in which to remain in service. A rating of 100 percent indicates a bridge is entirely satisfactory, and a rating of zero percent indicates a bridge is completely deficient. Bridges are eligible for federal funding for rehabilitation if they have a sufficiency rating below 80 percent. If a bridge has a sufficiency rating below 50 percent, it is considered eligible for replacement funding. Locations of all bridges and their sufficiency ratings are shown on **Figure 7**.



Bridge ID:	County	Year Built	Sufficiency Rating
090B00026N	Nelson	1950	67.8
* 090B00027N	Nelson	2012	99
* 090B00117N	Washington/Nelson	2012	99
* 115B00071N	Washington	2012	99
115B00021N	Washington	1951	72.9
115B00023N	Washington	1963	78.7

* Not in Study Area

Figure 7 - Bridge Locations and Sufficiency Ratings

2.3 EXISTING TRAFFIC VOLUMES

Current 2014 average daily traffic (ADT) volumes for the study area are shown on **Figure 8** and in **Table 2**. Current ADT volumes on US 150 range from 8,800 vehicles per day (vpd) to 12,000 vpd. Volume-to-Capacity (V/C) ratios are also shown in **Table 2**. The V/C ratio indicates where roadway segments approach or exceed the daily volume of traffic they can accommodate. In the case of US 150, all roadway segments in the study area currently operate at less than full capacity with a V/C of 0.60 or less (0.90 or more in rural areas indicates capacity concerns).

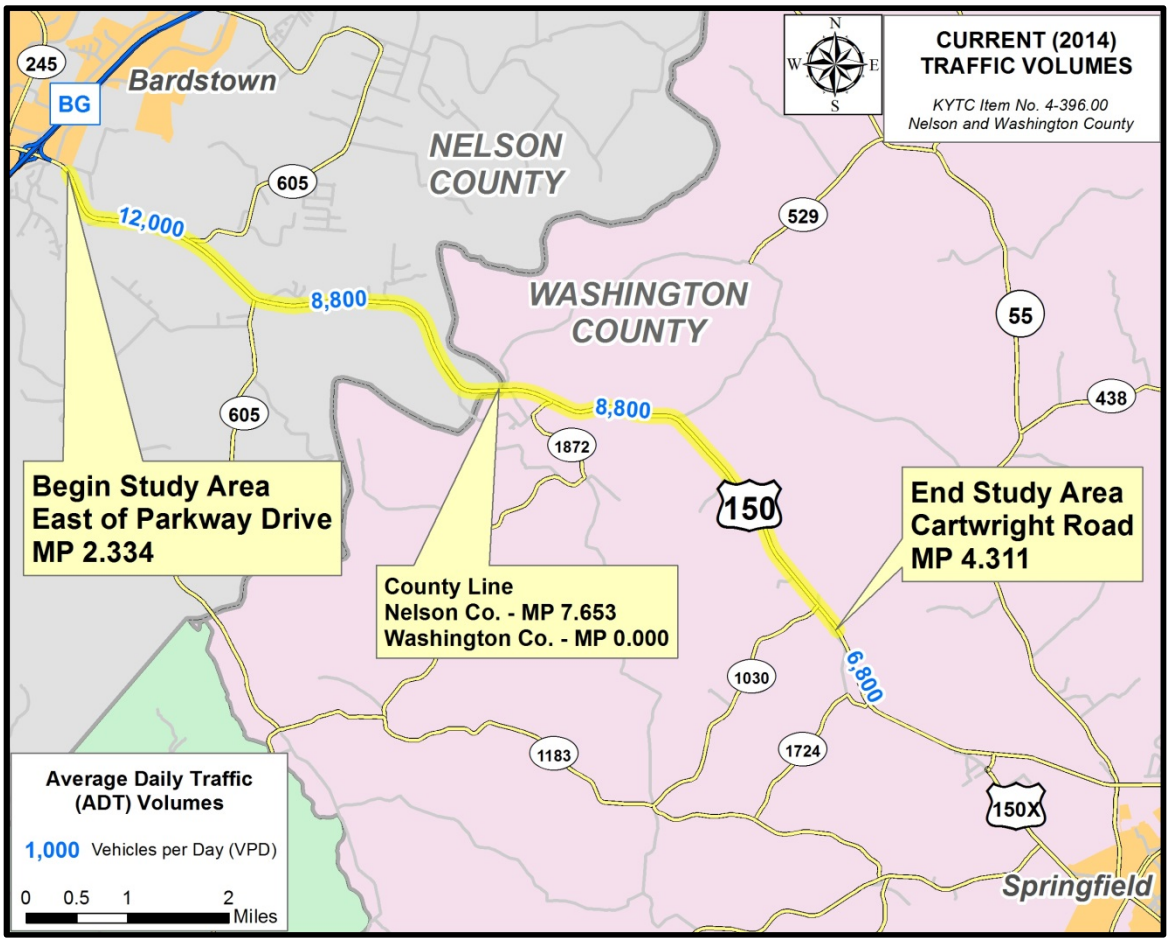


Figure 8 - Current Average Daily Traffic (ADT) Volumes

County	Segment	Begin_MP	End_MP	EXISTING (2014)			NO BUILD (2035)		
				ADT	V/C	LOS	ADT	V/C	LOS
Nelson County	East of Parkway Dr. to KY 605 east	2.334	4.733	12,000	0.60	E	19,000	0.94	E
	KY 605 east to Washington Co. line	4.733	7.653	8,800	0.45	D	13,000	0.64	E
Washington County	Nelson Co. line to KY 1030	0.000	4.110	8,800	0.45	D	13,000	0.64	E
	KY 1030 to Cartwright Rd.	4.110	4.311	8,800	0.45	D	13,000	0.64	E

Project limits are from MP 2.334 in Nelson County to MP 4.311 in Washington County.

US 150 within the study area is a Rural Minor Arterial

Table 2 - US 150 Traffic Summary

Level of service (LOS) is a qualitative measure describing operational conditions within a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. There are six levels of service, ranging from A through F. LOS A is associated with free-flow conditions, high freedom to maneuver, and little or no delay. Conditions at or near capacity typically are associated with LOS E. At LOS F, traffic conditions are oversaturated and beyond capacity, with low travel speeds, little or no freedom to maneuver, and high delays. In rural areas, LOS C or better is desirable.

Levels of service for different facility types are based on service measures deemed most appropriate for describing operations. For two-lane highways, levels of service are determined based on two parameters -- average travel speed and percent time spent following in a platoon. At the facility level, LOS can be computed using methods that involve detailed data and operational parameter input. All segments of US 150 within the study area were found to operate at LOS D or worse, which is undesirable.

2.4 CRASH HISTORY

Historical crash data was collected along US 150 within the study area for a five-year period between January, 2010 and December, 2014. **Figures 9** and **10** present a summary of all crashes reported within the corridor study area over the time period. **Figures 11** and **12** present a summary of all crashes reported within the Nelson County portion of the study area over the time period. In similar fashion, **Figures 13** and **14** present a summary of all crashes reported within Washington County. Within the US 150 Corridor study area, 234 crashes were reported. Single vehicle crashes were the

most commonly reported type (87 crashes, 37 percent) followed by rear-end crashes (74 crashes, 32 percent). The crash records and locations are included in **Appendix A.**

Historical truck crash data within the study area was also collected for the same five-year period. **Figures 15** and **16** present a summary of all truck crashes reported within the corridor study area in Nelson and Washington Counties.

Crashes were geospatially referenced and compared to statewide data to identify locations experiencing above-average crash rates. The methodology is defined in the Kentucky Transportation Center research report, *Analysis of Traffic Crash Data in Kentucky* (Kentucky Transportation Center, 2013). As defined in the methodology, segments vary in length and are divided along roadways where geometry or traffic volumes change. For each segment, the number of crashes, traffic volume, rural/urban, number of lanes, and segment length were evaluated to determine the critical rate factor (CRF). The CRF is one measure of the safety of a road, expressed as a ratio of the crash rate at the location compared to the average crash rate for roadways of the same functional classification throughout the state. If the CRF is 1.00 or greater, it is assumed that crashes cannot be attributed to random occurrence. The CRF analysis is summarized on **Figure 17**.

The only location along US 150 in the study area that has a CRF value greater than 1.0 is at the intersection of US 150 and North KY 605.

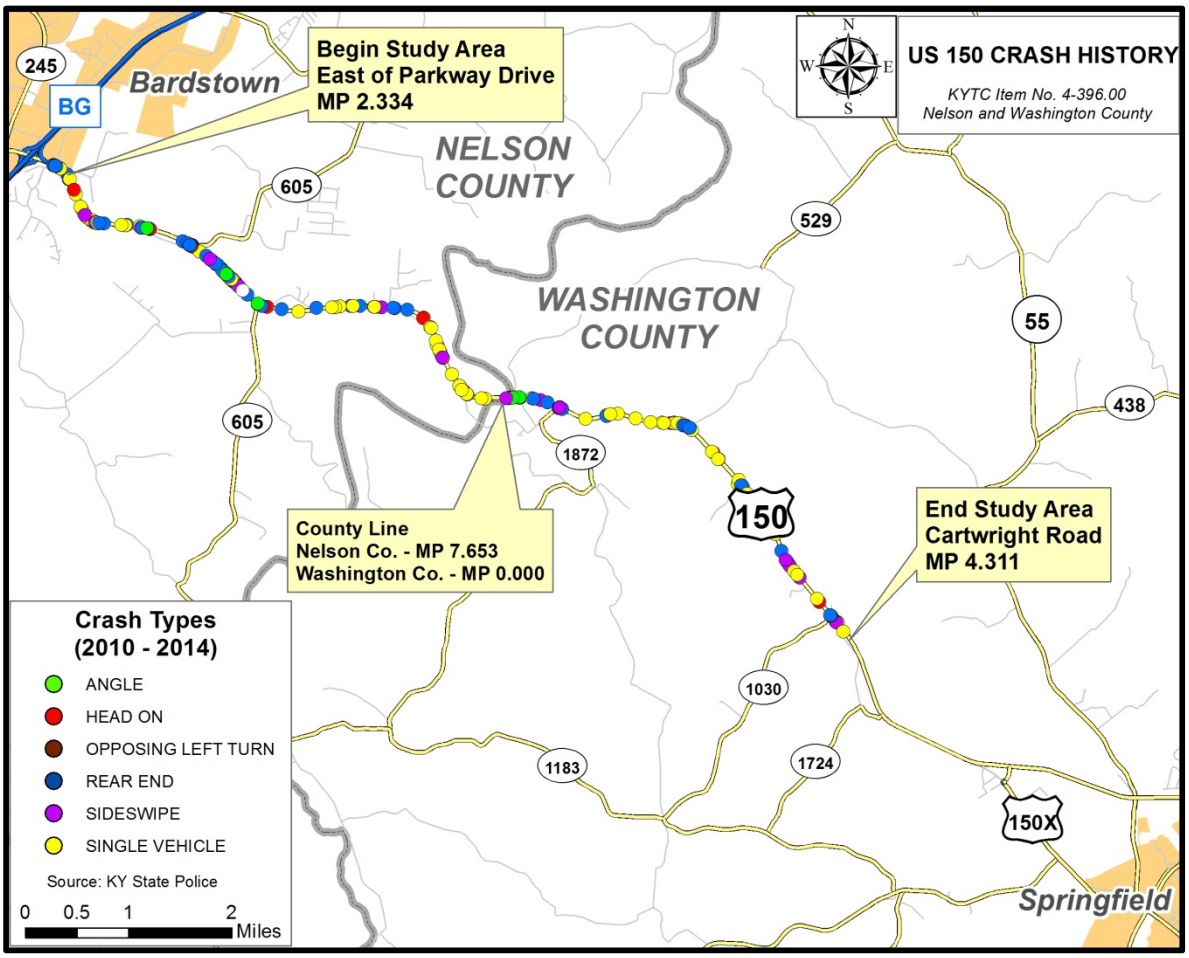


Figure 9 - Crash History - Nelson and Washington Counties - (2010 - 2014)

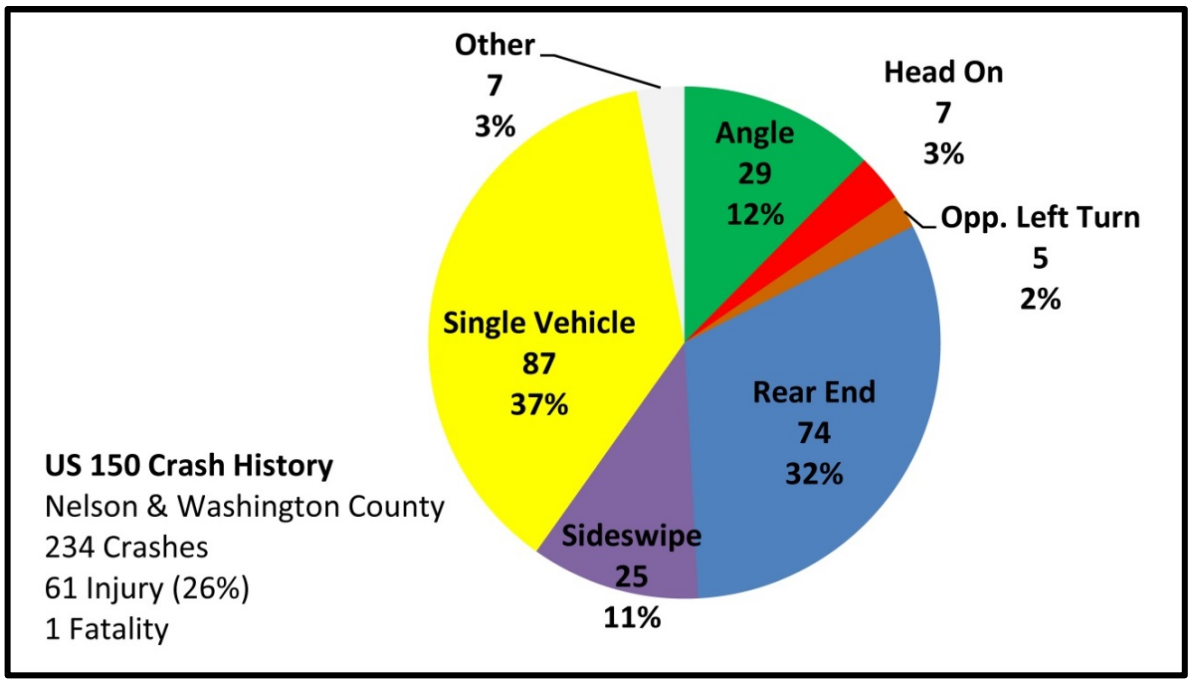


Figure 10 - Crash History - Nelson and Washington Counties - (2010 - 2014)

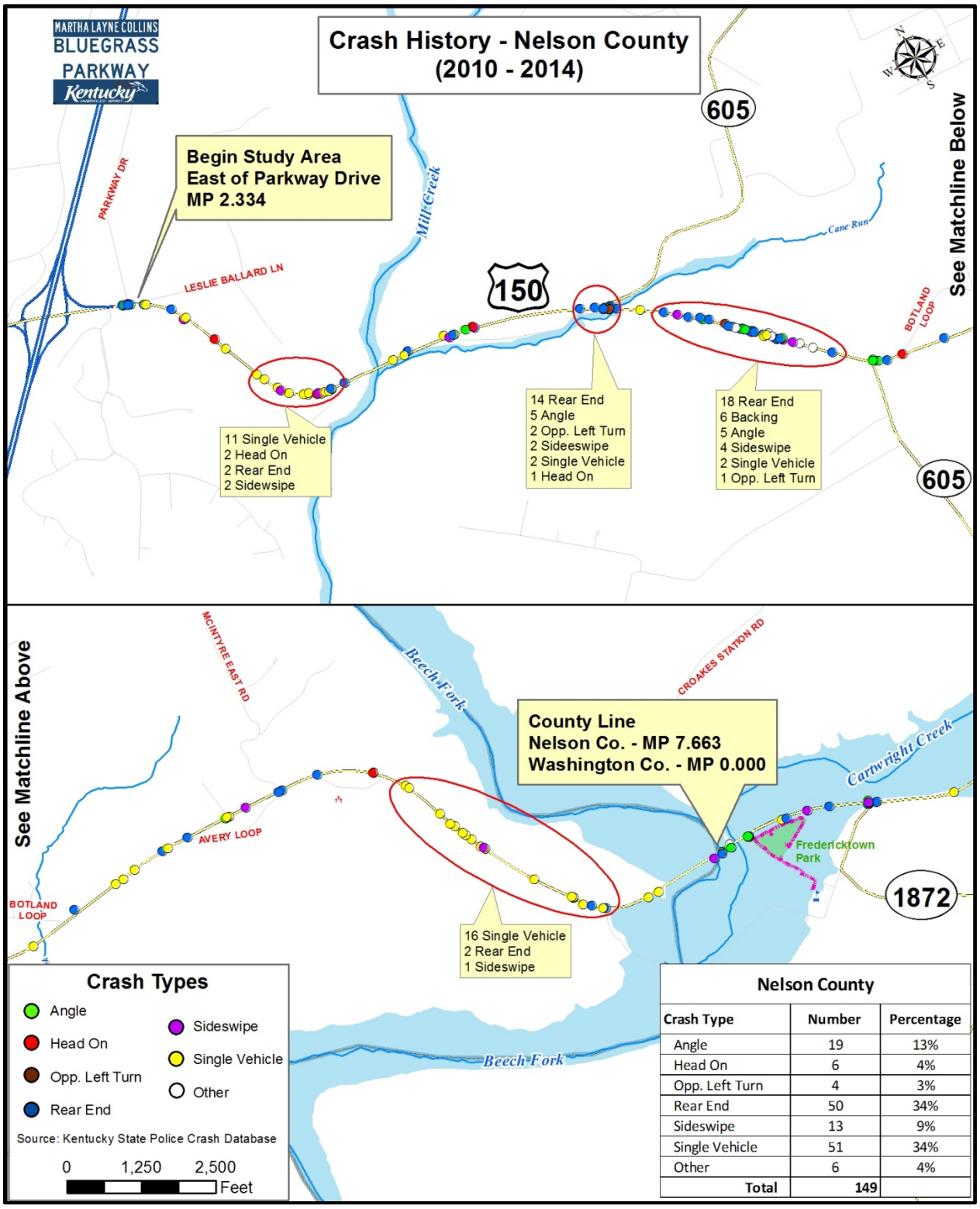


Figure 11 - Crash History - Nelson County - (2010 - 2014)

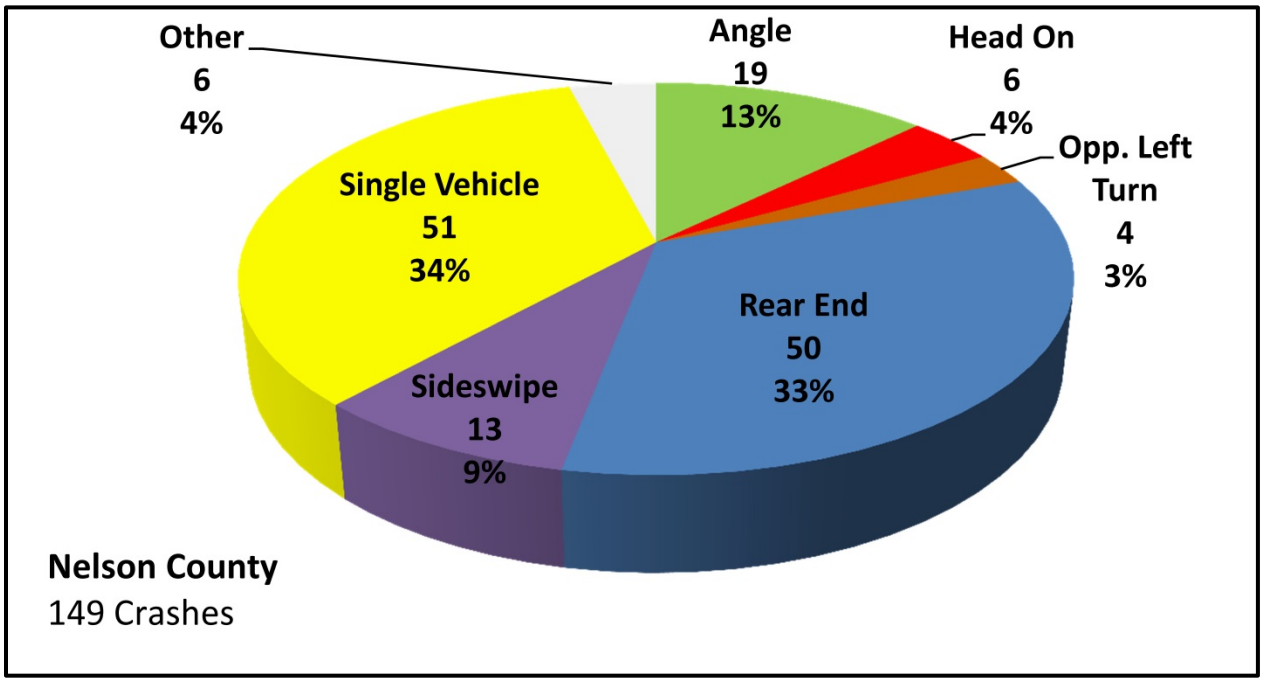
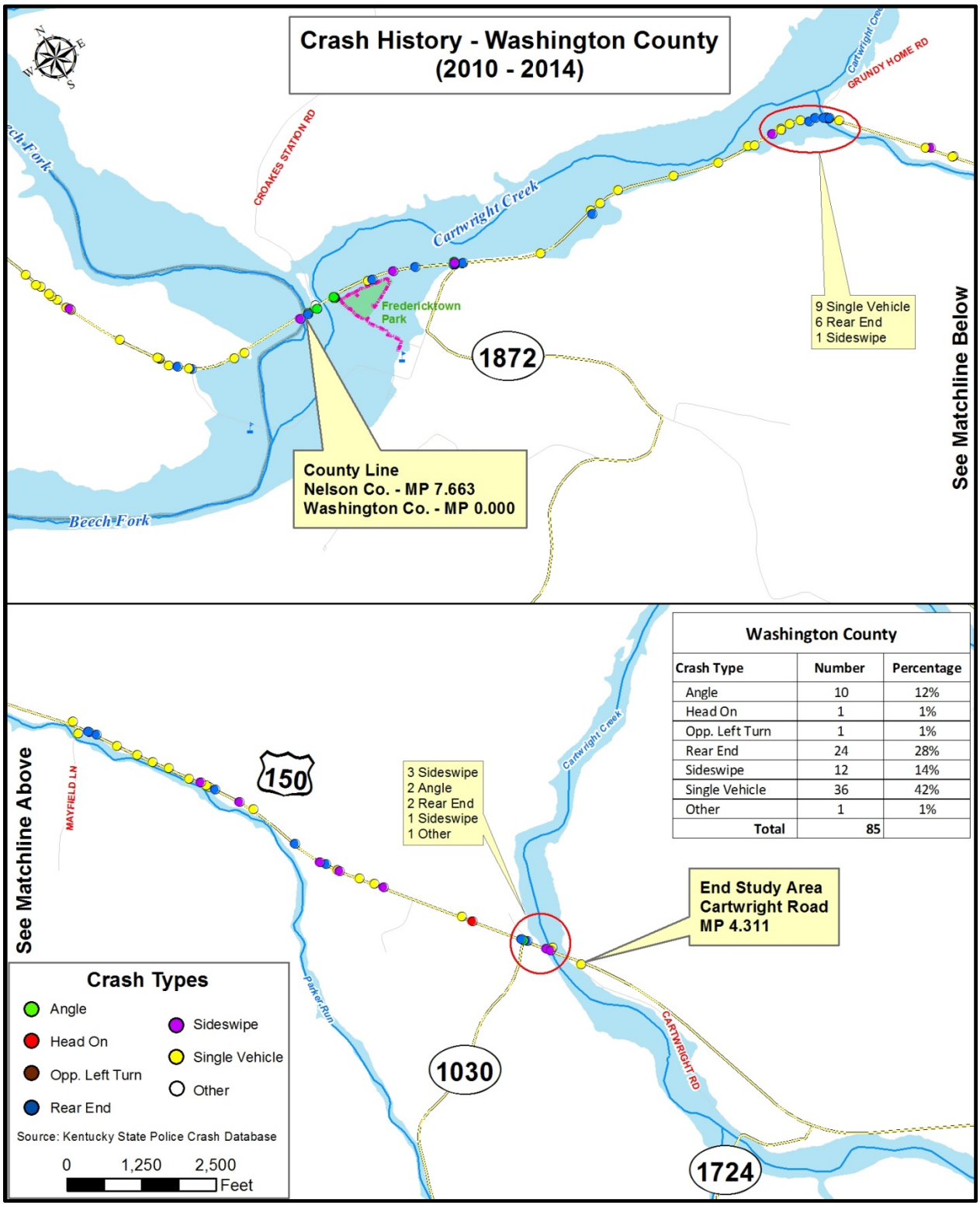


Figure 12 - Crash History - Nelson County - (2010 - 2014)



Washington County		
Crash Type	Number	Percentage
Angle	10	12%
Head On	1	1%
Opp. Left Turn	1	1%
Rear End	24	28%
Sideswipe	12	14%
Single Vehicle	36	42%
Other	1	1%
Total	85	

Figure 13 - Crash History - Washington County - (2010 - 2014)

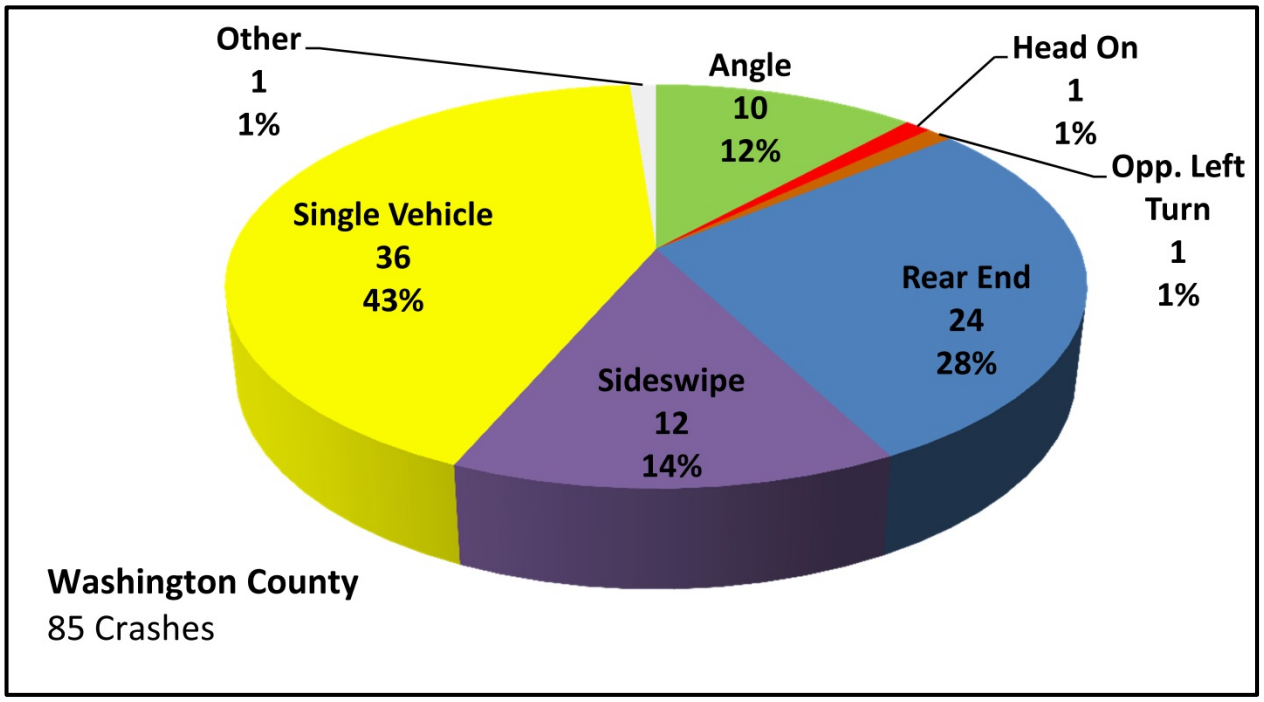


Figure 14 - Crash History - Washington County - (2010 - 2014)

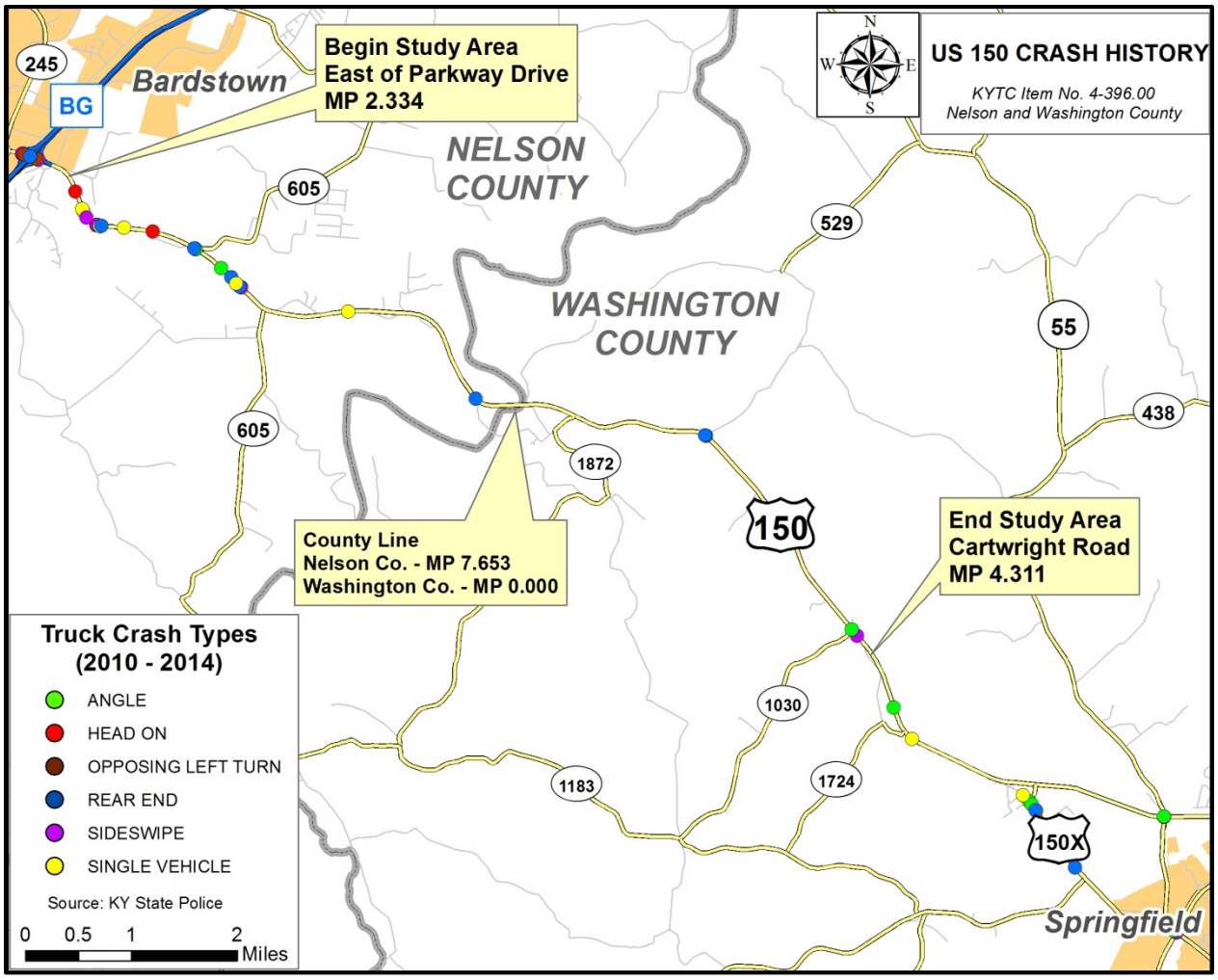


Figure 15 - Truck Crash History - Nelson and Washington Counties - (2010 - 2014)

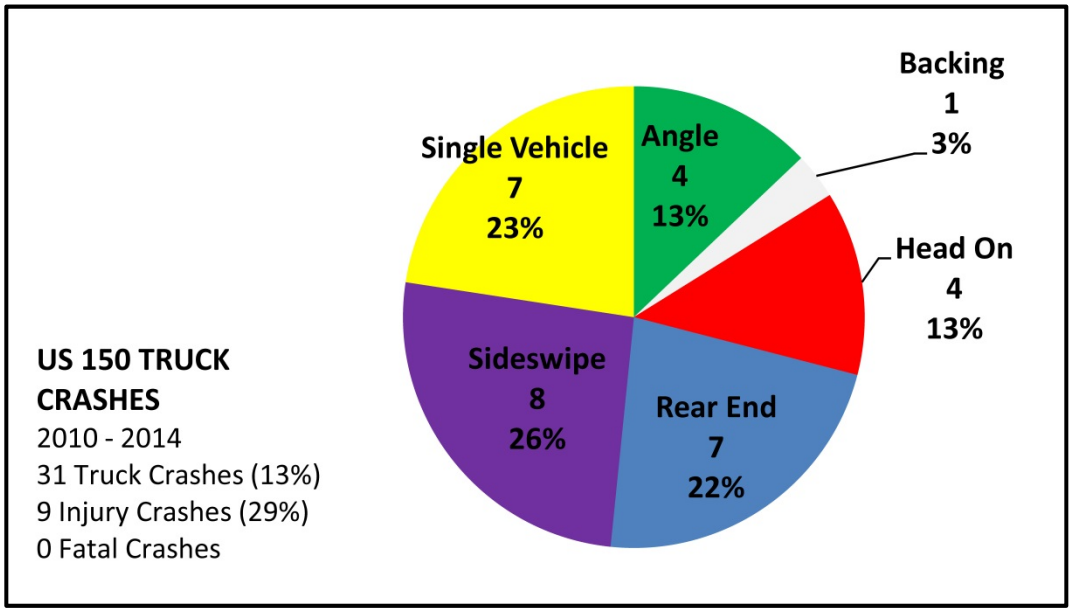


Figure 16 - Truck Crash History - Nelson and Washington Counties - (2010 - 2014)

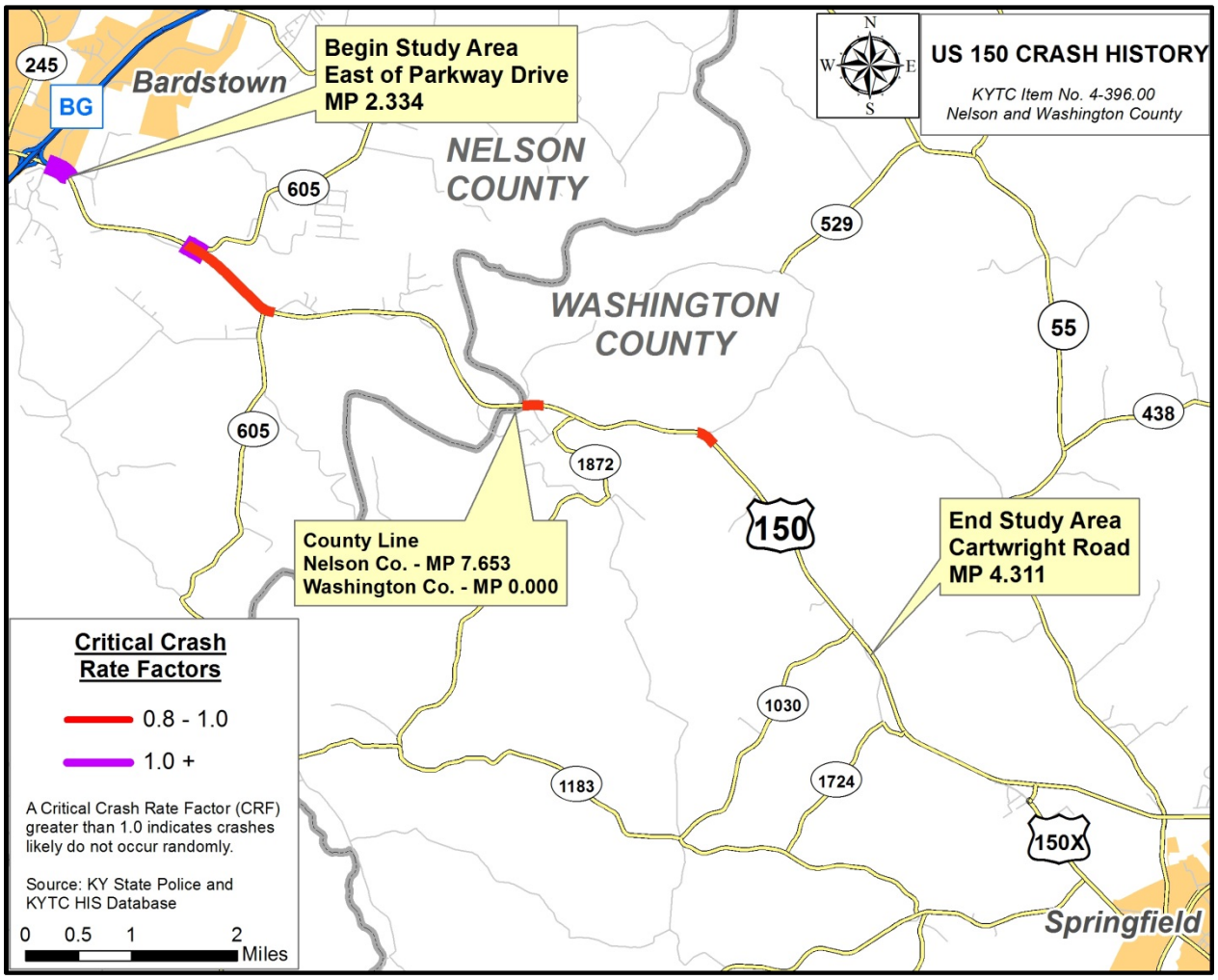


Figure 17 - Critical Crash Rate Factor (CRF) Analysis
Nelson and Washington Counties - (2010 - 2014)

3.0 ENVIRONMENTAL

3.1 ENVIRONMENTAL OVERVIEW

An environmental overview was performed to determine potential impacts of the proposed project. The complete document is included in **Appendix B**. The following sections discuss both natural and human environment resources present within the study area. This information was assembled from readily available data sources and correspondence with resource agencies; additional, detailed investigations should be undertaken as part of any future project development phases.

3.1.1 Project Description and Physical Setting

A. Project Description

This design study has been commissioned by the Kentucky Transportation Cabinet (KYTC) to identify potential improvements to US 150 between Springfield, KY in Washington County and Bardstown, KY which is in Nelson County . The US 150 corridor has already been significantly improved from Interstate 75 near Mt. Vernon in Rockcastle County, KY to just west of Springfield, including the recently completed Springfield Bypass (KYTC Item 4-307 open to traffic 2009). North of Bardstown US 150 runs concurrently with US 31E; this corridor is being improved from KY 508 to the Salt River Bridge. Currently this project is state funded; if future phases are federally funded a more intensive environmental document will be developed.

B. Purpose and Need

The purpose of the US 150 Improvement Project is to enhance local and regional mobility, increase capacity where necessary, and to provide a safer, more efficient connection between the Bluegrass Parkway and Springfield, Kentucky. Currently, US 150 provides the only regional east/west connection for areas between the Bluegrass Parkway in Bardstown and I-75 in Mt. Vernon. In an effort to provide a more reliable and safer regional connector, past improvements have been made to the US 150 corridor between the east end of the project area and I-75 in Rockcastle County.

C. Climate

Kentucky has a mild, mid-latitude climate which can be highly variable. It is characterized by large seasonal temperature changes between summer and winter. The proximity to the Gulf of Mexico influences annual precipitation rates with warm, moist air rising from the south and meeting cooler air from the North. The mean annual temperature in Kentucky is 53° F but the average daily high ranges from 88° in July to 39° F in January. The average annual precipitation is around 47 inches.

D. Geology and Soils

The project area is within the Outer Bluegrass Physiographic Region. This region is characterized by limestones, dolomites and shales of Ordovician and Silurian age. Near the Bluegrass Parkway interchange there is an area underlain by New Albany Shale. This is important to note because of the presence of pyrite within this bedrock and the potential for acid runoff. The design team should make provisions to treat any runoff if any rock cuts are left exposed in this area.

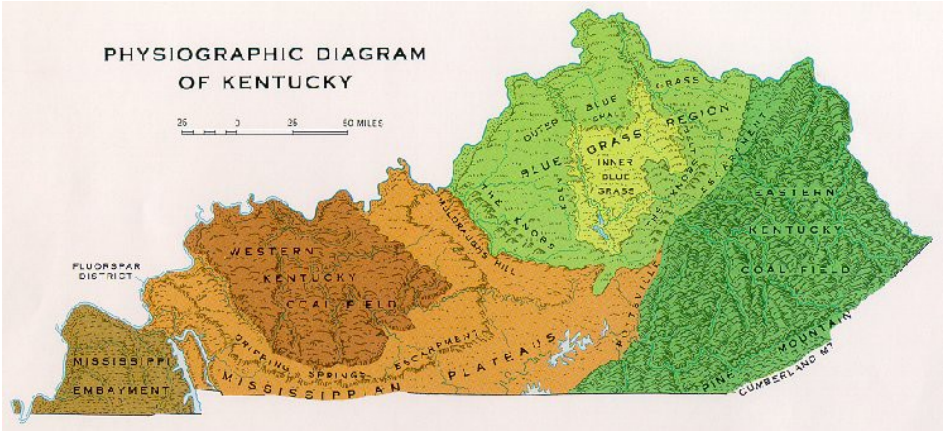


Figure 18 - Physiographic Map of Kentucky (from KGS)

In Nelson County the soils are from the Pembroke-Beasley-Corydon soil association. These soils range from deep to shallow, are well-drained and moderately fine grained composed of degraded limestone and shale. These soils are generally well suited for agriculture on moderately steep and level ground and many are classified as prime farmland or farmland of statewide importance.

In Washington County the soils are from either the Fairmount-Shrouts-Faywood (FMS) or Lowell-Faywood-Shelbyville (LFS) soil associations. The FSF soil association consists of shallow and moderately deep well drained soils with clay subsoil. The soils are underlain with Ordovician and Silurian limestone bedrock. These soils are most suitable for pasture and hay due to the slope of the ground. The prime farmland designated soils are generally located within the valleys of the Beech Fork River and along the bottoms of Cartwright Creek. The LFS soil association is comprised of deep and moderately deep well drained soils with clay or loam subsoil on generally gently sloping to moderately steep uplands. These soils are also well suited to hay and pasture use and if erosion is controlled row cropping. This association also has soils classified as prime farmland in the bottom land or on level ridges. See **Appendix B** for maps showing soil Farmland Classification within the study area.

If the project is federalized the Natural Resources Conservation Service (NRCS) should be consulted to develop a farmland conversion impact analysis and if determined to be significant steps to avoid, minimize or mitigate for the loss of important farmlands will be considered.

E. Land Cover

With the exception of the area near Bardstown, the US 150 project corridor has a rural landscape. There are numerous, dispersed residences throughout and along the route along with abundant farmland and small patches of forest interspersed throughout the landscape. **Table 3** shows the percentage of land use within a 0.5 km buffer of the US 150 centerline or proposed realignments.

NLCD Class	Area (Ac)	% Area
Open Water	24.46	0.44%
Developed, Open Space	536.41	9.69%
Developed, Low Intensity	165.46	2.99%
Developed, Medium Intensity	54.93	0.99%
Developed, High Intensity	18.46	0.33%
Deciduous Forest	1450.23	26.21%
Evergreen Forest	77.84	1.41%
Mixed Forest	56.27	1.02%
Shrub/Scrub	0.89	0.02%
Grassland/Herbaceous	58.04	1.05%
Pasture/Hay	2536.85	45.84%
Cultivated Crops	538.64	9.73%
Woody Wetlands	2.67	0.05%
Emergent Herbaceous Wetlands	12.90	0.23%

Table 3 - NLCD 2011 Land use within the US 150 Study Area in Washington and Nelson Counties

3.1.2 Natural Environment

A. Air Quality and Noise Impacts

Nelson and Washington Counties are currently in attainment categories for all criteria pollutants. The present and forecasted traffic data for this corridor is below the threshold for Carbon Monoxide project level analysis. No further air quality analysis is required for these pollutants. Mobile Source Air Toxins (MSAT) are becoming of increasing concern due their impact on populations susceptible to asthma and other respiratory illnesses. Again, however, the traffic data indicate there is low potential for MSAT effects to the local population therefore only a qualitative analysis would be required.

The primary noise receptors along the route are residences along with a few scattered churches and businesses. KYTC has an established Noise Analysis and Abatement Policy (KYTC 2012). If recommended improvements are federally funded and would be classified as *Type I* according to the 2012 Policy a detailed noise impact analysis is required at affected locations. A *Type I* project is one where there is a new alignment, substantial change to either the vertical or horizontal alignment or the addition of a through traffic lane such as a truck climbing lane.

B. Aquatic and Terrestrial Resources

The study area has numerous aquatic resources which must be considered when designing improvements to US 150. There are 10 stream crossings with existing US 150 including the Beech Fork River at the Nelson/Washington County line. Additionally there are several stretches where Cartwright Creek or Parker Run flow parallel within close proximity to US 150. The Federal Emergency Management Agency Digital Flood Insurance Map (DFIRM) for the study area was accessed from the KY Geoportal to obtain 1% annual chance flood prone areas. There are mapped floodplain areas associated with Mill Creek and Cane Run in Nelson County. The Beech Fork River and Cartwright Creek form a large flood prone area near Fredericktown that spans both Nelson and Washington Counties.

Wetlands

The National Wetlands Inventory GIS dataset was used to map known wetland resources (**Table 4**). There are 89 mapped wetlands within the US 150 study area totaling 643.25 acres.

Type	Description	Count	Area
PAB3Hh	Palustrine, Aquatic Bed, Rooted Vascular Permanently Flooded Diked/Impounded	1	1.36
PAB4Hh	Palustrine, Aquatic Bed, Floating Vascular, Permanently Flooded, diked/impounded	1	1.54
PEM1C	Palustrine, Emergent, Persistent, Seasonally Flooded	2	0.72
PEM1Ch	Palustrine, Emergent, Persistent, Seasonally Flooded	1	1.24
PFO1A	Palustrine, Forested, Broad-Leaved Deciduous, Temporarily Flooded	1	0.57
PSS1C	Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded	1	0.85
PUBFh	Palustrine, Unconsolidated Bottom Semi permanently Flooded, Diked/Impounded	2	0.44
PUBFx	Palustrine, Unconsolidated Bottom Semi permanently Flooded, Excavated	2	1.17
PUBH	Palustrine, Unconsolidated Bottom Permanently Flooded,	11	3.06
PUBHh	Palustrine, Unconsolidated Bottom Permanently Flooded, Diked/Impounded	41	22.08
PUSC	Palustrine, Unconsolidated Shore, Seasonally Flooded	4	0.98
PUSCh	Palustrine, Unconsolidated Shore, Seasonally Flooded, Diked/Impounded	2	0.56
PUSCX	Palustrine, Unconsolidated Shore, Seasonally Flooded, Excavated	4	0.98
R2UBH	Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded	3	577.08
R2USC	Riverine, Lower Perennial, Unconsolidated Bottom, Seasonally Flooded	8	5.31
U	Upland	4	25.09

Table 4 - Type, Description, Count and Area of Wetlands within the US 150 Study Area

Threatened and Endangered Species

The KYTC combined species list for Nelson and Washington Counties has 11 listed species (**Table 5**).

County	Name	*Scientific Name*	Listing Agency	Status
Nelson	Gray Bat	*Myotis grisescens*	KDFWR, KSNPC, USFWS	Endangered
Nelson	Indiana Bat	*Myotis sodalis*	KDFWR, KSNPC, USFWS	Endangered
Nelson	Northern Long-eared Bat	*Myotis septentrionalis*	KDFWR, USFWS	Threatened
Nelson	Clubshell	*Pleurobema clava*	KDFWR, KSNPC	Endangered
Nelson	Fanshell	*Cyprogenia stegaria*	KDFWR, KSNPC, USFWS	Endangered
Nelson	Northern Rifffleshell	*Epioblasma torulosa rangi*	KDFWR, KSNPC, USFWS	Endangered
Nelson	Rabbitsfoot	*Quadrula cylindrica cylindrica*	KSNPC	Endangered
Nelson	Snuffbox	*Epioblasma triquetra*	KDFWR, KSNPC, USFWS	Endangered
Nelson	Price's Potato-bean	*Apios priceana*	KSNPC, USFWS	Threatened
Nelson	Running Buffalo Clover	*Trifolium stoloniferum*	KSNPC, USFWS	Endangered
Nelson	Short's Bladderpod	*Physaria globosa*	KSNPC	Endangered
Washington	Indiana Bat	*Myotis sodalis*	USFWS	Endangered
Washington	Northern Long-eared Bat	*Myotis septentrionalis*	USFWS	Threatened
Washington	Clubshell	*Pleurobema clava*	USFWS	Endangered
Washington	Fanshell	*Cyprogenia stegaria*	USFWS	Endangered

Table 5 – KYTC Combined List of Species Listed by USFWS, KDFWR and KSNPC

Gray Bat

On April 21, 1975, *Myotis grisescens* was proposed for listing under the Endangered Species Act (40 FR 17590) and formally attained endangered status on April 28, 1976 (United States Department of Interior 1976). Foraging usually occurs in riparian areas or over water bodies. Habitat requirements for roosts are highly specific with fewer than 5% of caves representing suitable habitat (Tuttle 1979). M. grisescens utilizes different caves throughout a year with winter caves usually defined with deep vertical shafts providing a cold air trap while caves utilized during the summer (especially maternity caves) are usually characterized as having domed ceilings (acting as a warm air trap) which are located in close proximity to a stream or water body (USFWS 1982, Tuttle 1976). Other caves, known as dispersal caves are used as roosting sites during migration from maternity caves to hibernacula.

Indiana Bat

The Indiana Bat (*Myotis sodalis*) was listed as an endangered species by the U.S. Fish and Wildlife Service on 11 March 1967) and is currently protected under the Endangered Species Act of 1973, as amended (Public Law 93-205). The species uses different habitats during the summer and winter months. In addition, male and female bats may use different habitat types. Both sexes of bat overwinter in caves or mines. In the summer, female bats form maternity colonies in characteristic trees. Males are more opportunistic and roost singly or in small groups in trees and small caves. During mid-fall the bats migrate to their winter habitat and begin swarming. Both males and females require forested areas and wetland/riparian areas for foraging (USFWS 2007).

Northern Long Eared Bat

The Northern Long-eared Bat (NLEB) was listed as threatened by the USFWS on April 2, 2015. The habitat requirements for the NLEB are similar to the Indiana Bat preferring to roost underneath the bark or in cavities of both living and dead trees in the summer and overwinter in caves.

The project area is within the area identified as "Potential" by the USFWS (**Appendix B**) for the forest-dwelling bat habitat in Kentucky. The implication for this is that the removal of trees within the final project area will have to be coordinated with USFWS. Most likely the Programmatic Agreement between KYTC and USFWS will be used to develop a Conservation Memorandum of Agreement to pay mitigation for the loss of potential roosting habitat.

Clubshell Mussel

The clubshell mussel was listed as Endangered on January 22, 1993 by the USFWS. The clubshell is found in small streams to large rivers in clean, coarse sand and cobble mixes within the current. It is most commonly found downstream of riffles and islands. It burrows and may be found several inches below the surface of the substrate. It is not found in waters heavily impacted by sediment or in slack-water conditions.

Fanshell Mussel

The fanshell mussel was formally listed as endangered under the Endangered Species Act of 1973, as amended, on June 21, 1990. The *Fanshell mussel* is usually found in medium to large rivers in sand and gravel. Individuals are often found in deeper water with moderate flow. The species was historically found throughout the Ohio River Basin with records from Pennsylvania, West Virginia, Ohio, Indiana, Illinois, Kentucky, Tennessee, Alabama, and Virginia.

Northern Riffleshell

The northern riffleshell mussel was listed as endangered on January 22, 1993. The mussel can be found in large or small streams. The mussel beds are most commonly found in riffles and swift running water with clean substrate bottoms that consist of both firmly packed sand and fine to coarse gravel. Typically the species is found in shallow water, although individuals have been found as deep as two meters.

Rabbitsfoot

The rabbitsfoot mussel was listed as threatened under the Endangered Species Act of 1973, as amended, on September 17, 2013. Rabbitsfoot primarily inhabit small to medium sized streams and rivers. It usually occurs in shallow water along the bank and runs and shoals with reduced water velocity. It is generally found on substrates such as gravel and sand and seldom burrows but is typically found lying on its side.

Snuffbox

The snuffbox mussel was listed as endangered by the USFWS on February 12, 2012. It is usually found in small streams to medium sized rivers inhabiting areas with swift current. Adults often burrow deep in sand, gravel or cobble substrates.

The Beech Fork River and Cartwright Creek within the US 150 study area contain the best habitat available for listed mussel species, however a Biological Assessment completed for the replacement of the bridges conducted in November 2011 found no listed mussel species in the areas near the US 150 crossing. Additionally, many of the other streams including upstream reaches of Cartwright Creek in Washington County are bedrock bottom which provides little to no substrate for mussel species.

Price's Potato Bean

This plant was listed as threatened on January 5, 1990. It is a member of the Pea family and is a herbaceous, perennial vine legume which grows from a single tuber. The species is often found in low, open woods near streams or within transition areas from floodplains to hillsides. It is shade intolerant and requires open wooded areas or edge habitat such as power line easements. It requires well-drained calcareous soils over limestone beds.

Running Buffalo Clover

Also a member of the Pea family, this plant was listed as endangered on July 6, 1987. It is historically associated with buffalo, buffalo traces and open savannah woodlands. It is mostly associated with limestone-derived soils. It is dependent on partial shade (filtered sunlight) and moderate, periodic disturbance such as grazing livestock, mowing and foot, vehicle or logging trails.

Short's Bladderpod

Short's bladderpod was listed as a candidate endangered species on May 11, 2004. It is a member of the Mustard family and is a short-lived herb. Very little is known about the ecology or life history of this plant and populations may vary greatly from year to year. Short's bladderpod inhabits steep, rocky, wooded slopes and talus areas at the base of cliffs. It may also be found in areas on or along major waterways. It prefers dry limestone rocks and open rock ledges or calcareous soils as found in cedar glades. The plant may also be found in shale at the base of cliffs and within roadcuts.

These plants may be found within the project area and when plans are developed, impacted area should be searched by a qualified biologist for suitable habitat and extant populations.

3.1.3 Human Environment

A. Archaeology

A search of the Office of State Archaeology database returned no recorded sites within a 30m buffer of US 150. However, there have only been three recorded surveys within that buffer. The presence of Beech Fork and Cartwright Creek and the topography with wide flat ridges overlooking the water features seems ripe for prehistoric sites. When you combine the physical features of the study area the large number of residences appearing on the 1953 USGS topographic maps and the paucity of surveys there is relatively high probability of prehistoric and historic archaeological sites within the study area.

Since this project is currently state funded, archaeological resource surveys will be focused on jurisdictional stream crossings for USACE permits.

B. Historic Resources

The Kentucky Heritage Council records indicate 40 sites within the study area in their database, including 4 National Register Listed Properties. The remaining 36 sites have not been evaluated for National Register listing and could be eligible. Additionally, there are a cluster of surveyed resources in Fredericktown which may be eligible as a Historic District. When design advances to Phase I, care should be taken to avoid impacts to these inventoried resources. If future phases are federally funded or USACE 404 permits are required Section 106 coordination will be required and the eligibility and effects to these resources will be evaluated.

C. Section 4(f) Section 6(f) Resources

Section 4(f) of the Department of Transportation Act (49 U.S.C. 303 and 23 U.S.C. 138 provides for the protection of historic sites listed or eligible for the National Register of Historic Places, public parks or recreation areas and wildlife and waterfowl reservations. Impacts to Section 4(f) resources must be determined as part of the federal NEPA process. There are numerous sites within the study area which would qualify as Section 4(f) resources including the KHC sites and Fredericktown Community Park. If any of the projects advanced from this scoping study are federally funded, the project level Section 4(f) analysis will be required as part of the NEPA process.

The Land Water Conservation Fund Act (16 U.S.C. 460 Section (4f) was enacted to preserve, develop and assure accessibility to outdoor recreation resources by providing funds for planning, acquisition and development of property and facilities. The Governor's Office of Local Development administers the program for Kentucky and any impacts with Section 6(f) properties should be coordinated through that office. Within the study area the Fredericktown Community Park has received 4 grants between December 1980 and September 2007 for constructing facilities. If a federally funded project advances near the park which will impact facilities, measures to mitigate for the loss of park resources will be evaluated.

D. Agriculture

The study area is home to numerous farms. There is one farm enrolled in the PACE (Purchase Agricultural Easement) program. This farm is located north of US 150 near Fredericktown and is also listed on the National Register as the Hamilton Farm. The PACE program, administered through the Kentucky Department of Agriculture, allows the state to purchase conservation easements to ensure that land currently in agricultural use is protected from future development and will remain in agricultural use in the future.

E. HAZMAT

Properties with hazardous material concerns were identified through aerial photography, Kentucky Department of Environmental Protection UST database, and Nationwide Environmental Title Research database search. There are seven sites located in Nelson County and 4 located in Washington County. A Phase 1 Environmental Site Assessment is recommended if any of the identified properties are impacted by the US 150 improvements.

Site	Location	County	Concern
Maywood Gas Station	2590 Springfield Rd US 150 MP 2.2	Nelson	UST
Bardstown Auto Wreckers	3205 Springfield Rd US 150 MP 2.8	Nelson	Petroleum products, heavy metals, acids
Bivens Automotive	3398 Springfield Rd US 150 MP 2.8	Nelson	Petroleum products, heavy metals, acids
Taylor Welding & Fabricating	4050 Springfield Rd US 150 MP 3.65	Nelson	heavy metals, gas canisters, acids
US 150 Quick Stop	4598 Springfield Rd US 150 MP 4.2	Nelson	UST
Botland Liquors	5201 Springfield Rd US 150 MP 4.73	Nelson	UST, petroleum products
Hutchins Brothers Trucking	475 Botland Loop US 150 MP 5.27	Nelson	Petroleum products
Mama's Touch Nursery and Landscaping	8689 Bardstown Rd US 150 MP 4.77	Washington	Possible former UST,
Mudd's Body Shop	8666 Bardstown Rd US 150 MP4.77	Washington	Petroleum products, heavy metals, acids
Pat Mattingly Trucking Company	5529 Bardstown Rd US 150 MP 3.05	Washington	Petroleum products
Farm/Trucking Company	US 150 MP 3.6	Washington	Petroleum products

Table 6 - Possible Hazardous Materials Sites

3.2 GEOTECHNICAL OVERVIEW

The KYTC Division of Structural Design, Geotechnical Branch provided a Geotechnical Overview for the study area, a copy of which is found in **Appendix C**. The review noted that alluvial soils and three difficult shale formations are present in the study area. These three shale formations include New Albany Shale, Waldron Shale, and shales of the Osgood Formation.

Foundations for bridges in the study area are generally rock bearing (end bearing piles, drilled shafts, or spread foundations). Smaller structures, such as retaining walls and box culverts, may be founded on soil or bedrock. As indicated above, some measures may be required where the bedrock is thinly bedded and considered erodible. Native soils in the area are generally suitable for embankment construction, accommodating embankments to a height of 60 feet with 2:1 side slopes if the foundation is suitable and proper compaction methods are used. However, in no case should soil cuts be steeper than 2:1. California Bearing Ratio (CBR) values used in pavement design are generally low for subgrades in the area, ranging from two to five. The use of rock roadbed is common in the area. Chemical modification of the subgrade is sometimes used in the area.

3.3 SOCIOECONOMIC STUDY

Issues pertaining to minority, elderly, disability and low income (persons living in poverty) populations in the study area in Nelson and Washington Counties were evaluated and documented by the Lincoln Trail Area Development District (LTADD) in a report entitled *Socioeconomic Study and Community Impact Report – U.S. 150 from MP 2.212 (Nelson Co.) to MP 4.311 (Washington Co.) Nelson Co/Washington Co Item No. 4-396.00*. A copy of the report has been included in the aforementioned Environmental Overview in **Appendix B**.

The Socioeconomic Study concluded that after a comprehensive analysis of the data obtained, from the U.S. Census Bureau, for the US 150 study area, both census block groups that comprise the study area had rates of minority, age, poverty, disabled, sex and English speaking near, at or below national, state and county averages. The data presented in the report is intended to highlight areas of concern that may require additional analysis when the project is advanced to future phases.

4.0 INITIAL CONCEPT DEVELOPMENT

The first Project Team Meeting was held on January 29, 2015. At this meeting, the Project Team decided that the focus of the US 150 Corridor Study should involve the development of defined segments of US 150 that will cover the entire corridor from beginning to end, and each segment should have a construction cost of $8M to $10M. In addition to the corridor-wide improvements, spot improvements will also be identified. These spot improvement locations will be based on a review of the existing horizontal and vertical alignments, crash history, traffic analyses, and local input. The top spot improvement location in both Nelson County and Washington County will be determined using the same criteria.

Improvement Strategy

Improvement strategies involved the development of five defined segments of US 150 from the Bluegrass Parkway to the already improved portion of US 150 west of Springfield. The newly improved section of US 150 at the Nelson-Washington County line was excluded from the proposed improvements. In addition to the five defined segments that cover the entirety of US 150 from the Bluegrass Parkway to Springfield, six spot improvements have also been identified that could be initially constructed. These spot improvements would be constructed to tie to future improvements covered by one of the five segments. The Improvement Strategies and Alternatives are summarized as follows and shown on **Figures 19** and **20**:

<u>Improvement Strategies and Alternatives</u>
<u>Segments</u>

- 5 Segments
  - 3 in Nelson County
  - 2 in Washington County

<u>Spot Improvements</u>

- 6 Spot Improvements
  - 2 in Nelson County
  - 4 in Washington County

<u>New Alignments</u>

- 2 Locations
  - Conceptual Realignment North of Botland – Alternative to Segment II
  - Conceptual Realignment South of US 150 In Nelson County – Alternative to Segment II and Segment III

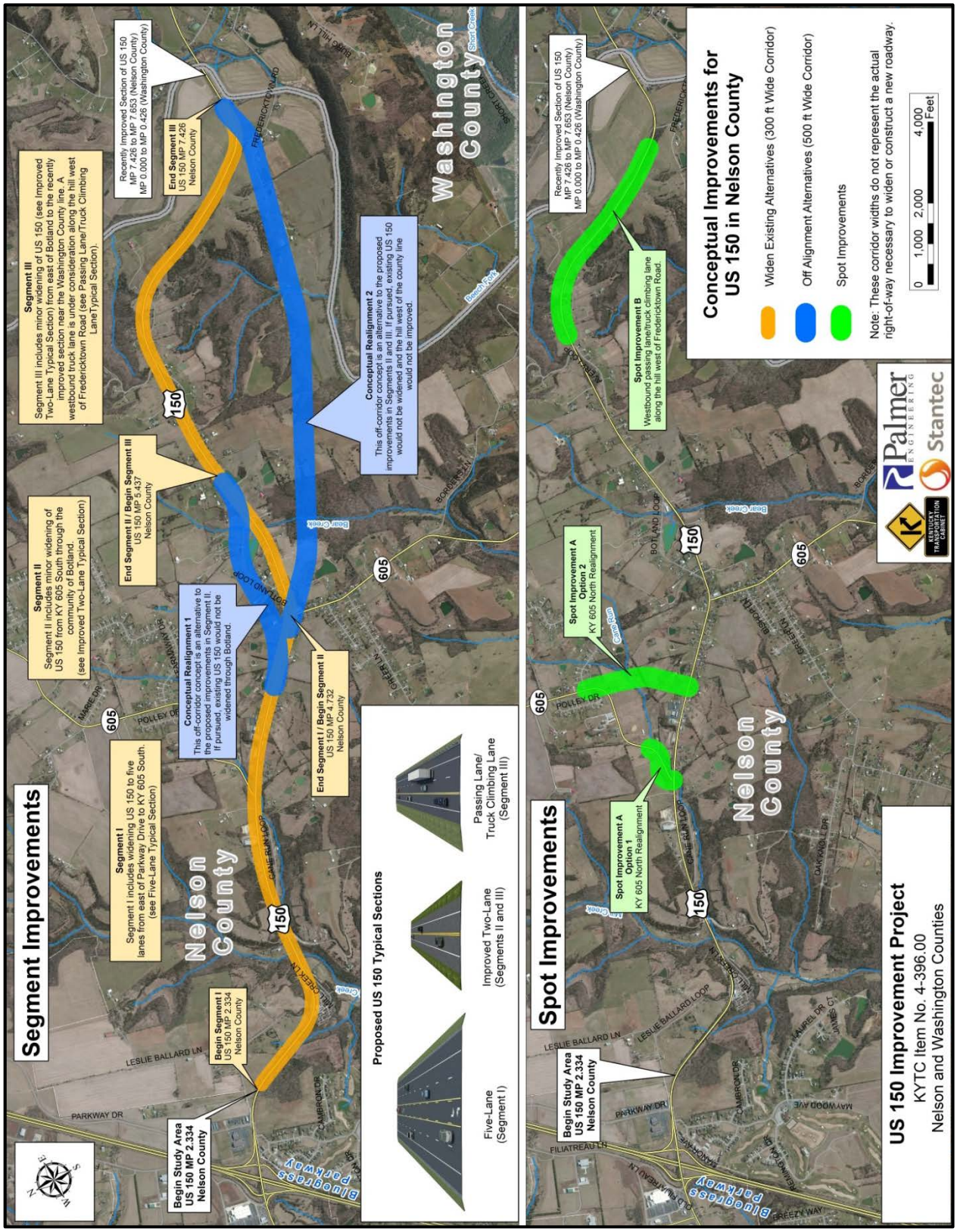


Figure 19 - Segment Alternatives and Spot Improvements - Nelson County

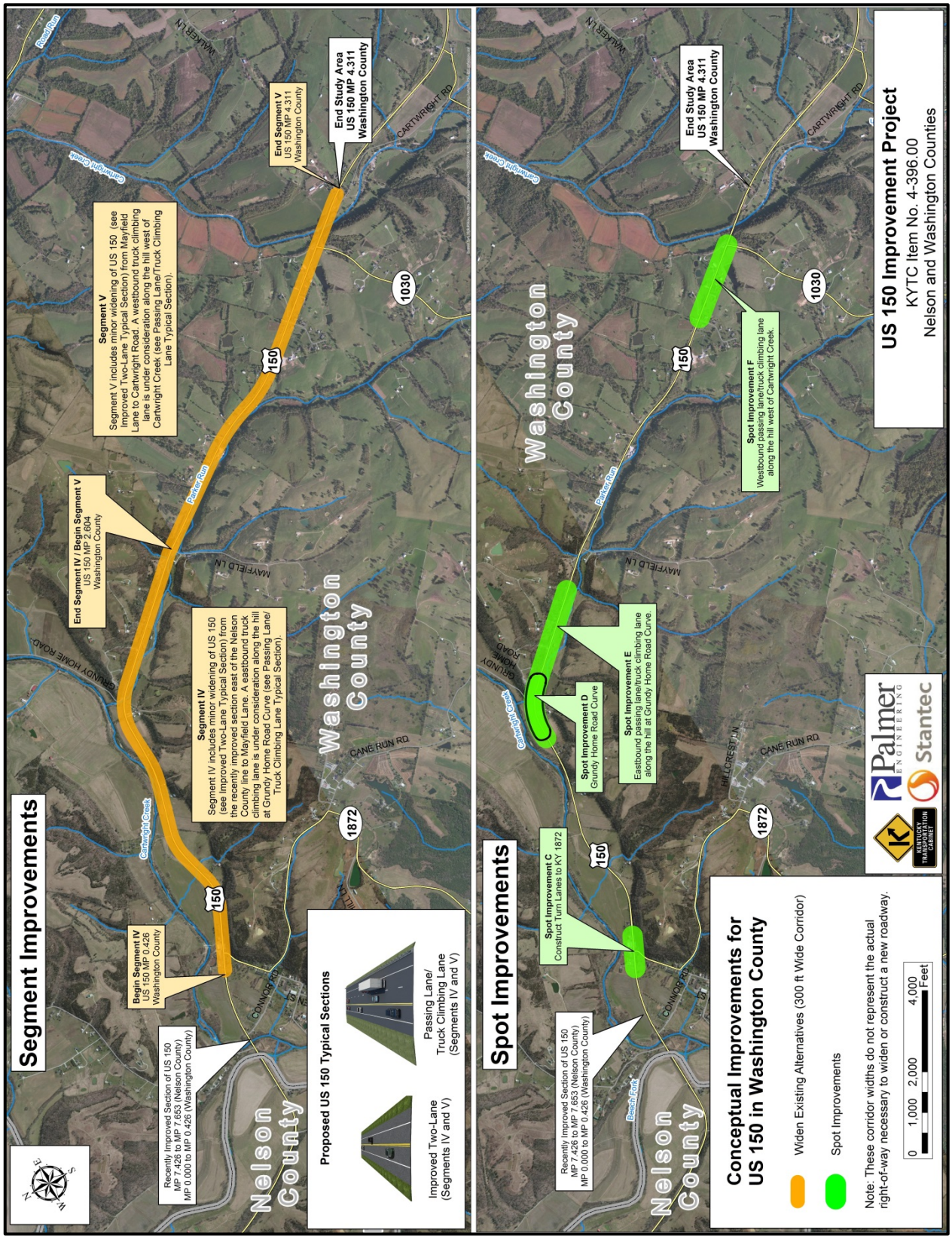


Figure 20 - Segment Alternatives and Spot Improvements - Washington County

4.1 TRAFFIC FORECASTS

Project traffic forecasts were developed by the KYTC Division of Planning for the year 2035. **Figures 21** and **22** display the traffic forecasts for the corridor. See **Appendix E** for the complete Traffic Forecast Report.

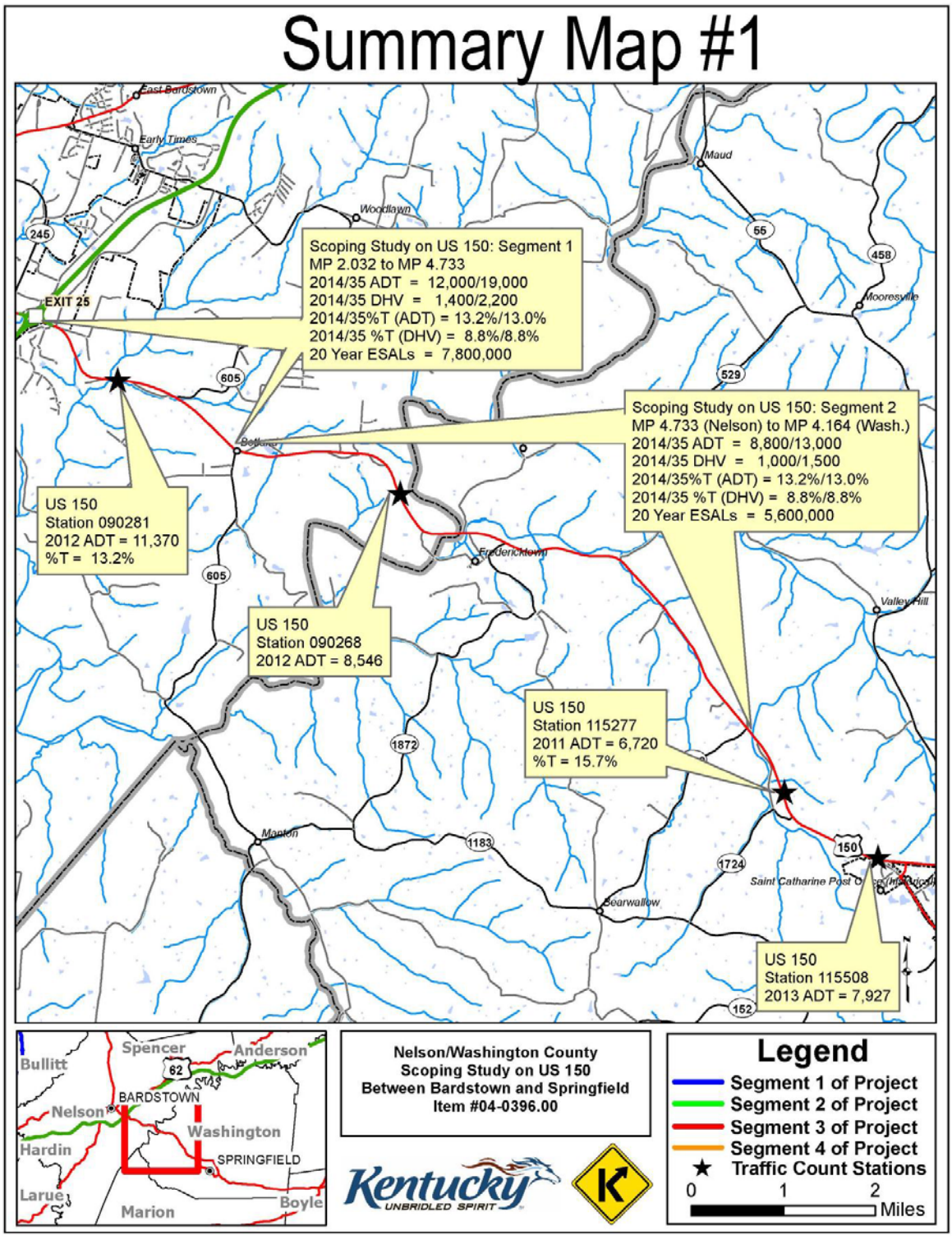


Figure 21 - Existing Traffic and 2035 Traffic Forecasts

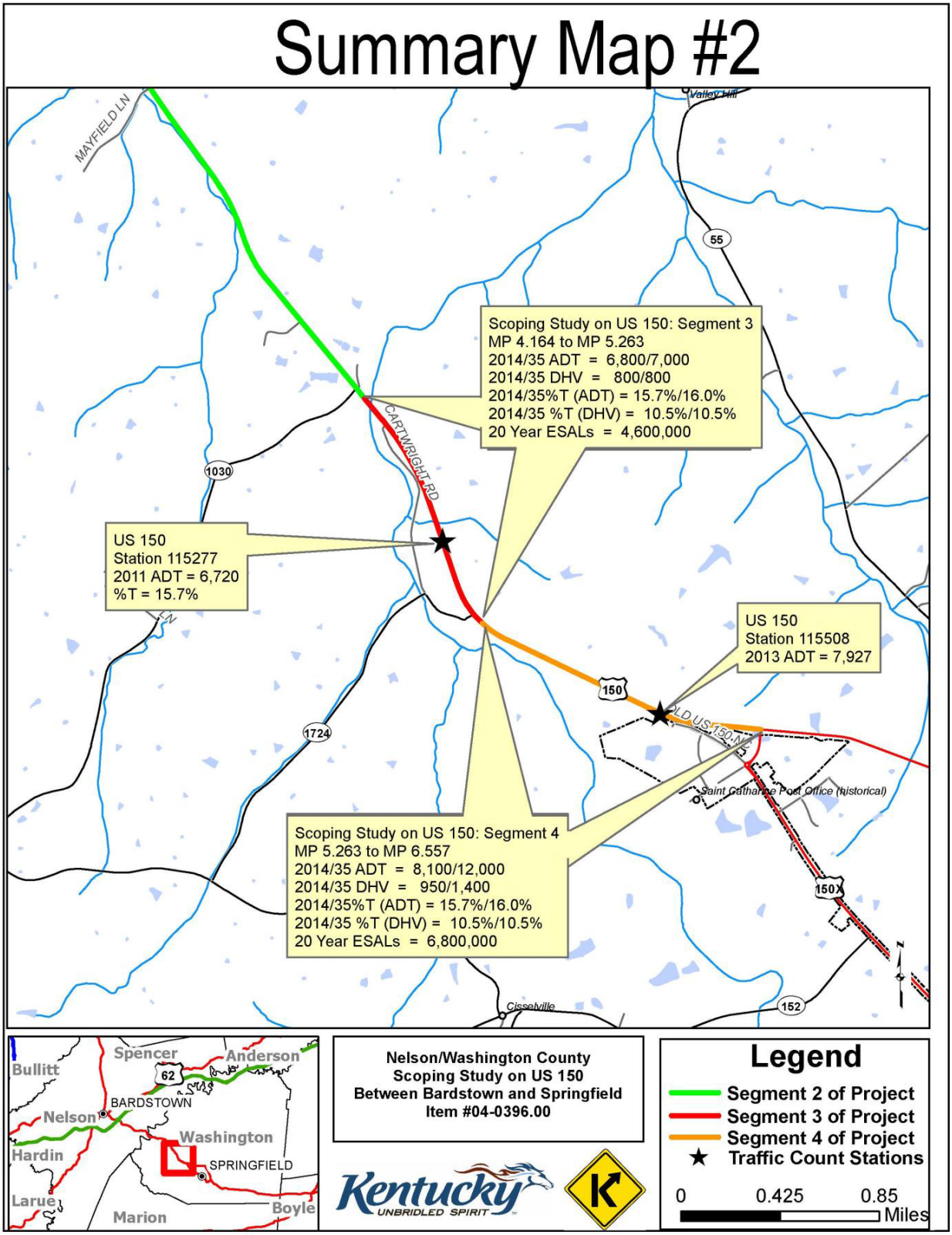
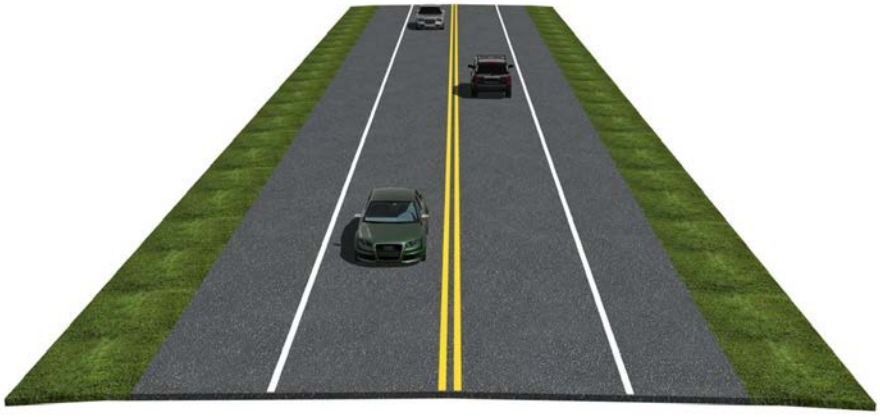


Figure 22 - Existing Traffic and 2035 Traffic Forecasts

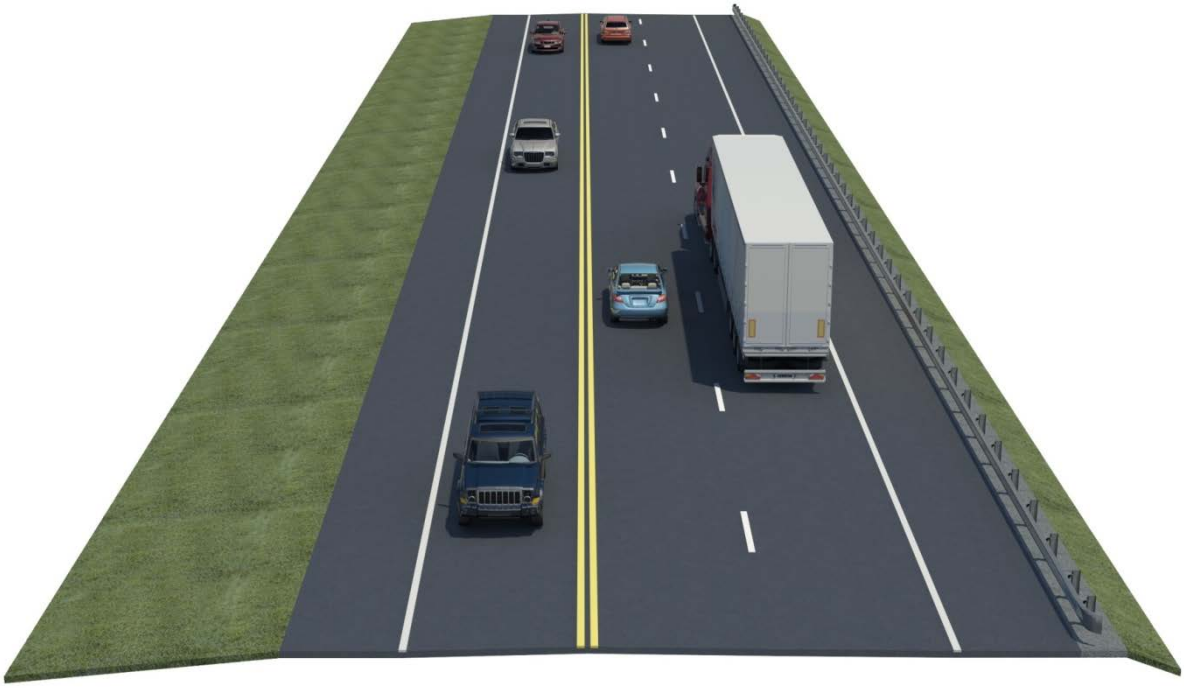
4.2 TYPICAL SECTIONS

The Project Team considered several possible typical sections for US 150, ultimately deciding to focus on options that would accommodate driver expectancy and better suit adjacent sections of roadway. The US 150 Corridor includes three options, shown in **Figures 23, 24** and **25**. The first option, which would be considered in most locations, is a two-lane section (one 12-foot lane per direction) with 8 to 10-foot-wide paved shoulders. The second option would consist of similar lane and shoulder widths but would include a truck climbing or passing lane where appropriate. The third option is a five-lane section (two 12-foot lanes per direction with a center turn lane) for Segment I.



Two 12-foot lanes with 8'-10' paved shoulders

Figure 23 - Conceptual Typical Section for US 150



Truck climbing (passing) lane (where appropriate)

Figure 24 - Conceptual Typical Section for US 150

Five 12-foot lanes (including center turn lane) with 8’-10’ paved shoulders

Figure 25 - Conceptual Typical Section for US 150

5.0 PUBLIC AND STAKEHOLDER COORDINATION

Community outreach helped guide the US 150 Scoping Study, particularly in identifying potential issues and developing alternatives. A two-step process was used that involved early meetings with project stakeholders and local officials, followed by meetings with the general public. Summaries for all project meetings, including Project Team meetings, are found in **Appendix D**.

5.1 FIRST MEETING OF LOCAL OFFICIALS AND STAKEHOLDERS

Table 7 includes a list of the stakeholders and local officials that attended the first meeting and participated in the study.

Local Official/Stakeholder	Title / Representing
Daniel Carney	Springfield-Washington Co. Economic Development Authority
Forrest Carrico	Washington County Fire Department
Bob Goodlett	Springfield City Council
Mark Hale	Washington County EMS
Sam Hutchins	2nd District Magistrate – Nelson County
Jim Lemieux	Nelson County Engineer
Dale Mann	Washington County Road Department
Elaine Mattingly	Resident and Business Owner
Pat Mattingly	Resident and Business Owner
Ramon Pineiroa	Nelson County Sheriff's Office
Sheriff Pinkston	Washington County Sheriff's Office
Billy Riney	5th District Magistrate – Washington County
Bill Robinson	Attorney – Washington County
Benjamin Settles	2nd District Magistrate - Washington County
John A. Settles	Washington County Judge Executive
Jim Smith	Springfield Police Department
Laurie Smith	City of Springfield
Paul Terrell	Washington County Schools
Terry Tingle	1st District Magistrate – Washington County
Dean Watts	Nelson County Judge Executive

Table 7 - US 150 Scoping Study Local Officials/Stakeholders

The first meeting of local officials and stakeholders was held on Thursday, January 29, 2015 in the Washington County Cooperative Extension Office, in Springfield, Kentucky. Excluding the Project Team, 20 individuals were in attendance at the meeting. The purpose of this meeting was to provide a brief overview of the study and to get feedback on needed improvements. In general, three suggestions for potential needed improvements were noted:

1. Safety / high crash locations throughout the corridor; It was noted that improvements to address high crash locations could include correcting substandard geometric deficiencies, adding turning lanes (left and right), and addressing sight distance at approach roads.
2. Full shoulders (8-10 feet paved) along the entire length of the corridor;
3. Realignment and additional lanes; It was noted that existing geometry indicated only a few locations with less than minimum acceptable horizontal geometry but also many more vertical curves with less than desirable stopping sight distance. Thus, improvements could involve realignment and/or adding lanes (truck-climbing lanes and passing lanes).

A complete summary of this meeting is shown in **Appendix D**.

5.2 SECOND MEETING OF LOCAL OFFICIALS AND STAKEHOLDERS

A second meeting of local officials and stakeholders for the US 150 Scoping Study was held on Tuesday, May 26, 2015 at Parkway Baptist Church, in Bardstown, Kentucky. This meeting was held to show the local officials the improvement strategies and alternatives, outlined in this chapter, including five segments, six spot improvements and two realignments, which would be presented at the public meetings.

A complete summary of this meeting is shown in **Appendix D**.

5.3 US 150 CORRIDOR

The conceptual segments, spot improvements, and realignments for the US 150 Corridor, shown in **Figures 19** and **20**, were developed to address issues identified by the Project Team or at the suggestion of local officials, stakeholders or members of the public. The descriptions of each alternative, spot improvement and conceptual realignment, with an explanation of the recommended improvements including cost estimates, are shown in **Table 8** and on the following pages.

	Improvement	County	Length (miles)	Cost Estimate							Project Priority	Priority Status
				Design	ROW	Utilities	Construction	Total				
Alternatives	**Segment I**	**Nelson**	**2.398**	**$1,580,000**	**$2,600,000**	**$1,300,000**	**$15,800,000**	**$21,280,000**			**HIGH**	**Recommended**
	Segment II	Nelson	0.705	$530,000	$1,800,000	$400,000	$5,300,000	$8,030,000			**MEDIUM**	
	Segment III	Nelson	1.989	$900,000	$700,000	$1,000,000	$9,000,000 - $13,500,000	$11,600,000 - $16,100,000		*	**LOW**	
	Segment IV	**Washington**	**2.178**	**$990,000**	**$900,000**	**$1,100,000**	**$9,900,000**	**$12,890,000**			**HIGH**	**Recommended**
	Segment V	**Washington**	**1.707**	**$910,000**	**$900,000**	**$1,000,000**	**$9,100,000**	**$11,910,000**			**MEDIUM**	**Recommended**
Conceptual Realignments	Conceptual Realignment No. 1	Nelson	1.087	$490,000	$900,000	$200,000	$4,900,000	$6,490,000			**MEDIUM**	
	Conceptual Realignment No. 2 (Segments II & III Inclusive)	**Nelson**	**2.694**	**$1,650,000**	**$2,300,000**	**$200,000**	**$16,500,000 - $18,600,000**	**$20,650,000 - $22,750,000**		*	**MEDIUM**	**Recommended**
Spot Improvements	Spot Improvement "A" (Located within Segment I)	Nelson	0.587	$490,000	$800,000 - $1,200,000	$400,000	$4,900,000 - $6,200,000	$6,590,000 - $8,290,000		**	**HIGH**	
	Spot Improvement "B" (Located within Segment III)	Nelson	1.226	$600,000	$500,000 - $700,000	$700,000	$6,000,000 - $9,000,000	$7,800,000 - $11,000,000		*	**MEDIUM**	
	Spot Improvement "C" (Located within Segment IV)	Washington	0.564	$110,000	$200,000	$100,000	$1,100,000	$1,510,000			**LOW**	
	Spot Improvement "D" (Located within Segment IV)	Washington	0.750	$420,000	$500,000	$400,000	$4,200,000	$5,520,000			**HIGH**	
	Spot Improvement "E" (Located within Segment IV)	Washington	1.250	$600,000	$500,000	$500,000	$6,000,000	$7,600,000			**HIGH**	
	Spot Improvement "F" (Located within Segment V)	Washington	1.161	$600,000	$500,000	$500,000	$6,000,000	$7,600,000			**LOW**	

* Variable - Dependent upon Geotechnical Conditions

** Variable - Dependent upon selection of Option 1 or Option 2

Table 8 - Summary of Alternatives, Spot Improvements and Conceptual Realignments

Segment I Recommended	LOCATION US 150 East of Bluegrass Parkway (MP 2.334 – MP 4.732)	PROJECT PRIORITY: **HIGH**

DESCRIPTION

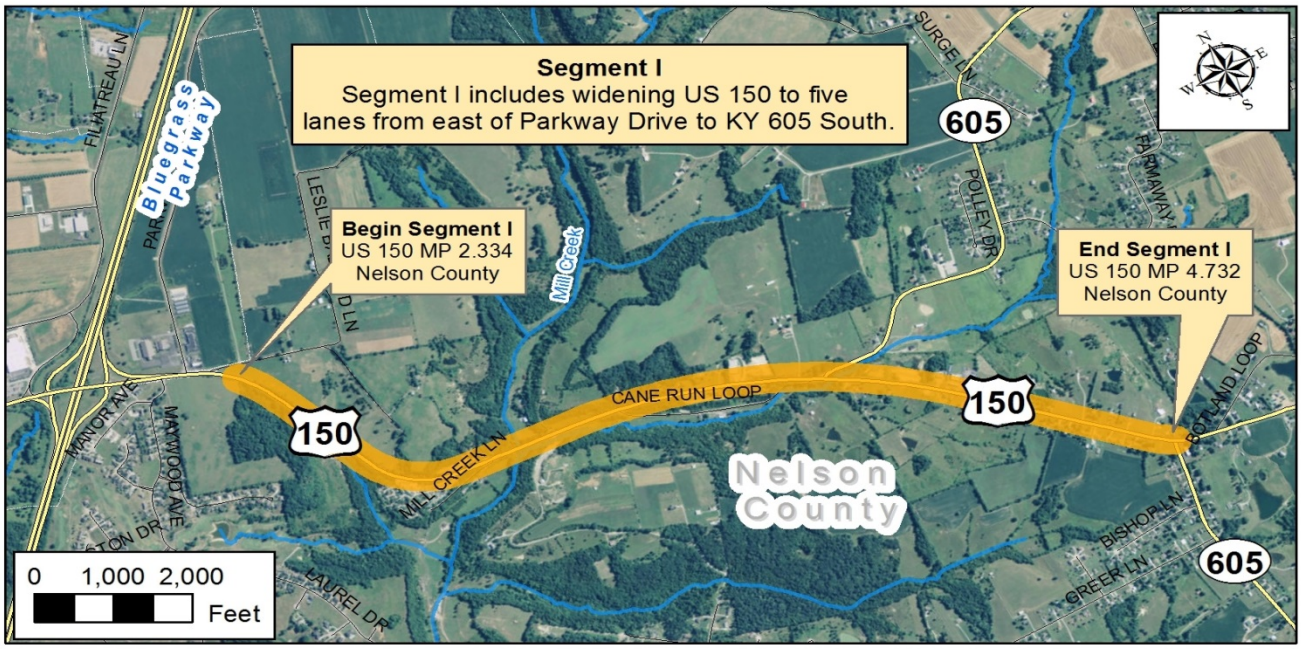
Widening US 150 to five lanes from east of Parkway Drive (0.40 miles east of the Bluegrass Parkway) to KY 605 South (Manton Road).

COST ESTIMATE

Design	$1,580,000
ROW	$2,600,000
Utilities	$1,300,000
Construction	$15,800,000
Total	**$21,280,000**

Currently, US 150 carries 8,800 to 12,000 to vehicles per day through this segment. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 are substandard vertical and horizontal curves indicating possible sight distance and speed differential issues.

This project will address the substandard horizontal and vertical geometry. This segment was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this segment as a high priority.



Segment II	LOCATION US 150 at the Community of Botland (MP 4.732- MP 5.437)	PROJECT PRIORITY: **MEDIUM**

DESCRIPTION

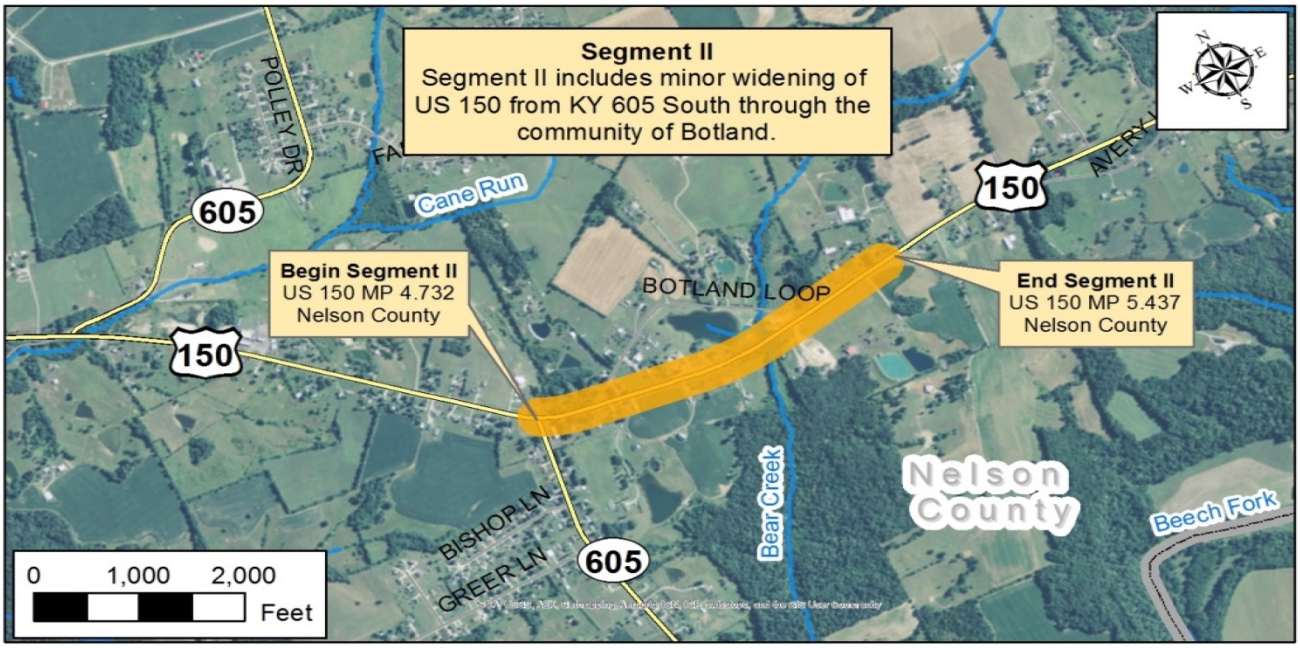
Widening US 150 from KY 605 South through the community of Botland.

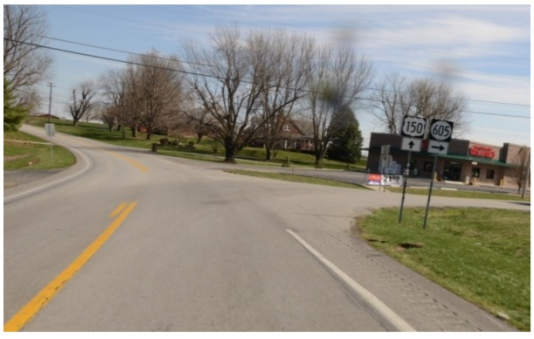
COST ESTIMATE

Design:	$530,000
ROW:	$1,800,000
Utilities:	$400,000
Construction:	$5,300,000
Total:	**$8,030,000**

Beginning at KY 605 South (Manton Road) in Nelson County (Milepoint 4.732) and continuing through the community of Botland. Currently, US 150 carries 8,800 vehicles per day through this segment. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 is a substandard horizontal curve indicating possible sight distance issues. While sight distance may be an issue, substandard horizontal curves more so lead to run off the road, head-on, or sideswipe crashes - any crash that may result because of leaving the driving lane.

This project will address the substandard horizontal geometry and realign the skewed intersection of KY 605 South with US 150 and add left- and right-turn lanes on US 150. This segment was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this segment as a medium priority.





Segment III	LOCATION US 150 Between Botland & Fredericktown (MP 5.437 – MP 7.426)	PROJECT PRIORITY: **LOW**

DESCRIPTION

Minor widening of US 150 from east of Botland to Nelson County - Washington County line.

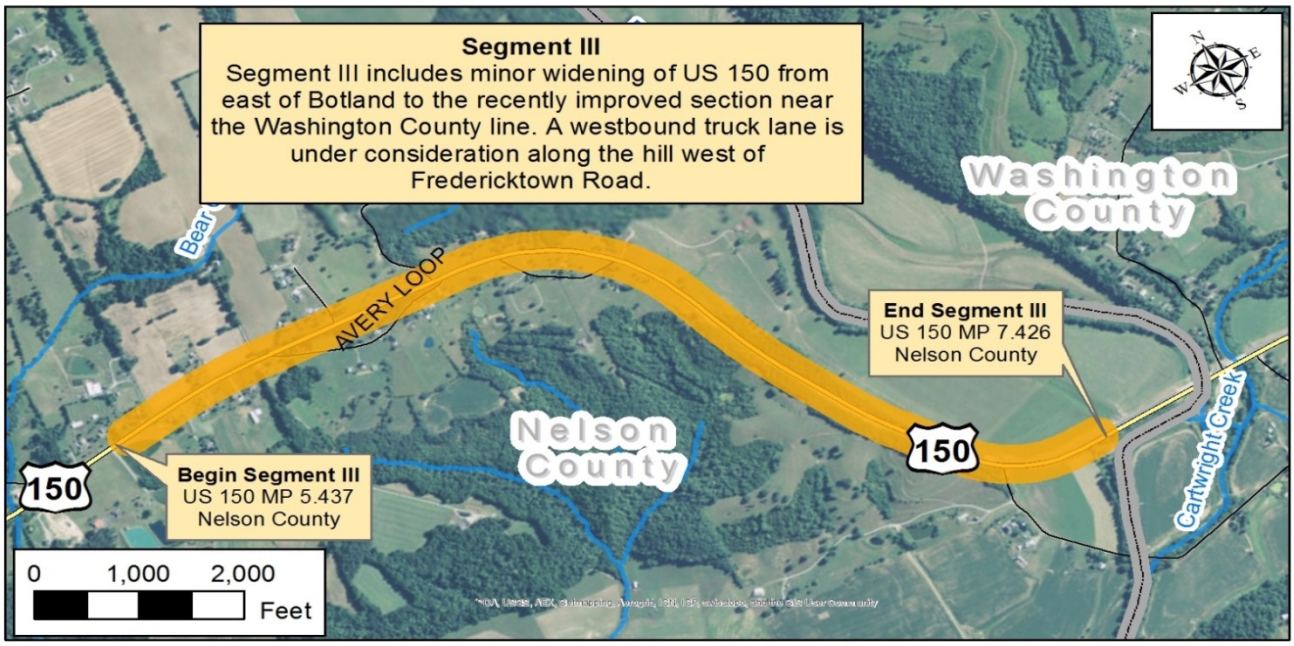
COST ESTIMATE

Design:	$900,000
ROW:	$700,000
Utilities:	$1,000,000
Construction: *	$9,000,000 - $13,500,000
Total: *	**$11,600,000 - $16,100,000**

*** Variable - Dependent upon Geotechnical Conditions**

Beginning east of the Botland in Nelson County (Milepoint 5.437) to the recently improved section of US 150, 0.20 miles west of the Nelson County - Washington County line (Milepoint 7.426). Currently, US 150 carries 8,800 vehicles per day through this segment. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 are substandard vertical curves indicating possible sight distance and speed differential issues.

This project will address the substandard vertical geometry and add truck-climbing lanes and passing lanes where required. This segment was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this segment as a low priority.



Segment IV Recommended	LOCATION US 150 East of Fredericktown (MP 0.426 – MP 2.604)	PROJECT PRIORITY: **HIGH**

DESCRIPTION

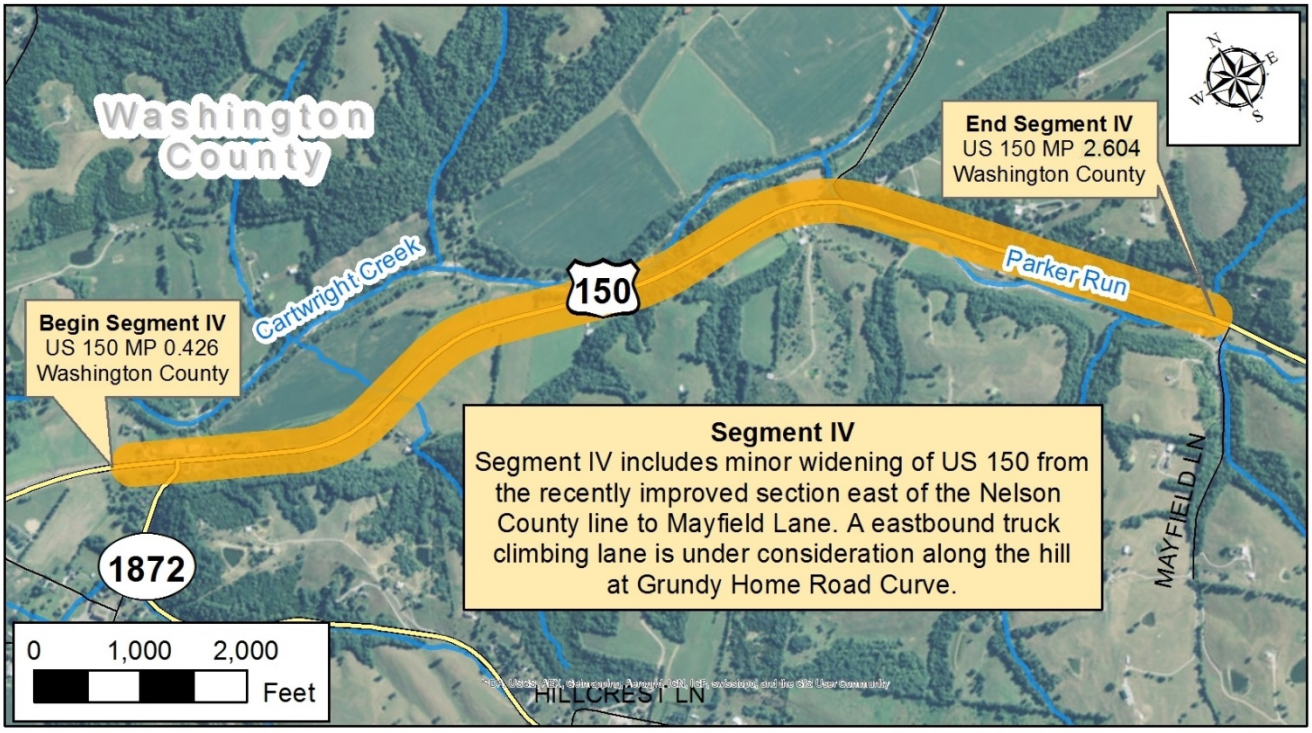
Minor widening US 150 from east of Fredericktown to Mayfield Lane.

COST ESTIMATE

Design:	$990,000
ROW:	$900,000
Utilities:	$1,100,000
Construction:	$9,900,000
Total:	**$12,890,000**

Beginning at the recently improved section of US 150, 0.426 miles east of the Nelson County - Washington County line (Milepoint 0.426) to Mayfield Lane (Milepoint 2.604). Currently, US 150 carries 8,800 vehicles per day through this segment. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 are substandard vertical and horizontal curves indicating possible sight distance and speed differential issues. While sight distance may be an issue, substandard horizontal curves more so lead to run off the road, head-on, or sideswipe crashes - any crash that may result because of leaving the driving lane.

This project will address the substandard horizontal and vertical geometry, realign the skewed intersection of Grundy Home Road with US 150, add left- and right-turn lanes on US 150, and add truck-climbing lanes and passing lanes where required. This segment was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this segment as a high priority.



Segment V Recommended	LOCATION US 150 Mayfield Lane to Cartwright Road (MP 2.604 – MP 4.311)	PROJECT PRIORITY: **MEDIUM**

DESCRIPTION

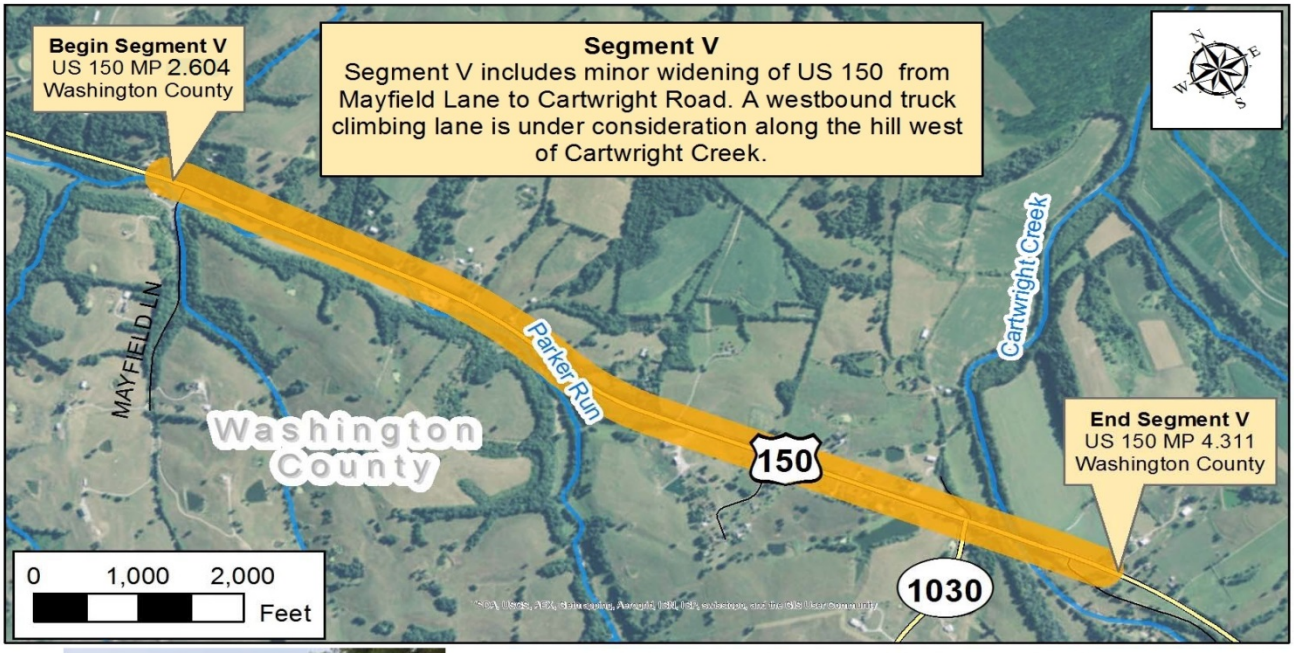
Minor widening US 150 from Mayfield Lane to Cartwright Road.

COST ESTIMATE

Design:	$910,000
ROW:	$900,000
Utilities:	$1,000,000
Construction:	$9,100,000
Total:	**$11,910,000**

Beginning at Mayfield Lane in Washington County (Milepoint 2.604) to Cartwright Road in Washington County (Milepoint 4.311). Currently, US 150 carries 8,800 vehicles per day through this segment. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 are substandard vertical curves indicating possible sight distance and speed differential issues.

This project will address the substandard vertical geometry and add truck-climbing lanes and passing lanes where required. This segment was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this segment as a medium priority.



Spot Improvement "A"	LOCATION US 150 @ North KY 605 (MP 3.809 – MP 4.396)	PROJECT PRIORITY: **HIGH**

DESCRIPTION

Adding left- and right-turn lanes to US 150 and realigning the skewed intersection of KY 605 North with US 150.

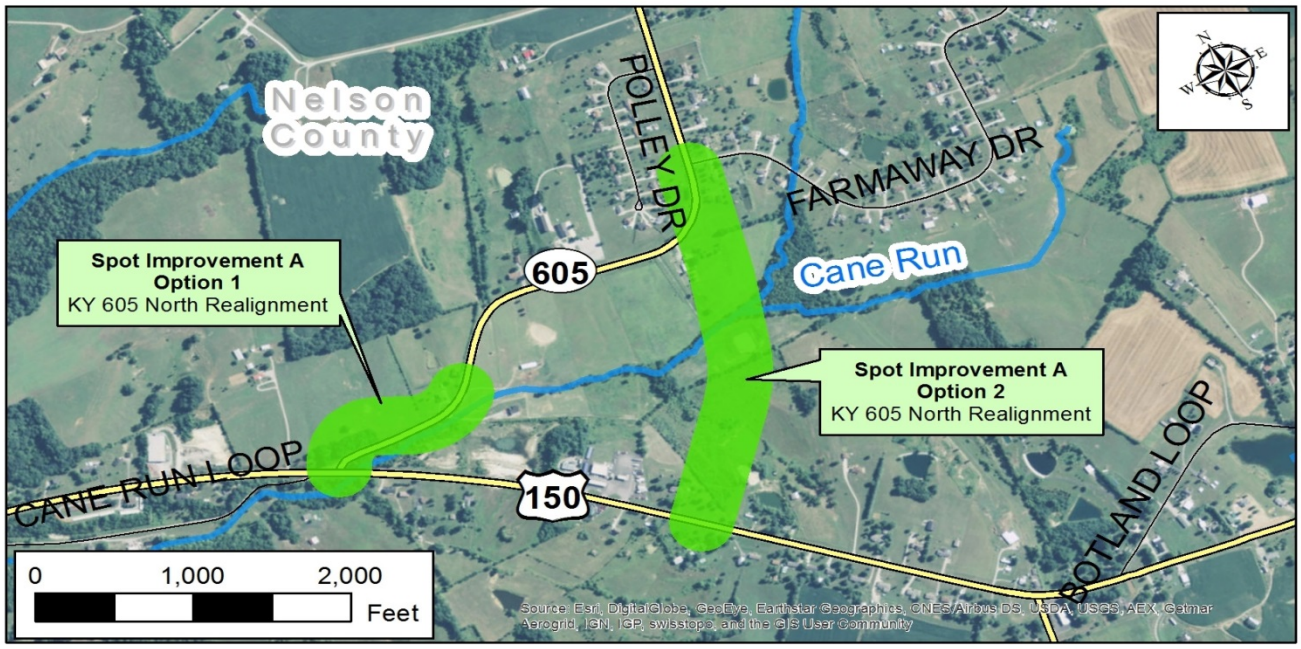
COST ESTIMATE

Design:	$490,000
ROW:	$800,000 - $1,200,000
Utilities:	$400,000
Construction: *	$4,900,000 - $6,200,000
Total: *	**$6,590,000 - $8,290,000**

*** Variable - Dependent upon selection of Option 1 or Option 2**

US 150 carries 8,800 to 12,000 vehicles per day through this section. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 are substandard vertical curves indicating possible sight distance issues.

This project will address the substandard vertical geometry, realign the skewed intersection of KY 605 North with US 150, and add left- and right-turn lanes on US 150. The cost shown above includes reconstruction along US 150 and the KY 605 approach. This spot improvement was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this spot improvement as a high priority.



Spot Improvement "B"	LOCATION US 150 Between Botland & Fredericktown (MP 6.200 – MP 7.426)	PROJECT PRIORITY: **MEDIUM**

DESCRIPTION

Minor widening of US 150 with the addition of a westbound passing lane/truck-climbing lane along the hill west of Fredericktown Road.

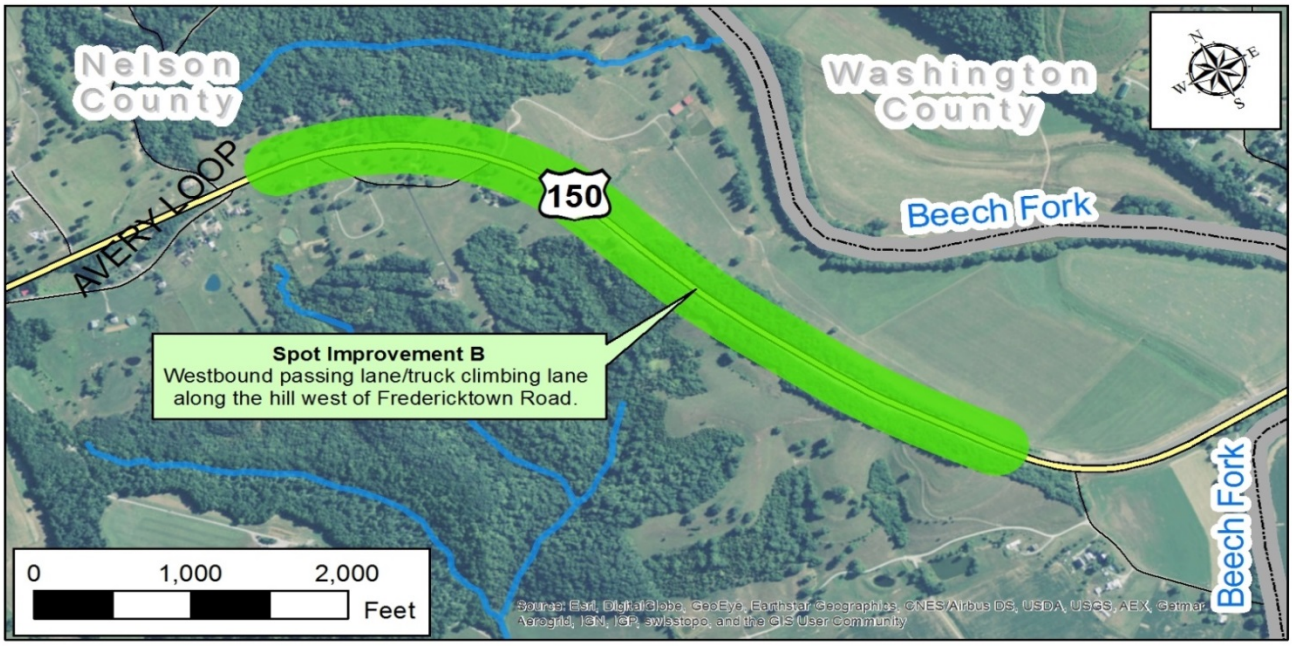
COST ESTIMATE

Design:	$600,000
ROW:	$500,000 - $700,000
Utilities:	$700,000
Construction: *	$6,000,000 - $9,000,000
Total: *	**$7,800,000 - $11,000,000**

*** Variable - Dependent upon Geotechnical Conditions**

Beginning east of Botland in Nelson County (Milepoint 6.200) to the recently improved section of US 150, 0.20 miles west of the Nelson County - Washington County line (Milepoint 7.426). Currently, US 150 carries 8,800 vehicles per day through this segment. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 are substandard vertical curves indicating possible sight distance and speed differential issues.

This project will address the substandard vertical geometry and add truck-climbing lanes and passing lanes where required. This spot improvement was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this spot improvement as a medium priority.



Spot Improvement "C"	LOCATION US 150 at Fredericktown (MP 0.436 – MP 1.000)	PROJECT PRIORITY: **LOW**

DESCRIPTION

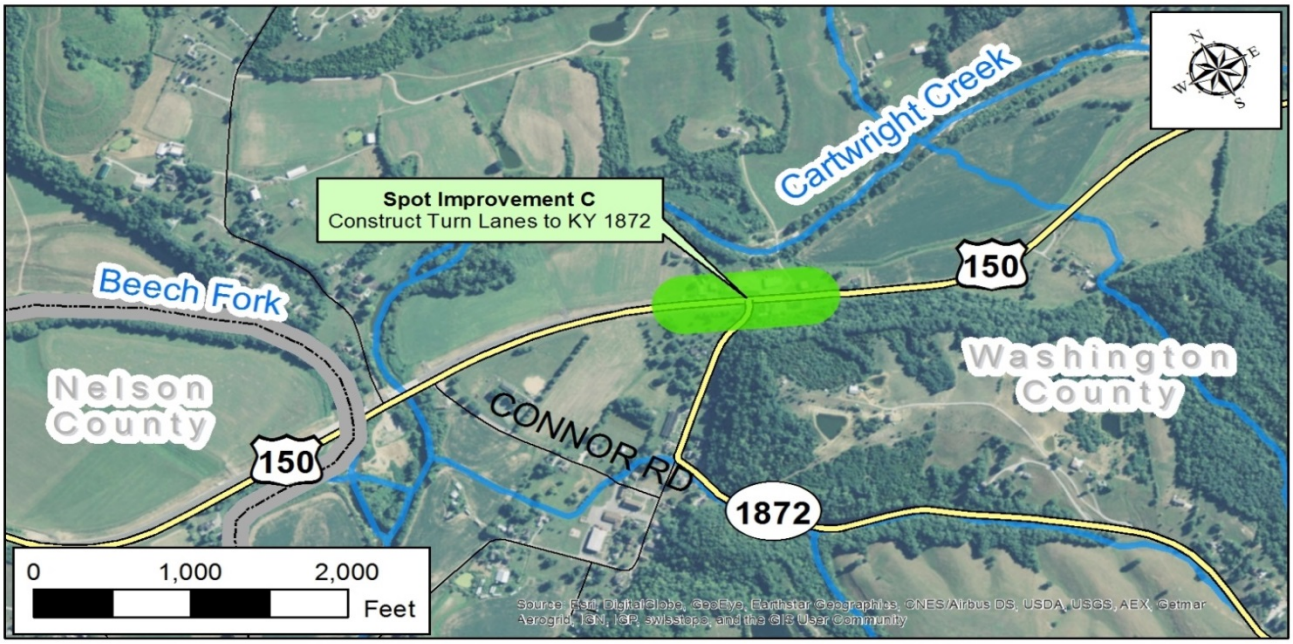
Minor widening US 150 at Fredericktown.

COST ESTIMATE

Design:	$110,000
ROW:	$200,000
Utilities:	$100,000
Construction:	$1,100,000
Total:	**$1,510,000**

Beginning at the recently improved section of US 150, 0.426 miles east of the Nelson County - Washington County line (Milepoint 0.426) to East of KY 1872 (Milepoint 1.000). Currently, US 150 carries 8,800 vehicles per day through this segment. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County.

This project will add left- and right-turn lanes on US 150 for KY 1872. This spot improvement was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this spot improvement as a low priority.



Spot Improvement "D"	LOCATION US 150 at Grundy Home Road (MP 1.250 – MP 2.000)	PROJECT PRIORITY: **HIGH**

DESCRIPTION

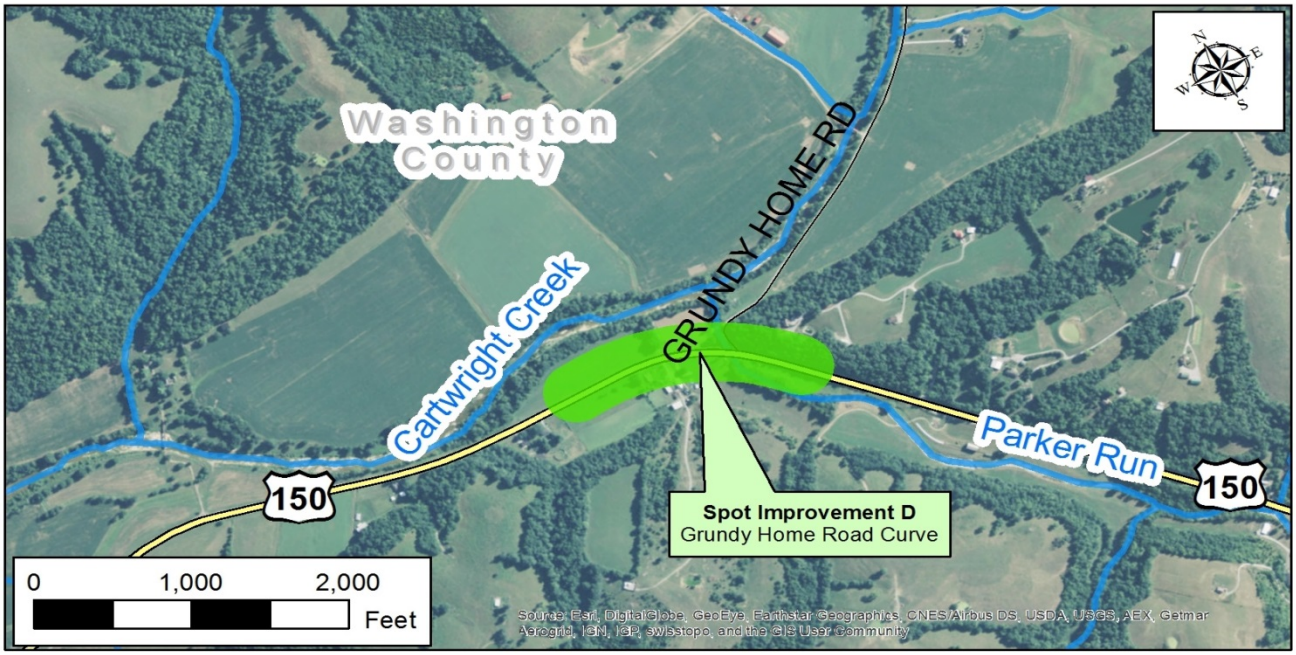
Minor widening US 150 at Grundy Home Road.

COST ESTIMATE

Design:	$420,000
ROW:	$500,000
Utilities:	$400,000
Construction:	$4,200,000
Total:	**$5,520,000**

Beginning west of Grundy Home Road (Milepoint 0.1.250) to west of Grundy Home Road (Milepoint 2.000). Currently, US 150 carries 8,800 vehicles per day through this segment. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 is a substandard horizontal curve indicating possible sight distance issues. While sight distance may be an issue, substandard horizontal curves more so lead to run off the road, head-on, or sideswipe crashes - any crash that may result because of leaving the driving lane.

This project will address the substandard horizontal geometry and realign the skewed intersection of Grundy Home Road with US 150, and add left- and right-turn lanes on US 150. This spot improvement was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this spot improvement as a high priority.



Spot Improvement "E"	LOCATION US 150 Grundy Home Road to Mayfield Lane (MP 1.250 – MP 2.500)	PROJECT PRIORITY: **HIGH**

DESCRIPTION

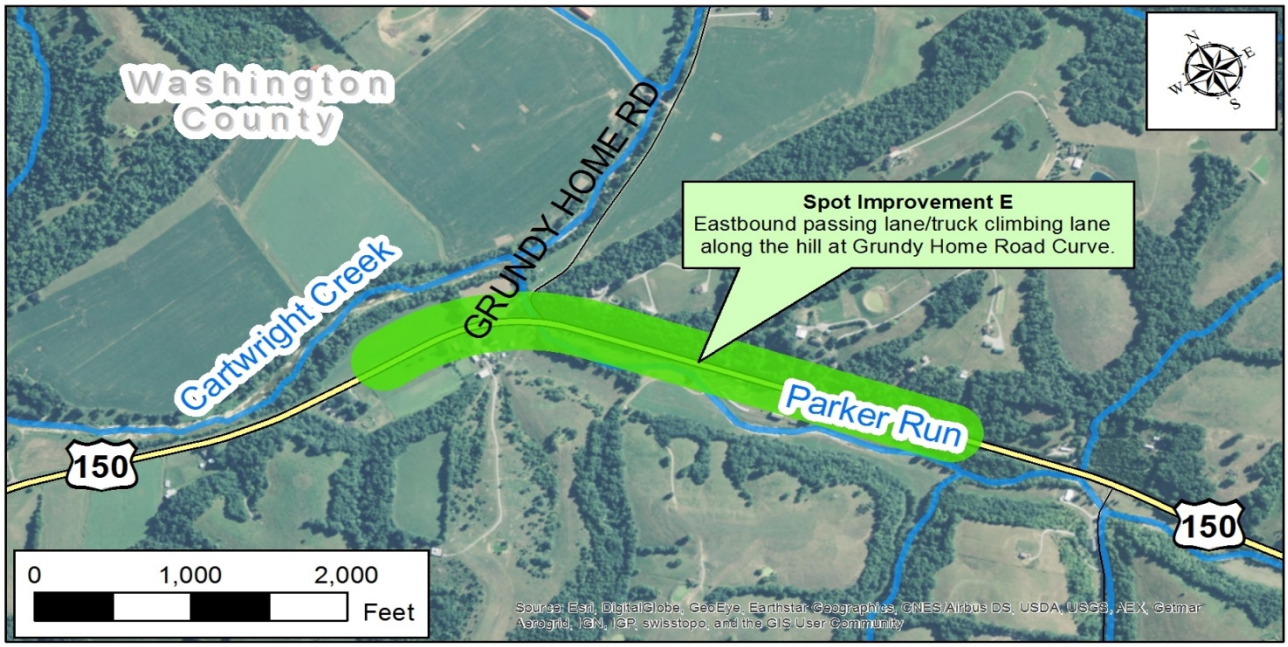
Minor widening US 150 at Grundy Home Road.

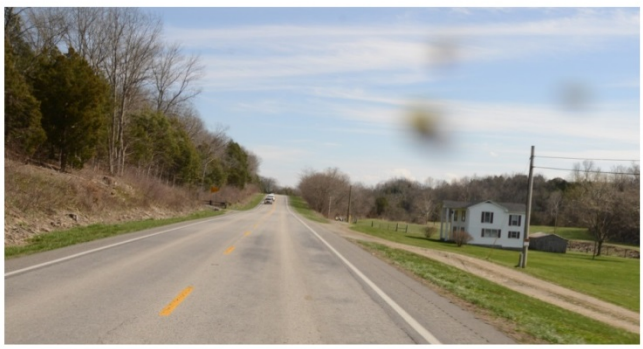
COST ESTIMATE

Design:	$600,000
ROW:	$500,000
Utilities:	$500,000
Construction:	$6,000,000
Total:	**$7,600,000**

Beginning west of Grundy Home Road (Milepoint 0.1.250) to Mayfield Lane (Milepoint 2.500). Currently, US 150 carries 8,800 vehicles per day through this section. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 is a substandard horizontal curve and substandard vertical geometry indicating possible sight distance and speed differential (vehicles leaving the driving lane) issues.

This project will address the substandard horizontal and vertical geometry, realign the skewed intersection of Grundy Home Road with US 150, add left- and right-turn lanes on US 150, and add truck-climbing lanes and passing lanes where required. This spot improvement was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this spot improvement as a high priority.





Spot Improvement "F"	LOCATION US 150 West of Cartwright Road (MP 3.150 – MP 4.311)	PROJECT PRIORITY: **LOW**

DESCRIPTION

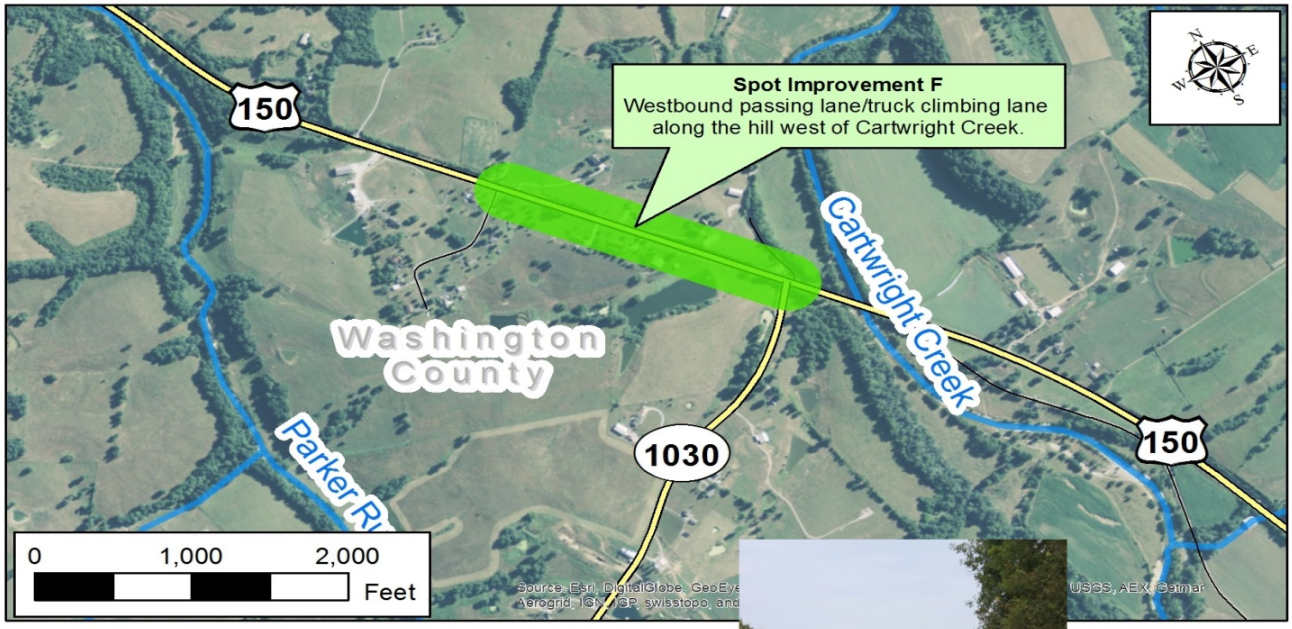
Widening US 150 along the hill west of Cartwright Creek.

COST ESTIMATE

Design:	$600,000
ROW:	$500,000
Utilities:	$500,000
Construction:	$6,000,000
Total:	**$7,600,000**

Currently, US 150 carries 8,800 vehicles per day through this section. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 are substandard vertical curves indicating possible sight distance and speed differential issues.

This project will address the substandard vertical geometry and add truck-climbing lanes and passing lanes where required. This spot improvement was identified during the initial round of engagement with local officials. Survey results from the Public spot improvement as a low priority.



Conceptual Realignment 1	LOCATION US 150 at the Community of Botland (MP 4.350 – MP 5.437)	PROJECT PRIORITY: **MEDIUM**

DESCRIPTION

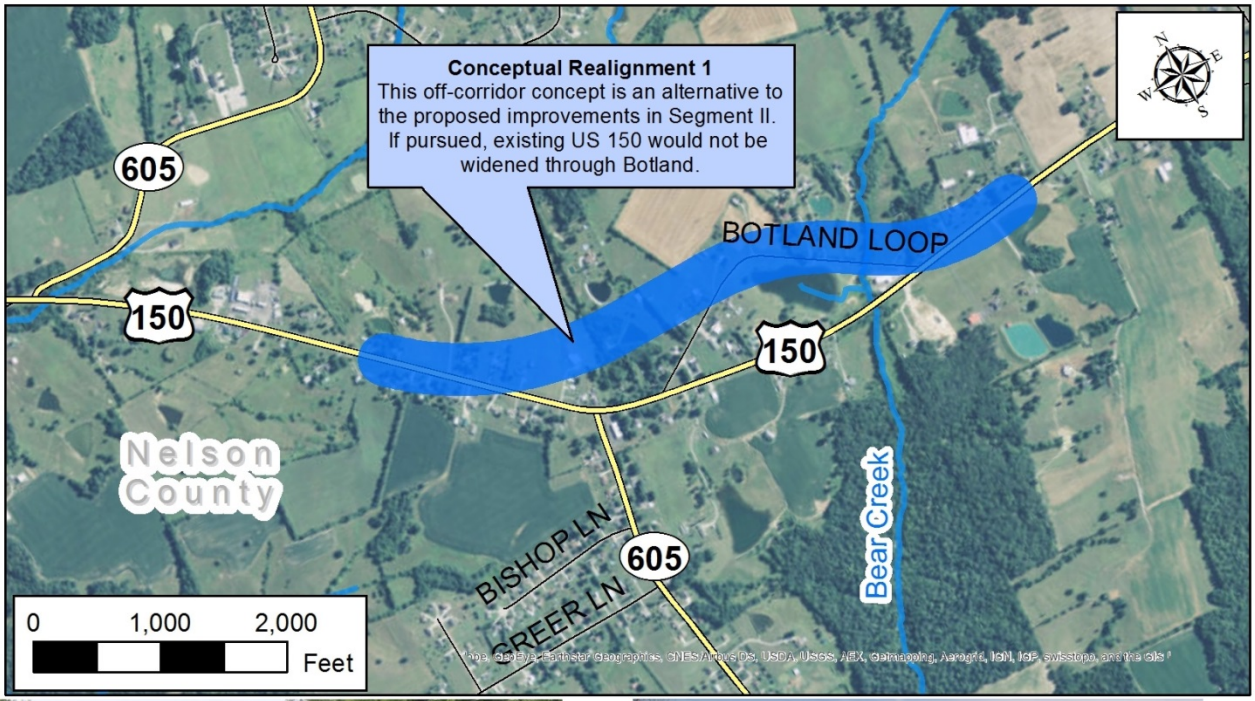
Realignment of US 150 around the Community of Botland.

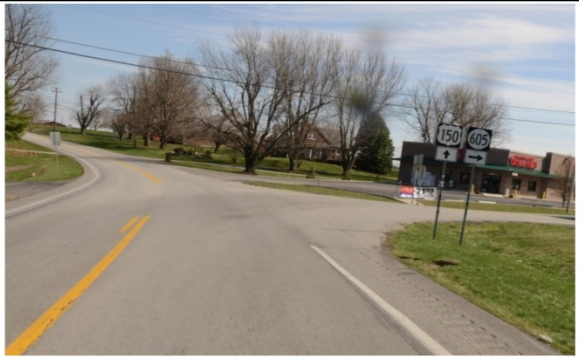
COST ESTIMATE

Design:	$490,000
ROW:	$900,000
Utilities:	$200,000
Construction:	$4,900,000
Total:	**$6,490,000**

Currently, US 150 carries 8,800 vehicles per day through this segment. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 is a substandard horizontal curve indicating possible sight distance issues. While sight distance may be an issue, substandard horizontal curves more so lead to run off the road, head-on, or sideswipe crashes - any crash that may result because of leaving the driving lane.

This Conceptual Realignment will address the substandard horizontal geometry, realign the skewed intersection of KY 605 South with US 150, and add left- and right-turn lanes on US 150. This Conceptual Realignment was identified during the initial round of engagement with local officials. Survey results from the Public Meeting listed this segment as a medium priority.





Conceptual Realignment 2 Recommended	LOCATION US 150 Between Botland and Fredericktown (MP 4.732 – MP 7.426)	PROJECT PRIORITY: **MEDIUM**

DESCRIPTION

Realignment of US 150 from Botland to Fredericktown

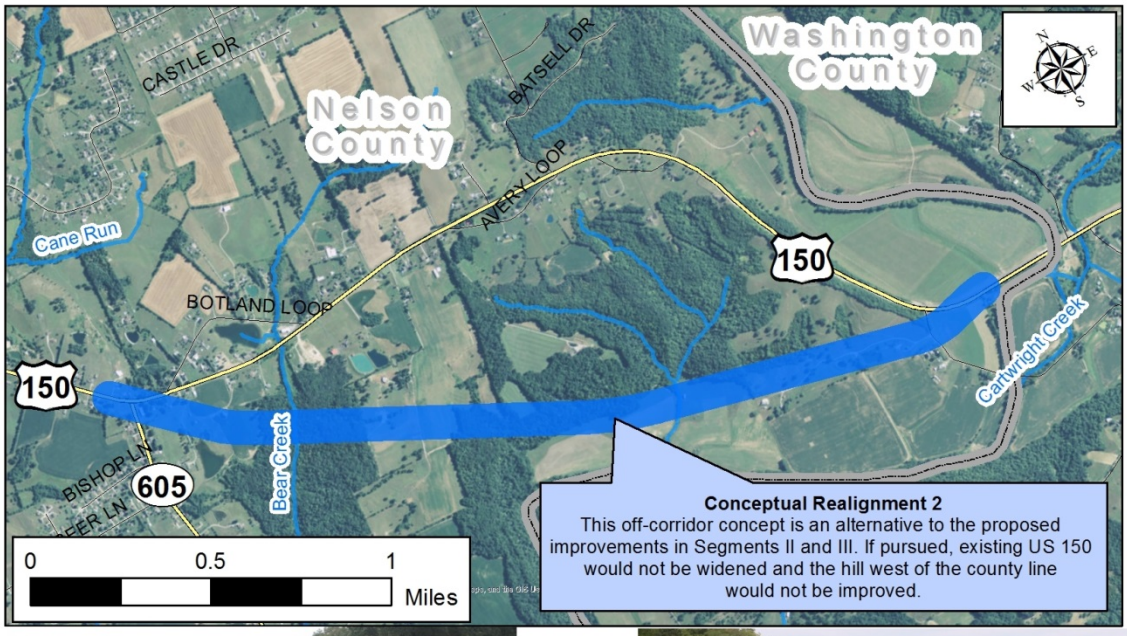
COST ESTIMATE

Design:	$1,650,000
ROW:	$2,300,000
Utilities:	$200,000
Construction: *	$16,500,000 - $18,600,000
Total: *	**$20,650,000 - $22,750,000**

*** Variable - Dependent upon Geotechnical Conditions**

Currently, US 150 carries 8,800 vehicles per day through this segment. US 150 is the primary roadway from the Bluegrass Parkway to the City of Springfield located in Washington County. Along this section of US 150 are substandard vertical curves and horizontal curves indicating possible sight distance and speed differential issues. While sight distance may be an issue, substandard horizontal curves more so lead to run off the road, head-on, or sideswipe crashes - any crash that may result because of leaving the driving lane.

This Conceptual Realignment will address the substandard horizontal and vertical geometry with an off-corridor concept that will replace existing US 150 from Botland to Fredericktown. This Conceptual Realignment was identified during the project team meetings. Survey results from the Public Meeting showed a preference for this concept over improving US 150 along the existing corridor (Segment II and Segment III) and listed this segment as a medium priority.



5.4 PUBLIC MEETINGS – NELSON AND WASHINGTON COUNTIES

On May 26 and May 28, 2015, the Project Team held public meetings. The first public meeting was held at Parkway Baptist Church, in Bardstown, Kentucky; the second was held at Washington County High School, in Springfield, Kentucky. The purpose of these meetings was to provide information about the study, discuss some very preliminary conceptual alternatives, (See **Figure 19: Segment Alternatives and Spot Improvements – Nelson County** and **Figure 20: Segment Alternatives and Spot Improvements – Washington County**) and to solicit input from the public. The meetings were held in an open house format, with a formal presentation to explain the project and the information on display. Attendees were provided a project handout and questionnaire with the option to complete their questionnaire at the meeting, or return it by mail within two weeks. The Project Team was available to answer questions and discuss issues.

Based on the sign-in sheets, 111 members of the public attended the May 26 meeting in Nelson County. A total of 61 questionnaires were returned from this meeting within the comment period, ending on June 12, 2015. There were 58 members of the public in attendance at the May 28 meeting in Washington County. A total of 34 questionnaires were returned from this meeting within the comment period.

A complete summary of these meetings is shown in **Appendix D**.

Meeting attendees suggested issues that needed to be addressed, which include safety of the roadway, lack of passing opportunities, narrow shoulders and lanes, and too much traffic. An overwhelming majority of survey respondents (84%) indicated the US 150 Corridor Project is needed.

The public was asked to prioritize the improvement strategies and alternatives. Question 6 was a four part question that asked about ranking the priority of the segments of US 150 and potential spot improvements. The results are shown on **Figures 26**, **27**, **28** and **29**.

- 6A. *If funding were available to construct segments one at a time, please rank your priority of the Segments I through V, with 1 being the highest ranking and 5 being the lowest ranking.* Forty-two (53%) of the seventy-nine responses indicated that Segment I was the number one priority.

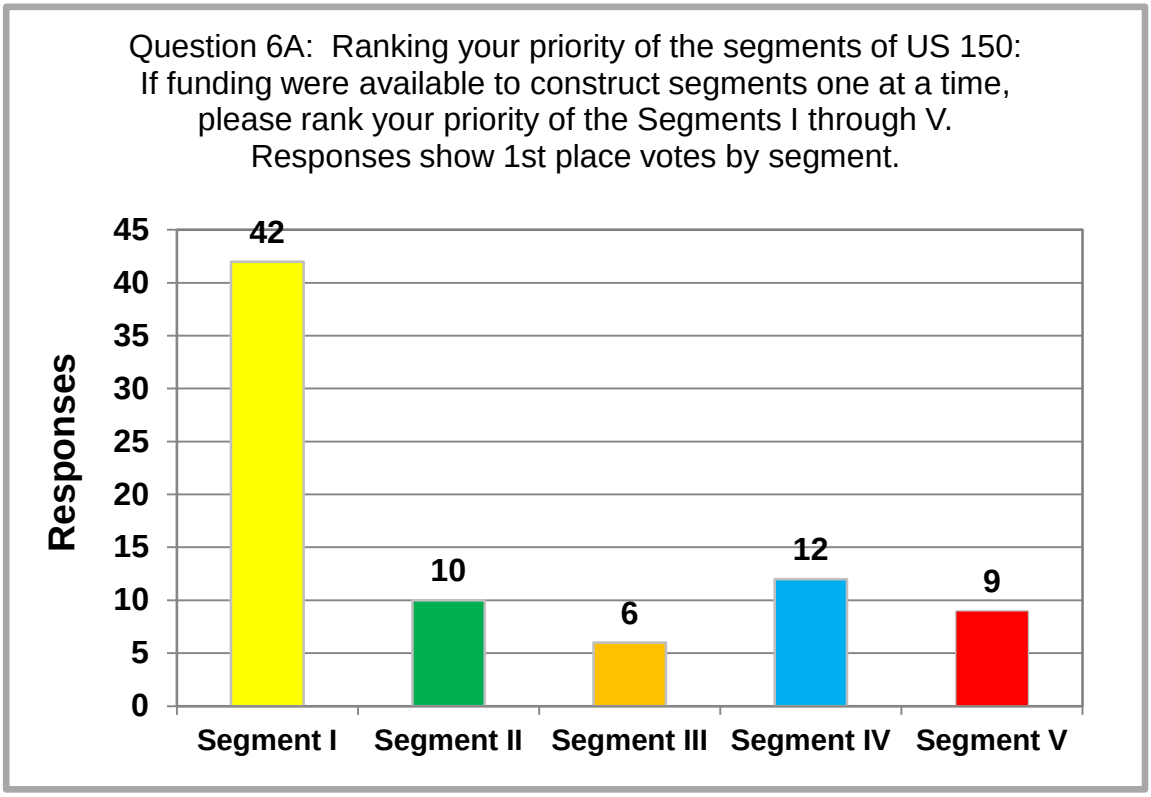


Figure 26 - Combined Survey Results – Question 6A

It can be seen from the above that attendees of the two Public Meetings ranked Segment I as their first choice.

Looking at the ranked priorities of the five segments from a county perspective:

- Nelson County Public Meeting attendees ranked Segment I as their first choice.
- Washington County Public Meeting attendees ranked Segment IV as their first choice.

- 6B. *If funding were available to construct spot improvements one at a time, please rank your priority of the Spot Improvements A through F, with 1 being the highest ranking and 6 being the lowest ranking.* Of the seventy-six total responses to question 6B, forty-seven (62%) selected Spot Improvement A as the top priority.

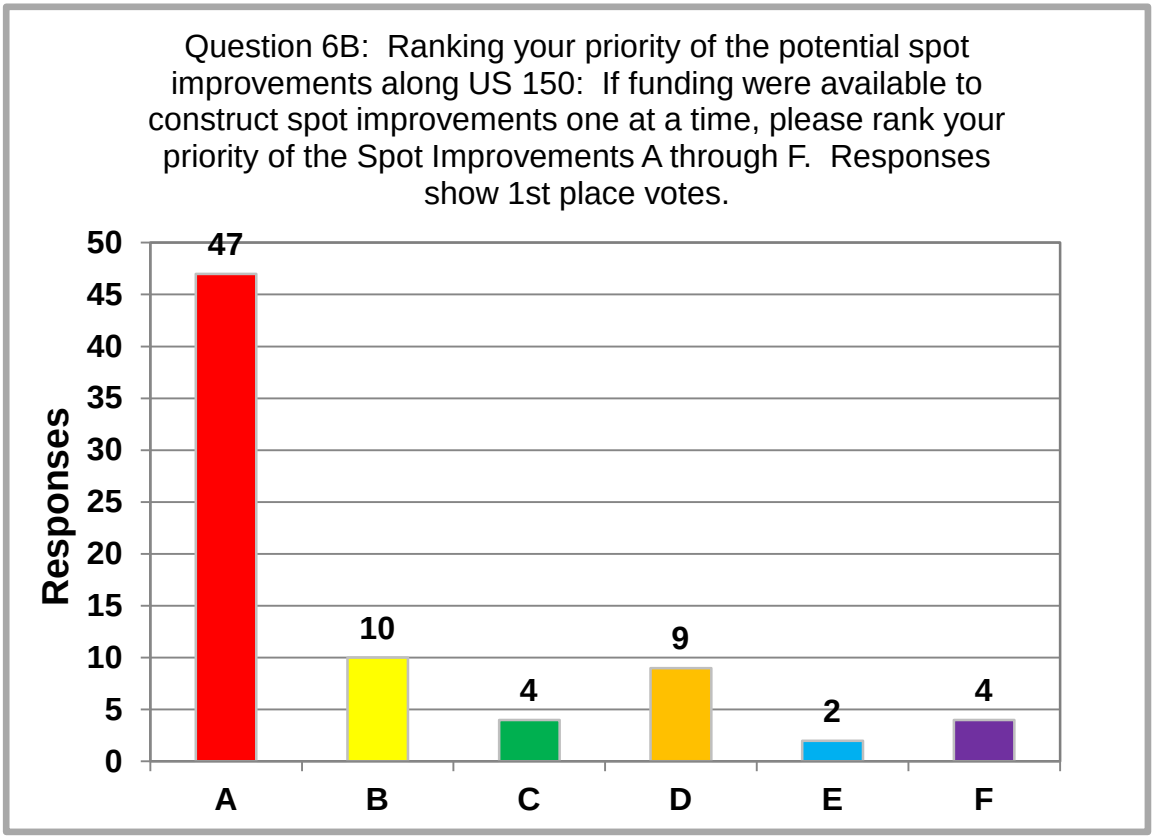


Figure 27 - Combined Survey Results - Question 6B

It can be seen from the above that attendees of the two Public Meetings ranked Spot Improvement A as the most needed spot improvement in the event that a specific segment could not be constructed.

Looking at the ranked priorities of the six spot improvements from a county perspective:

- Nelson County Public Meeting attendees ranked Spot Improvement A as the most needed spot improvement in the event that a specific segment could not be constructed.
- Washington County Public Meeting attendees ranked Spot Improvement D as the most needed spot improvement in the event that a specific segment could not be constructed.

- 6C. *Segment II has two potential alignments. What is your preference for improving Segment II?* Thirty-eight of the seventy-four responses (51%) selected the option of improving Segment II along the existing corridor through Botland.

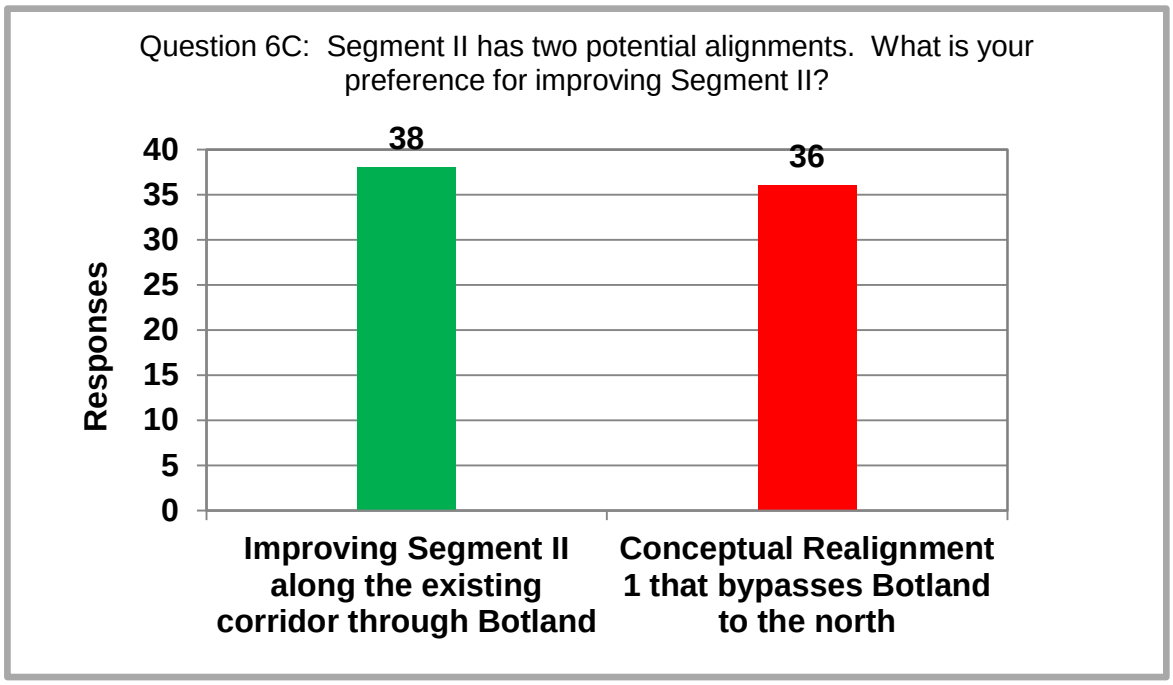


Figure 28 - Combined Survey Results - Question 6C

- 6D. *The combination of Segment II & Segment III has two potential alignments. What is your preference for improving Segment II & Segment III?* Forty-one of the seventy-one responses (58%) selected Conceptual Realignment 2, south of the existing corridor.

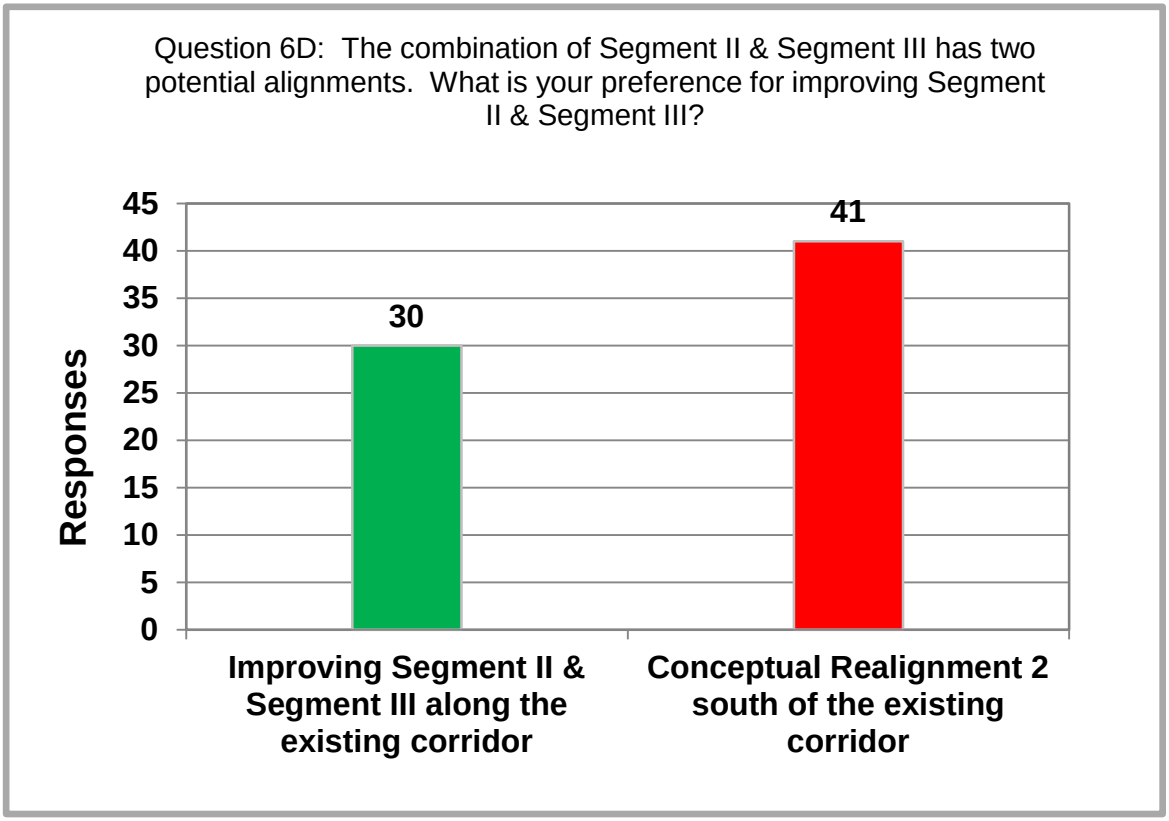


Figure 29 - Combined Survey Results - Question 6D

A complete set of results, from the questionnaire, can be found in **Appendix D**.

6.0 RECOMMENDATIONS

The recommendations for the US 150 Corridor Project are based on their ability to meet the purpose and need, project team input, local official/stakeholder and public feedback, and technical analysis.

The final study recommendation for the US 150 Corridor Project is to improve the entire corridor over time using defined segments of US 150 that will cover the corridor from beginning to end, focusing first on one high priority project within each county. Given the size of the US 150 Corridor Project, improvements will need to be implemented over time. Five independent alternative segments were defined, three in Nelson County (Segments I, II, and III) with a total length of 5.09 miles, and two in Washington County (Segments IV and V) with a total length of 3.89 miles. During the alternative development process, an off-corridor concept (Conceptual Realignment No. 2) that would replace existing US 150 from Botland to Fredericktown (Segments II and III) was also developed. **Table 8** summarizes the US 150 Corridor recommendations.

The highest priority project in Nelson County is to improve the corridor along Segment I through the eastern KY 605 (south) intersection. Segment I would effectively continue the improvements underway through the Bluegrass Parkway interchange (KYTC Item No. 4-8308.10), extending a 5-lane section that will be designed to connect to Conceptual Realignment No. 2, which takes the place of Segments II and III along the existing corridor. Conceptual Realignment No. 2 will result in reduced right-of-way, utility, and maintenance of traffic impacts compared to reconstructing the existing alignment. Additionally, the realignment of US 150 will eliminate the steep grade approaching Washington County and the Beech Fork River, a grade that cannot be reasonably reduced if the existing horizontal alignment were to be maintained. If the realignment is constructed, the portion of existing US 150 west of the Beech Fork River could potentially be closed to through traffic, and a scenic overlook could be constructed at the top of the hill.

While Segment I is the highest priority segment in Nelson County, the Project Team discussed the desire to advance the entire Nelson County portion of the corridor through Phase I design. This will allow the KYTC the opportunity to determine the optimal alignment for Conceptual Realignment No. 2 and to ensure compatibility between it and Segment I, including the details related to a likely relocation/reconfiguration of the US 150 intersection with KY 605 (south). The reconstruction of KY 605 (north) within Segment I has two possible options. Option No. 2 for connecting KY 605 (north) to US 150 was preferred and will be further evaluated during subsequent project phases.

The recommendation for this study in Washington County is to improve the corridor along Segments IV and V. The highest priority project in Washington County is to improve the corridor along Segment IV. This segment includes extending the recently improved section east of the Nelson County line, and would address the curve at Grundy Home Road, an area that was repeatedly discussed by local officials, project stakeholders, and the public.

Segments I through V appear to be feasible and beneficial projects that should be pursued further. However, based on the available design funding in the 2014 Highway Plan, the Project Team recommends that Segment IV should be the first project advanced to Phase I design.

6.1 FUTURE STEPS

Given the magnitude of the recommended improvements, additional funding will be required. The recommended first priority will be to advance Segment IV to Phase I design with the available funds.

7.0 CONTACTS / ADDITIONAL INFORMATION

Additional information regarding this study can also be obtained from the KYTC District 4 Project Manager, Charlie Allen, at (270) 766-5066 (email at CharlieA.Allen@ky.gov).