



DISTRICT 10

INTERSECTIONS STUDY

Final Report

Prepared for: KYTC DIVISION OF PLANNING - DISTRICT 10

Prepared by: PARSONS BRINCKERHOFF

DECEMBER 2015



TABLE OF CONTENTS

EXECUTIVE SUMMARY.....ES-1

1.0 INTRODUCTION 1

1.1 Project Location and Study Area..... 1

1.2 Study Background..... 1

1.3 Study Process 3

2.0 PURPOSE AND NEED..... 4

2.1 Purpose..... 4

2.2 Need 4

2.3 Goals and Objectives 4

3.0 EXISTING CONDITIONS..... 5

3.1 Aerial Photography..... 5

3.2 Crash Data 5

3.3 Field Reviews..... 5

3.4 Traffic Volumes 5

4.0 IMPROVEMENT OPTIONS DEVELOPMENT AND EVALUATION 7

4.1 Improvement Options Development..... 7

4.2 Improvement Evaluation 8

4.3 Cost Estimation 8

5.0 PROJECT SHEETS..... 9

6.0 FUTURE PROJECT DEVELOPMENT INFORMATION 82

6.1 Project Categorization..... 82

6.2 PIF Project Needs 82

7.0 CONTACTS / ADDITIONAL INFORMATION..... 84

APPENDICES

APPENDIX A: PROJECT DEVELOPMENT TEAM MEETING DOCUMENTATION

APPENDIX B: CRASH DISTRIBUTION

APPENDIX C: SIGNAL WARRANT ANALYSIS

APPENDIX D: DETAILED COST ESTIMATES

APPENDIX E: STANDARD DRAWINGS

LIST OF TABLES

Table ES-1: Intersection Improvement Summary Sheet ES-2
Table 1: Intersection Turning Movement Counts..... 6

LIST OF FIGURES

Figure 1: Study Area 2
Figure 2: Project Sheets Improvement Legend 11

GLOSSARY OF TERMS

Average daily traffic (ADT) – The total volume of traffic passing a point or segment of a highway facility divided by the number of days in which the count was taken, typically two in Kentucky as counts are usually performed during the course of a 48 hour period.

Access management – The systematic control of the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections to a roadway, as well as roadway design applications that affect access, such as median treatment and auxiliary lanes and the appropriate separation of traffic signals.¹

Crash rate – the number of crashes per unit of exposure. For an intersection, this is typically the number of crashes divided by the total entering AADT; for road segments, this is typically the number of crashes per million vehicle-miles traveled on the segment.¹

Critical crash rate² – formula based on the average crash rate added to a statistical constant multiplied by an exposure value. Formula is defined by the following:

$$C_c = C_a + K \sqrt{C_a/M + 1/2M}$$

C_c = critical crash rate

C_a = average crash rate

K = constant related to level of statistical significance selected (a probability of 0.995 was used wherein $K = 2.576$)

M = exposure (for sections, M was in terms of 100 million vehicle miles (100 MVM); for spots, M was in terms of million vehicles (MV))

Critical rate factor (CRF) – The ratio of the crash rate for a roadway spot or segment divided by the critical crash rate for that roadway spot or segment based on roadway type and number of lanes.

Highway Safety Improvement Program (HSIP) – SAFETEA-LU re-established the Highway Safety Improvement Program (HSIP) as a core program in conjunction with a Strategic Highway Safety Plan (SHSP). The purpose of the HSIP is to reduce the number of fatal and serious / life-changing crashes through state-level engineering measures.¹

KAB – part of an injury scale developed by the National Safety Council to measure the observed injury severity for any person involved as determined by law enforcement at the scene of the crash. The acronym is derived from (Fatal injury (K), Incapacitating Injury (A), and Non-Incapacitating Injury (B)).¹

Potential Crash Reduction (PCR) – (also referred to as PSI or Potential Safety Improvement) estimates how much the long-term crash frequency could be reduced at a particular site.

¹ Highway Safety Manual 2010

² Kentucky Transportation Center Research Report KTC-03-15/SPR250-02-1F

EXECUTIVE SUMMARY

Introduction and Study Area

Parsons Brinckerhoff was contracted by the Kentucky Transportation Cabinet (KYTC) to perform a study to identify potential improvements at 50 intersections within KYTC District 10. KYTC obtained the ranking of all the intersections within their District from the Kentucky Transportation Center (KTC) Spatial Database for Intersections. Using this information 50 intersections were evaluated for improvement, selected by the following procedure:

- The first five intersections have the highest fatalities and injury collisions rate (according to the KAB scale – fatal injury, incapacitating injury, and non-incapacitating injury) within the District.
- The next 41 intersections are ranked in order by the Potential Crash Reduction factor (PCR) calculation.
- The remaining four intersections on the list have been noted as having safety issues within the District but do not necessarily have a high crash rate factor. These have been included as part of previous District Transportation Plan (DTP) projects.

Study Process

The list of intersections, along with detailed crash information, was given to Parsons Brinckerhoff to evaluate and develop proposed safety improvements for each of the intersections based on crash type and history, intersection characteristics, geometry and other field conditions.

The location, severity, and manner of collision were reviewed for the crashes noted during a five-year period (January 1, 2010 – December 31, 2014). Aerial photography was reviewed to evaluate existing intersection layout and geometrics. This was followed by a field review of each of the intersection locations. Next, preliminary improvements and cost estimates were developed and shared with the project team for feedback. The improvement options for each intersection were revised, and detailed cost estimates were developed for design, construction, right-of-way and utilities. A summary sheet for each intersection was developed, including crash and traffic volume information, intersection issues, a drawing of the proposed improvement options, and cost estimates for the improvements. The following spreadsheet (**Table ES-1**) provides an overall summary of intersection improvements as well as cost estimation information in current year dollars.

Study Conclusion

Projects with a total cost estimate less than \$500,000 may be selected for implementation using Highway Safety Improvement Program (HSIP) funds. Projects exceeding the HSIP amount will require a Project Identification Form (PIF) to be developed by KYTC for consideration in future Six Year Highway Plans.

Table ES-1: Intersection Improvement Summary Sheet

County	Intersection #	Cross Streets	Treatments			Design	Right-of-Way	Utilities	Construction	Total Cost	
Breathitt	1 - 1	KY 15 at Fish Pond Loop	A	Widening	Widen NB approach for left turn lane to Fish Pond Loop and adjust guardrail.	\$50,000	\$10,000	\$10,000	\$133,000	\$270,000	
			B	Pavement	Alter Park and Ride Lot orientation along tree line.						
			C	Realignment	Realign WB approach to improve sight distance on KY 15.	\$50,000			\$17,000		
			D	Delineation	Define access to / from KY 15.						
Breathitt	1 - 2	KY 15 at Fish Pond Loop	A	Widening	Widen NB approach for left turn lane to Fish Pond Loop and adjust guardrail.	\$50,000	\$10,000	\$10,000	\$145,000	\$310,000	
			B	Pavement	Alter Park and Ride Lot orientation along tree line.						
			C	Realignment	Realign WB approach to improve sight distance on KY 15.	\$50,000			\$45,000		
			D	Pavement	Re-stripe EB approach to align with WB approach.						
			E	Delineation	Provide new entrance from Fish Pond Loop and define access to / from KY 15.						
Breathitt	2	KY 15 at KY 1812	A	Delineation	Delineators along center line of KY 15 (Wendy's & gas station).	\$50,000	\$0	\$0	\$52,000	\$102,000	
			B	Access Management	Restrict access to gas station along Washington Avenue.						
			C	Access Management	Limit TWLTL.						
			D	Pavement	Check pavement markings once construction is complete.						
Perry	3	KY 15 at KY 451C	A	Signals	Signalize intersection. Meets Warrants 1, 2, and 3.	\$50,000	\$0	\$0	\$109,400	\$160,000	
			B	Pavement	Move stop bar on KY 451C closer to intersection.	N/A			\$600		
Powell	4	KY 2486 at W Railroad Street	A	Signs	Convert intersection to 4-way stop.	\$50,000	\$0	\$50,000	\$25,800	\$127,000	
			B	Pavement	Paint stop bars on all 4 legs of intersection.						
			C	Pavement	Install rumble strips on KY 2486 approaches.						
			D	Pavement	Stripe center yellow line and edge lines along KY 2486 (from KY 15 to KY 2476).	N/A			\$1,200		
			E	Signs	Change speed limit to 25 mph.						
Morgan	5	KY 7 at KY 519	A	Lighting	Install lighting at intersection.	\$50,000	\$0	\$0	\$39,000	\$440,000	
			B	Pavement / Widening	Add left turn lane on KY 519 to KY 7 NB.	\$50,000			\$218,000		
			C	Signals	Install yellow flashing beacons on KY 519 and red flashing beacon on KY 7.	\$50,000			\$33,000		
Estill	6	KY 52 at KY 499	A	Delineation	Delineators along center line (McDonalds and old gas station).	\$50,000	\$45,000	\$5,000	\$32,000	\$420,000	
			B	Access Management	Close access near intersection, provide channelization for lane reduction on KY 499.	\$50,000			\$93,000		
			C	Access Management	Access point modification on EB approach.	\$50,000			\$95,000		
Perry	7-1	KY 451 at Elm Street / Liberty Street	A	Signs / Pavement	Add stop signs and stop bars to side streets.	N/A	\$0	\$5,000	\$1,500	\$525,000	
			B	Pavement	Create consistent cross section and striping around intersection.	\$100,000			\$418,500		
			C	Delineation	Better define driveways, parking areas, and intersecting street locations.						
Perry	7-2	KY 451 at Elm Street / Liberty Street	A	Signs / Pavement	Add stop signs and stop bars to side streets.	N/A	\$0	\$5,000	\$1,200	\$161,000	
			B	Pavement	Create consistent cross section and striping around intersection.	\$50,000			\$104,800		
Breathitt	8	KY 15 at Indian Hollow	A	Access Management	Limit wide driveway.	\$50,000	\$10,000	\$20,000	\$81,000	\$223,000	
			B	Access Management	Limit TWLTL						
			C	Access Management	Remove parking lot access point.				\$50,000		\$12,000
Perry	9-1	KY 550 at Combs Lane	A	Signs / Pavement	Add stop sign and stop bar at Combs Lane.	N/A	\$90,000	\$120,000	\$800	\$770,000	
			B	Pavement	Widen north side of KY 550 and re-stripe.	\$100,000			\$459,200		
			C	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.						
Perry	9-2	KY 550 at Combs Lane	A	Signs / Pavement	Add stop sign and stop bar at Combs Lane.	N/A	\$90,000	\$120,000	\$800	\$720,000	
			B	Pavement	Re-stripe KY 550 by shifting edge of road to the north. Add curb and gutter to north side of KY 550 and define business entrances.	\$100,000			\$409,200		
			C	Access Management	Provide designated access points for businesses and separate parking from roadway on south side of KY 550.						
Powell	10	KY 11 at Airport Road / White Avenue	A	Access Management	Consolidate access points, convert one gas station access to right-in / right-out.	\$50,000	\$10,000	\$45,000	\$92,200	\$251,000	
			B	Pavement	Paint stop bars on Airport Road and White Avenue.	N/A			\$500		
			C	Pavement	Change center line striping to a no passing zone.	\$50,000			\$3,300		
Perry	11-1	KY 550 at Grand Vue Plaza	A	Signals	Signalize intersection. Does not meet volume warrants but could meet crash experience warrant (#7).	\$50,000	\$0	\$0	\$110,000	\$160,000	
			B	Widening / Pavement	Widen north side of KY 550 and re-stripe.	See Costs for 9-1					
			C	Access Management	Separate parking from roadway on south side of KY 550, and designate specific access points to parking area.						
Perry	11-2	KY 550 at Grand Vue Plaza	A	Signals	Signalize intersection. Does not meet volume warrants but could meet crash experience warrant (#7).	\$50,000	\$0	\$0	\$110,000	\$160,000	
			B	Widening / Pavement	Re-stripe KY 550 by shifting edge of road to the north. Add curb and gutter to north side of KY 550 and define business entrances.	See Costs for 9-2					
			C	Access Management	Provide designated access points for businesses and separate parking from roadway on south side of KY 550.						
Powell	12	KY 15 at Powell Valley Road	A	Signs	Straighten directional signs across from ramp.	N/A	\$10,000	\$0	N/A	\$166,000	
			B	Signs	Install signs for "Wrong Way" and "Do Not Enter" (R5-1 and R5-1a).	N/A			\$1,300		
			C	Signs	Replace broken in ground pavement markers.	\$50,000			\$37,700		
			D	Pavement	Channelize left turn lane to a "T" to form 90 degree approach to KY 15.						
			E	Access Management	Close access road; additional access provided from KY 82.	\$50,000			\$17,000		

Note: The costs do not account for any environmental permits, mitigation, fees and other costs that may be incurred such as geotechnical analysis.

Table ES-1: Intersection Improvement Summary Sheet (cont.)

County	Intersection #	Cross Streets	Treatments			Design	Right-of-Way	Utilities	Construction	Total Cost		
Powell	13	KY 11 at KY 2486	A	Realignment	Realign the Kroger entrance to KY 2486.	\$200,000	\$160,000	\$125,000	\$757,500	\$1,245,000		
			B	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.							
			C	Pavement	Re-stripe intersection and approaches.							
			D	Drainage	Improve drainage on eastern side of KY 2486.							
			E	Multimodal	Move pedestrian push button signs above push buttons.							
			F	Signs	Add route signs and change speed limit to 25 mph on KY 2486.							
Powell	14-1	KY 15 at River Street	A	Realignment / Widening	Realign River Street to a 4-way intersection with KY 15 at signalized intersection. Widen Black Creek Road to allow for left turn movements.	\$50,000	\$45,000	\$55,000	\$168,400	\$500,000		
			B	Pavement	Re-stripe intersections and approaches.	N/A			\$1,600			
			C	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.	\$50,000			\$130,000			
Powell	14-2	KY 15 at River Street	A	Realignment	Realign River Street to a 4-way intersection with KY 15 at signalized intersection.	\$50,000	\$35,000	\$55,000	\$149,400	\$440,000		
			B	Pavement	Re-stripe intersections and approaches.	N/A			\$1,600			
			C	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.	\$50,000			\$99,000			
Powell	14-3	KY 15 at River Street	A	Widening / Pavement	Widen River Street and re-stripe to allow for separate right and left turn lanes.	\$50,000	\$0	\$30,000	\$124,400	\$350,000		
			B	Signals	Include River Street as part of signal control at KY 15 and Black Creek Road.	N/A			\$1,600			
			C	Pavement	Re-stripe intersections and approaches.	N/A			\$94,000			
			D	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.	\$50,000			\$94,000			
Breathitt	15	KY 15 at KY 1812	A	Realignment	Realign KY 3068.	\$50,000	\$15,000	\$35,000	\$235,000	\$460,000		
			B	Realignment	Realign KY 1812.	\$50,000			\$10,800			
			C	Delineation	Install delineators along NB approach.	\$50,000			\$14,200			
			D	Delineation	Add concrete islands.	\$50,000			\$14,200			
Wolfe	16	KY 15 at KY 191	A	Widening / Pavement	Lengthen KY 15 right turn lanes.	\$100,000	\$0	\$5,000	\$409,500	\$515,000		
			B	Delineation	Improve concrete island to standard.							
			C	Widening / Pavement	Lengthen KY 15 left turn lanes.							
			D	Access Management	Restrict movements into / out of gas station to right-in / right-out along KY 15.							
			E	Access Management	Extend concrete median on NB approach to control access.							
			F	Signs	Add "No Left Turn" sign at private drive on WB approach.						N/A	\$500
			G	Signals	Add protected / permissive phasing for EB and WB approaches.						N/A	N/A
Perry	17	KY 15X at Turner Street	A	Signs / Pavement	New stop sign and stop bar at Turner Street approach.	N/A	\$0	\$35,000	\$800	\$705,000		
			B	Pavement / Widening	Add right turn lane onto Turner Street, and left turn lane to Elizabeth Drive.	\$100,000			\$417,200			
			C	Access Management	Define access at property north of the intersection.	\$50,000			\$102,000			
Wolfe	18 - 1	KY 15 at KY 3355	A	Pavement	Add dedicated left turn lanes along KY 15.	\$50,000	\$25,000	\$15,000	\$1,800	\$283,000		
			B	Access Management	Relocate Dollar General driveway and limit access to businesses around intersection.	\$50,000			\$76,100			
			C	Access Management	Add delineators to limit left turns near the intersection.	\$50,000			\$15,100			
Wolfe	18 - 2	KY 15 at KY 3355	A	Pavement	Add dedicated left turn lanes along KY 15.	\$50,000	\$10,000	\$45,000	\$1,800	\$435,000		
			B	Pavement	Realign approaches on KY 3355.	\$50,000			\$195,200			
			C	Access Management	Relocate Dollar General driveway.	\$50,000			\$33,000			
Perry	19	KY 15X at Newland Street	A	Signs / Pavement	Improve Newland Street / KY 15X intersection.	\$100,000	\$0	\$65,000	\$430,200	\$605,000		
			B	Pavement	Add rumble strips to slow vehicles coming down hill toward KY 2451 on KY 15X.	N/A			\$8,600			
			C	Pavement	Stripe center line of Newland Street to KY 15X.	N/A			\$1,200			
Lee	20 - 1	KY 11 at KY 1411	A	Realignment	Realign South Fork Road with River Street.	\$200,000	\$10,000	\$27,500	\$650,000	\$887,500		
			B	Access Management	Provide access to River Street from gas station.							
Lee	20 - 2	KY 11 at KY 1411	A	Realignment	Realign South Fork Road with River Street.	\$200,000	\$95,000	\$25,000	\$880,000	\$1,200,000		
			B	Access Management	Provide access to River Street from gas station.							
			C	Widening / Pavement	Widen KY 11 to add left turn pocket for movement to KY 1411.							
			D	Pavement	Re-stripe WB approach lanes to KY 11.							
Lee	20 - 3	KY 11 at KY 1411	A	Realignment	Realign South Fork Road to roundabout with River Street, and realign KY 11 and KY 1411 to roundabout.	\$200,000	\$15,000	\$35,000	\$940,000	\$1,190,000		
			B	Access Management	Close gas station access along KY 11 and provide new access at River Street and re-stripe access at KY 11 (Broadway).							
Lee	20 - 4	KY 11 at KY 1411	A	Realignment	Realign South Fork Road with River Street.	\$50,000	\$95,000	\$25,000	\$240,000	\$410,000		
			B	Access Management	Provide access to River Street from gas station.							
			C	Widening / Pavement	Widen KY 11 to add left turn pocket for movement to KY 1411.							
			D	Pavement	Re-stripe WB approach lanes to KY 11.							
Perry	21	KY 15 at Brian Lane / KY 1067	A	Access Management	Convert Brian Lane to right-in / right-out and add curb and gutter to control access along KY 15.	\$50,000	\$0	\$0	\$118,600	\$230,000		
			B	Delineation	Add delineators along KY 15 to require left turns at KY 1067.	\$50,000			\$9,900			
			C	Signs / Pavement	Add stop bar and stop sign to Brian Lane.	N/A			\$700			
			D	Signs	Add "Heavy Trucks Entering Highway" sign (W42-7).	N/A			\$800			
Magoffin	22	US 460 at Allen Drive	A	Access Management	Realign so that Allen Drive "T" is away from Sav a Buck parking lot.	\$50,000	\$65,000	\$45,000	\$120,000	\$280,000		
			B	Access Management	Perform Access Management Study in conjunction with Intersection #30.	N/A			N/A			

Note: The costs do not account for any environmental permits, mitigation, fees and other costs that may be incurred such as geotechnical analysis.

Table ES-1: Intersection Improvement Summary Sheet (cont.)

County	Intersection #	Cross Streets	Treatments		Design	Right-of-Way	Utilities	Construction	Total Cost			
Breathitt	23	KY 15 at KY 3232	A	Delineation	Reduce width of NB approach.	\$50,000	\$10,000	\$17,000	\$29,200	\$107,000		
			B	Sight Distance	Regrade NB approach.							
			C	Sight Distance	Increase signage height on EB approach to not impede sight triangle.				\$800			
Powell	24	KY 213 at Pendleton Street	A	Pavement	Install stop bars at Pendleton Street approaches.	N/A	\$0	\$0	\$8,700	\$16,000		
			B	Pavement	Install rumble strips on KY 213 NB approaching interchange.				\$7,300			
Perry	25	KY 451 at Glomawr Stormking Rd.	A	Signs	Add retroreflective warning signs.	N/A	\$0	\$0	\$6,000	\$6,000		
			B	Pavement	Add retroreflective pavement markings and in ground reflective pavement markers.							
			C	Pavement	Add centerline rumble strips.							
Powell	26	KY 2476 at KY 2486	A	Pavement / Parking	Convert to reverse angle parking .	\$100,000	\$15,000	\$55,000	\$278,600	\$450,000		
			B	Pavement	Add centerline striping, crosswalks, and stop bars around the Court House.							
			C	Pavement / Signs	Convert KY 2486 between Atkinson Street and KY 2476 to one way SB.							
			D	Pavement	Add median to Atkinson, Breckenridge and Court Streets.							
			E	Signs	Change speed limit on KY 2486 to 25 mph.				\$1,400			
Perry	27-1	KY 550 at Smitty Drive	A	Signs / Pavement	Add stop sign and stop bar at Smitty Drive.	N/A	\$0	\$0	\$900	\$900		
			B	Widening / Pavement	Widen north side of KY 550 and re-stripe.							
			C	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.						See Costs for 9-1	
Perry	27-2	KY 550 at Smitty Drive	A	Signs / Pavement	Add stop sign and stop bar at Smitty Drive.	N/A	\$0	\$0	\$900	\$900		
			B	Widening / Pavement	Re-stripe KY 550 by shifting edge of road to the north. Add curb and gutter to north side of KY 550 and define business entrances.						See Costs for 9-2	
			C	Access Management	Provide designated access points for businesses and separate parking from roadway on south side of KY 550.							
Magoffin	28-1	KY 7 at KY 867	A	Sight Distance	Improve curve north of intersection.	\$100,000	\$10,000	\$30,000	\$350,000	\$490,000		
Magoffin	28-2	KY 7 at KY 867	A	Pavement	Add stop bar to KY 867 approach realignment and raise grade.	\$50,000	\$0	\$15,000	\$39,100	\$106,000		
			B	Signs	Reduce posted speed on KY 7 and add curve warning sign.	\$1,900						
Estill	29	KY 52 at Old KY 52 Connector	A	Pavement	Widen KY 52 and add EB left turn lane.	\$50,000	\$10,000	\$15,000	\$150,850	\$725,000		
			B	Sight Distance	Cut slope excavation.	\$100,000			\$396,750			
			C	Pavement	Move stop bar on SB approach.	N/A			\$400			
			D	Drainage	Fix washout on NE corner.	N/A			\$2,000			
Magoffin	30	US 460 at Ward Road	A	Access Management	Install island to reduce driveway width.	\$50,000	\$10,000	\$15,000	\$14,700	\$92,000		
			B	Pavement	Repaint stop bar and striping.	N/A			\$2,300			
			C	Access Management	Perform Access Management Study in conjunction with Intersection #22.	N/A			N/A			
Powell	31	KY 15 at KY 82	A	Signs	Install reflective back plates on signals.	N/A	\$0	\$0	\$2,300	\$280,000		
			B	Pavement	Add "puppy tracks" for left turns on KY 82 EB and WB.				\$700			
			C	Pavement / Signal	Change the shared-left turn lanes on KY 82 EB and WB approaches to exclusive left turn lanes. Add exclusive left turn phasing.				\$50,000		\$225,000	
			D	Signs	Provide overhead directional arrow signs on span wire and refresh paint and pavement markings.				N/A		\$2,000	
Powell	32	KY 2486 at Bright Street	A	Sight Distance	Cut trees back on either side of east leg (Bright Street) approach to improve sight distance.	N/A	\$0	\$30,000	\$4,000	\$55,000		
			B	Pavement	Add stop bars on Bright Street approaches.				\$800			
			C	Pavement	Install rumble strips on KY 2486 approaches.				\$15,900			
			D	Pavement	Stripe center yellow line and edge lines along KY 2486 (from KY 15 to KY 2476).				\$1,200			
			E	Drainage	Improve drainage on eastern side of KY 2486.				N/A		Further Study	
			F	Signs	Replace "Stop Ahead" sign that meets current MUTCD standards (Sign W3-1) on west approach (Bright Street).				N/A		\$1,700	
			G	Signs	Change speed limit to 25 mph.				N/A		\$1,400	
Perry	33	KY 476 at Peavley Street Connector	A	Access Management	Convert Peavley Street Connector to a one-way street.	\$50,000	\$0	\$0	\$1,700	\$158,000		
			B	Access Improvement	Add curbing and improve access points along KY 476.	\$50,000			\$56,300			
Perry	34	KY 476 at Cole Avenue	A	Signs / Pavement	Relocate Stop sign on Cole Avenue and re-stripe pavement markings.	N/A	\$10,000	\$85,000	\$1,500	\$365,000		
			B	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.				\$50,000		\$215,300	
			C	Pavement / Delineation	Improve striping and driveway delineation along KY 476.				N/A		\$1,500	
			D	Signs	Add "Congested Area" signs.				N/A		\$1,700	
Perry	35-1	KY 15 at Entertainment Drive	A	Realignment	Realign intersection.	\$200,000	\$12,000	\$25,000	\$536,800	\$827,000		
			B	Pavement	Add dedicated right turn lane to Entertainment Drive.	\$50,000			\$3,200			
Perry	35-2	KY 15 at Entertainment Drive	A	Striping	Re-stripe approaches to intersection.	\$50,000	\$0	\$50,000	\$177,300	\$330,000		
			B	Pavement	Add dedicated right turn lane to Entertainment Drive.	\$50,000			\$2,700			
Magoffin	36-1	KY 40 at Coal Branch Road	A	Signs	Sign Coal Branch Road to be one-way.	\$50,000	\$0	\$15,000	\$28,600	\$94,000		
			B	Realignment	Realign Flint Street and Higgin Street to accommodate new traffic pattern.							
			C	Signs	Install "No Parking" signs (R8-3a) in front of the bank on KY 40.				N/A		\$400	

Note: The costs do not account for any environmental permits, mitigation, fees and other costs that may be incurred such as geotechnical analysis.

Table ES-1: Intersection Improvement Summary Sheet (cont.)

County	Intersection #	Cross Streets	Treatments			Design	Right-of-Way	Utilities	Construction	Total Cost	
Magoffin	36-2	KY 40 at Coal Branch Road	A	Realignment	Shift intersection away from building to improve sight distance.	\$50,000	\$48,000	\$25,000	\$81,600	\$205,000	
			B	Widening	Widen Coal Branch Road.						
			C	Signs	Install "No Parking" signs (R8-3a) in front of the bank on KY 40.						
Magoffin	36-3	KY 40 at Coal Branch Road	A	Signs	Sign Coal Branch Road to be one-way.	\$50,000	\$75,000	\$15,000	\$109,600	\$250,000	
			B	Realignment	Widen and realign Flint Street and Higgin Street to accommodate new traffic pattern.						
			C	Signs	Install "No Parking" signs (R8-3a) in front of the bank on KY 40.						
Breathitt	37-1	KY 15 at Thorpe Road	A	Pavement	Add full lane rumble strips to slow vehicles through curve.	\$50,000	\$55,000	\$15,000	\$360,000	\$480,000	
			B	Sight Distance	Improve sight distance with slope removal near corner of Thorpe Road.						
Breathitt	37-2	KY 15 at Thorpe Road	A	Pavement	Add new roadway between Thorpe Road and Fish Pond Loop.	\$50,000	\$300,000	\$25,000	\$180,000	\$555,000	
			B	Access Management	Close Thorpe Road and access points between Thorpe Road and Fish Pond Loop.						
Menifee	38-1	US 460 at KY 746	A	Delineation	Add delineators to require utilization of the center turn lane.	\$50,000	\$0	\$10,000	\$45,300	\$106,000	
			B	Pavement	Add left turn receiving pocket on US 460.						
			C	Pavement	Paint stop bar on KY 746.						
Menifee	38-2	US 460 at KY 746	A	Access Management	Close access points on east side of US 460.	\$50,000	\$0	\$10,000	\$13,300	\$74,000	
			B	Pavement	Paint stop bar on KY 746.	N/A			\$700		
Wolfe	39 - 1	KY 15 at Swift Camp Creek	A	Pavement	Add SB left turn pocket.	\$200,000	\$0	\$10,000	\$761,000	\$1,090,000	
			B	Access Management	Realign Swift Camp Creek Road.	\$50,000			\$69,000		
Wolfe	39 - 2	KY 15 at Swift Camp Creek	A	Access Management	Close road access and provide driveway for resident only.	\$50,000	\$0	\$0	\$35,000	\$85,000	
Perry	40 - 1	KY 15 at Scuddy Mountain Rd.	A	Pavement	Install Stop signs and stop bar on driveways.	N/A	\$0	\$10,000	\$3,100	\$250,000	
			B	Pavement	Re-stripe dedicated left turn lanes on KY 15.				\$39,100		
			C	Pavement	Improve access for Scuddy Branch Road.				\$147,800		
Perry	40 - 2	KY 15 at Scuddy Mountain Rd.	A	Pavement	Install stop signs and stop bar on driveways.	N/A	\$10,000	\$15,000	\$3,100	\$305,000	
			B	Pavement	Re-stripe dedicated left turn lanes on KY 15.				\$39,400		
			C	Pavement	Change access to Scuddy Mountain Road from Scuddy Branch Road.				\$187,500		
Wolfe	41	KY 191 at KY 746	A	Sight Distance	Trim trees inside of curve on KY 191.	N/A	\$10,000	\$25,000	\$2,700	\$295,000	
			B	Realignment	Realign for 90 degree intersection.						
			C	Realignment	Extend driveway to access center of the curve.						
Perry	42	KY 476 at KY 1146	A	Signs	Move stop sign on KY 1146 closer to intersection.	N/A	\$0	\$35,000	\$800	\$335,000	
			B	Pavement	Add stop bar on KY 1146.				\$700		
			C	Delineation	Delineate KY 476 from parking area.				\$248,500		
Perry	43	KY 15X at Elizabeth Drive	A	Signs / Pavement	Add stop sign and stop bar at Elizabeth Drive approach.	N/A	\$0	\$0	\$900	\$900	
			B	Pavement	Install left turn lane from KY 15 to Elizabeth Drive.				See Costs for 17-B		
			C	Access Management	Provide designated access points for businesses and separate parking from roadway.				See Costs for 17-C		
Powell	44	KY 2486 at Halls Road	A	Signs	Install retroreflective pavement markings and signs.	N/A	\$0	\$0	\$2,000	\$6,000	
			B	Access Management	Consider closing west approach to thru traffic.						
			C	Signs	Stripe center yellow line and edge lines along KY 2486 (from KY 15 to KY 2476).						
			D	Pavement	Move stop bar on east leg closer to intersection to improve sight distance.						
			E	Signs	Change speed limit to 25 mph on KY 2486.						
Perry	45	KY 1762 at Oakhurst	A	Pavement	Add edge line striping on all approaches.	N/A	\$0	\$0	\$1,000	\$6,000	
			B	Pavement	Re-apply stop bars on all approaches.				\$3,000		
			C	Signs	Install new stop signs.						
Lee	46	KY 52 at Old KY 52 / Carlisle	A	Realignment	Realign curve to West Main Street and adjust guard rail.	\$50,000	\$0	\$5,000	\$62,900	\$230,000	
			B	Access Management	Eliminate driveway access to KY 52 and install end treatment.	\$50,000			\$5,500		
			C	Access Management	Eliminate business entrance along KY 52 and utilize new access point.	\$50,000			\$6,600		
Wolfe	47	KY 191 at KY 1812	A	Sight Distance	Cut back slope on inside of KY 191 curve.	\$50,000	\$15,000	\$35,000	\$118,400	\$460,000	
			B	Realignment	Improve sight distance, realign intersection to "T" in curve.	\$50,000			\$191,600		
Perry	48	KY 476 at KY 3351	A	Realignment	Improve connection of KY 3351 to KY 476.	\$200,000	\$77,500	\$15,000	\$2,480,000	\$2,772,500	
			B	Maintenance	Cut back trees on KY 476 EB so flashers are visible.	N/A			N/A		
Breathitt	49 - 1	KY 1812 at Snowden Branch Rd	A	Realignment	Provide 90 degree approach for Snowden Branch Road intersection with KY 1812.	\$50,000	\$10,000	\$15,000	\$80,000	\$339,000	
			B	Sight Distance	Regrade / repave pavement west of intersection to improve sight distance.	\$50,000			\$50,000		
			C	Sight Distance	Improve sight distance with tree removal in curve and widen ditch.	\$50,000			\$34,000		
Breathitt	49 - 2	KY 1812 at Snowden Branch Rd	A	Widening	Increase shoulder width and eliminate on-street parking. Turn lane added.	\$100,000	\$10,000	\$30,000	\$408,000	\$780,000	
			B	Realignment	Provide 90 degree approach for Snowden Branch Road intersection with KY 1812.	\$50,000			\$76,000		
			C	Sight Distance	Improve sight distance with tree removal in curve.	N/A			\$3,000		
			D	Sight Distance	Widen ditch and lay back slopes.	\$50,000			\$53,000		
Wolfe	50-1	KY 191 at KY 1010	A	Realignment	Improve sight distance, realign intersection to "T" away from curve.	\$50,000	\$25,000	\$10,000	\$180,000	\$265,000	
Wolfe	50-2	KY 191 at KY 1010	A	Sight Distance	Cut back slopes and widen ditch along KY 191 to improve sight distance.	N/A	\$0	\$0	\$210,000	\$210,000	

Note: The costs do not account for any environmental permits, mitigation, fees and other costs that may be incurred such as geotechnical analysis.

1.0 INTRODUCTION

Parsons Brinckerhoff was contracted by the Kentucky Transportation Cabinet (KYTC) to perform a study to identify potential improvements at 50 intersections within KYTC District 10. This includes intersections in Breathitt, Estill, Lee, Magoffin, Menifee, Morgan, Perry, Powell, and Wolfe Counties, Kentucky. Where feasible the study focuses on short-term improvements that can be quickly and effectively implemented, and will produce a list of recommendations and information about the proposed improvements that KYTC can use for further project development and implementation.

Members of the Project Development Team (PDT) included KYTC District 10, KYTC Central Office Division of Planning, KYTC Central Office Division of Highway Design, KYTC Central Office Division of Traffic, and Parsons Brinckerhoff. Minutes from the PDT meetings are included in **Appendix A**.

1.1 Project Location and Study Area

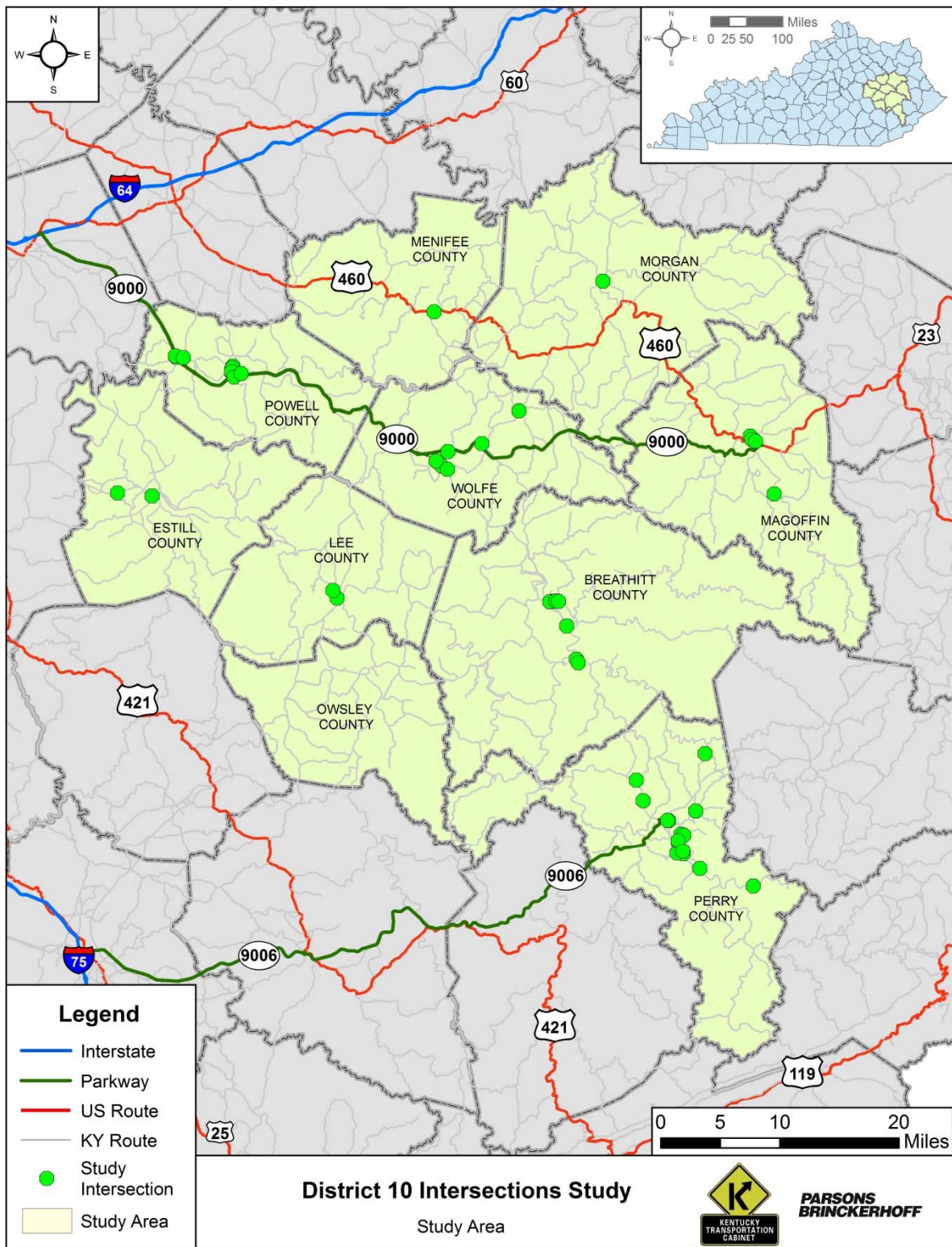
The study area includes 50 intersections throughout District 10. **Figure 1** shows the location of each intersection.

1.2 Study Background

The project conceptually began in 2014 by KYTC as a result of discussion in District 10 on providing intersection improvement projects for an internal use document, the District Transportation Plan (DTP). An analysis was performed by the District with assistance from the Kentucky Transportation Center (KTC) to determine which of the 4,623 intersections maintained by District 10 had the highest crash rates and which could be improved through quick fixes such as signage and striping or through more extensive improvement projects.

KTC, in cooperation with KYTC Traffic Engineering Branch within the Division of Traffic Operations, collects, maintains and evaluates every intersection in Kentucky and compiles a list of crash rates for each. Recently KTC has developed a Spatial Database for Intersections that creates and maintains a full inventory of every intersection in the state. This database contains precise location information as well as safety and operational attributes. For more information on the methodology and compilation of this data refer to the full research report maintained by KTC (KTC-15-11/SPR14-480-1F) Spatial Database for Intersections.

Figure 1: Study Area



KYTC District 10 has used this information to assist in determining 50 intersections in their District most in need of improvement from a safety perspective. The list provided by the District included the following:

- The first five intersections have the highest fatalities and injury collisions rate (according to the KAB scale – fatal injury, incapacitating injury, and non-incapacitating injury) within the District.
- The next 41 intersections are ranked in order by the Potential Crash Reduction factor (PCR) calculation.
- The remaining four intersections on the list have been noted as having safety issues within the District but do not necessarily have a high crash rate factor. These have been included as part of previous DTP projects.

It should be noted that the PCR rate was the primary identification factor rather than the Critical Rate Factor (CRF) used more commonly in recent years. The CRF calculation is based on an assumption that the relationship between the number of crashes and traffic volume is linear. This relationship can actually be exponential for most roadway and intersection types. With the development of the procedures used in the Highway Safety Manual (HSM) to evaluate safety and the potential of certain influences of countermeasures, the PCR rate can be used to identify locations where higher benefit to cost ratios might be achieved.

1.3 Study Process

The list of intersections, along with detailed crash information, was given to Parsons Brinckerhoff to evaluate and develop proposed safety improvements for each based on crash type and history, intersection characteristics, geometry, and other field conditions.

The first step was to review existing conditions through the use of aerial photography to identify the geometric layout of intersections, and to gather additional information such as crash data and traffic volumes. This was followed by a field review of each intersection location. Next, preliminary improvements and cost estimates were developed and shared with the project team who provided feedback. The improvement options for each intersection were revised, and detailed cost estimates were developed for design, right-of-way, utilities, and construction. A summary sheet for each intersection was developed, including crash and traffic volume information, intersection issues, a drawing of the proposed improvement options, and cost estimates for the improvements.

The following chapters discuss these steps and the final improvement options in greater detail for each intersection.

2.0 PURPOSE AND NEED

It is important to establish the purpose and need for a project during its early stages since it defines the reason(s) for the study and provides the basis for the development, evaluation, and comparison of alternatives. The three parts to a complete purpose and need statement include: 1) the purpose, 2) the need, and 3) goals and objectives. The purpose identifies the problem to be solved by the study and is supported by the need. Goals and objectives go beyond the transportation issues of the study and should be considered and addressed as part of a successful solution to the problem.

The overall purpose and need statement for this study was developed based on guidance and expectations set forth by KYTC as well as from issues identified in field reviews and analysis of deficiencies identified in the existing roadway conditions.

2.1 Purpose

The purpose of the District 10 Intersections Study is to identify potential improvements at 50 identified intersections throughout KYTC District 10.

2.2 Need

Supporting the study purpose is the study need. The supporting need is presented below.

Safety – Each of the intersections in the study area has been identified as a safety concern by KTC's Spatial Intersection Database. Issues identified during field reviews include sight distance issues, multiple access points with no clear delineation of in / out traffic flow, and missing, faded, or not adequately located signage and striping.

2.3 Goals and Objectives

In accordance with KYTC policy on purpose and need statements, goals and objectives were developed to balance environmental and community issues with transportation issues. These include:

- Provide improvement options that address the identified safety issues of each intersection.
- Provide construction quantities and cost estimates for the improvements.
- Identify solutions with project costs that are less than \$500,000 that can be completed using Highway Safety Improvement Program (HSIP) funds where possible.

3.0 EXISTING CONDITIONS

3.1 Aerial Photography

Aerial photography for each intersection was downloaded from Google Earth. This provided the most recent photography of intersection conditions for use in determining existing conditions as well as a background for the design layout of improvement options.

3.2 Crash Data

While crash rates had previously been calculated by KTC, analysis of the data for this study went beyond the rate. The full crash data set for each intersection was obtained for this study from the Kentucky State Police Collision Analysis database for the same time period (five-year period from January 1, 2010 through December 31, 2014). All reported crashes were mapped at each intersection by severity and manner of collision. This distribution of crashes can be seen for each intersection in **Appendix B**. Evaluation of this data provided information on which approaches experienced the higher number of crashes, any consistency in crash type at a certain location within the intersection vicinity, as well as some determination of whether the crashes occurred on the roadway in question or in adjacent parking lots.

3.3 Field Reviews

Following a review of existing geometric conditions through examination of aerial photography and the Google Earth street view tool, as well as the identification of crash distribution throughout the intersection, field reviews were conducted. The field reviews served the purpose of verifying existing conditions, identifying potential issues such as utility impacts, and evaluating preliminary improvement options. Inventory of existing signs, striping, and traffic control equipment was noted in order to further make recommendations for intersection improvements. The project sheets provided later in this report document note issues and list improvement options to address the issues.

3.4 Traffic Volumes

The focus of this study was improving safety at the identified intersections. To evaluate some of the proposed improvements, it was necessary to collect traffic volume information to determine if potential identified improvements would meet standards required for installation (i.e. turn lanes, stop control, or traffic signals). The intersections that turning movement counts were requested for are listed in **Table 1**.

Table 1: Intersection Turning Movement Counts

County	Intersection #	Description
Perry	3	KY 15 at KY 451C
Perry	11	KY 550 at Grand Vue Plaza
Perry	19	KY 15X at Newland Street
Powell	4	KY 2486 at W Railroad Street
Powell	10	KY 11 at Airport Road
Powell	31	KY 15 at KY 82
Wolfe	18	KY 15 at KY 3355

These intersections were identified for turning movement counts through the field reviews. For those where a traffic signal installation was considered, the HCS 2010 MUTCD Signal Warrants analysis tool was used. The summary sheets output is included in **Appendix C** for reference. Intersections that met warrants for signalization are noted on the project sheets provided later in this report. The intersection of KY 15 at KY 82 (Intersection #31) is already signalized. Turning movement counts were performed at this intersection to evaluate left turn lane requirements.

4.0 IMPROVEMENT OPTIONS DEVELOPMENT AND EVALUATION

4.1 Improvement Options Development

The improvements shown for each intersection are a function of identified need(s) based on the distribution and manner of crashes as well as field reviews documenting existing conditions. A list of improvements (labeled alphabetically on the project sheets) is provided to fully document all potential project components.

Consideration was given to the development of improvement solutions that could be easily implemented. Projects that are estimated to cost less than \$500,000 could be completed using HSIP funds. This includes quick fixes such as maintenance, signing, striping, signal installation, or timing adjustment, as well as lower-cost construction items including access point management and minor approach adjustments / re-alignments. Some intersections required a more comprehensive solution to address safety issues. Projects that exceed the HSIP funding limit will require a Project Identification Form (PIF) to be developed by KYTC for consideration in future Six Year Highway Plans. Where possible for these longer-term project solutions, individual items that could be separated out were noted for potential short-term (or interim) improvements.

Another consideration for the development of improvement options was the interaction and consistency of treatments to adjacent intersections that are also part of the identified list of 50 intersections. An example would be the adjacent Intersections #9, #11, and #27, located along KY 550 in Perry County. Individual intersection improvements were evaluated, and consideration was given to treatments that address the overall safety issue associated with the corridor. Another example would be intersections located along KY 2486 in Powell County (Intersections #4, #13, #26, #32, and #44). A consistent cross section throughout the corridor was recommended, including striping and a speed limit reduction.

At locations where the primary safety issue appeared to be access management issues for a segment (i.e. Intersection #22 and #30 in Magoffin County), further study was recommended to develop an overall plan for corridor improvement.

Further study from a design perspective was recommended for KY 2486 at Bright Street (Intersection #32). Site surveys were not completed as part of this planning-level study; therefore the extent of drainage issues on the eastern side of KY 2486 is unknown. Further study is required to determine the appropriate design treatment and cost impact.

4.2 Improvement Evaluation

When determining potential improvements for several intersections, multiple options were identified for overall intersection improvement. These are designated on the project sheets with an additional number after the intersection identification number (i.e. Intersection #1-1, #1-2, etc.). The first iteration of intersections with multiple options was presented at the first PDT meeting on October 6, 2015. Discussion at the meeting led to the determination that all variations of improvement options would be included in the final documentation, thereby enabling additional flexibility in options for the District to pursue at the next level of project development.

4.3 Cost Estimation

The cost estimates developed for each intersection include construction estimates in current year dollars, as well as design, right-of-way, and utilities estimates where applicable. The estimates were developed using the most recent KYTC price sheet. The costs do not account for any environmental permits, mitigation, fees, and other costs that may be incurred such as geotechnical analysis. These additional costs (if applicable) would need to be determined as part of the next phase of project development.

An overall construction estimate was developed with specific costs split out where feasible as separate projects that may be completed independent of other improvements. These projects typically included signing, striping, and maintenance projects. The full calculation of construction costs is included in **Appendix D** for reference.

In order to determine right-of-way impacts, as-built drawings were downloaded from KYTC's website. The right-of-way lines were compared to estimated construction limits.

Quantities of impacted right-of-way areas were then determined. For intersections where drawings were not available, right-of-way lines were estimated based on aerial photography, utilizing property lines, tree lines, and other visible site features. These estimated quantities were provided to KYTC District 10, which assigned a per acre right-of-way cost. It should be noted that no formal site surveys were conducted for any of the sites. All values are estimates for this study.

The utilities impact assessment and subsequent cost estimation was performed through an initial assessment of utility poles impacted by the improvement option designs. The number of poles impacted within right-of-way and outside of right-of-way were noted and sent to KYTC District 10 to assign a cost for impacts. Also provided were notes on other utilities within the impacted area such as gas pipelines and sanitary sewers. These utilities were either noted from field reviews or were identified through aerial photography review. Similar to the right-of-way assessment, no site surveys were performed.

For a summary that lists all components of the cost estimates (design (D), right-of-way (R), utilities (U), and construction (C)) refer to **Appendix D**.










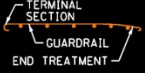



















5.0 PROJECT SHEETS

The following sheets present a summary of the proposed improvements for each of the 50 intersections with some additional alternative variations. Construction cost estimates are provided on the sheets along with total costs. The cost estimate components (D, R, U and C) are provided in the overall summary sheet in **Appendix D**. As noted previously, detailed construction costs are also included in **Appendix D**. Standard drawings per construction items required for proposed improvements are included in **Appendix E**.

For reference on project sheet information, an overall legend is included in **Figure 2**.

To be consistent with intersection numbering, the page numbering for the project sheets follows the intersection numbering scheme and not the page numbering for this report.

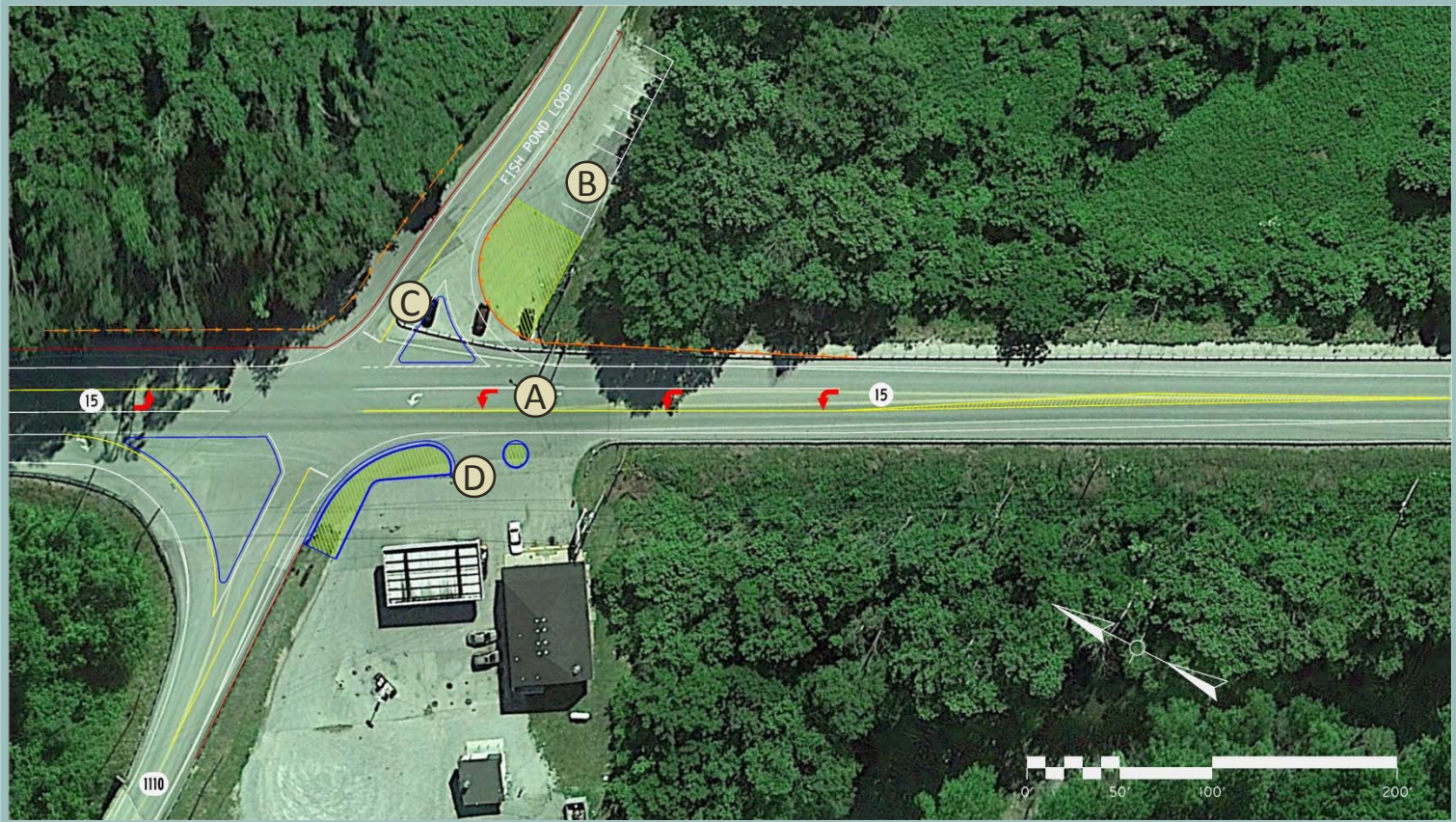
Figure 2: Project Sheets Improvement Legend

	PAVEMENT REMOVAL AND SEEDING OR SODDING		ROUTE SYMBOL		PROPOSED HEADWALL
	CUTTING BACK SLOPES		NORTH ARROW		PROPOSED SAFETY HEADWALL
	FILL AREA		PROPOSED SIGNAL		PROPOSED SIGN
	PROPOSED GUARDRAIL		PROPOSED FLUME INLET		PROPOSED BOX CULVERT
	RETAINING WALL		PROPOSED YARD DRAIN		PROPOSED DOUBLE BOX CULVERT
	PROPOSED DELINEATORS		PROPOSED JUNCTION BOX		EXISTING RAILROAD
	PROPOSED FENCE		PROPOSED DROP BOX INLET		PROPOSED PAVEMENT MARKINGS
	EXISTING RIGHT OF WAY LINE (APPROX.)		PROPOSED CURB BOX INLET		PROPOSED RUMBLE STRIPS
	STREAM		PROPOSED DITCH		
	PROPOSED TEMP. EASEMENT		PROPOSED STORM PIPE		
	TURN ARROW		PROPOSED TREE/SHRUB		

Intersection 1 - 1: KY 15 (MP 9.176) at Fish Pond Loop Breathitt County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.517 / PCR KAB: 1.570 - CRF (2010-2015): 2.629 - Number of Crashes: 9 - KY 15, 2015 ADT: 5,919 - Fish Pond Loop, 2015 ADT: 743 	<ul style="list-style-type: none"> - Multiple angle injury collisions at intersection - Poor sight distance - High speed corridor - Skewed approaches

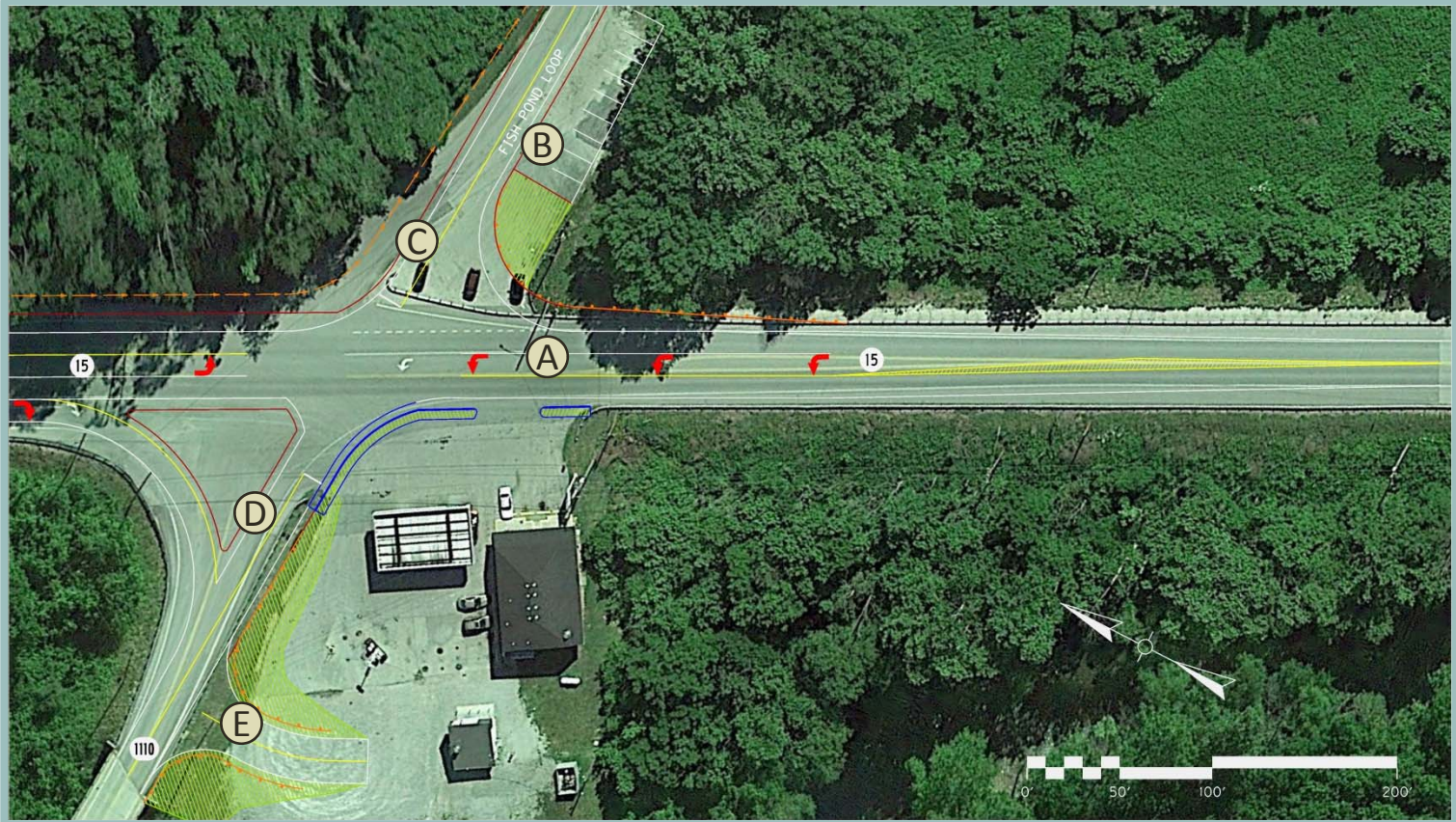


Label	Improvement	Description	Construction Cost	Total Cost
A	Widening	Widen NB approach for left turn lane to Fish Pond Loop and adjust guardrail.	\$133,000	\$270,000
B	Pavement	Alter Park and Ride Lot orientation along tree line.		
C	Realignment	Realign WB approach to improve sight distance on KY 15.		
D	Delineation	Define access to / from KY 15.	\$17,000	

Intersection 1 - 2: KY 15 (MP 9.176) at Fish Pond Loop Breathitt County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.517 / PCR KAB: 1.570 - CRF (2010-2015): 2.629 - Number of Crashes: 9 - KY 15, 2015 ADT: 5,919 - Fish Pond Loop, 2015 ADT: 743 	<ul style="list-style-type: none"> - Multiple angle injury collisions at intersection - Poor sight distance - High speed corridor - Skewed approaches

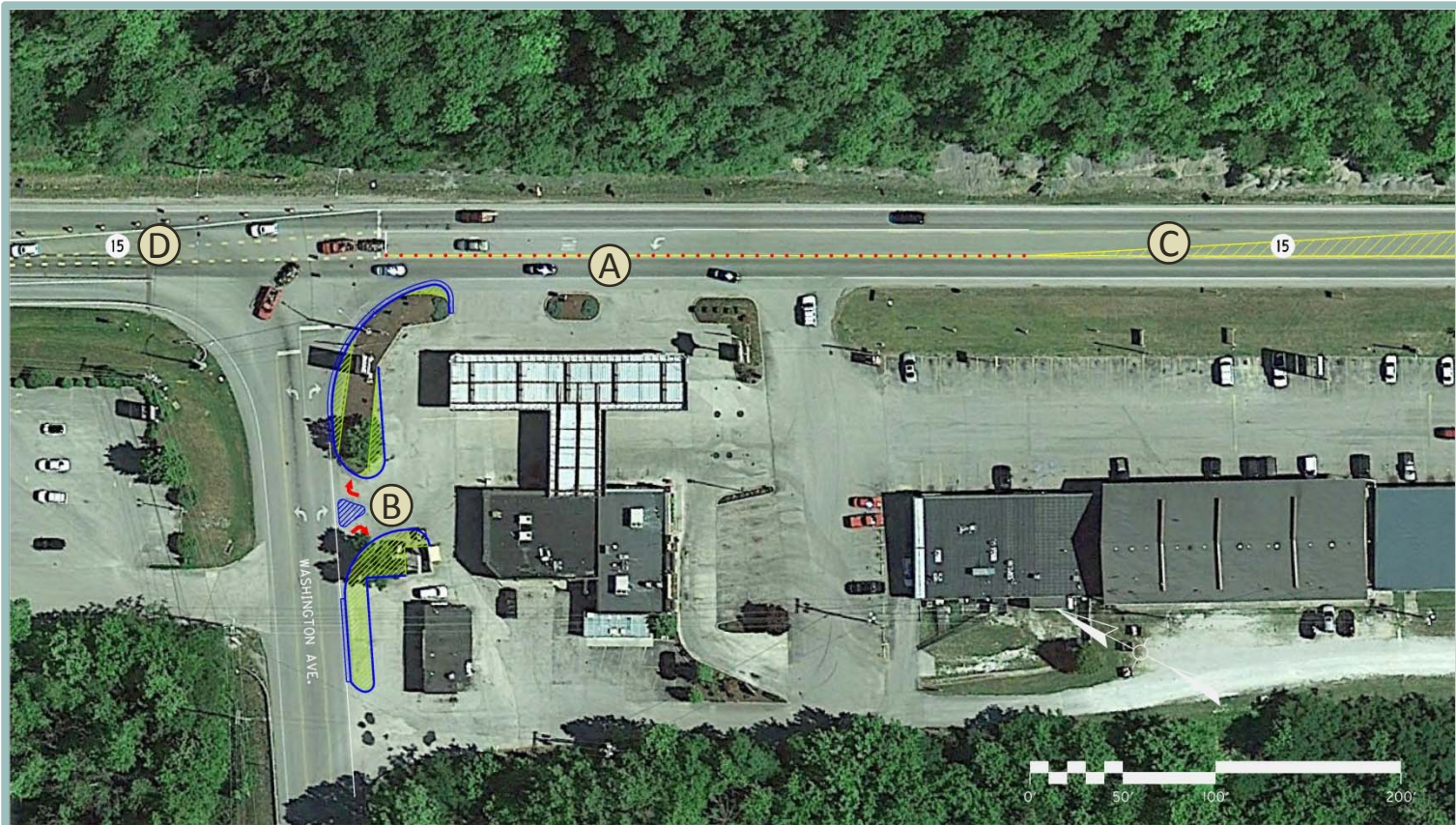


Label	Improvement	Description	Construction Cost	Total Cost
A	Widening	Widen NB approach for left turn lane to Fish Pond Loop and adjust guardrail.	\$145,000	\$310,000
B	Pavement	Alter Park and Ride Lot orientation along tree line.		
C	Realignment	Realign WB approach to improve sight distance on KY 15.		
D	Pavement	Re-stripe EB approach to align with WB approach .		
E	Delineation	Provide new entrance from Fish Pond Loop and define access to / from KY 15.	\$45,000	

Intersection 2: KY 15 (MP 17.446) at Washington Avenue Breathitt County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 7.060 / PCR KAB: 1.524 - CRF (2010-2015): 1.469 - Number of Crashes: 30 - KY 15, 2015 ADT: 16,377 - KY 1812, 2015 ADT: 3,214 	<ul style="list-style-type: none"> - Multiple types of injury and PDO crashes - Multiple access points - High school nearby - Driver inattention



Label	Improvement	Description	Construction Cost	Total Cost
A	Delineation	Delineators along center line of KY 15 (Wendy's & gas station).	\$52,000	\$102,000
B	Access Management	Restrict access to gas station along Washington Avenue.		
C	Access Management	Limit TWLTL.		
D	Pavement	Check pavement markings once construction is complete.		

Intersection 3: KY 15 (MP 11.849) at KY 451C (MP 0.235) Perry County

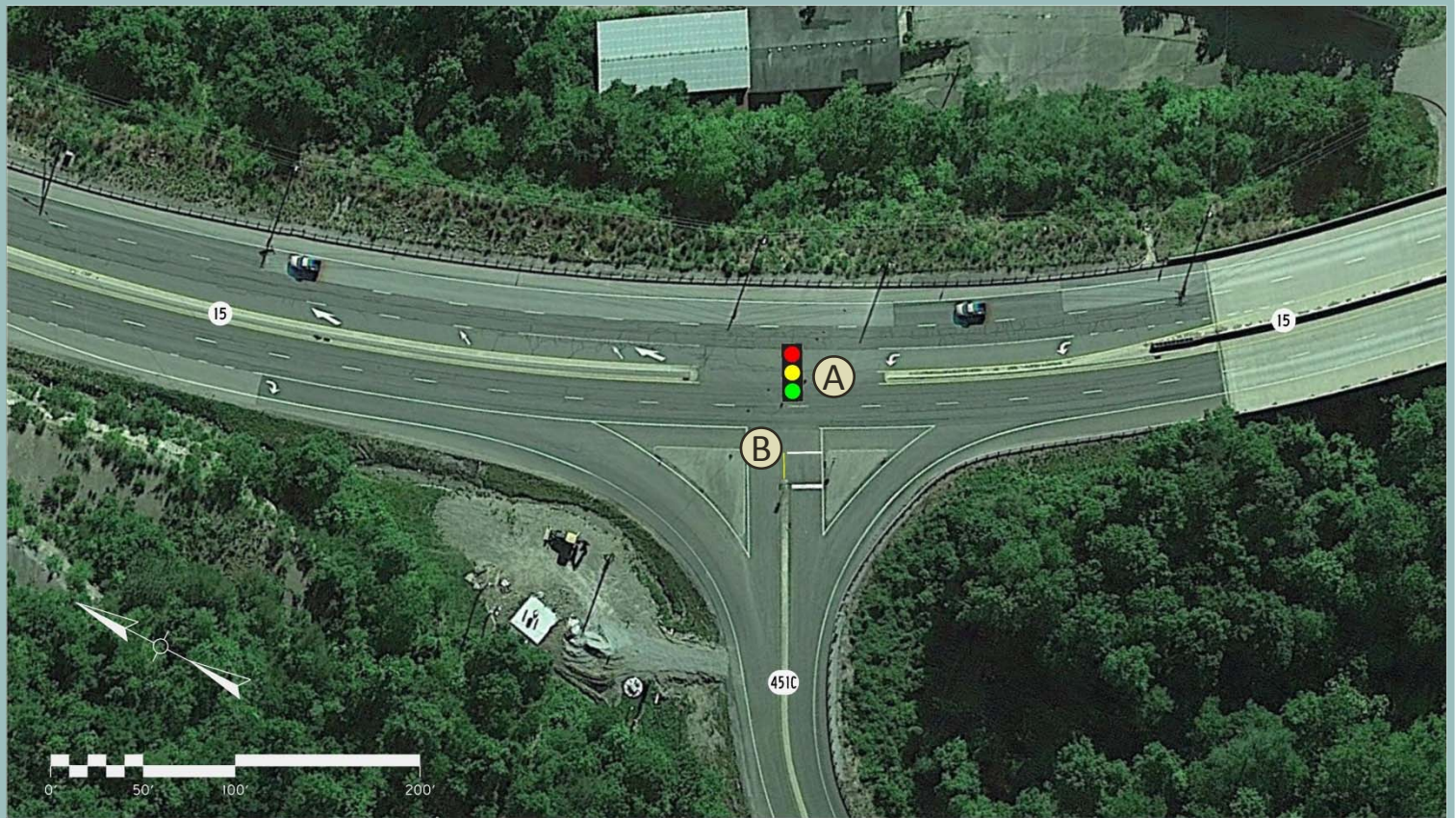


Existing Conditions

- PCR: 7.013 / PCR KAB: 1.266
- CRF (2010-2015): 2.243
- Number of Crashes: 16
- KY 15, 2015 ADT: 17,333
- KY 451C, 2015 ADT: 1,674

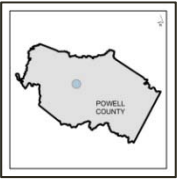
Issues

- Grade on approaches
- Intersection configuration
- High speed maneuvers
- Sight distance issue
- 7 injury angle/left turn collisions



Label	Improvement	Description	Construction Cost	Total Cost
A	Signals	Signalize intersection. Meets Warrants 1, 2, and 3.	\$109,400	\$160,000
B	Pavement	Move stop bar on KY 451C closer to intersection.	\$600	

Intersection 4: KY 2486 (MP 0.233) at W Railroad Street Powell County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 12.610 / PCR KAB: 0.814 - CRF (2010-2015): 26.619 - Number of Crashes: 27 - KY 2486, 2015 ADT: 1,674 - W Railroad St, 2015 ADT: 300 	<ul style="list-style-type: none"> - High number of collisions, including a fatality and multiple injury crashes at intersection - Sight distance issue

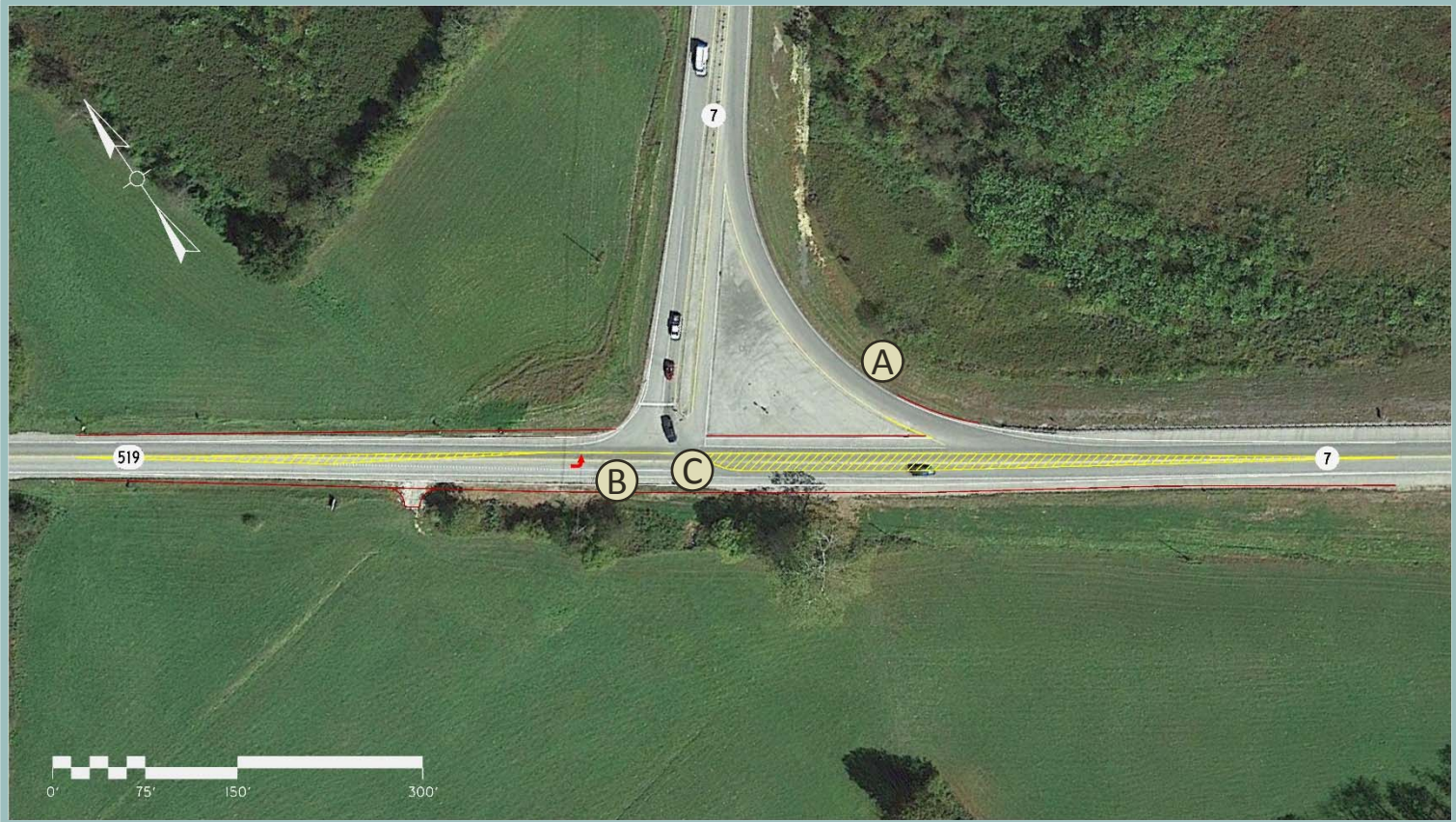


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs	Convert intersection to 4-way stop.	\$25,800	\$127,000
B	Pavement	Paint stop bars on all 4 legs of intersection.		
C	Pavement	Install rumble strips on KY 2486 approaches.		
D	Pavement	Stripe center yellow line and edge lines along KY 2486 (from KY 15 to KY 2476).		
E	Signs	Change speed limit to 25 mph.	\$1,200	

Intersection 5: KY 7 (MP 2.667) at KY 519 MP (0.00) Morgan County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: -0.269 / PCR KAB: 0.754 - CRF (2010-2015): 4.080 - Number of Crashes: 4 - KY 7, 2015 ADT: 3,466 - KY 519, 2015 ADT: 1,855 	<ul style="list-style-type: none"> - High speeds - Multiple injury collisions



Label	Improvement	Description	Construction Cost	Total Cost
A	Lighting	Install lighting at intersection.	\$39,000	\$440,000
B	Pavement / Widening	Add left turn lane on KY 519 to KY 7 NB.	\$218,000	
C	Signals	Install yellow flashing beacons on KY 519 and red flashing beacon on KY 7.	\$33,000	

Intersection 6: KY 52 (MP 6.748) at KY 499 MP (7.741) / Shady Lane Estill County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 18.760 - CRF (2010-2015): 2.048 - Number of Crashes: 35 - KY 52, 2015 ADT: 11,175 - KY 499, 2015 ADT: 1,767 	<ul style="list-style-type: none"> - Multiple access points - Majority of collisions (rear end and angle)

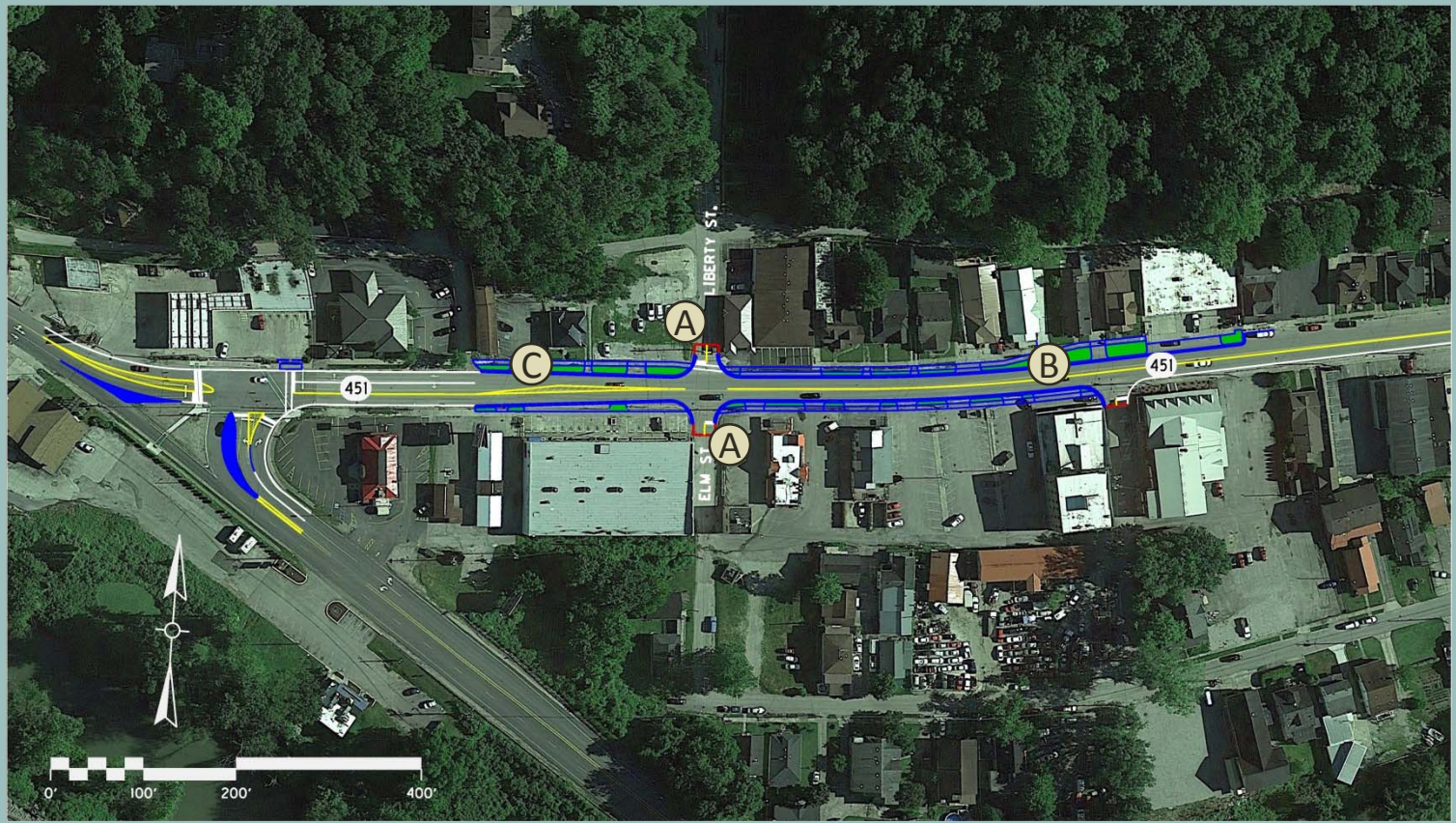


Label	Improvement	Description	Construction Cost	Total Cost
A	Delineation	Delineators along center line (McDonalds and old gas station).	\$32,000	\$420,000
B	Access Management	Close access near intersection, provide channelization for lane reduction on KY 499.	\$95,000	
C	Access Management	Access point modification on EB approach.	\$93,000	

Intersection 7-1: KY 451 (MP 3.392) at Elm Street / Liberty Street Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 7.428 - CRF (2010-2015): 2.135 - Number of Crashes: 15 - KY 451, 2015 ADT: 8,220 - Elm St/ Liberty St, 2015 ADT: 300 	<ul style="list-style-type: none"> - Multiple access points along corridor - Multiple collision types surrounding intersection - Inconsistent cross section

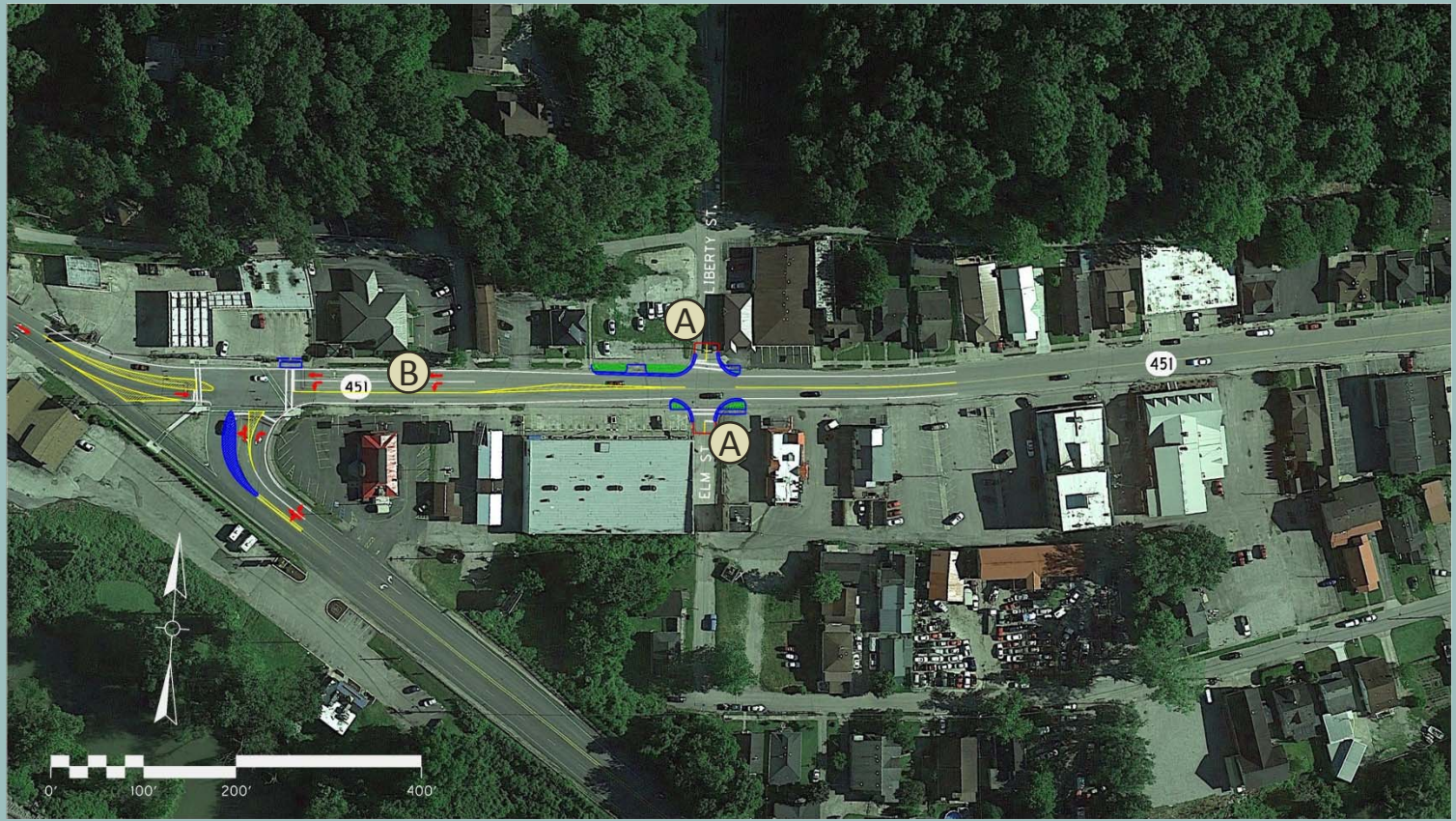


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs / Pavement	Add stop signs and stop bars to side streets.	\$1,500	\$525,000
B	Pavement	Create consistent cross section and striping around intersection.	\$418,500	
C	Delineation	Better define driveways, parking areas, and intersecting street locations.		

Intersection 7-2: KY 451 (MP 3.392) at Elm Street / Liberty Street Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 7.428 - CRF (2010-2015): 2.135 - Number of Crashes: 15 - KY 451, 2015 ADT: 8,220 - Elm St/ Liberty St, 2015 ADT: 300 	<ul style="list-style-type: none"> - Multiple access points along corridor - Multiple collision types surrounding intersection - Inconsistent cross section

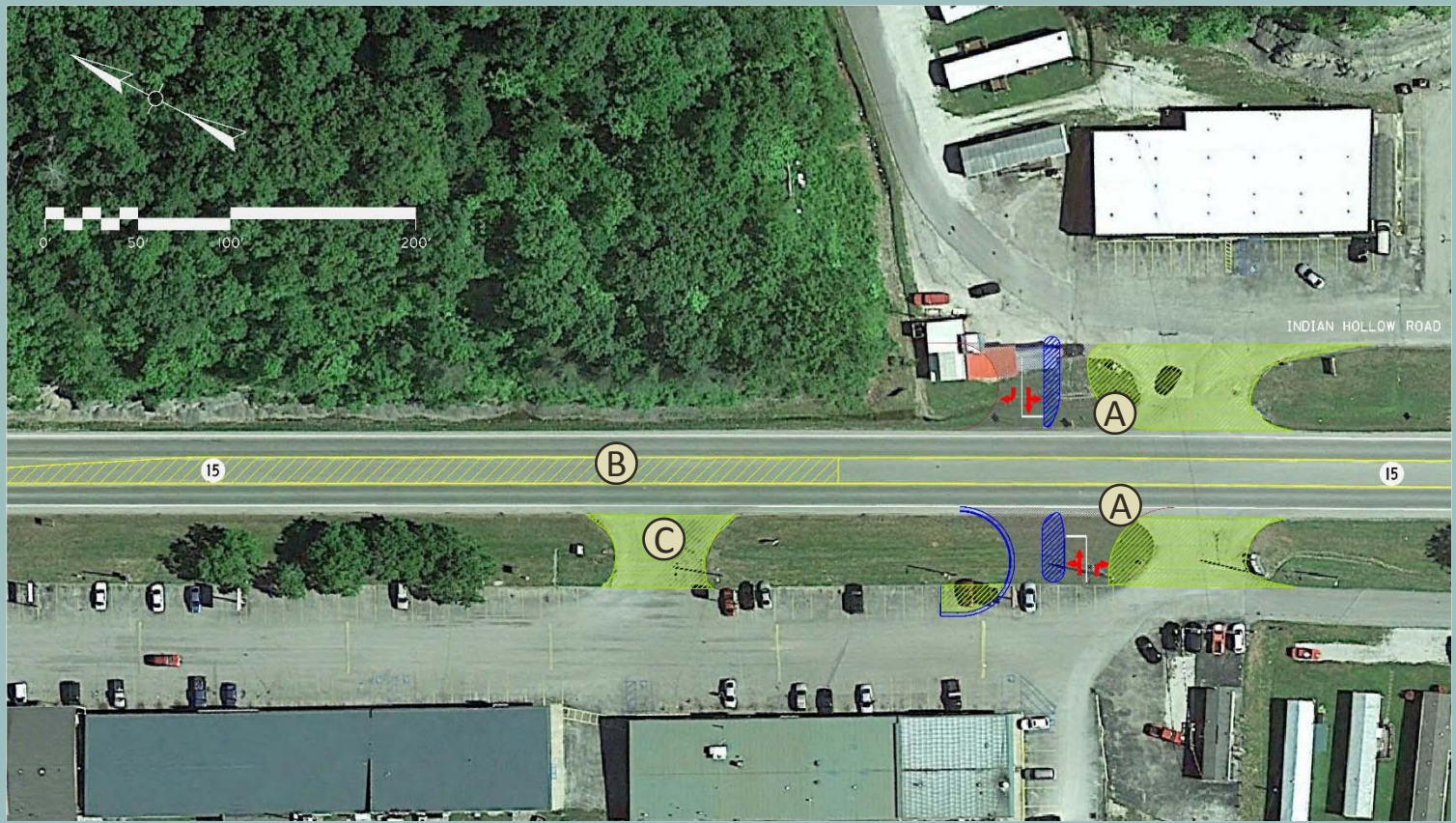


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs / Pavement	Add stop signs and stop bars to side streets.	\$1,200	\$161,000
B	Pavement	Create consistent cross section and striping around intersection.	\$104,800	

Intersection 8: KY 15 (MP 17.253) at Indian Hollow Road Breathitt County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 6.784 - CRF (2010-2015): 1.715 - Number of Crashes: 13 - KY 15, 2015 ADT: 14,454 - Indian Hollow Rd, 2015 ADT: 300 	<ul style="list-style-type: none"> - Multiple access points - Majority of rear end and angle collisions at and adjacent to intersection

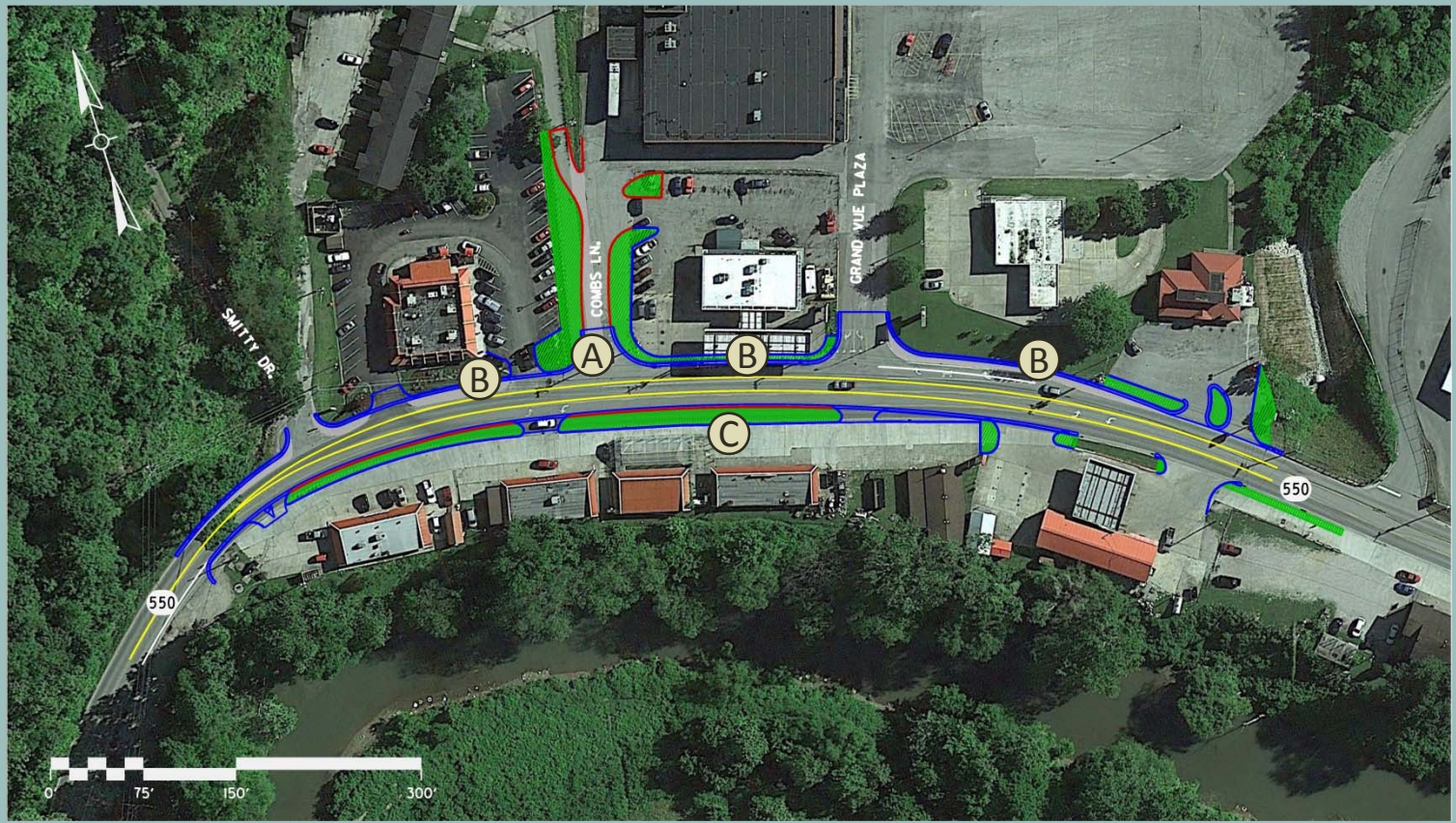


Label	Improvement	Description	Construction Cost	Total Cost
A	Access Management	Limit wide driveway.	\$81,000	\$223,000
B	Access Management	Limit TWLTL.		
C	Access Management	Remove parking lot access point.	\$12,000	

Intersection 9-1: KY 550 (MP 1.349) at Combs Lane Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 5.277 - CRF (2010-2015): 3.122 - Number of Crashes: 10 - KY 550, 2015 ADT: 7,374 - Combs Lane, 2015 ADT: 150 	<ul style="list-style-type: none"> - Multiple access points - High number of collisions at and adjacent to intersection (majority are property damage only)

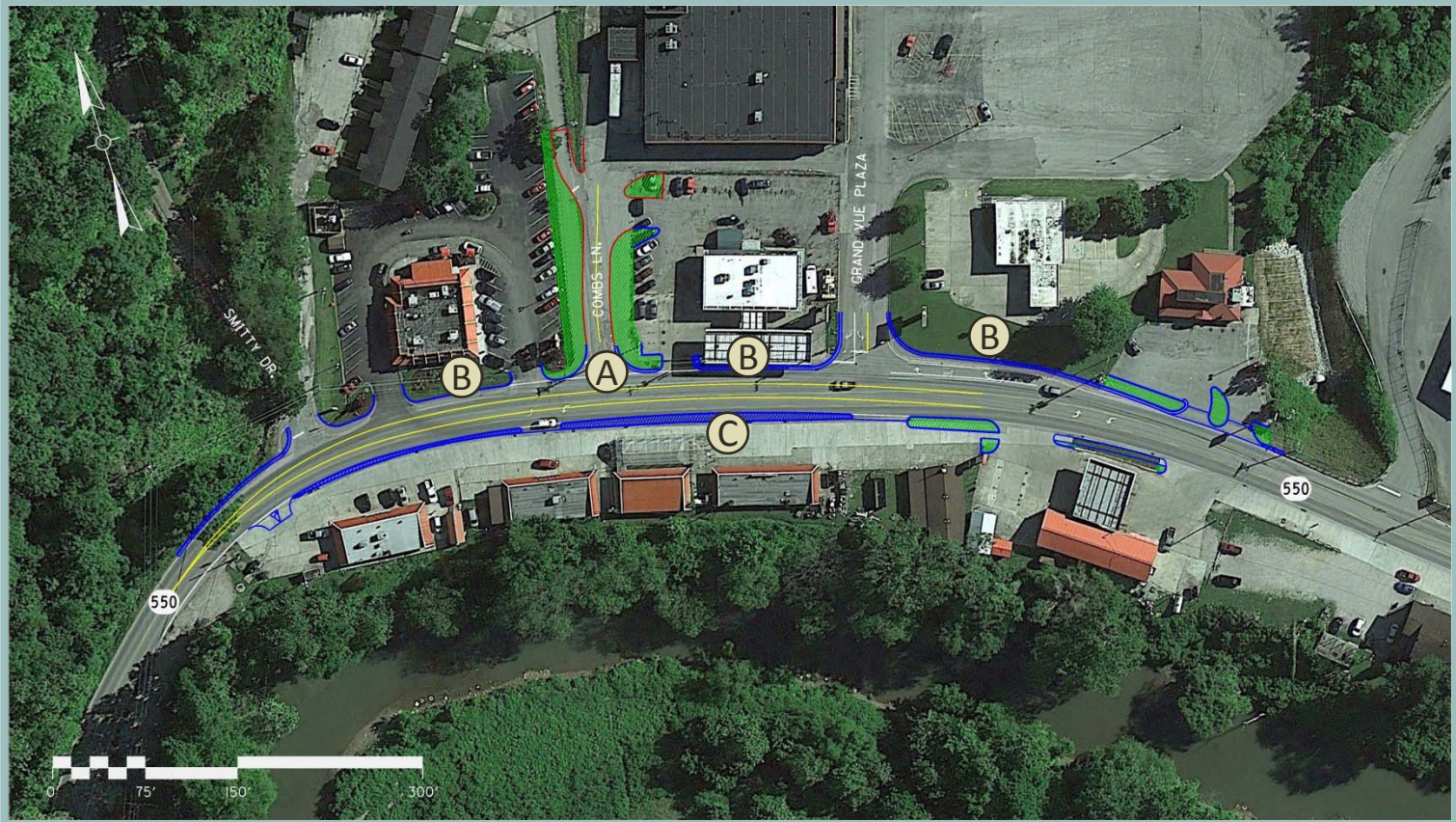


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs / Pavement	Add stop sign and stop bar at Combs Lane.	\$800	\$770,000
B	Pavement	Widen north side of KY 550 and re-stripe.	\$459,200	
C	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.		

Intersection 9-2: KY 550 (MP 1.349) at Combs Lane Perry County

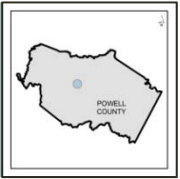


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 5.277 - CRF (2010-2015): 3.122 - Number of Crashes: 10 - KY 550, 2015 ADT: 7,374 - Combs Lane, 2015 ADT: 150 	<ul style="list-style-type: none"> - Multiple access points - High number of collisions at and adjacent to intersection (majority are property damage only)

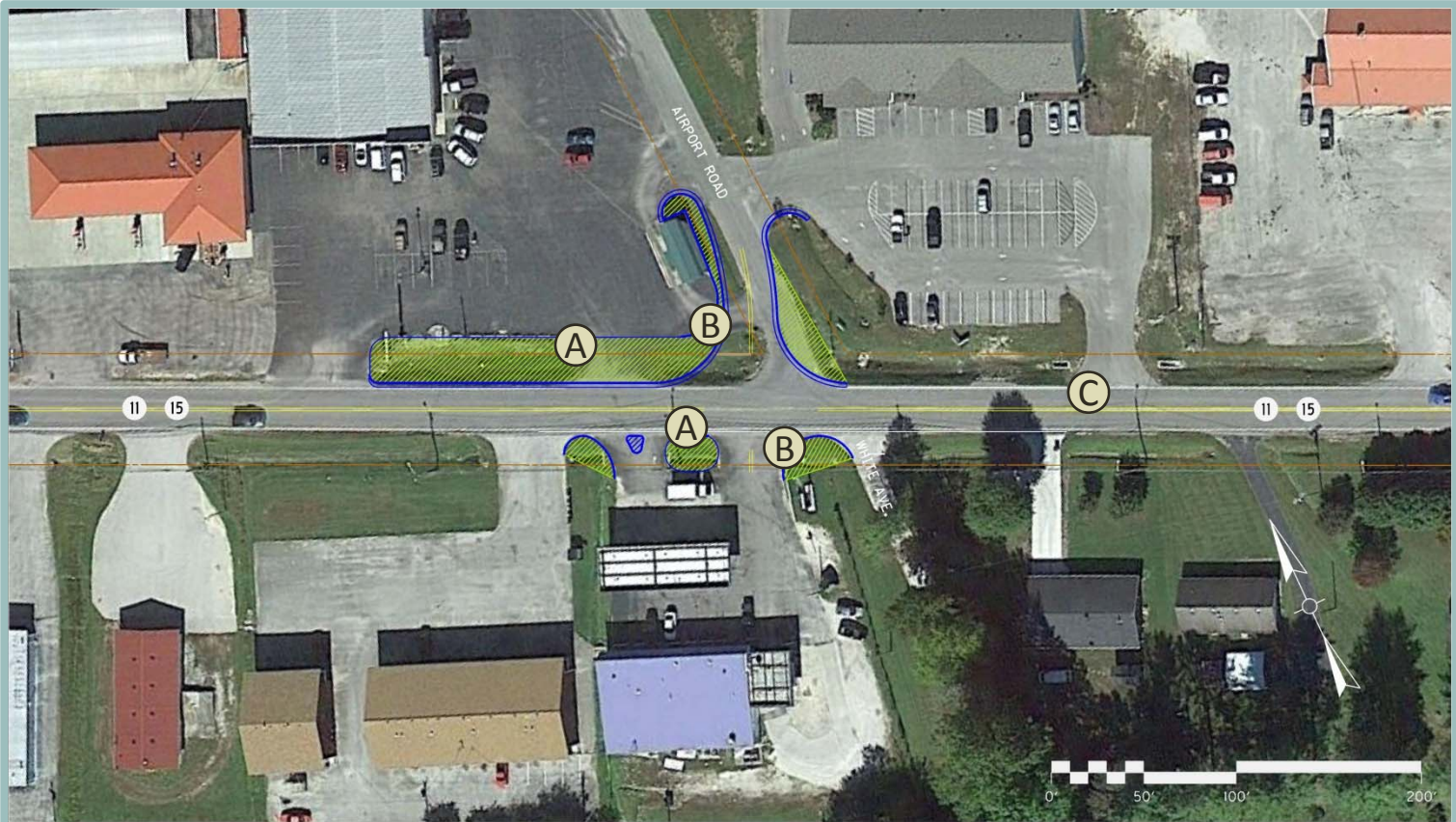


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs / Pavement	Add stop sign and stop bar at Combs Lane.	\$800	\$720,000
B	Pavement	Re-stripe KY 550 by shifting edge of road to the north. Add curb and gutter to north side of KY 550 and define business entrances.	\$409,200	
C	Access Management	Provide designated access points for businesses and separate parking from roadway on south side of KY 550.		

Intersection 10: KY 11 (MP 14.991) at Airport Road / White Avenue Powell County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 4.602 - CRF (2010-2015): 26.619 - Number of Crashes: 9 - KY 11, 2015 ADT: 6,320 - Airport / White, 2015 ADT: 300 	<ul style="list-style-type: none"> - Multiple access points

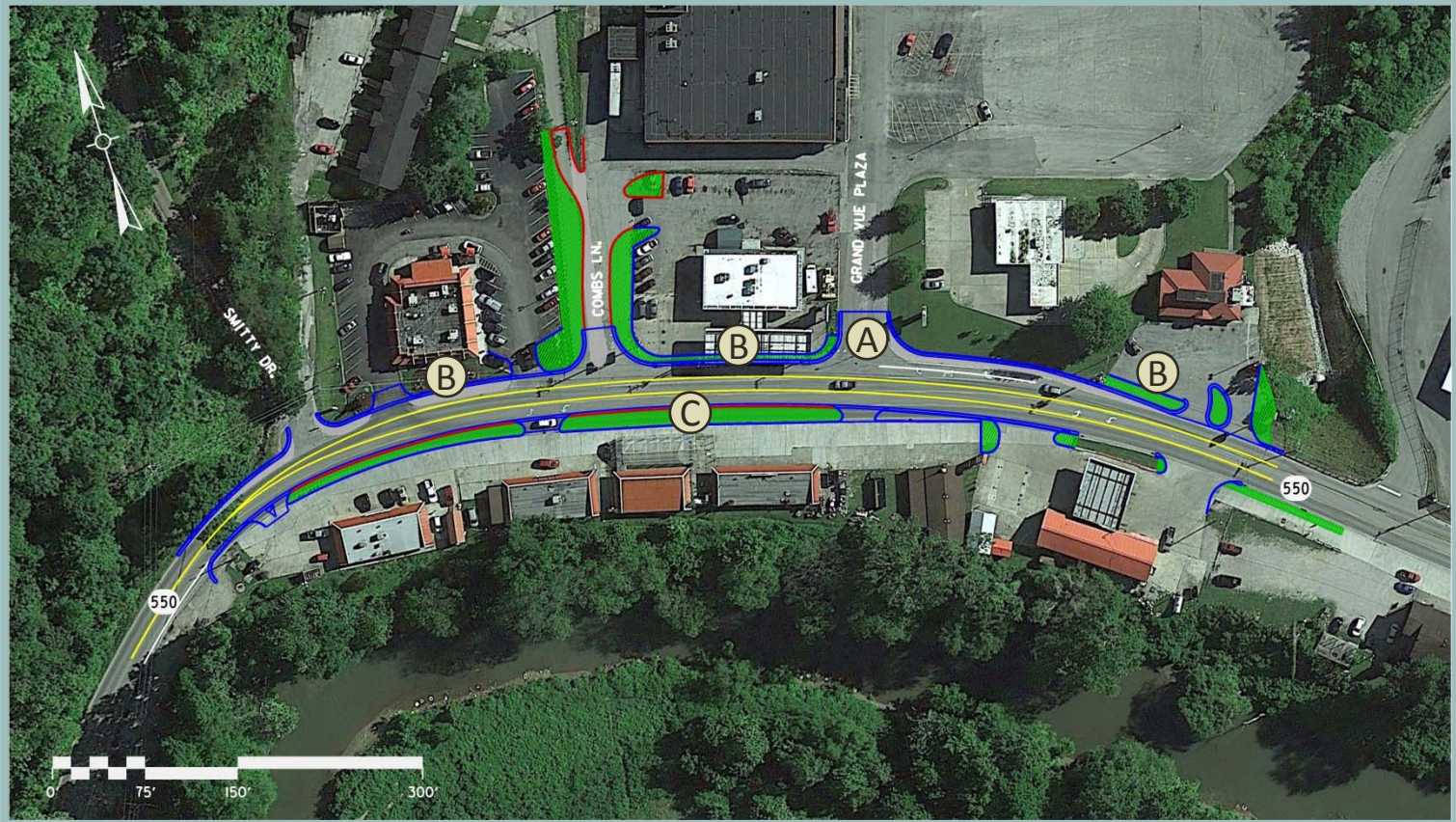


Label	Improvement	Description	Construction Cost	Total Cost
A	Access Management	Consolidate access points, convert one gas station access to right-in / right-out.	\$92,200	\$251,000
B	Pavement	Paint stop bars on Airport Road and White Avenue.	\$500	
C	Pavement	Change center line striping to a no passing zone.	\$3,300	

Intersection 11-1: KY 550 (MP 1.394) at Grand Vue Plaza Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 4.508 - CRF (2010-2015): 2.810 - Number of Crashes: 9 - KY 550, 2015 ADT: 7,374 - Combs Lane, 2015 ADT: 150 	<ul style="list-style-type: none"> - Multiple access points - High number of collisions at and adjacent to intersection (majority are property damage only)

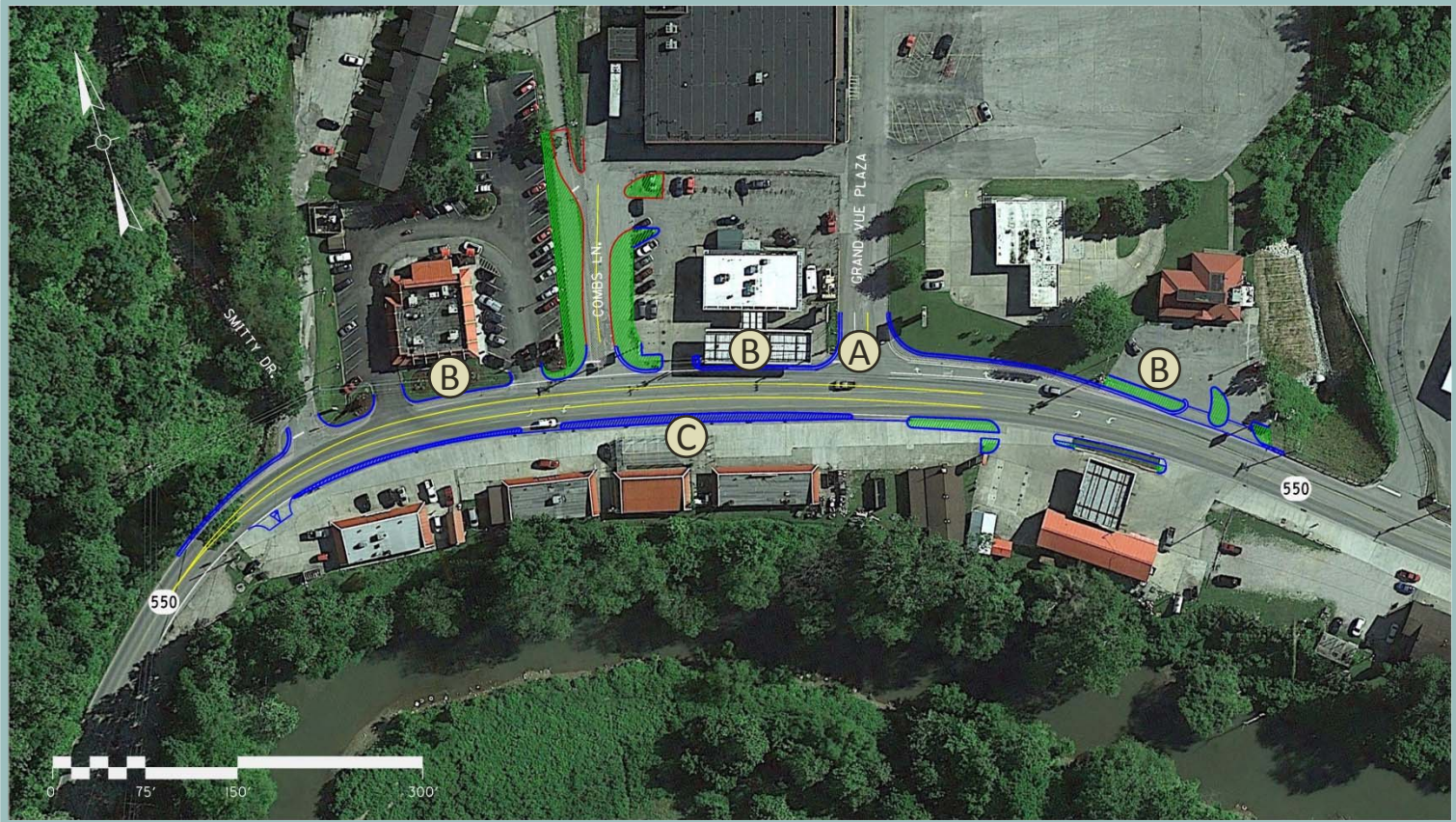


Label	Improvement	Description	Construction Cost	Total Cost
A	Signals	Signalize intersection. Does not meet volume warrants but could meet crash experience warrant (#7).	\$110,000	\$160,000
B	Widening / Pavement	Widen north side of KY 550 and re-stripe.	See Cost for 9-1	
C	Access Management	Separate parking from roadway on south side of KY 550, and designate specific access points to parking area.		

Intersection 11-2: KY 550 (MP 1.349) at Grand Vue Plaza Perry County

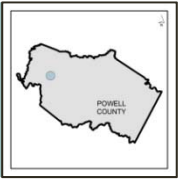


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 4.508 - CRF (2010-2015): 2.810 - Number of Crashes: 9 - KY 550, 2015 ADT: 7,374 - Combs Lane, 2015 ADT: 150 	<ul style="list-style-type: none"> - Multiple access points - High number of collisions at and adjacent to intersection (majority are property damage only)



Label	Improvement	Description	Construction Cost	Total Cost
A	Signals	Signalize intersection. Does not meet volume warrants but could meet crash experience warrant (#7).	\$110,000	\$160,000
B	Widening / Pavement	Re-stripe KY 550 by shifting edge of road to the north. Add curb and gutter to north side of KY 550 and define business entrances.	See Cost for 9-2	
C	Access Management	Provide designated access points for businesses and separate parking from roadway on south side of KY 550.		

Intersection 12: KY 15 (MP 4.275) at Powell Valley Road Powell County

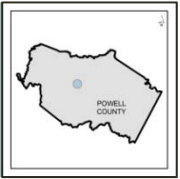


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.960 - CRF (2010-2015): 3.952 - Number of Crashes: 8 - KY 15, 2015 ADT: 3,490 - Powell Valley Road, 2015 ADT: 450 	<ul style="list-style-type: none"> - Poor sight distance

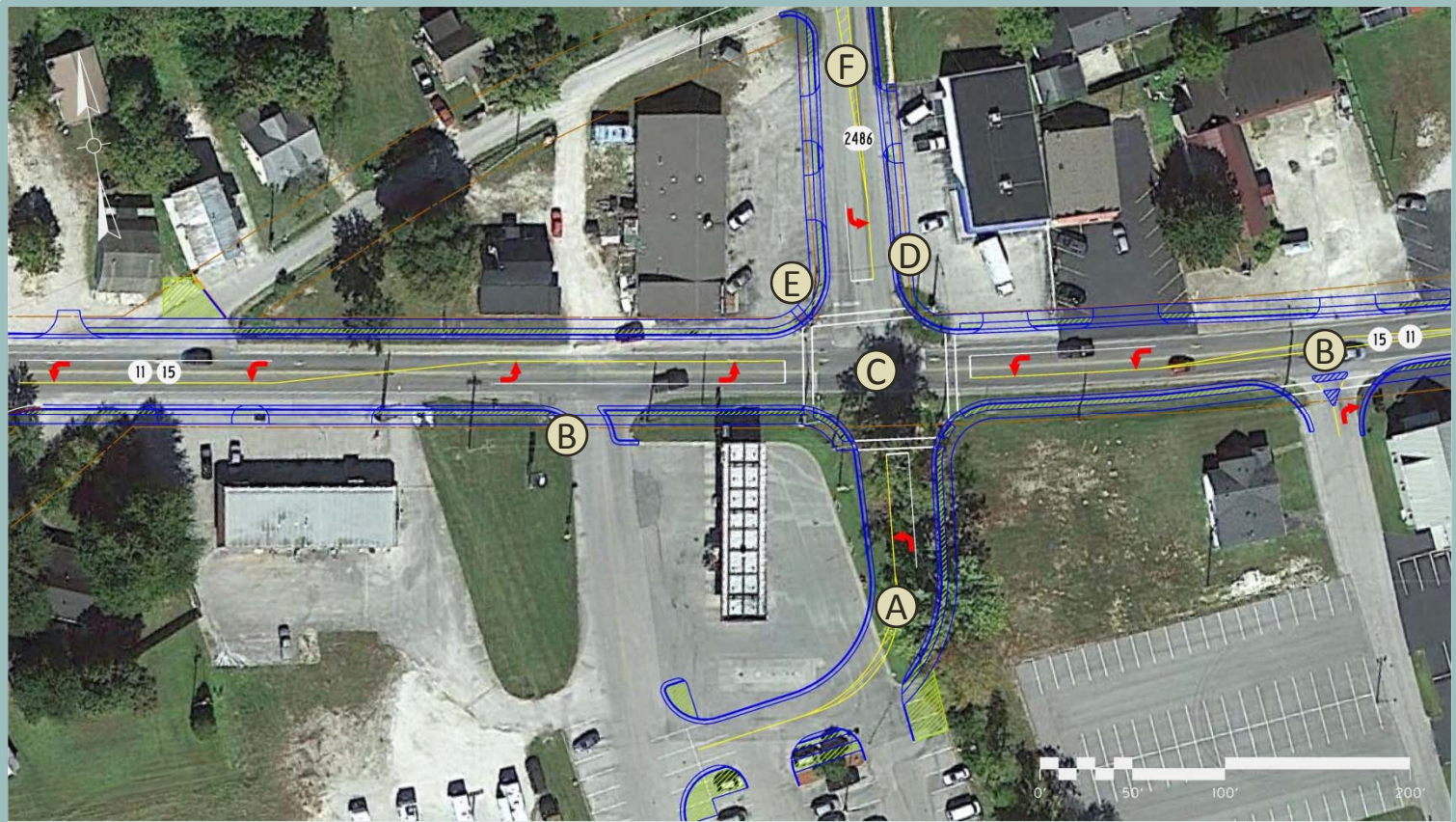


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs	Straighten directional signs across from ramp.	N/A	\$166,000
B	Signs	Install signs for "Wrong Way" and "Do Not Enter" (R5-1 and R5-1a).	\$1,300	
C	Signs	Replace broken in ground pavement markers.	\$37,700	
D	Pavement	Channelize left turn lane to a "T" to form 90 degree approach to KY 15.		
E	Access Management	Close access road; additional access provided from KY 82.	\$17,000	

Intersection 13: KY 11 (MP 15.813) at KY 2486 (MP 0.000) Powell County

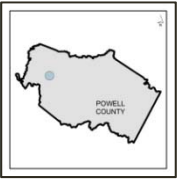


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.673 - CRF (2010-2015): 1.486 - Number of Crashes: 15 - KY 11, 2015 ADT: 8,580 - KY 2486, 2015 ADT: 1,105 	<ul style="list-style-type: none"> - Majority angle and rear end collisions

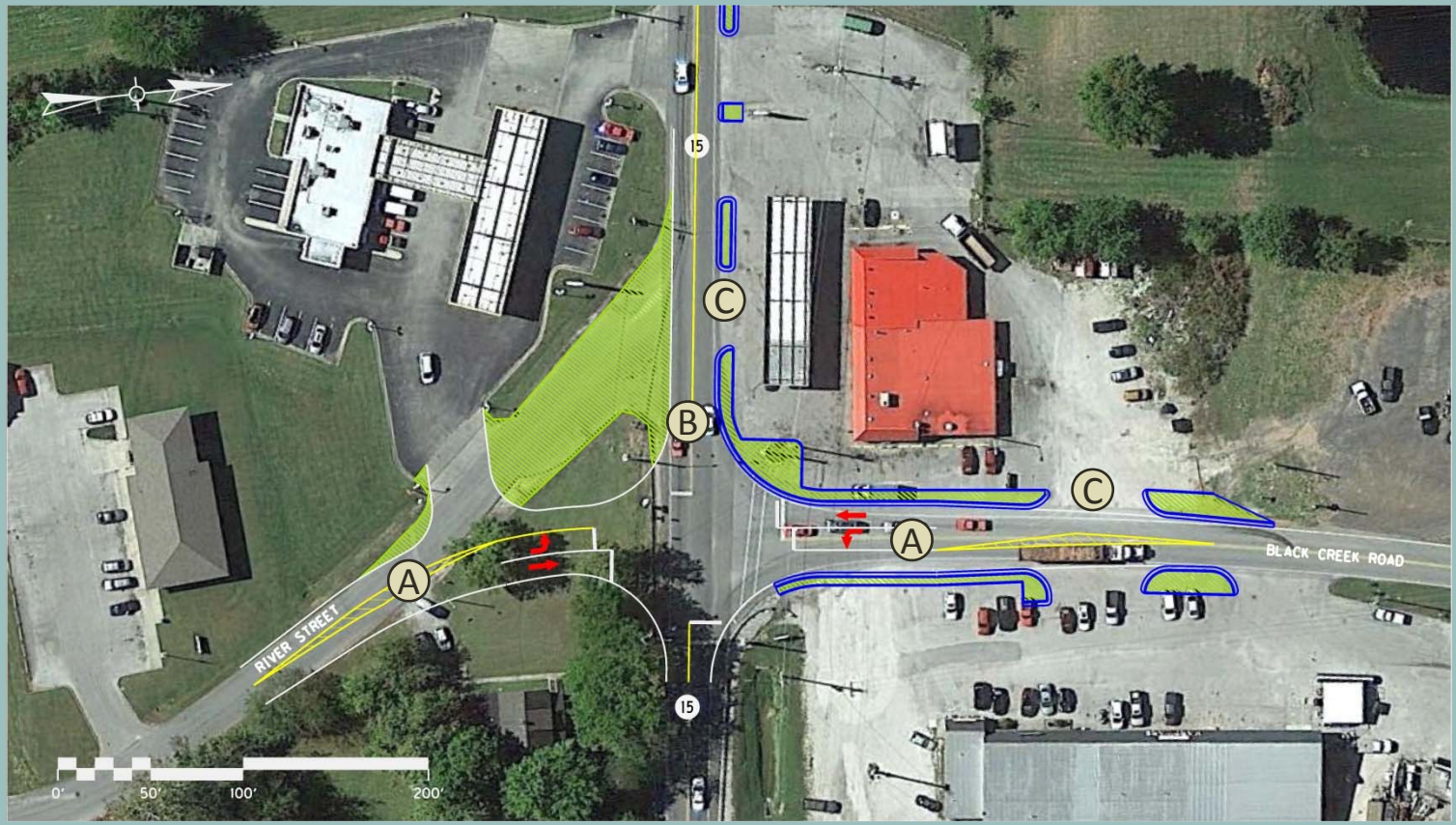


Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Realign the Kroger entrance to KY 2486.	\$757,500	\$1,245,000
B	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.		
C	Pavement	Re-stripe intersection and approaches.		
D	Drainage	Improve drainage on eastern side of KY 2486.		
E	Multimodal	Move pedestrian push button signs above push buttons.	N/A	
F	Signs	Add route signs and change speed limit to 25 mph on KY 2486.	\$2,500	

Intersection 14-1: KY 15 (MP 3.545) at River Street Powell County

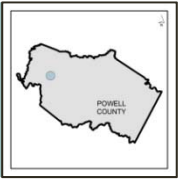


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.521 - CRF (2010-2015): 3.356 - Number of Crashes: 7 - KY 15, 2015 ADT: 8,763 - River Street, 2015 ADT: 150 	<ul style="list-style-type: none"> - Offset intersection - Multiple collisions caused by access points on both sides of KY 15

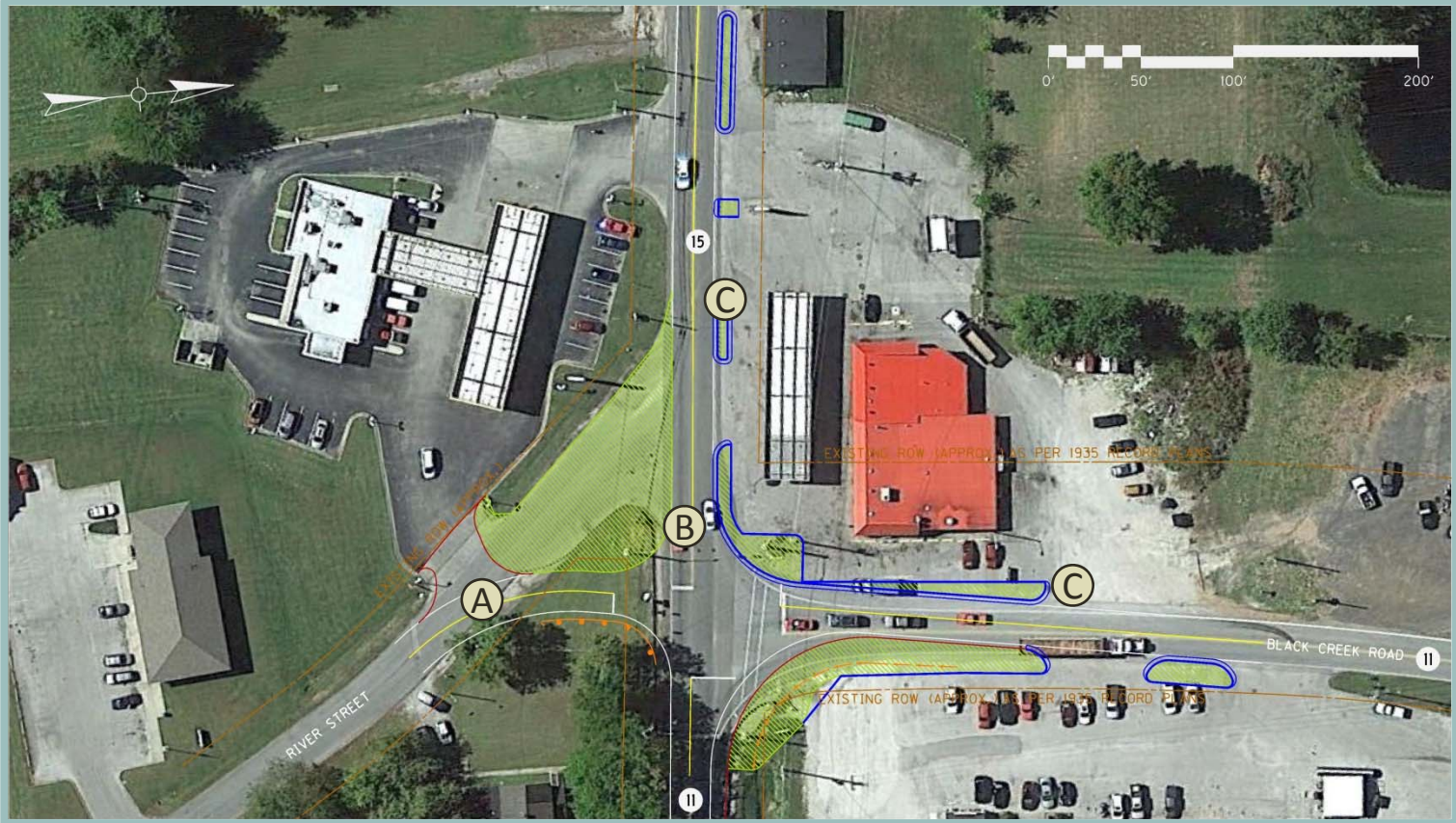


Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment / Widening	Realign River Street to a 4-way intersection with KY 15 at signalized intersection. Widen Black Creek Road to allow for left turn movements.	\$168,400	\$500,000
B	Pavement	Re-stripe intersections and approaches.	\$1,600	
C	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.	\$130,000	

Intersection 14-2: KY 15 (MP 3.545) at River Street Powell County

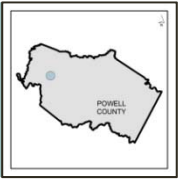


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.521 - CRF (2010-2015): 3.356 - Number of Crashes: 7 - KY 15, 2015 ADT: 8,763 - River Street, 2015 ADT: 150 	<ul style="list-style-type: none"> - Offset intersection - Multiple collisions caused by access points on both sides of KY 15

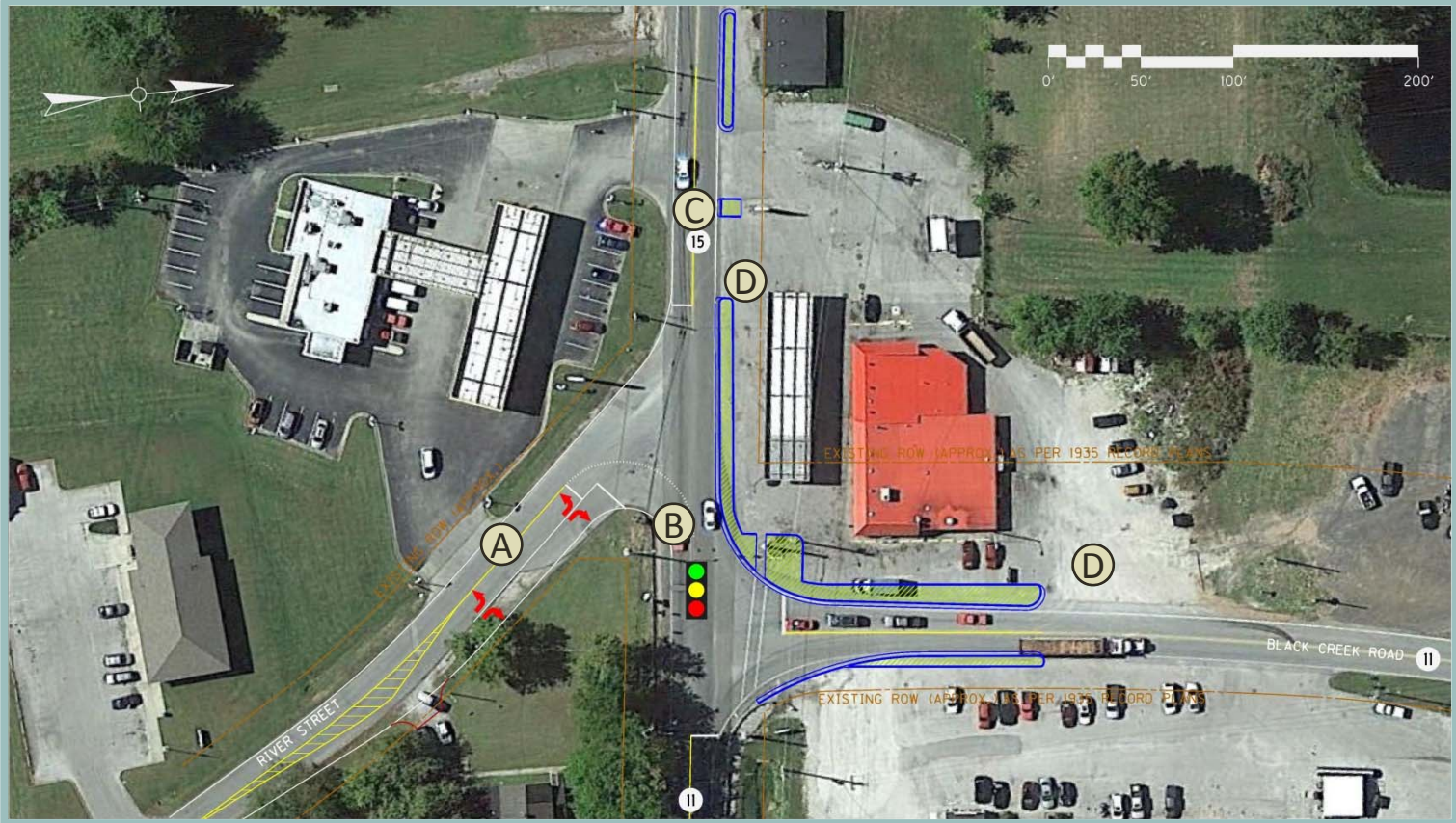


Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Realign River Street to a 4-way intersection with KY 15 at signalized intersection.	\$149,400	\$440,000
B	Pavement	Re-stripe intersections and approaches.	\$1,600	
C	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.	\$99,000	

Intersection 14-3: KY 15 (MP 3.545) at River Street Powell County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.521 - CRF (2010-2015): 3.356 - Number of Crashes: 7 - KY 15, 2015 ADT: 8,763 - River Street, 2015 ADT: 150 	<ul style="list-style-type: none"> - Offset intersection - Multiple collisions caused by access points on both sides of KY 15

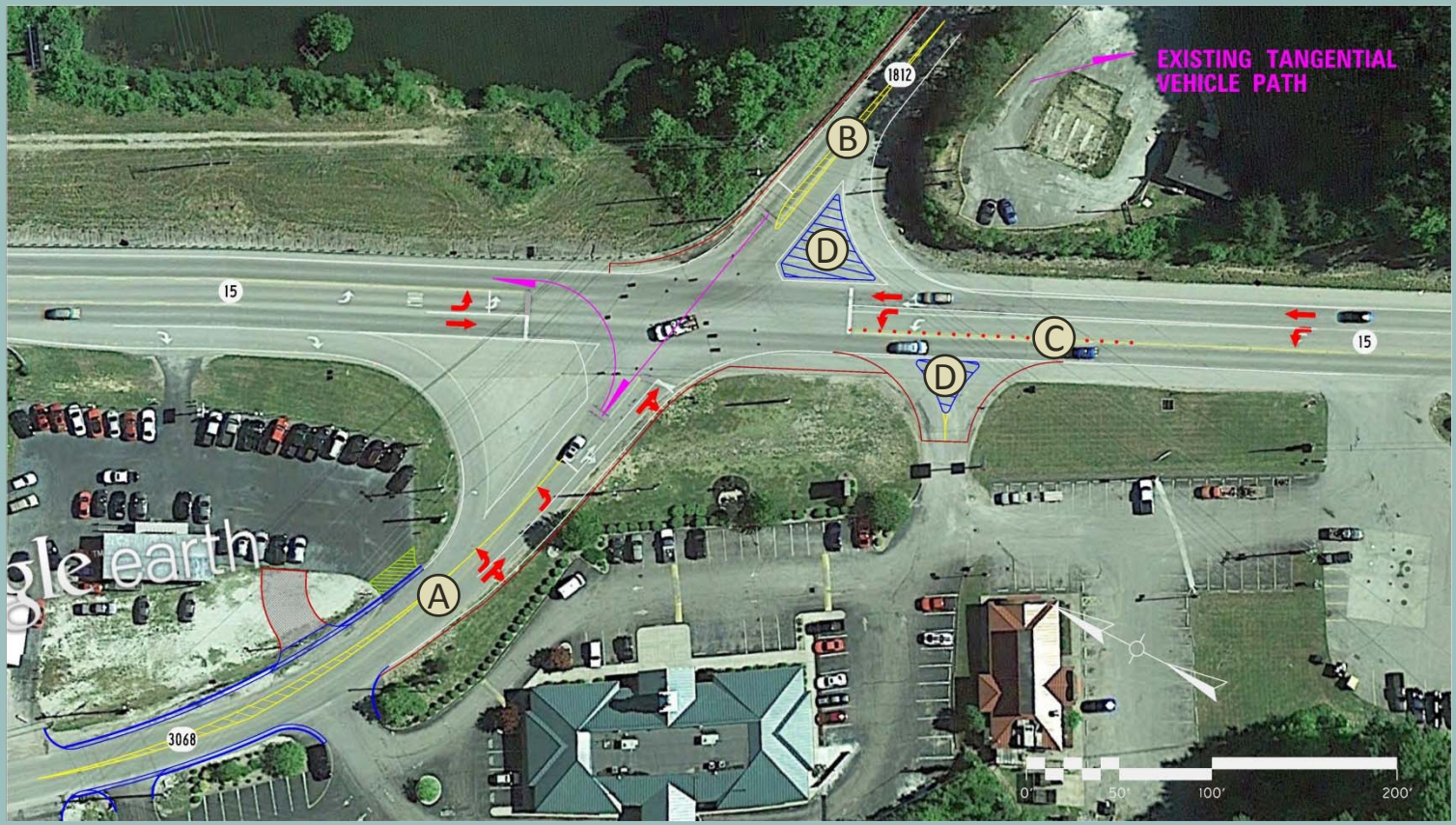


Label	Improvement	Description	Construction Cost	Total Cost
A	Widening / Pavement	Widen River Street and restripe to allow for separate right and left turn lanes.	\$124,400	\$350,000
B	Signals	Include River Street as part of signal control at KY 15 and Black Creek Road.		
C	Pavement	Re-stripe intersections and approaches.	\$1,600	
D	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.	\$94,000	

Intersection 15: KY 15 (MP 16.75) at KY 1812 (MP 0.000) Breathitt County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.475 - CRF (2010-2015): 1.026 - Number of Crashes: 17 - KY 15, 2015 ADT: 11,059 - KY 1812, 2015 ADT: 1,484 	<ul style="list-style-type: none"> - Intersection alignment - Access points on approaches - Grades on approaches

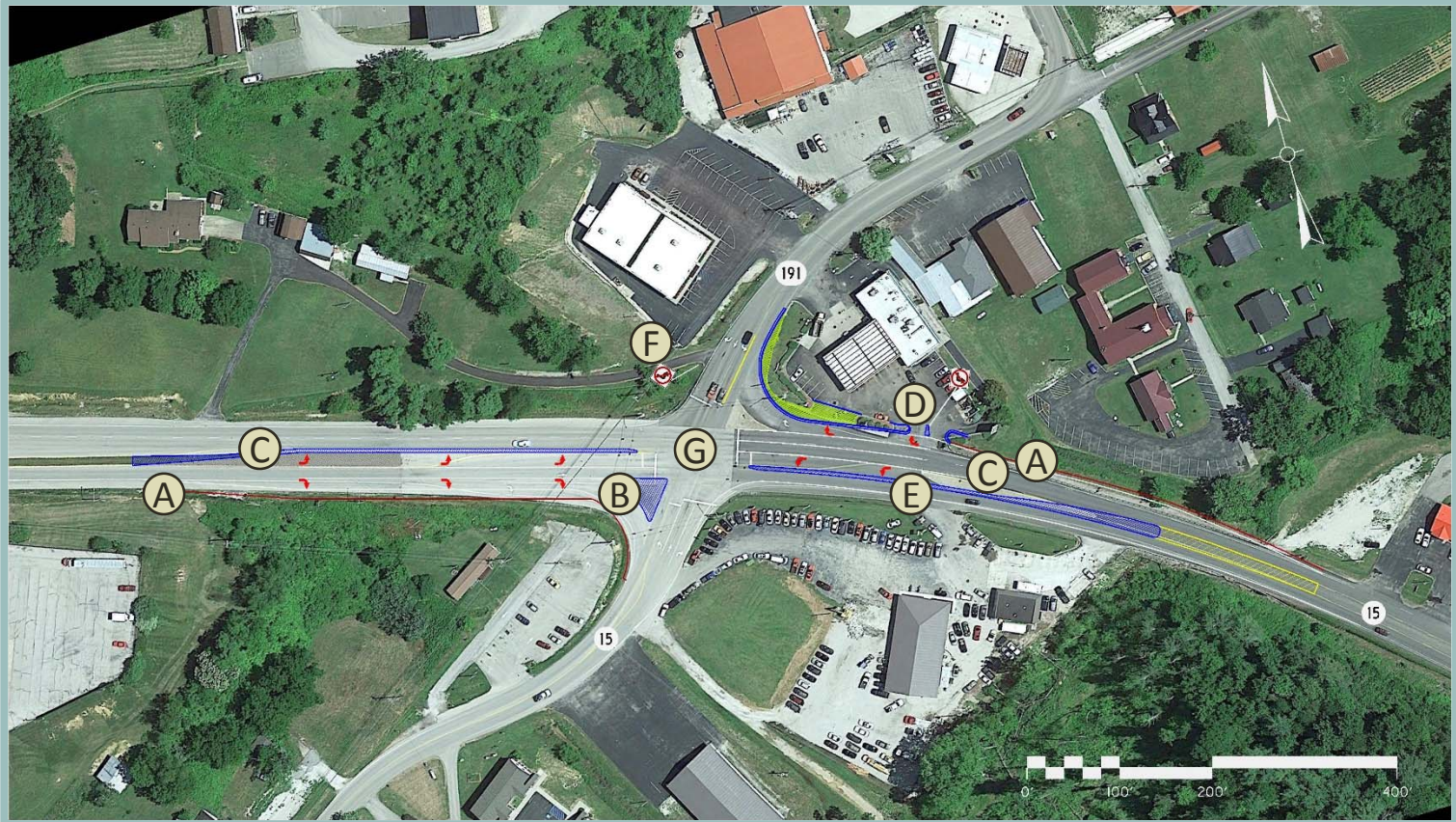


Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Realign KY 3068.	\$235,000	\$460,000
B	Realignment	Realign KY 1812.		
C	Delineation	Install delineators along NB approach.	\$10,800	
D	Delineation	Add concrete islands.	\$14,200	

Intersection 16: KY 15 (MP 9.486) at KY 191 (MP 0.000) Wolfe County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.423 - CRF (2010-2015): 1.638 - Number of Crashes: 27 - KY 15, 2015 ADT: 4,739 - KY 191, 2015 ADT: 6,181 	<ul style="list-style-type: none"> - Undefined travel ways - Access points on approaches - Grades on approaches

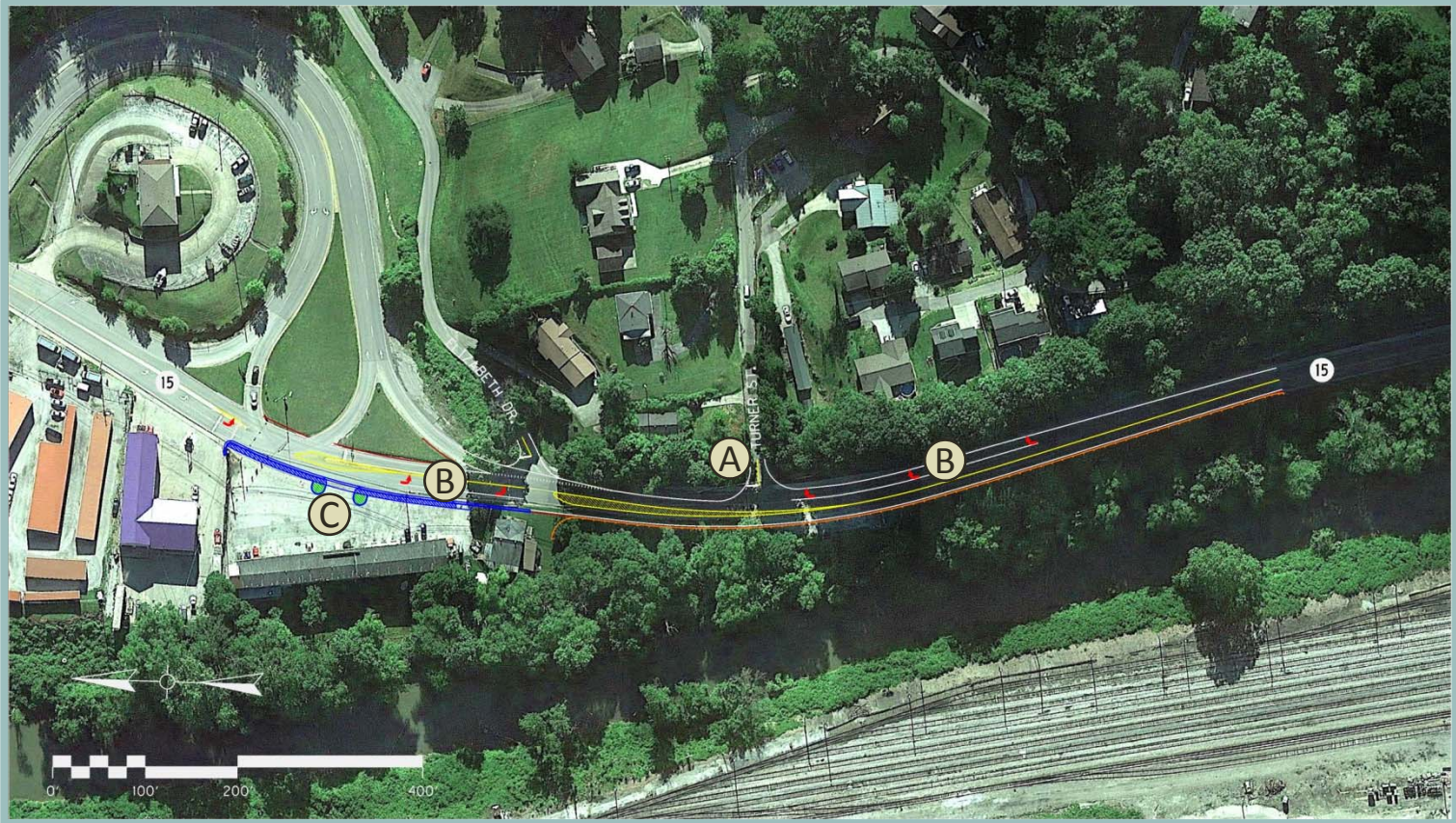


Label	Improvement	Description	Construction Cost	Total Cost
A	Widening / Pavement	Lengthen KY 15 right turn lanes.	\$409,500	\$515,000
B	Delineation	Improve concrete island to standard.		
C	Widening / Pavement	Lengthen KY 15 left turn lanes.		
D	Access Management	Restrict movements into / out of gas station to right-in / right-out along KY 15.	\$500	
E	Access Management	Extend concrete median on NB approach to control access.		
F	Signs	Add "No Left Turn" sign at private drive on WB approach.	N/A	
G	Signals	Add protected / permissive phasing for EB and WB approaches.		

Intersection 17: KY 15X (MP 1.593) at Turner Street Perry County

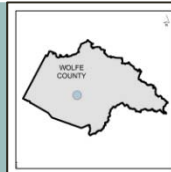


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.192 - CRF (2010-2015): 1.734 - Number of Crashes: 8 - KY 15X, 2015 ADT: 10,688 - Turner St, 2015 ADT: 150 	<ul style="list-style-type: none"> - Poor sight distance - Grade on approach

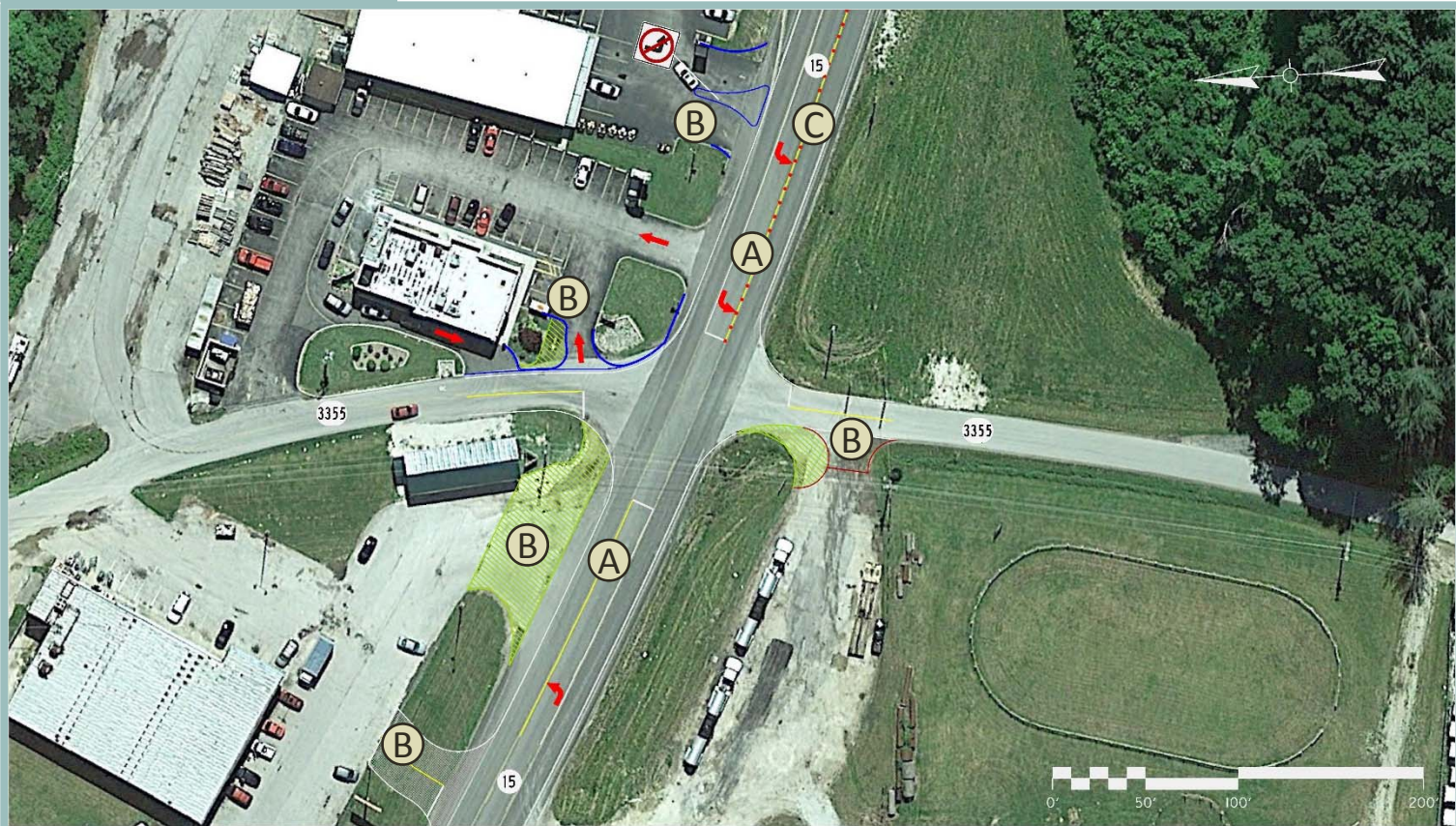


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs / Pavement	New stop sign and stop bar at Turner Street approach.	\$800	\$705,000
B	Pavement / Widening	Add right turn lane onto Turner Street, and left turn lane to Elizabeth Drive.	\$417,200	
C	Access Management	Define access at property north of the intersection.	\$102,000	

Intersection 18 - 1: KY 15 (MP 8.870) at KY 3355 (MP 0.000) Wolfe County

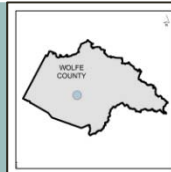


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.119 - CRF (2010-2015): 2.486 - Number of Crashes: 8 - KY 15, 2015 ADT: 5,618 - KY 3355, 2015 ADT: 646 	<ul style="list-style-type: none"> - Congested area - Access points on approaches - Bus barn on south approach

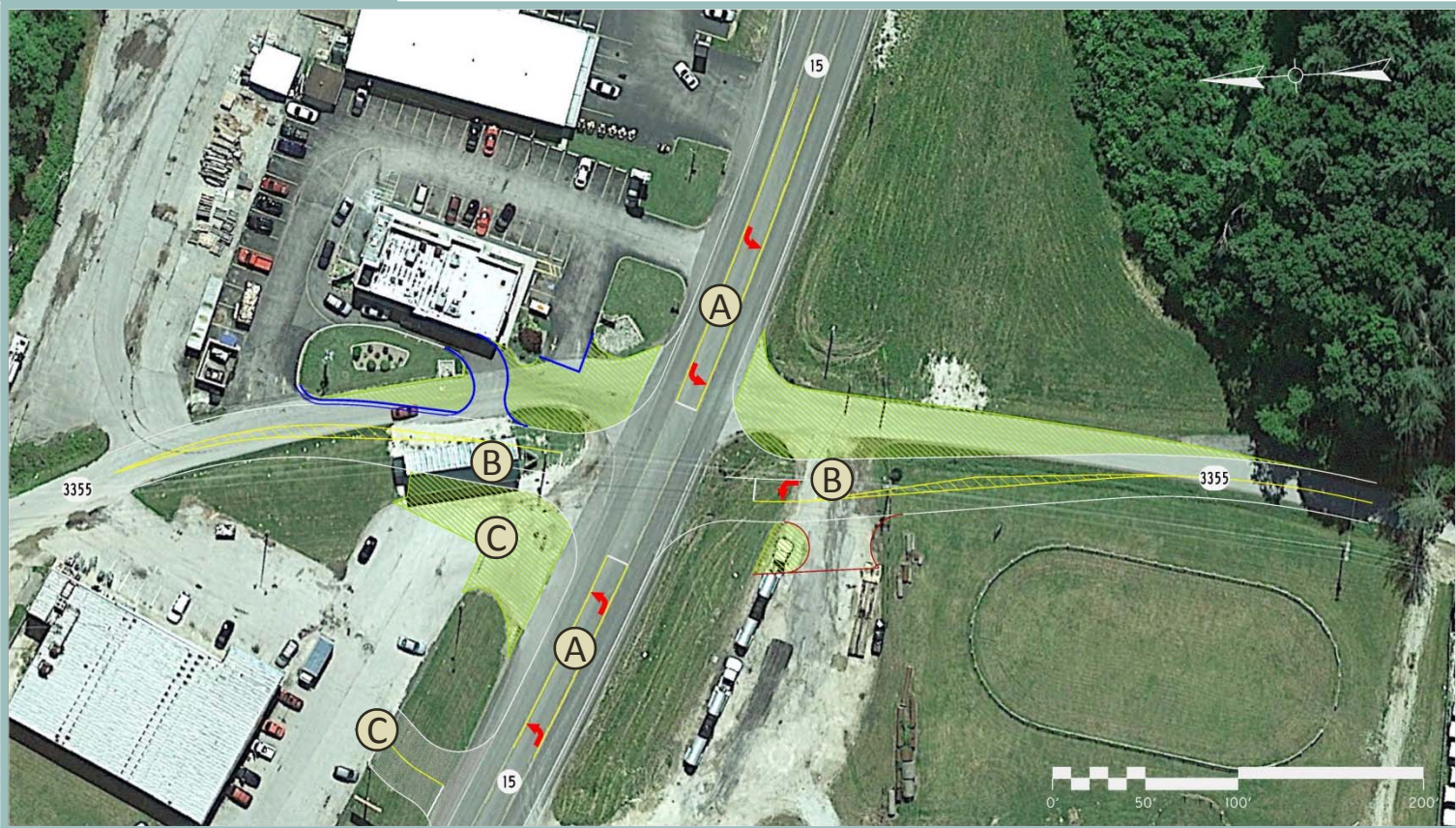


Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Add dedicated left turn lanes along KY 15.	\$1,800	\$283,000
B	Access Management	Relocate Dollar General driveway and limit access to businesses around intersection.	\$76,100	
C	Access Management	Add delineators to limit left turns near the intersection.	\$15,100	

Intersection 18 - 2: KY 15 (MP 8.870) at KY 3355 (MP 0.000) Wolfe County

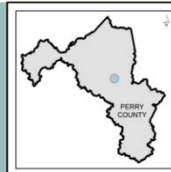


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 3.119 - CRF (2010-2015): 2.486 - Number of Crashes: 8 - KY 15, 2015 ADT: 5,618 - KY 3355, 2015 ADT: 646 	<ul style="list-style-type: none"> - Congested area - Access points on approaches - Bus barn on south approach

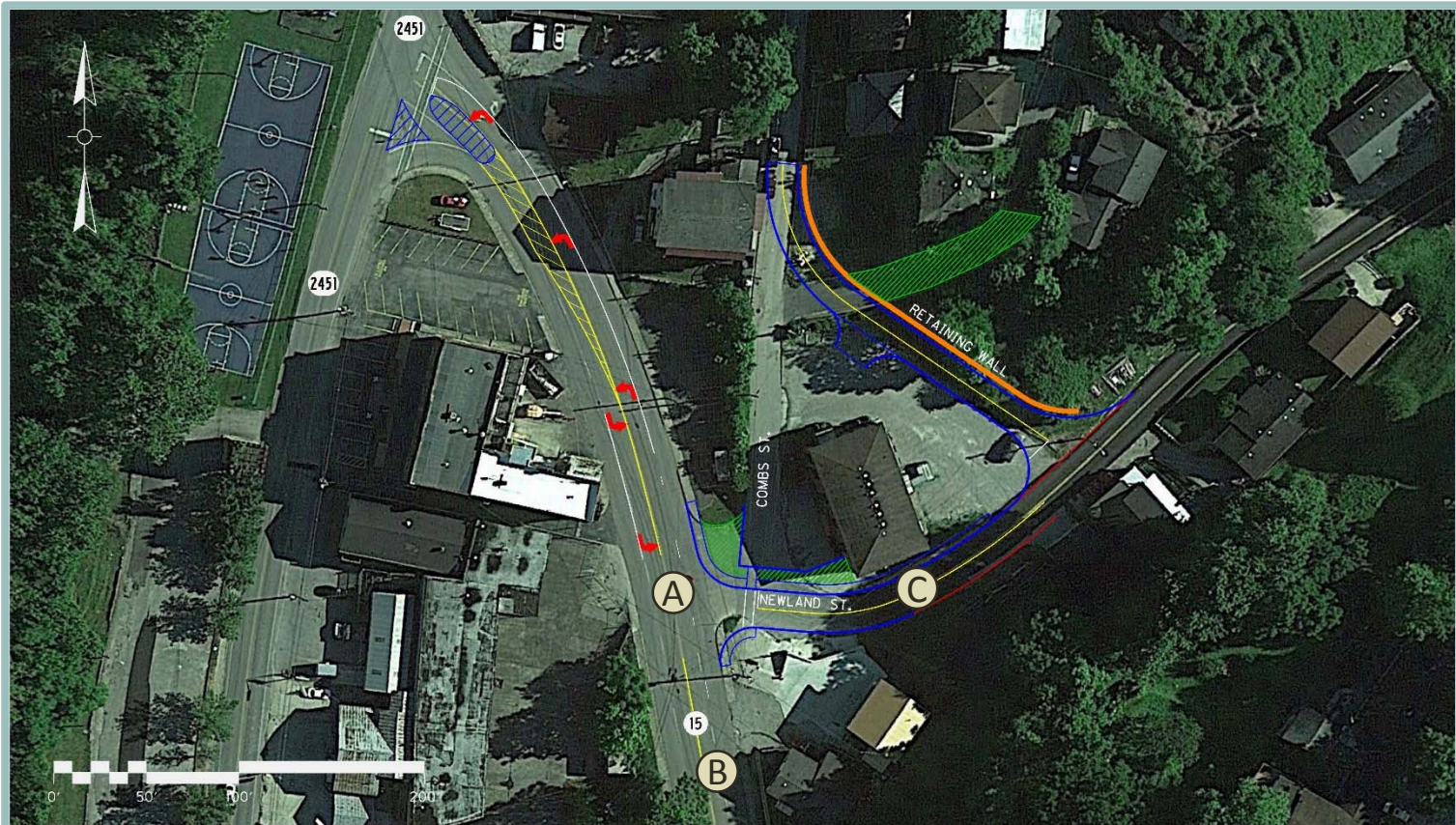


Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Add dedicated left turn lanes along KY 15.	\$1,800	\$435,000
B	Pavement	Realign approaches on KY 3355.	\$195,200	
C	Access Management	Relocate Dollar General driveway.	\$33,000	

Intersection 19: KY 15X (MP 0.937) at Newland Street Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.966 - CRF (2010-2015): 2.176 - Number of Crashes: 7 - KY 15X, 2015 ADT: 7,409 - Newland St, 2015 ADT: 150 	<ul style="list-style-type: none"> - Grade on approaches - Intersection configuration - Traffic movements



Label	Improvement	Description	Construction Cost	Total Cost
A	Signs/ Pavement	Improve Newland Street / KY 15X intersection.	\$430,200	\$605,000
B	Pavement	Add rumble strips to slow vehicles coming down hill toward KY 2451 on KY 15X.	\$8,600	
C	Pavement	Stripe center line of Newland Street to KY 15X.	\$1,200	

Intersection 20 - 1: KY 11 (MP 4.115) at KY 1411 (MP 0.000) Lee County

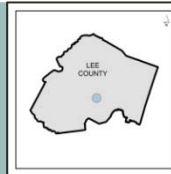


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.853 - CRF (2010-2015): 4.046 - Number of Crashes: 6 - KY 11, 2015 ADT: 6,066 - KY 1411, 2015 ADT: 269 	<ul style="list-style-type: none"> - Intersection configuration - Traffic movements - Access points on approaches



Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Realign South Fork Road with River Street.	\$650,000	\$887,500
B	Access Management	Provide access to River Street from gas station.		

Intersection 20 - 2: KY 11 (MP 4.115) at KY 1411 (MP 0.000) Lee County

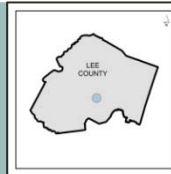


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.853 - CRF (2010-2015): 4.046 - Number of Crashes: 6 - KY 11, 2015 ADT: 6,066 - KY 1411, 2015 ADT: 269 	<ul style="list-style-type: none"> - Intersection configuration - Traffic movements - Access points on approaches



Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Realign South Fork Road with River Street.	\$880,000	\$1,200,000
B	Access Management	Provide access to River Street from gas station.		
C	Widening / Pavement	Widen KY 11 to add left turn pocket for movement to KY 1411.		
D	Pavement	Re-stripe WB approach lanes to KY 11.		

Intersection 20 - 3: KY 11 (MP 4.115) at KY 1411 (MP 0.000) Lee County

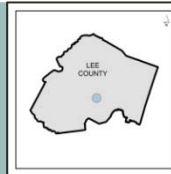


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.853 - CRF (2010-2015): 4.046 - Number of Crashes: 6 - KY 11, 2015 ADT: 6,066 - KY 1411, 2015 ADT: 269 	<ul style="list-style-type: none"> - Intersection configuration - Traffic movements - Access points on approaches

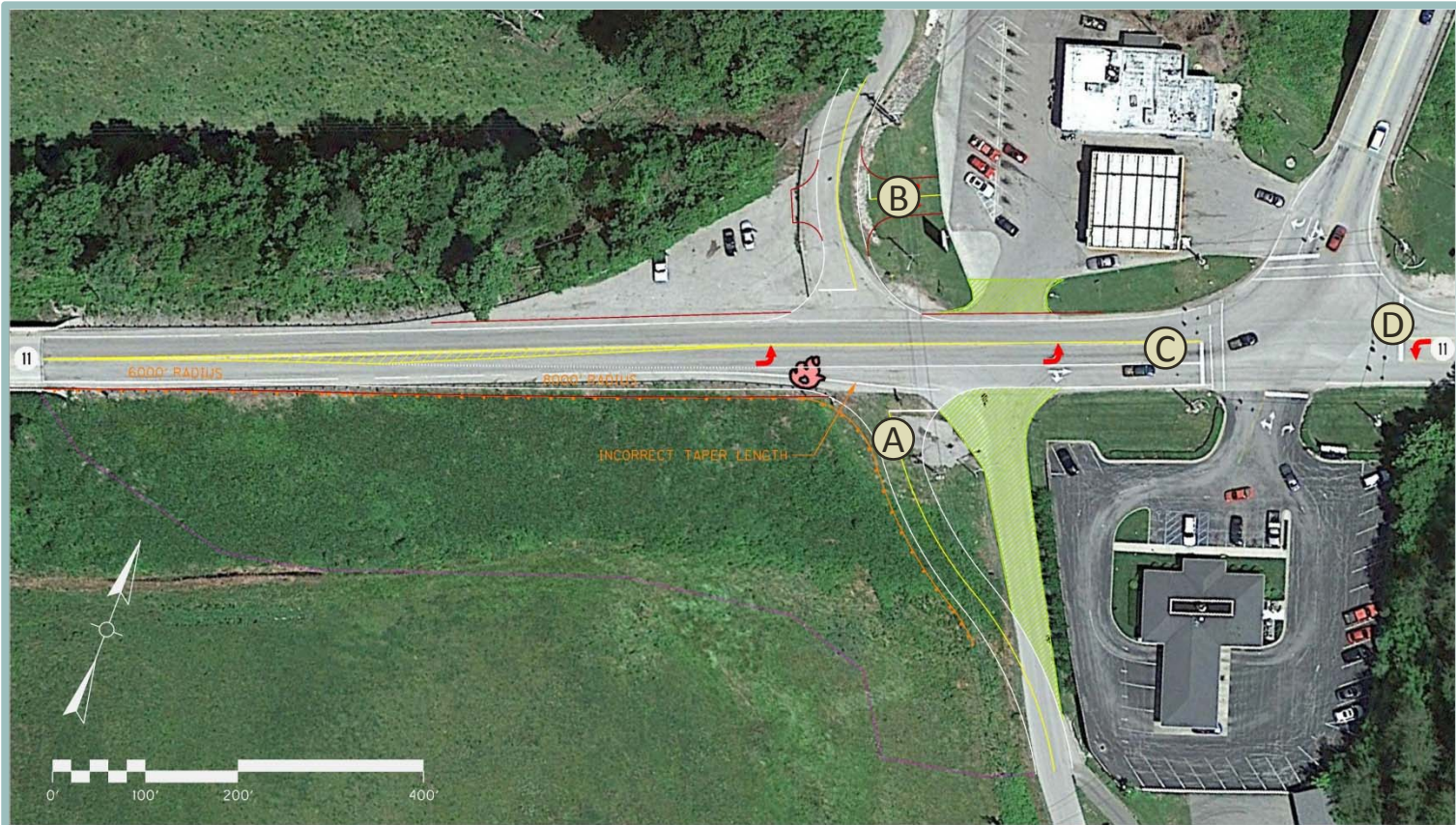


Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Realign South Fork Road to roundabout with River Street, and realign KY 11 and KY 1411 to roundabout.	\$940,000	\$1,190,000
B	Access Management	Close gas station access along KY 11 and provide new access at River Street and re-stripe access at KY 11 (Broadway).		

Intersection 20 - 4: KY 11 (MP 4.115) at KY 1411 (MP 0.000) Lee County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.853 - CRF (2010-2015): 4.046 - Number of Crashes: 6 - KY 11, 2015 ADT: 6,066 - KY 1411, 2015 ADT: 269 	<ul style="list-style-type: none"> - Intersection configuration - Traffic movements - Access points on approaches

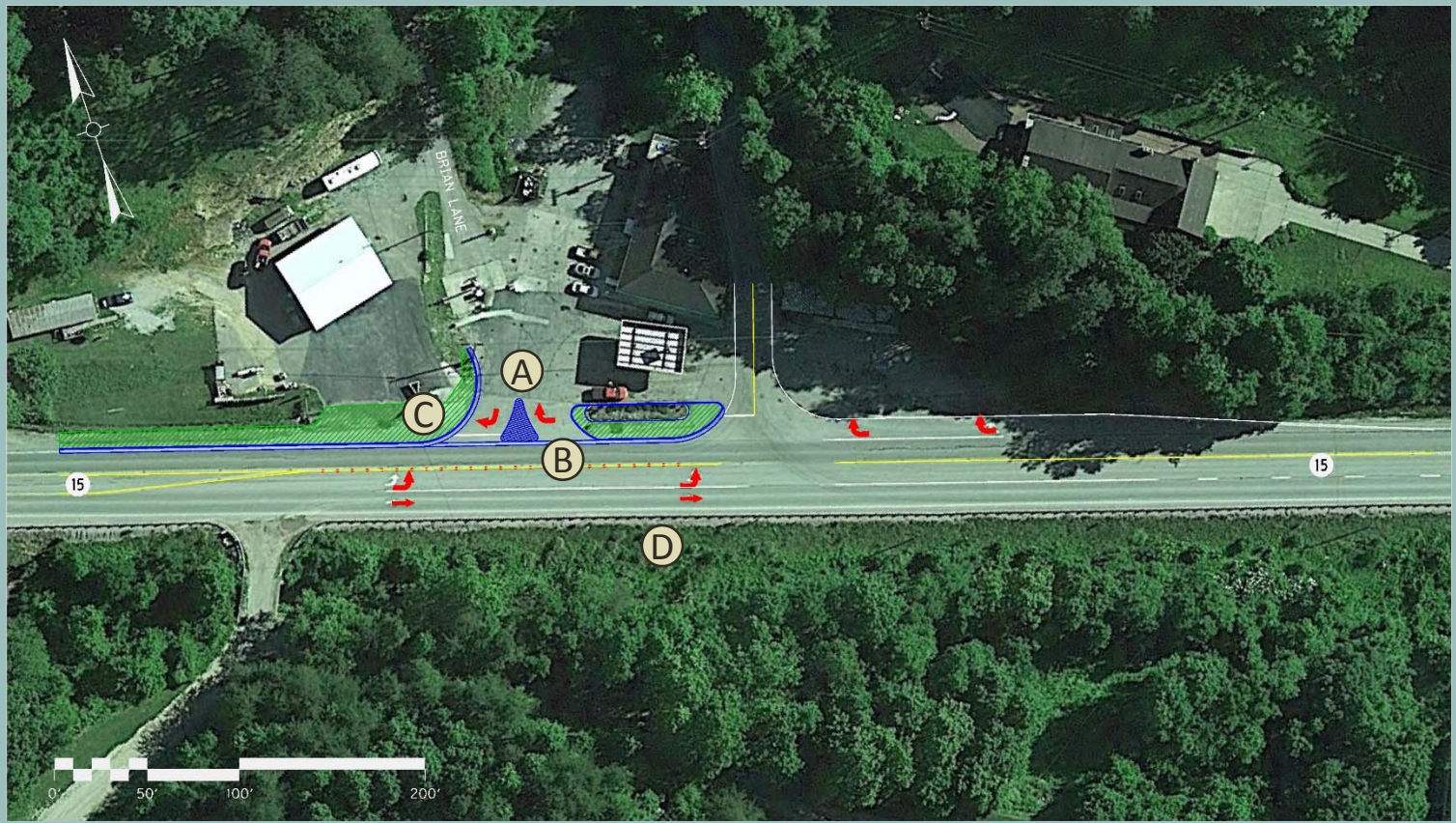


Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Realign South Fork Road with River Street.	\$240,000	\$410,000
B	Access Management	Provide access to River Street from gas station.		
C	Widening / Pavement	Widen KY 11 to add left turn pocket for movement to KY 1411.		
D	Pavement	Re-stripe WB approach lanes to KY 11.		

Intersection 21: KY 15 (MP 19.878) at Brian Lane / KY 1067 (MP 0.000) Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.838 - CRF (2010-2015): 2.612 - Number of Crashes: 6 - KY 15, 2015 ADT: 9,663 - Brian Lane, 2015 ADT: 150 	<ul style="list-style-type: none"> - Grade on approaches - Congested area - Access points on approaches



Label	Improvement	Description	Construction Cost	Total Cost
A	Access Management	Convert Brian Lane to right-in / right-out and add curb and gutter to control access along KY 15.	\$118,600	\$230,000
B	Delineation	Add delineators along KY 15 to require left turns at KY 1067.	\$9,900	
C	Signs / Pavement	Add stop bar and stop sign to Brian Lane.	\$700	
D	Signs	Add "Heavy Trucks Entering Highway" sign (W42-7).	\$800	

Intersection 22: US 460 (MP 11.51) at Allen Drive Magoffin County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.795 - CRF (2010-2015): 2.341 - Number of Crashes: 6 - US 460, 2015 ADT: 9,663 - Allen Drive, 2015 ADT: 150 	<ul style="list-style-type: none"> - Grade on approaches - Congested area - Access points on approaches

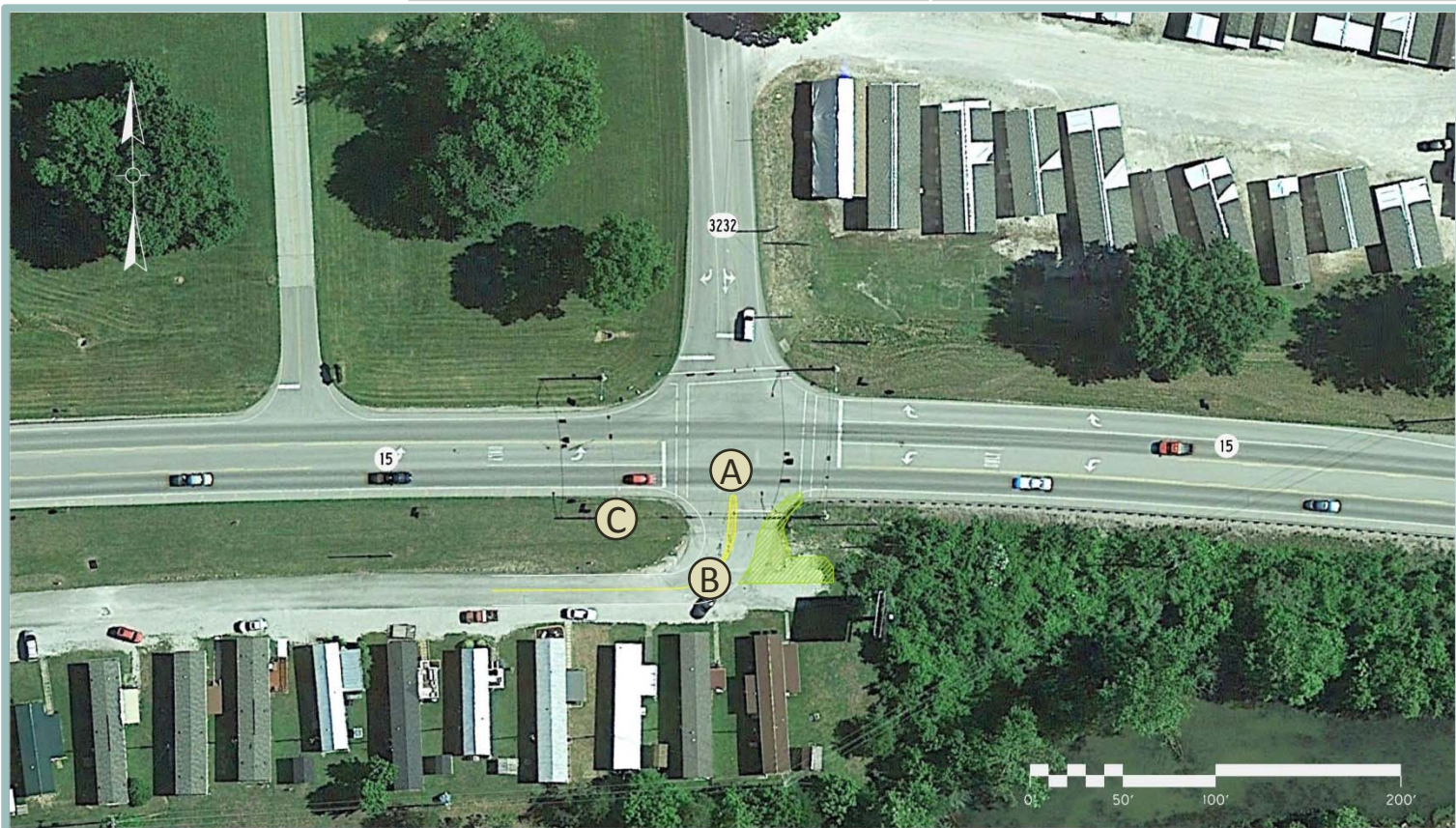


Label	Improvement	Description	Construction Cost	Total Cost
A	Access Management	Realign so that Allen Drive "T" is away from Sav a Buck parking lot.	\$120,000	\$280,000
B	Access Management	Perform Access Management Study in conjunction with Intersection #30.	N/A	

Intersection 23: KY 15 (MP 16.97) at KY 3232 (MP 0.000) Breathitt County

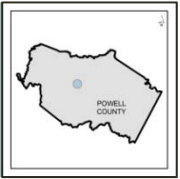


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.745 - CRF (2010-2015): 0.908 - Number of Crashes: 18 - KY 15, 2015 ADT: 12,756 - KY 3232, 2015 ADT: 2,259 	<ul style="list-style-type: none"> - Intersection alignment - Access points on approaches - Grades on approaches



Label	Improvement	Description	Construction Cost	Total Cost
A	Delineation	Reduce width of NB approach.	\$29,200	\$107,000
B	Sight Distance	Regrade NB approach.		
C	Sight Distance	Increase signage height on EB approach to not impede sight triangle.	\$800	

Intersection 24: KY 213 (MP 7.210) at Pendleton Street Powell County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.687 - CRF (2010-2015): 3.872 - Number of Crashes: 6 - KY 213, 2015 ADT: 2,590 - Pendleton Street, 2015 ADT: 426 	<ul style="list-style-type: none"> - Multiple access points along highway

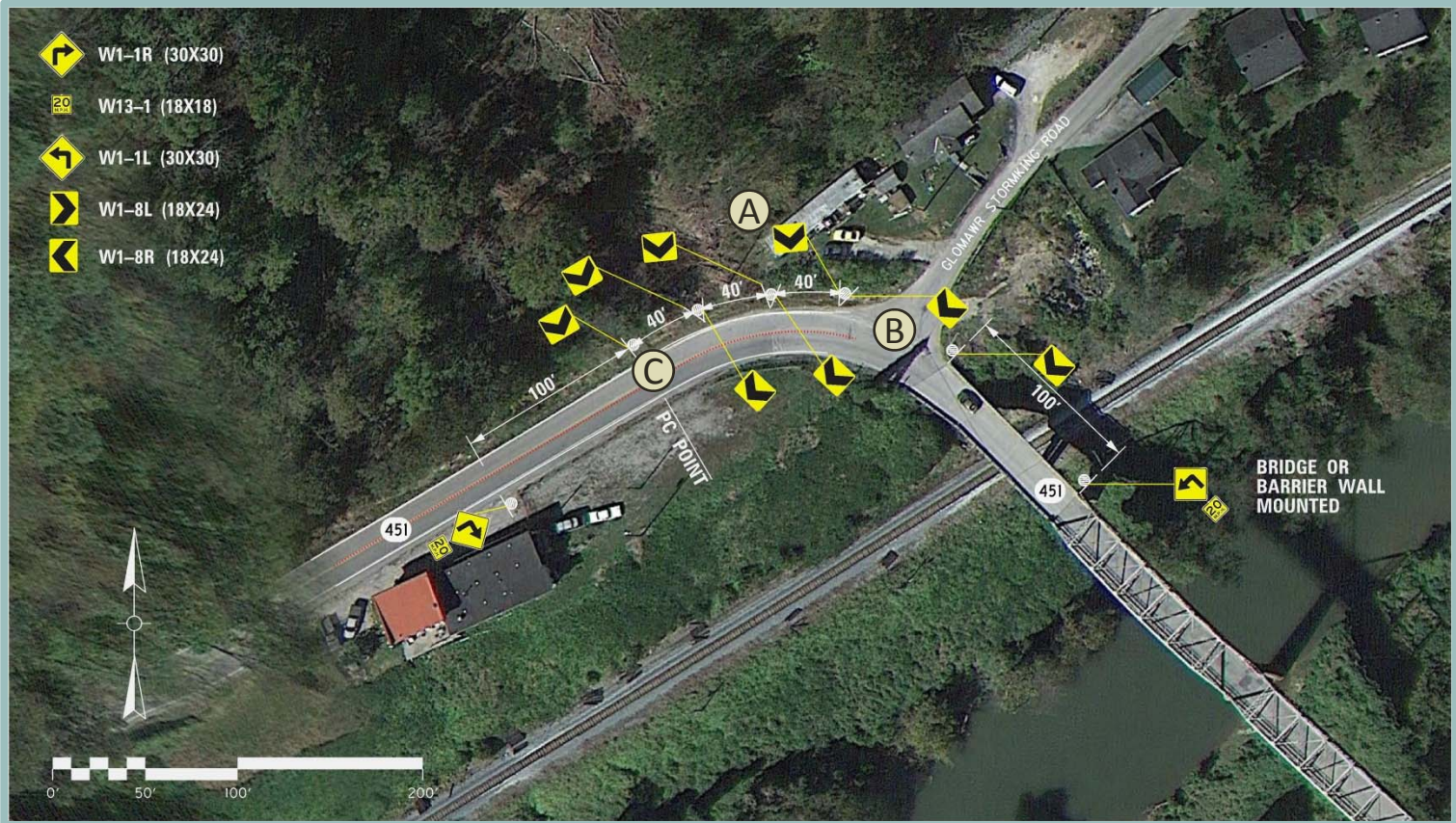


Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Install stop bars at Pendleton Street approaches.	\$8,700	\$16,000
B	Pavement	Install rumble strips on KY 213 NB approaching interchange.	\$7,300	

Intersection 25: KY 451 (MP 0.096) at Glomawr Stormking Road Perry County

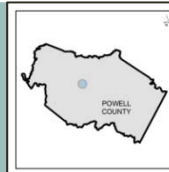


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.664 - CRF (2010-2015): 7.322 - Number of Crashes: 6 - KY 550, 2015 ADT: 1,775 - Glomawr, 2015 ADT: 150 	<ul style="list-style-type: none"> - Curved approach - Bridge on one approach

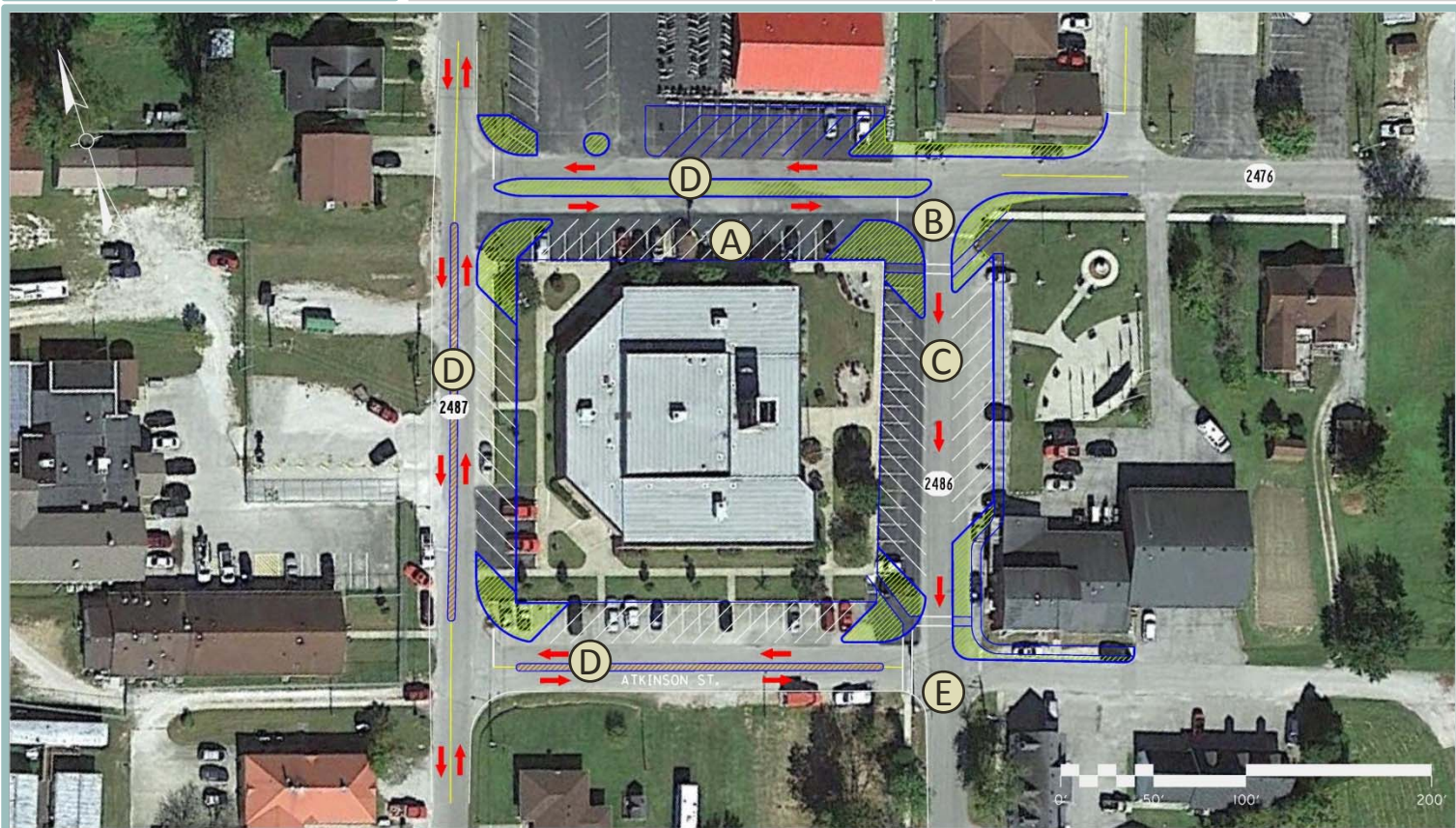


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs	Add retroreflective warning signs.	\$6,000	\$6,000
B	Pavement	Add retroreflective pavement markings and in ground reflective pavement markers.		
C	Pavement	Add centerline rumble strips.		

Intersection 26: KY 2476 (MP 0.046) at KY 2486 (MP 0.286) Powell County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.522 - CRF (2010-2015): 12.850 - Number of Crashes: 6 - KY 2476, 2015 ADT: 1,050 - KY 2486, 2015 ADT: 945 	<ul style="list-style-type: none"> - Multiple conflict points - Range of driver types



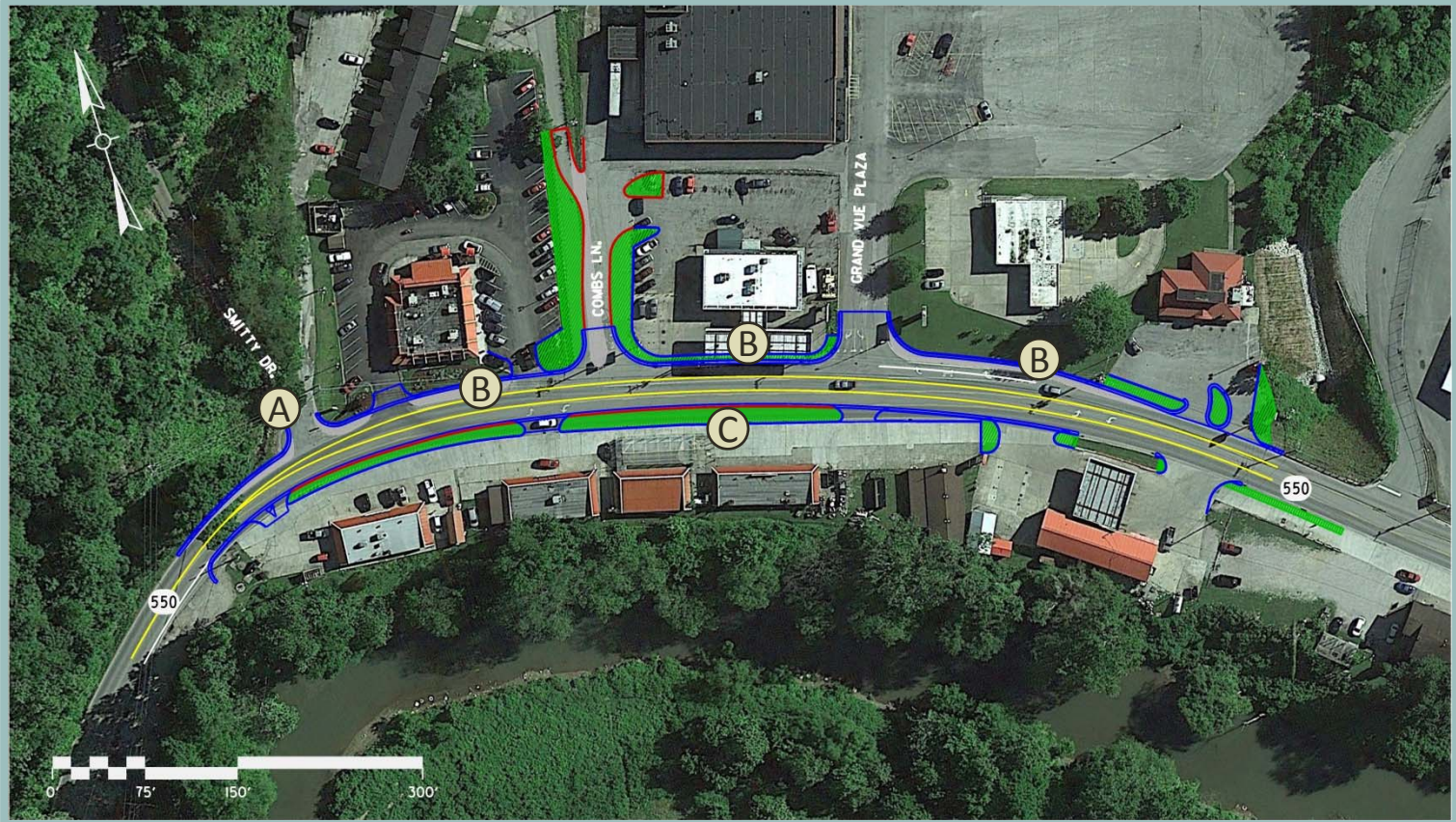
Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement / Parking	Convert to reverse angle parking.	\$278,600	\$450,000
B	Pavement	Add centerline striping, crosswalks, and stop bars around the Court House.		
C	Pavement / Signs	Convert KY 2486 between Atkinson Street and KY 2476 to one way SB.		
D	Pavement	Add median to Atkinson, Breckenridge and Court Streets.	\$1,400	
E	Signs	Change speed limit on KY 2486 to 15 mph.		

Note: Cost estimate does not include drainage costs. Additional investigation required to assess impact from medians and curb used for the design of the reverse angle parking.

Intersection 27-1: KY 550 (MP 1.304) at Smitty Drive Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.365 - CRF (2010-2015): 1.423 - Number of Crashes: 9 - KY 550, 2015 ADT: 7,374 - Smitty Drive, 2015 ADT: 300 	<ul style="list-style-type: none"> - Multiple access points - High number of collisions at and adjacent to intersection (majority are property damage only)

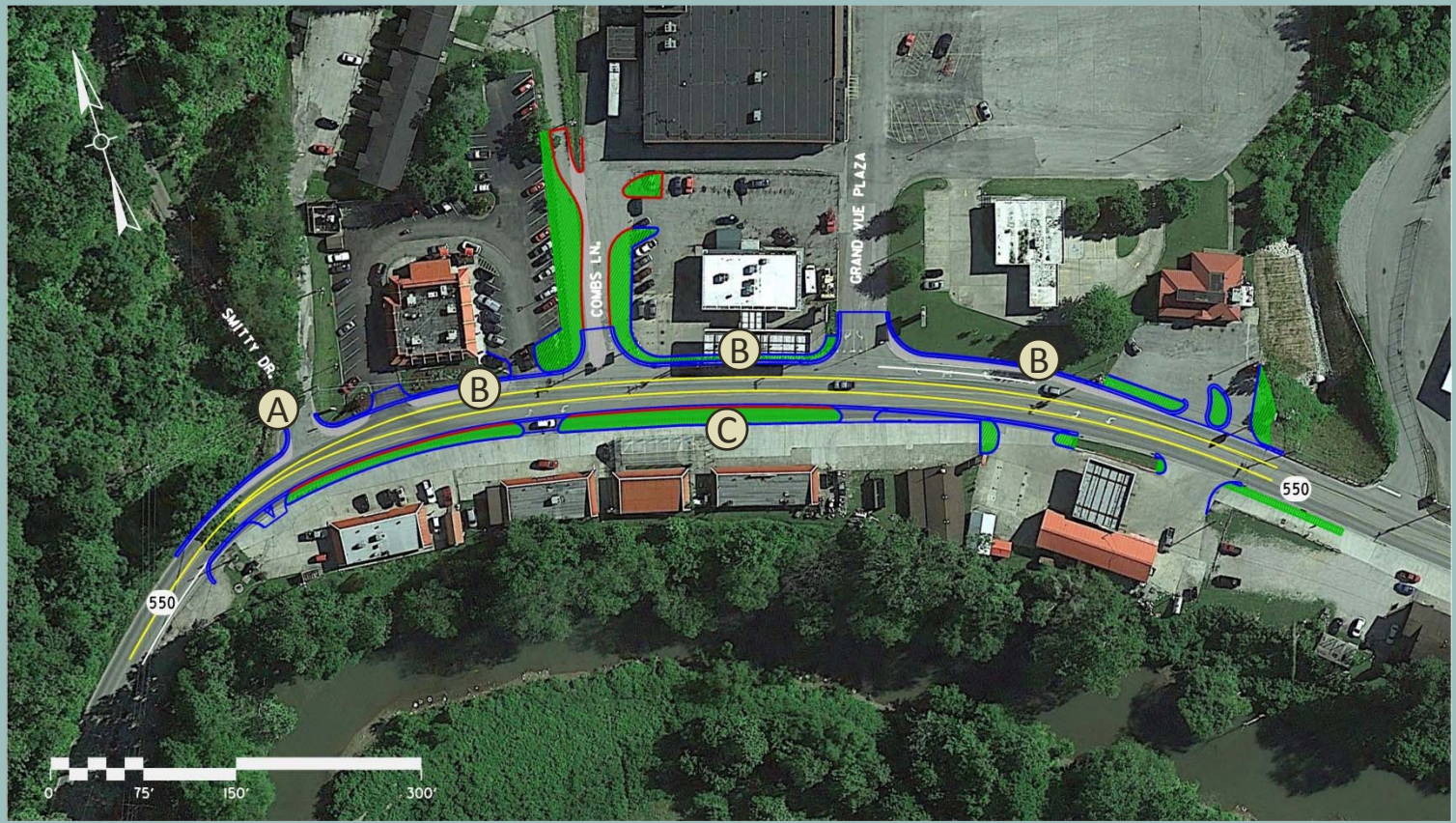


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs / Pavement	Add stop sign and stop bar at Smitty Drive.	\$900	\$900
B	Widening / Pavement	Widen north side of KY 550 and re-stripe.	See Cost for 9-1	
C	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.		

Intersection 27-2: KY 550 (MP 1.304) at Smitty Drive Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.365 - CRF (2010-2015): 1.423 - Number of Crashes: 9 - KY 550, 2015 ADT: 7,374 - Smitty Drive, 2015 ADT: 300 	<ul style="list-style-type: none"> - Multiple access points - High number of collisions at and adjacent to intersection (majority are property damage only)



Label	Improvement	Description	Construction Cost	Total Cost
A	Signs / Pavement	Add stop sign and stop bar at Smitty Drive.	\$900	\$900
B	Widening / Pavement	Re-stripe KY 550 by shifting edge of road to the north. Add curb and gutter to north side of KY 550 and define business entrances.	See Cost for 9-2	
C	Access Management	Provide designated access points for businesses and separate parking from roadway on south side of KY 550.		

Intersection 28 - 1: KY 7 (MP 19.047) at KY 867 (MP 5.710) Magoffin County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.212 - CRF (2010-2015): 6.534 - Number of Crashes: 5 - KY 7, 2015 ADT: 2,849 - KY 867, 2015 ADT: 420 	<ul style="list-style-type: none"> - Poor sight distance - Approaches on horizontal curves - Skewed intersection

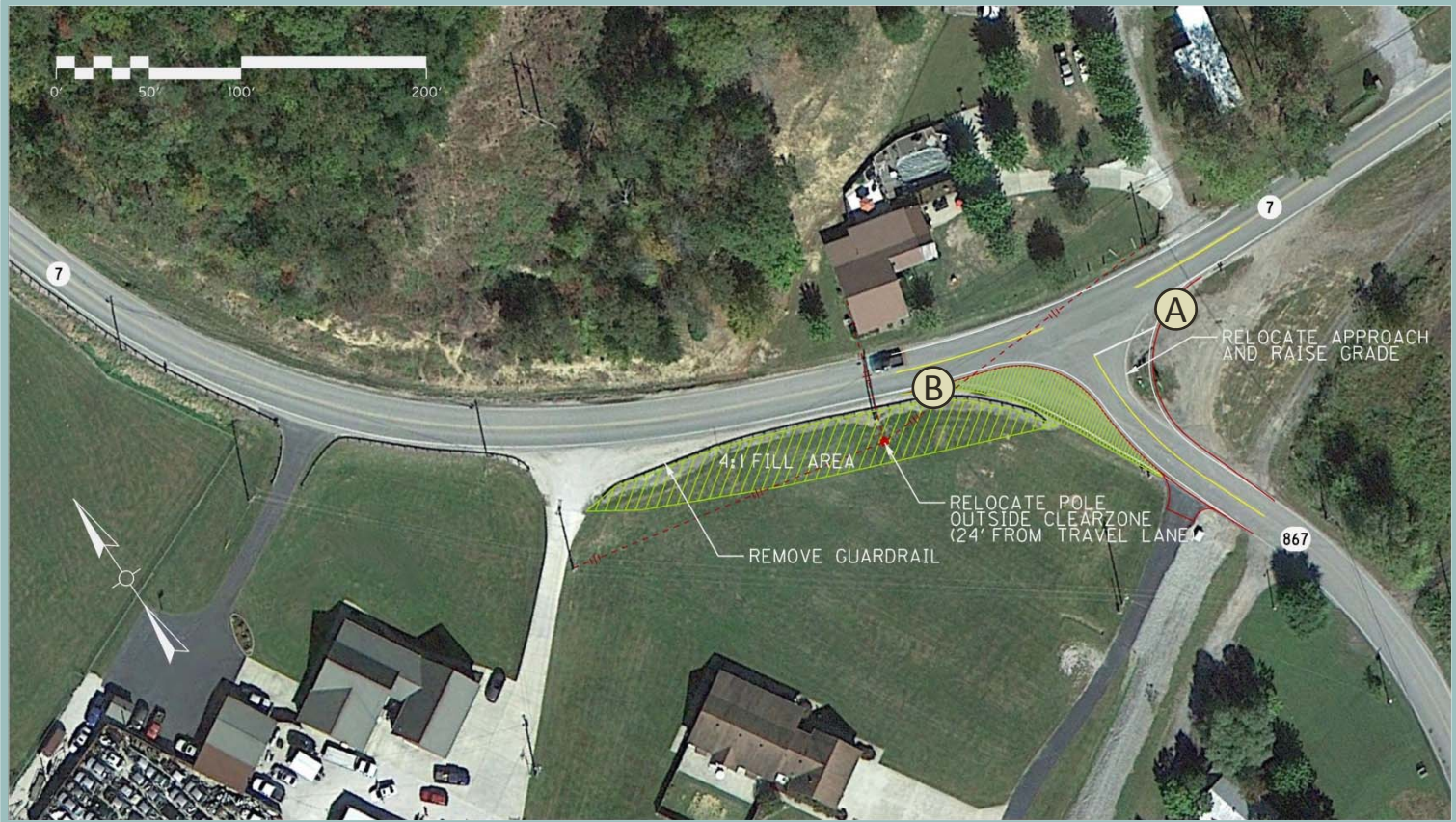


Label	Improvement	Description	Construction Cost	Total Cost
A	Sight Distance	Improve curve north of intersection.	\$350,000	\$490,000
B	Alignment	Improve intersection by providing 90 degree approach at KY 867 / KY 7 intersection.		

Intersection 28 - 2: KY 7 (MP 19.047) at KY 867 (MP 5.710) Magoffin County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.212 - CRF (2010-2015): 6.534 - Number of Crashes: 5 - KY 7, 2015 ADT: 2,849 - KY 867, 2015 ADT: 420 	<ul style="list-style-type: none"> - Poor sight distance - Approaches on horizontal curves - Skewed intersection

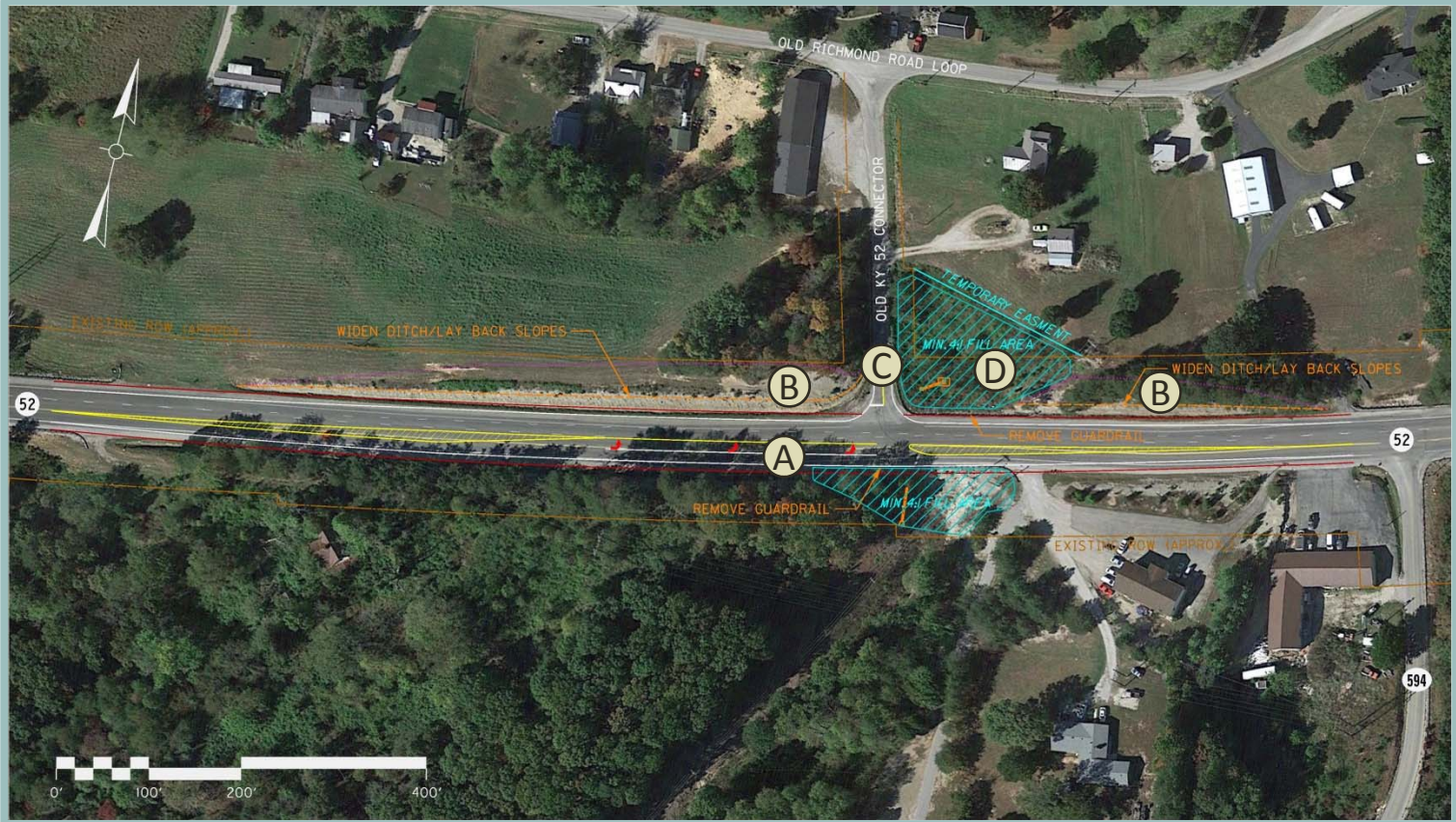


Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Add stop bar to KY 867 approach realignment and raise grade.	\$39,100	\$106,000
B	Signs	Reduce posted speed on KY 7 and add curve warning sign.	\$1,900	

Intersection 29: KY 52 (MP 3.560) at Old KY 52 Connector Estill County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.184 - CRF (2010-2015): 2.316 - Number of Crashes: 5 - KY 52, 2015 ADT: 9,074 - Old KY 52 Conn, 2015 ADT: 150 	<ul style="list-style-type: none"> - Poor sight distance - High speed corridor

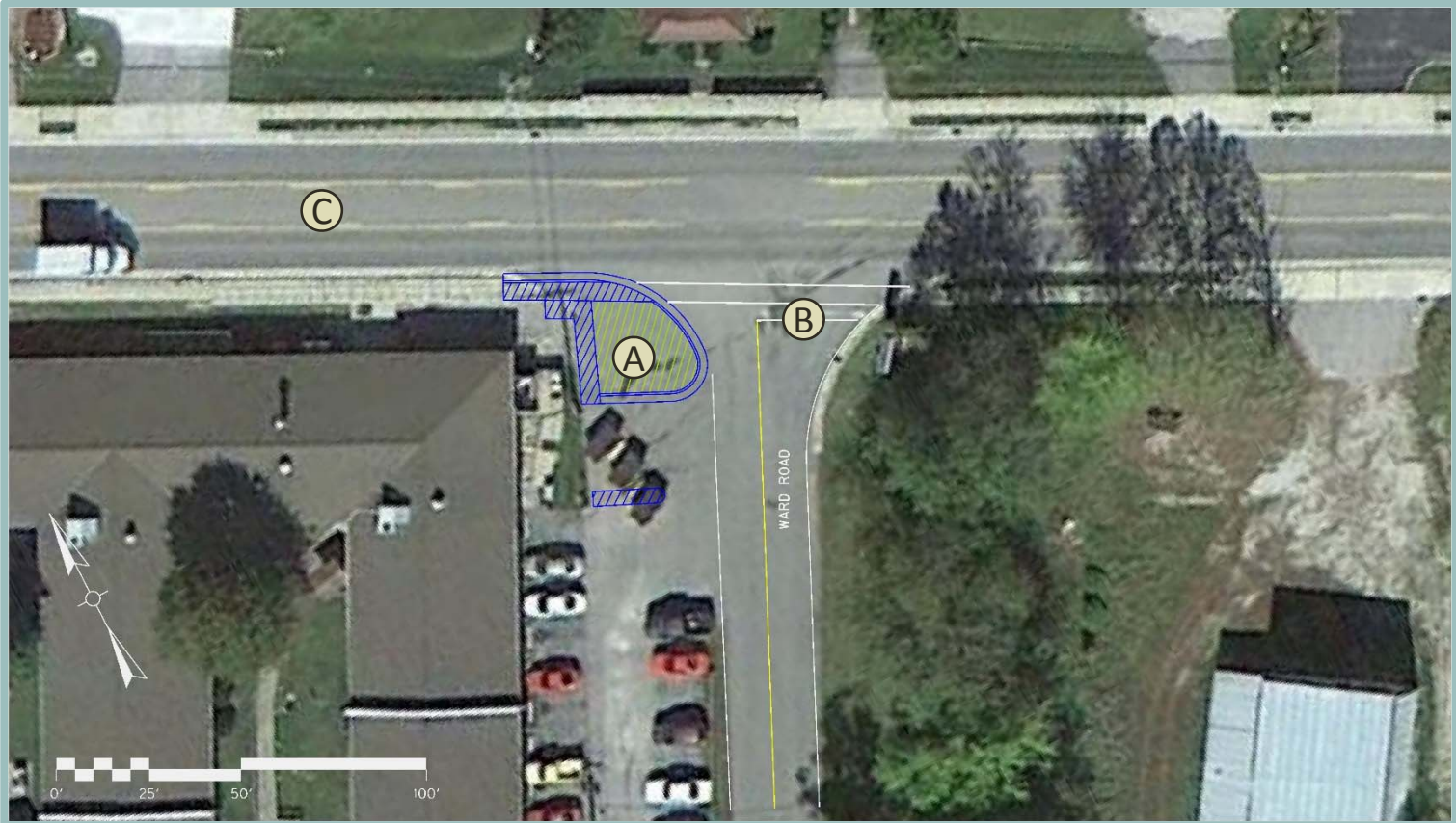


Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Widen KY 52 and add EB left turn lane.	\$150,850	\$725,000
B	Sight Distance	Cut slope excavation.	\$396,750	
C	Pavement	Move stop bar on SB approach.	\$400	
D	Drainage	Fix washout on NE corner.	\$2,000	

Intersection 30: US 460 (MP 11.840) at Ward Road Magoffin County

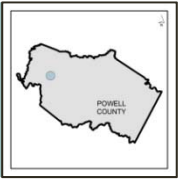


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.147 - CRF (2010-2015): 2.133 - Number of Crashes: 5 - US 460, 2015 ADT: 9,867 - Ward Road, 2015 ADT: 150 	<ul style="list-style-type: none"> - Poor sight distance - Access along corridor

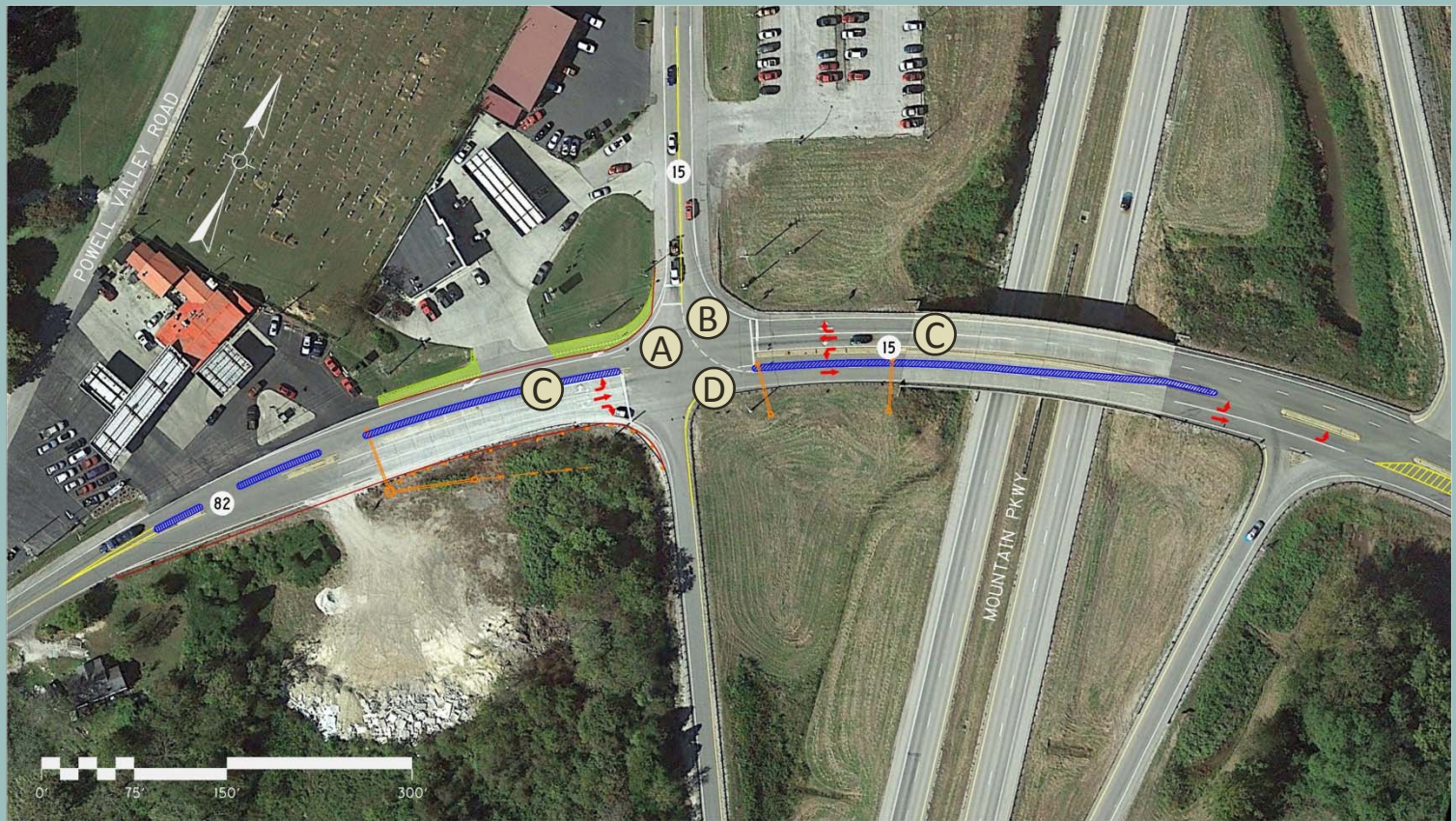


Label	Improvement	Description	Construction Cost	Total Cost
A	Access Management	Install island to reduce driveway width.	\$14,700	\$92,000
B	Pavement	Repaint stop bar and striping.	\$2,300	
C	Access Management	Perform Access Management Study in conjunction with Intersection #22.	N/A	

Intersection 31: KY 15 (MP 4.157) at KY 82 (MP 2.058) Powell County

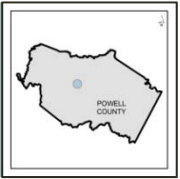


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.117 - CRF (2010-2015): 1.810 - Number of Crashes: 14 - KY 15, 2015 ADT: 3,490 - KY 82, 2015 ADT: 2,366 	<ul style="list-style-type: none"> - On horizontal curve - Access along highway

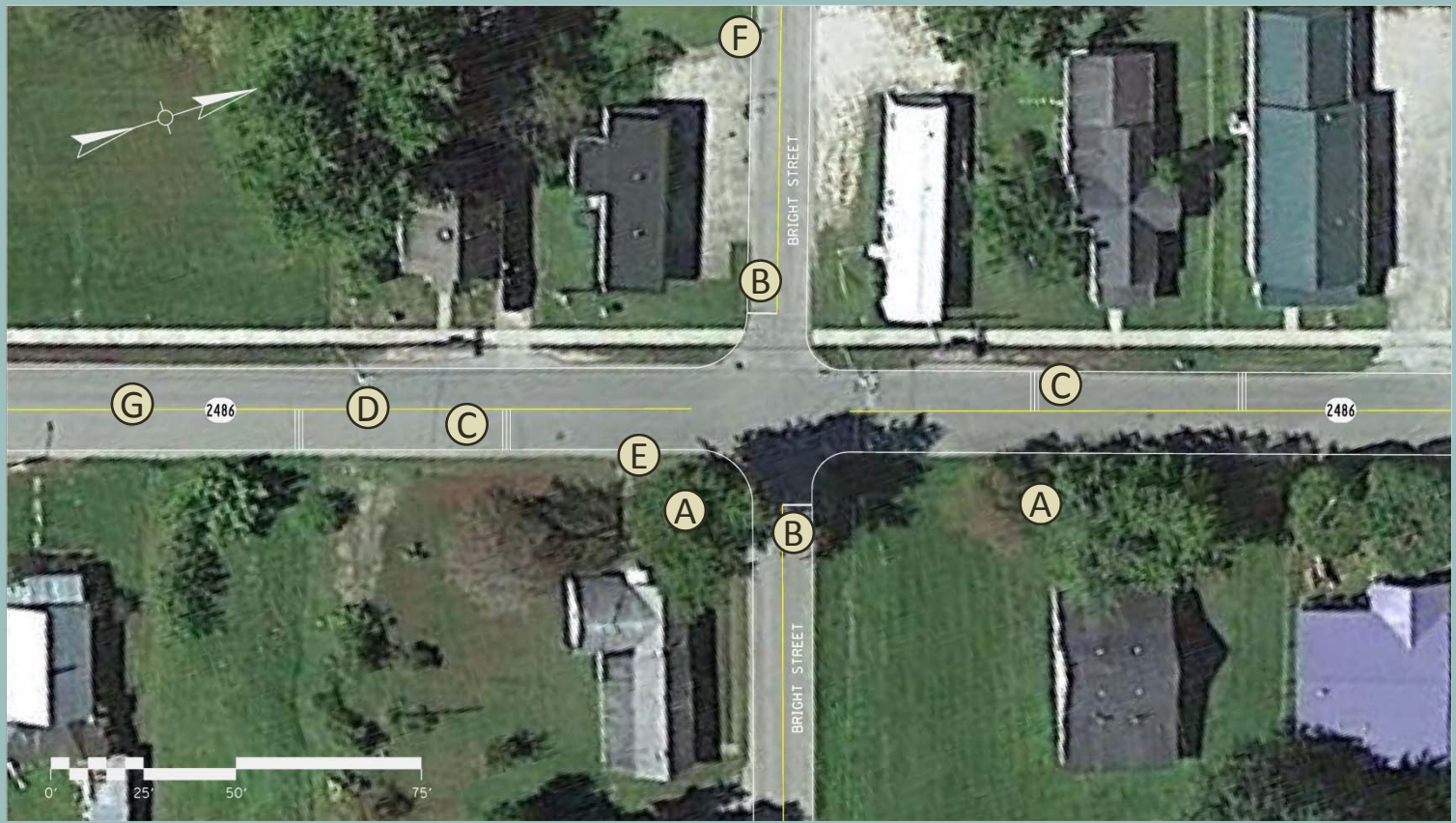


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs	Install reflective back plates on signals.	\$2,300	\$280,000
B	Pavement	Add "puppy tracks" for left turns on KY 82 EB and WB.	\$700	
C	Pavement / Signal	Change the shared-left turn lanes on KY 82 EB and WB approaches to exclusive left turn lanes. Add exclusive left turn phasing.	\$225,000	
D	Signs	Provide overhead directional arrow signs on span wire and refresh paint and pavement markings.	\$2,000	

Intersection 32: KY 2486 (MP 0.373) at Bright Street Powell County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 2.002 - CRF (2010-2015): 4.443 - Number of Crashes: 5 - KY 2486, 2015 ADT: 1,890 - Bright Street, 2015 ADT: 300 	<ul style="list-style-type: none"> - Poor sight distance - Elevated speeds

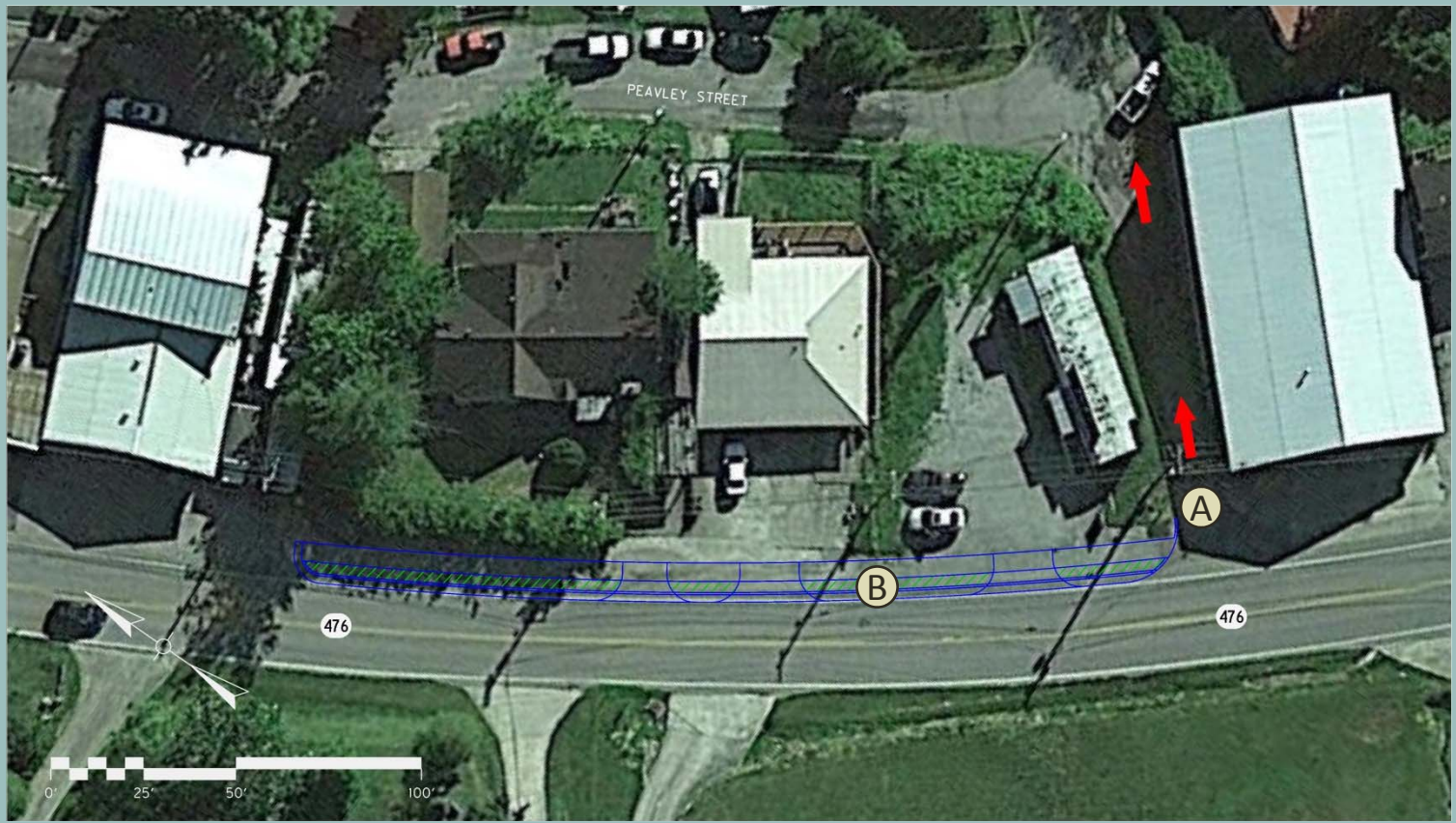


Label	Improvement	Description	Construction Cost	Total Cost
A	Sight Distance	Cut trees back on either side of east leg (Bright Street) approach to improve sight distance.	\$4,000	\$55,000
B	Pavement	Add stop bars on Bright Street approaches.	\$800	
C	Pavement	Install rumble strips on KY 2486 approaches.	\$15,900	
D	Pavement	Stripe center yellow line and edge lines along KY 2486 (from KY 15 to KY 2476).	\$1,200	
E	Drainage	Improve drainage on eastern side of KY 2486.	Further study required	
F	Signs	Replace "Stop Ahead" sign that meets current MUTCD standards (Sign W3-1) on west approach (Bright Street).	\$1,700	
G	Signs	Change speed limit to 25 mph.	\$1,400	

Intersection 33: KY 476 (MP 1.013) at Peavley Street Connector Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.997 - CRF (2010-2015): 2.700 - Number of Crashes: 5 - KY 476, 2015 ADT: 4,200 - Peavley St Conn, 2015 ADT: 150 	<ul style="list-style-type: none"> - Poor sight distance - Near horizontal curve - On vertical curve - Multiple driveways on highway



Label	Improvement	Description	Construction Cost	Total Cost
A	Access Management	Convert Peavley Street Connector to a one-way street.	\$1,700	\$158,000
B	Access Improvement	Add curbing and improve access points along KY 476.	\$56,300	

Intersection 34: KY 476 (MP 0.766) at Cole Avenue Perry County



Existing Conditions

- PCR: 1.925
- CRF (2010-2015): 2.430
- Number of Crashes: 5
- KY 476, 2015 ADT: 4,685
- Cole Ave, 2015 ADT: 150

Issues

- Poor sight distance
- Near horizontal curve
- Multiple driveways on highway

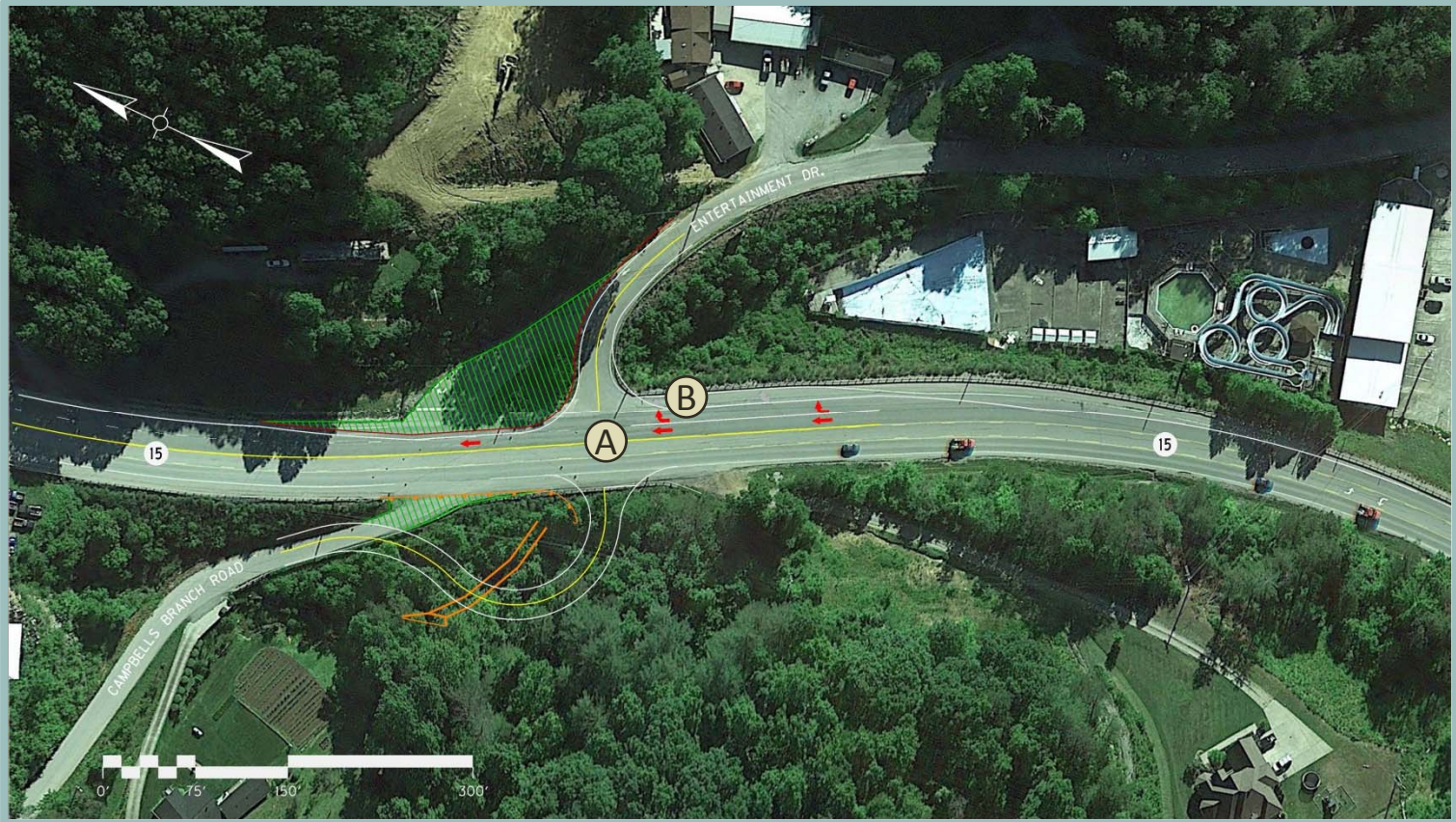


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs / Pavement	Relocate stop sign on Cole Avenue and re-stripe pavement markings.	\$1,500	\$365,000
B	Access Management	Provide designated access points for businesses, separate parking from roadway, and improve intersecting street locations.	\$215,300	
C	Pavement / Delineation	Improve striping and driveway delineation along KY 476.	\$1,500	
D	Signs	Add "Congested Area" signs.	\$1,700	

Intersection 35-1: KY 15 (MP 17.813) at Entertainment Drive Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.916 - CRF (2010-2015): 1.172 - Number of Crashes: 6 - KY 15, 2015 ADT: 4,200 - Entertainment Dr, 2015 ADT: 150 	<ul style="list-style-type: none"> - Poor sight distance - Near horizontal curve - Steep approach grades - Intersection alignment



Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Realign intersection.	\$536,800	\$827,000
B	Pavement	Add dedicated right turn lane to Entertainment Drive.	\$3,200	

Intersection 35-2: KY 15 (MP 17.813) at Entertainment Drive Perry County

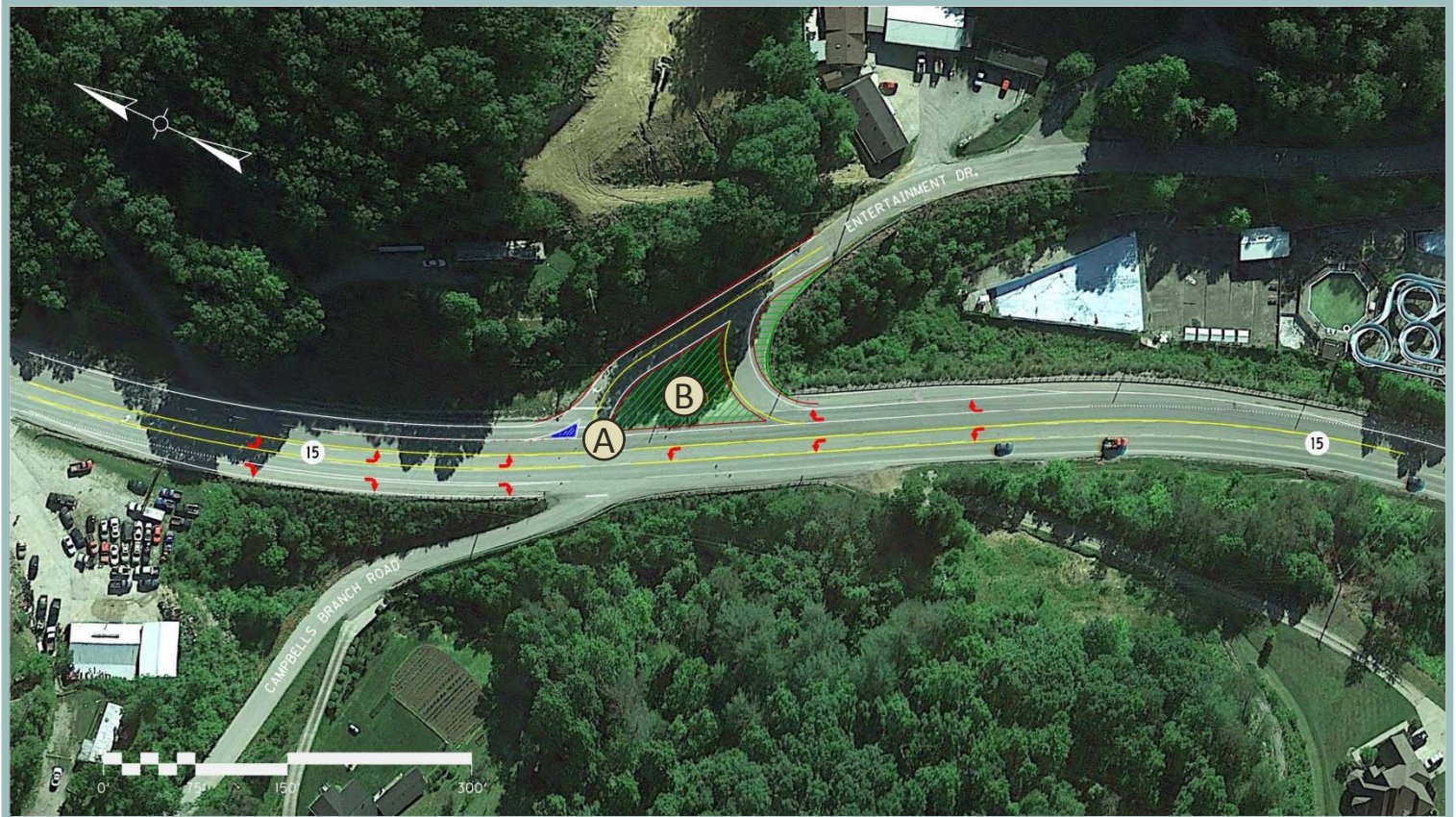


Existing Conditions

- PCR: 1.916
- CRF (2010-2015): 1.172
- Number of Crashes: 6
- KY 15, 2015 ADT: 4,200
- Entertainment Dr, 2015 ADT: 150

Issues

- Poor sight distance
- Near horizontal curve
- Steep approach grades
- Intersection alignment



Label	Improvement	Description	Construction Cost	Total Cost
A	Striping	Re-stripe approaches to intersection.	\$177,300	\$330,000
B	Pavement	Add dedicated right turn lane to Entertainment Drive.	\$2,700	

Intersection 36-1: KY 40 (MP 0.050) at Coal Branch Road Magoffin County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.633 - CRF (2010-2015): 2.900 - Number of Crashes: 4 - KY 40, 2015 ADT: 5,750 - Coal Branch Rd, 2015 ADT: 150 	<ul style="list-style-type: none"> - Poor sight distance - Access along corridor



Label	Improvement	Description	Construction Cost	Total Cost
A	Signs	Sign Coal Branch Road to be one-way.	\$28,600	\$94,000
B	Realignment	Realign Flint Street and Higgin Street to accommodate new traffic pattern.		
C	Signs	Install "No Parking" signs (R8-3a) in front of the bank on KY 40.	\$400	

Intersection 36-2: KY 40 (MP 0.050) at Coal Branch Road Magoffin County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.633 - CRF (2010-2015): 2.900 - Number of Crashes: 4 - KY 40, 2015 ADT: 5,750 - Coal Branch Rd, 2015 ADT: 150 	<ul style="list-style-type: none"> - Poor sight distance - Access along corridor



Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Shift intersection away from building to improve sight distance.	\$81,600	\$205,000
B	Widening	Widen Coal Branch Road.		
C	Signs	Install "No Parking" signs (R8-3a) in front of the bank on KY 40.	\$400	

Intersection 36-3: KY 40 (MP 0.050) at Coal Branch Road Magoffin County



Existing Conditions Issues

- PCR: 1.633
- CRF (2010-2015): 2.900
- Number of Crashes: 4
- KY 40, 2015 ADT: 5,750
- Coal Branch Rd, 2015 ADT: 150

- Poor sight distance
- Access along corridor



Label	Improvement	Description	Construction Cost	Total Cost
A	Signs	Sign Coal Branch Road to be one-way.	\$109,600	\$250,000
B	Realignment	Widen and realign Flint Street and Higgin Street to accommodate new traffic pattern.		
C	Signs	Install "No Parking" signs (R8-3a) in front of the bank on KY 40.	\$400	

Intersection 37-1: KY 15 (MP 8.837) at Thorpe Road Breathitt County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.632 - CRF (2010-2015): 2.816 - Number of Crashes: 18 - KY 15, 2015 ADT: 5,919 - Thorpe Road, 2015 ADT: 150 	<ul style="list-style-type: none"> - Intersection alignment - Access points on approaches - Grades on approaches

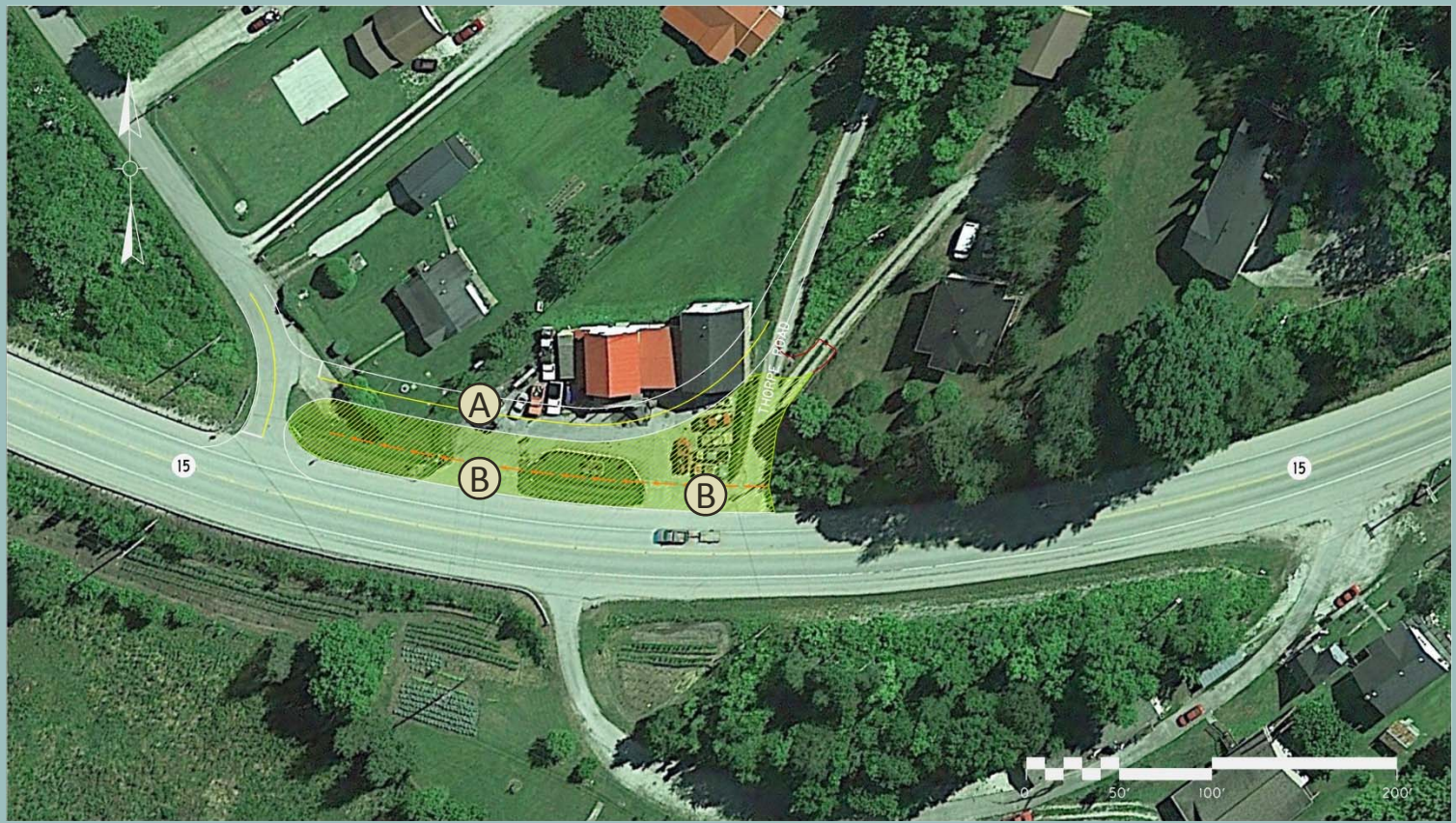


Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Add full lane rumble strips to slow vehicles through curve.	\$360,000	\$480,000
B	Sight Distance	Improve sight distance with slope removal near corner of Thorpe Road.		

Intersection 37-2: KY 15 (MP 8.837) at Thorpe Road Breathitt County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.632 - CRF (2010-2015): 2.816 - Number of Crashes: 18 - KY 15, 2015 ADT: 5,919 - Thorpe Road, 2015 ADT: 150 	<ul style="list-style-type: none"> - Intersection alignment - Access points on approaches - Grades on approaches



Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Add new roadway between Thorpe Road and Fish Pond Loop.		
B	Access Management	Close Thorpe Road and access points between Thorpe Road and Fish Pond Loop.	\$180,000	\$555,000

Intersection 38-1: US 460 (MP 15.024) at KY 746 (MP 6.778) Menifee County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.617 - CRF (2010-2015): 6.460 - Number of Crashes: 4 - US 460, 2015 ADT: 2,162 - KY 746, 2015 ADT: 484 	<ul style="list-style-type: none"> - High speed corridor - Multiple access points on highway



Label	Improvement	Description	Construction Cost	Total Cost
A	Delineation	Add delineators to require utilization of the center turn lane.	\$45,300	\$106,000
B	Pavement	Add left turn receiving pocket on US 460.		
C	Pavement	Paint stop bar on KY 746.	\$700	

Intersection 38-2: US 460 (MP 15.024) at KY 746 (MP 6.778) Menifee County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.617 - CRF (2010-2015): 6.460 - Number of Crashes: 4 - US 460, 2015 ADT: 2,162 - KY 746, 2015 ADT: 484 	<ul style="list-style-type: none"> - High speed corridor - Multiple access points on highway

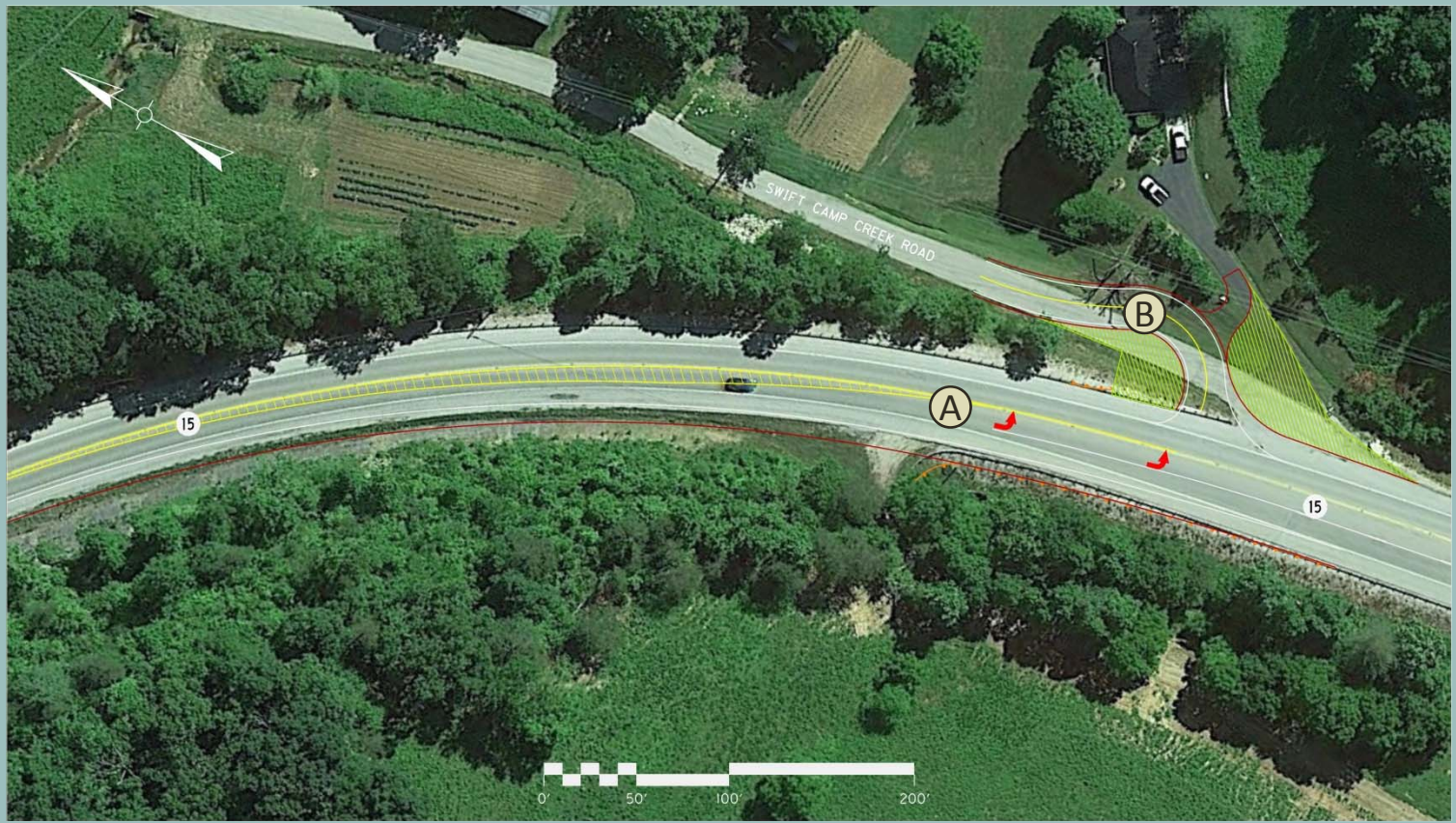


Label	Improvement	Description	Construction Cost	Total Cost
A	Access Management	Close access points on east side of US 460.	\$13,300	\$74,000
B	Pavement	Paint stop bar on KY 746.	\$700	

Intersection 39 - 1: KY 15 (MP 8.235) at Swift Camp Road Wolfe County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.595 - CRF (2010-2015): 3.818 - Number of Crashes: 4 - KY 15, 2015 ADT: 4,326 - Swift Camp Road, 2015 ADT: 150 	<ul style="list-style-type: none"> - High speed corridor - On horizontal curve - Severe grade on mainline

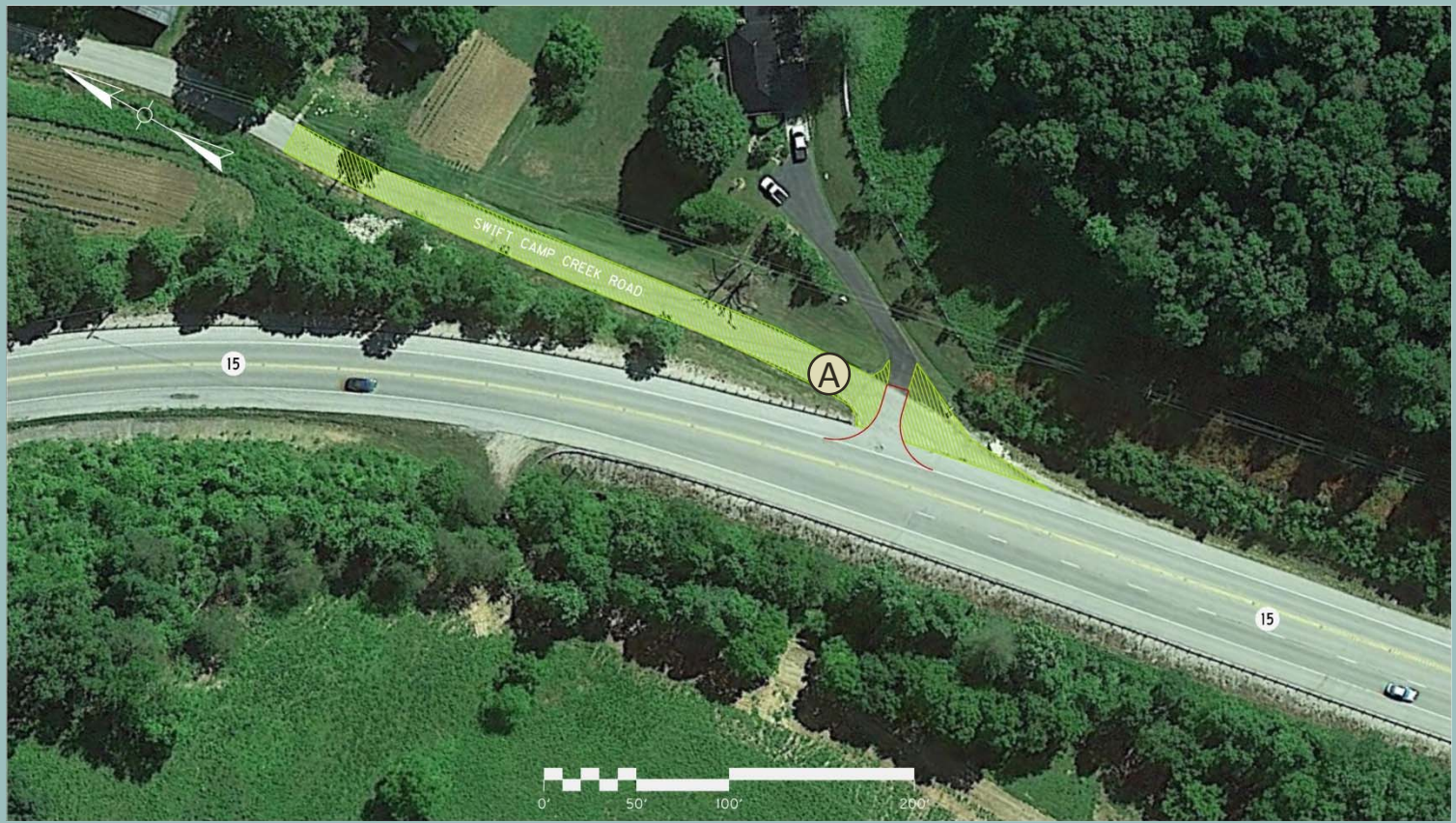


Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Add SB left turn pocket.	\$761,000	\$1,090,000
B	Access Management	Realign Swift Camp Creek Road.	\$69,000	

Intersection 39 - 2: KY 15 (MP 8.235) at Swift Camp Road Wolfe County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.595 - CRF (2010-2015): 3.818 - Number of Crashes: 4 - KY 15, 2015 ADT: 4,326 - Swift Camp Road, 2015 ADT: 150 	<ul style="list-style-type: none"> - High speed corridor - On horizontal curve - Severe grade on mainline

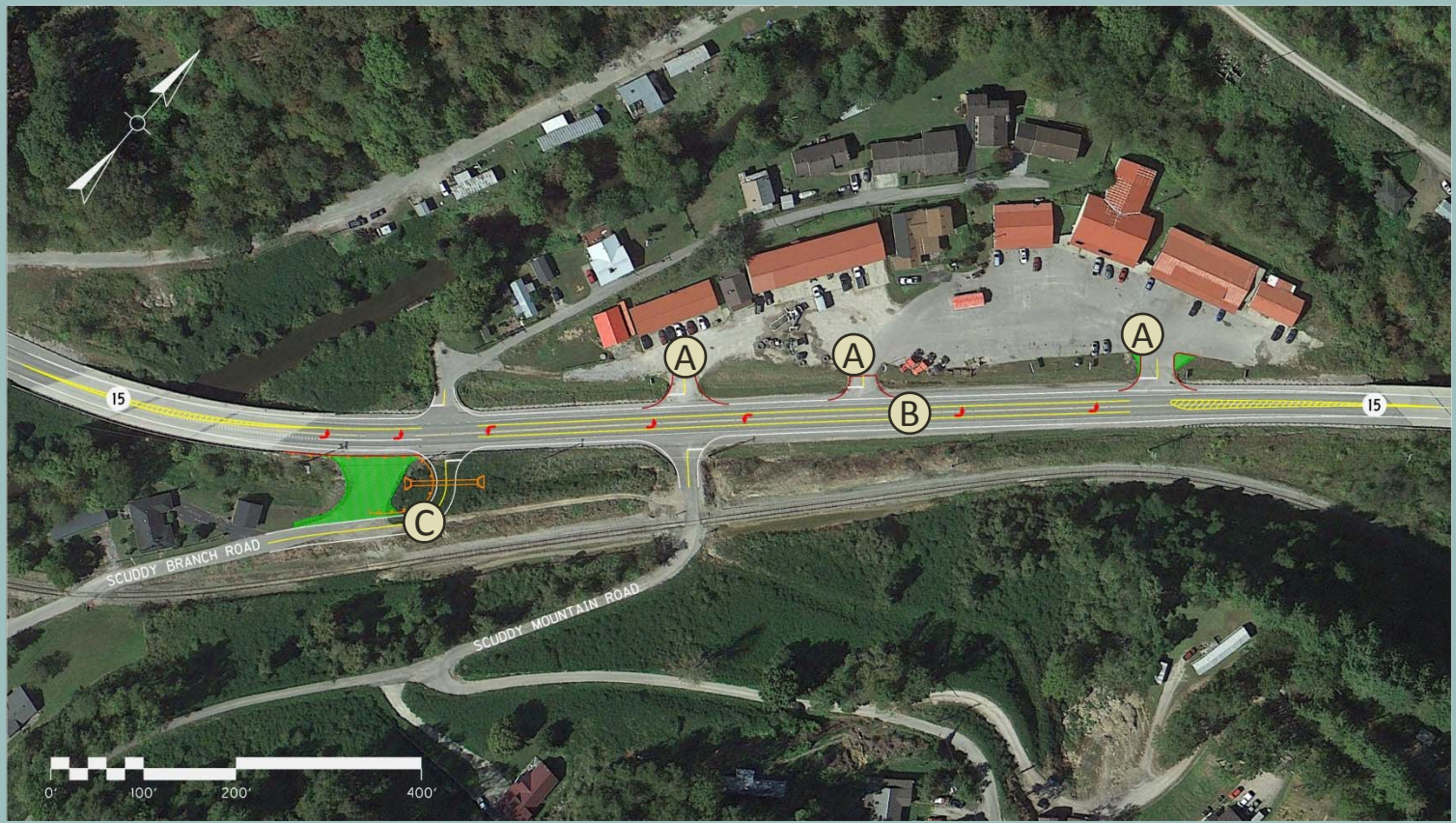


Label	Improvement	Description	Construction Cost	Total Cost
A	Access Management	Close road access and provide driveway for resident only.	\$35,000	\$85,000

Intersection 40 - 1: KY 15 (MP 1.928) at Scuddy Mountain Road Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.588 - CRF (2010-2015): 2.180 - Number of Crashes: 4 - KY 15, 2015 ADT: 7,690 - Scuddy Mt Rd, 2015 ADT: 150 	<ul style="list-style-type: none"> - Near horizontal curve - Multiple driveways on highway - High speed traffic

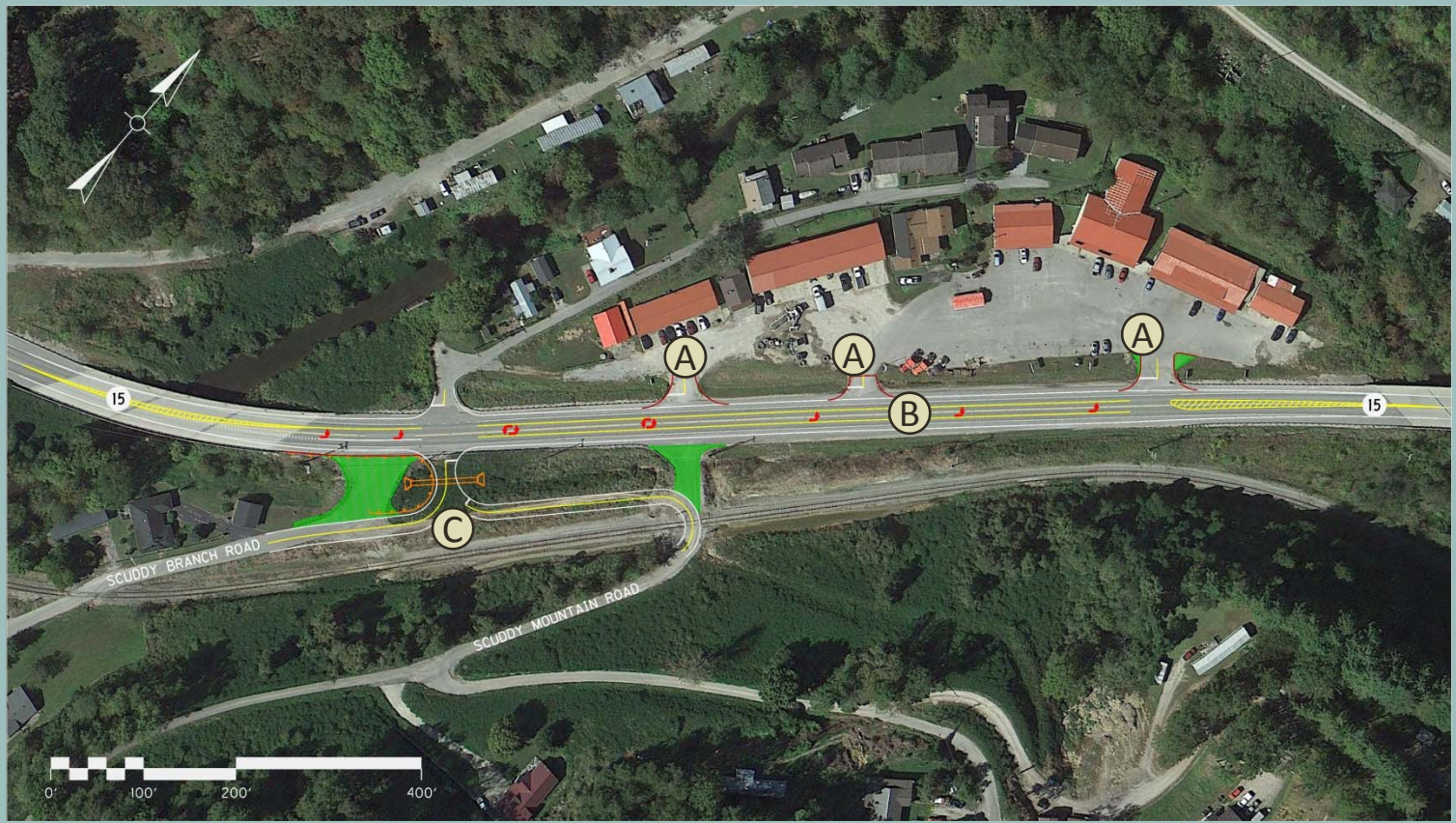


Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Install stop signs and stop bar on driveways.	\$3,100	\$250,000
B	Pavement	Re-stripe dedicated left turn lanes on KY 15.	\$39,100	
C	Pavement	Improve access for Scuddy Branch Road.	\$147,800	

Intersection 40 - 2: KY 15 (MP 1.928) at Scuddy Mountain Road Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.588 - CRF (2010-2015): 2.180 - Number of Crashes: 4 - KY 15, 2015 ADT: 7,690 - Scuddy Mt Rd, 2015 ADT: 150 	<ul style="list-style-type: none"> - Near horizontal curve - Multiple driveways on highway - High speed traffic

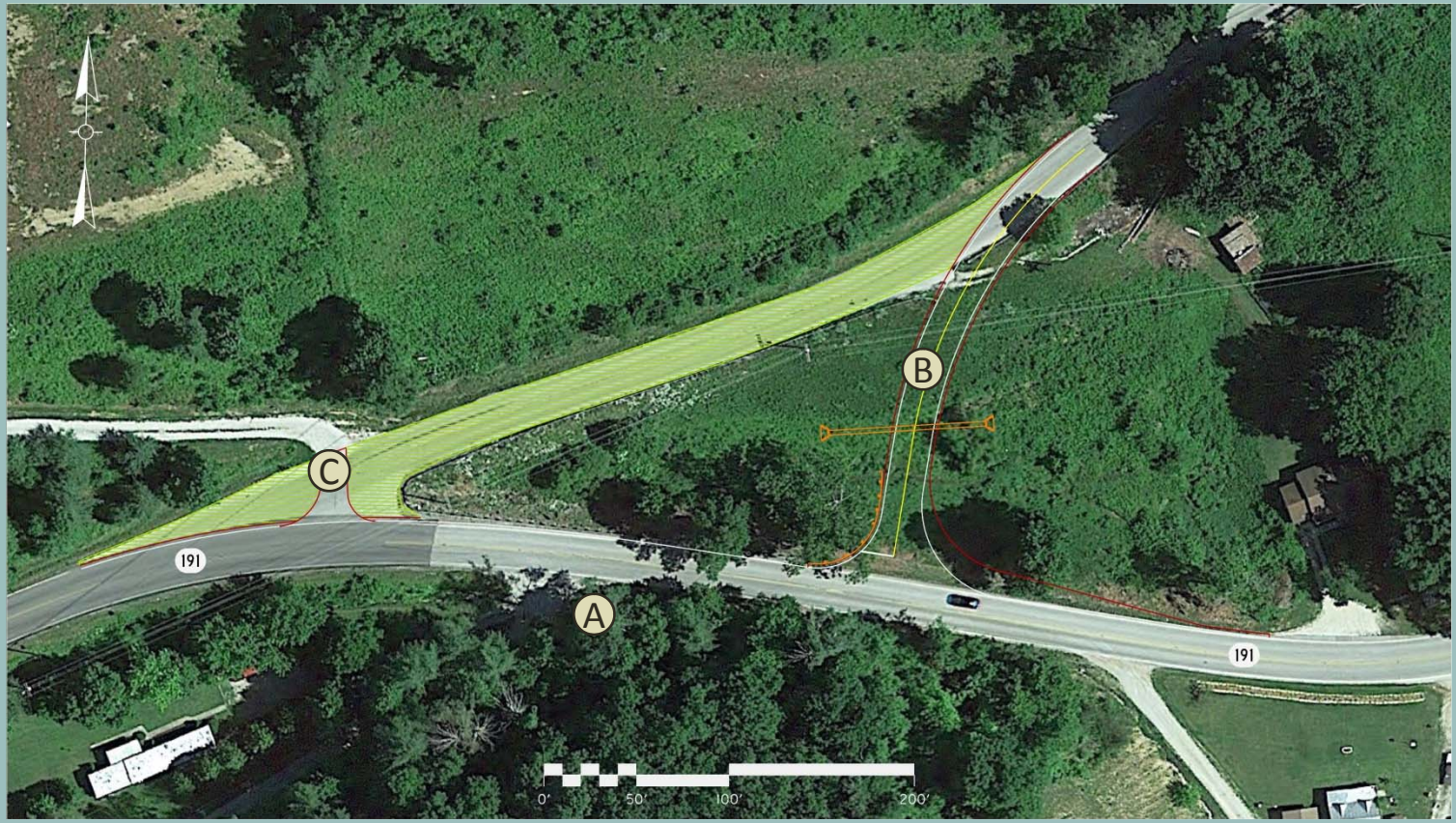


Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Install stop signs and stop bar on driveways.	\$3,100	\$305,000
B	Pavement	Re-stripe dedicated left turn lanes on KY 15.	\$39,400	
C	Pavement	Change access to Scuddy Mountain Road from Scuddy Branch Road.	\$187,500	

Intersection 41: KY 191 (MP 1.450) at KY 746 (MP 0.000) Wolfe County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.559 - CRF (2010-2015): 4.472 - Number of Crashes: 4 - KY 191, 2015 ADT: 3,227 - KY 746, 2015 ADT: 595 	<ul style="list-style-type: none"> - Approach in horizontal curve - Poor sight distance - Severe grade on mainline

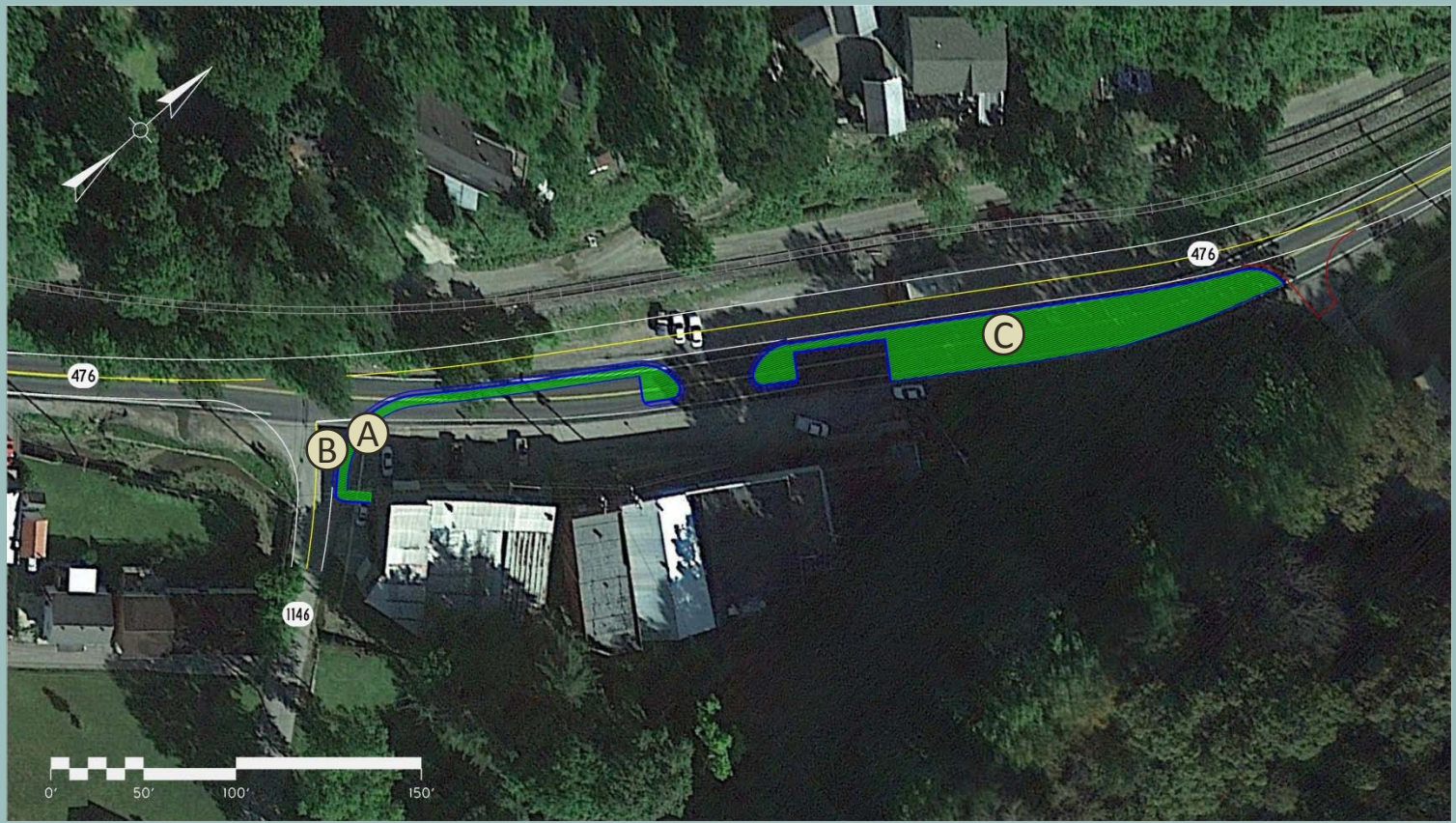


Label	Improvement	Description	Construction Cost	Total Cost
A	Sight Distance	Trim trees inside of curve on KY 191.	\$2,700	\$295,000
B	Realignment	Realign for 90 degree intersection.	\$207,300	
C	Realignment	Extend driveway to access center of the curve.		

Intersection 42: KY 476 (MP 3.851) at KY 1146 (MP 2.712) Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.551 - CRF (2010-2015): 4.442 - Number of Crashes: 4 - KY 476, 2015 ADT: 3,238 - KY 1146, 2015 ADT: 609 	<ul style="list-style-type: none"> - Poor sight distance - Near horizontal curve - A part of a vertical curve - Multiple driveways on highway

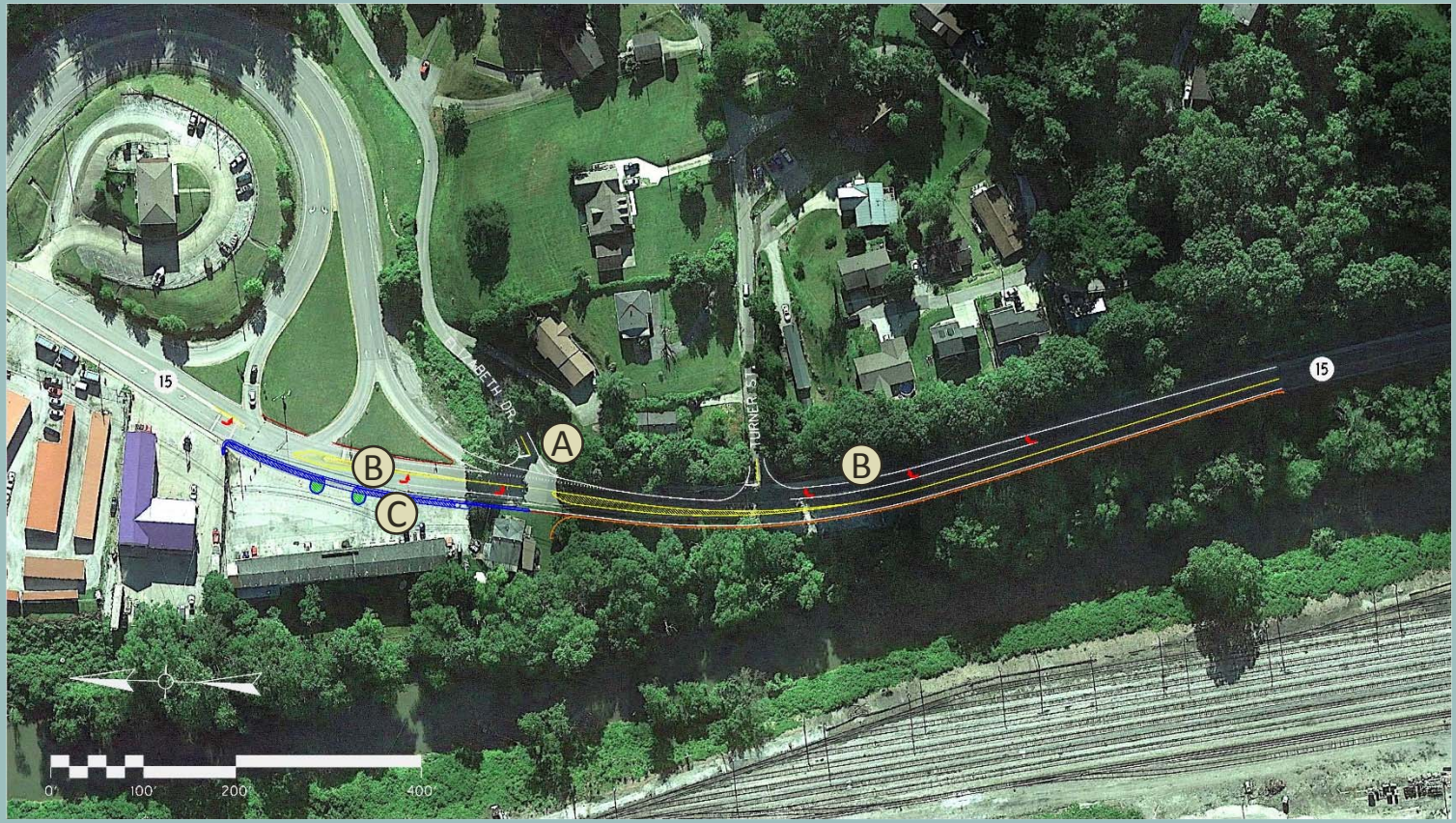


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs	Move stop sign on KY 1146 closer to intersection.	\$800	\$335,000
B	Pavement	Add stop bar on KY 1146.	\$700	
C	Delineation	Delineate KY 476 from parking area.	\$248,500	

Intersection 43: KY 15X (MP 1.637) at Elizabeth Drive Perry County

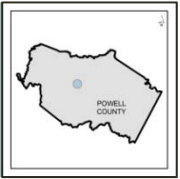


Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.527 - CRF (2010-2015): 0.879 - Number of Crashes: 4 - KY 476, 2015 ADT: 10,688 - KY 1146, 2015 ADT: 150 	<ul style="list-style-type: none"> - Adjacent to ramp for KY 15 - Poor sight distance

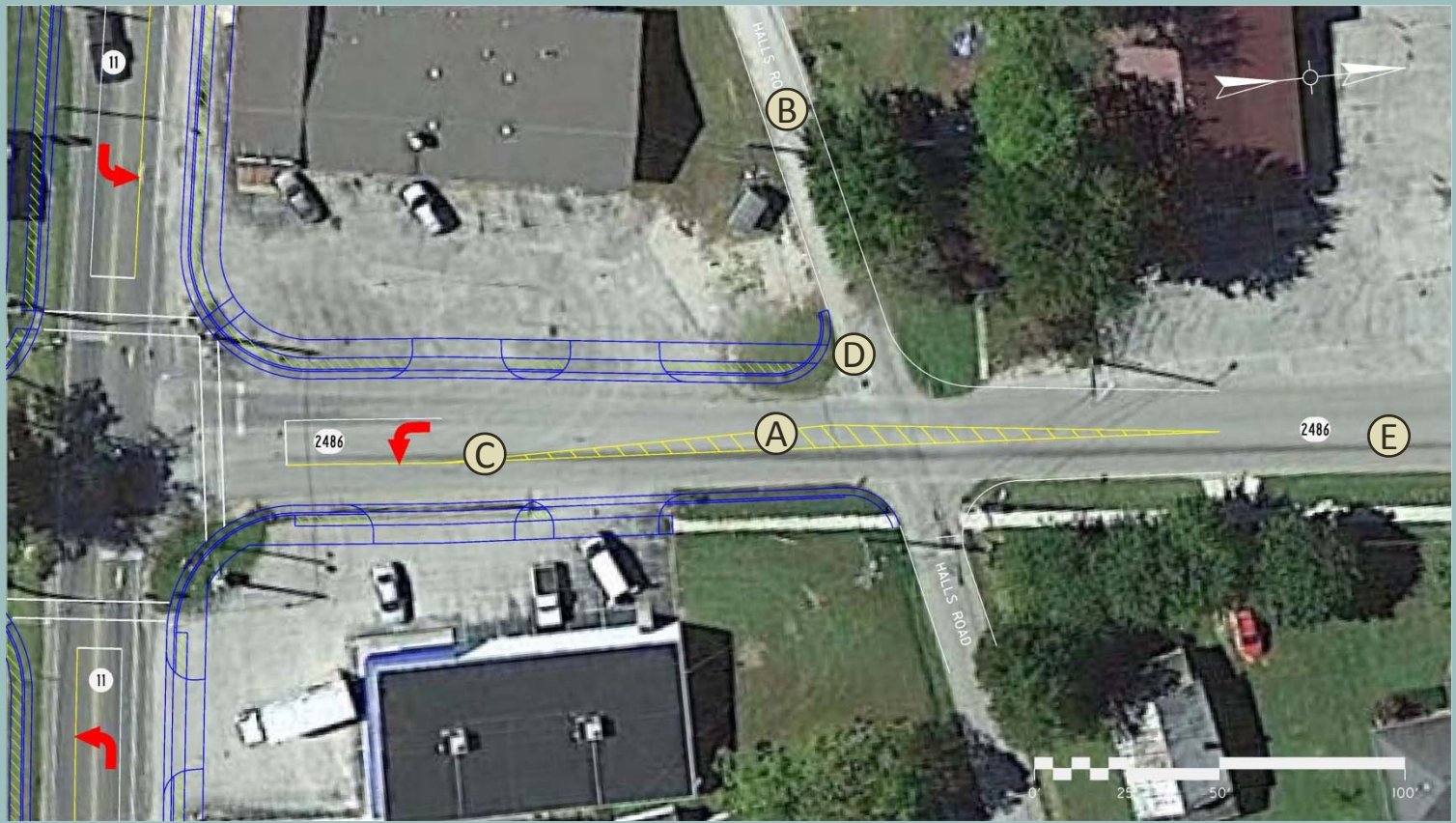


Label	Improvement	Description	Construction Cost	Total Cost
A	Signs / Pavement	Add stop sign and stop bar at Elizabeth Drive approach.	\$900	\$900
B	Pavement / Widening	Add right turn lane onto Turner Street, and left turn lane to Elizabeth Drive.	See cost from #17-B	
C	Access Management	Provide designated access points for businesses and separate parking from roadway.	See cost from #17-C	

Intersection 44: KY 2486 (MP 0.041) at Halls Road Powell County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.512 - CRF (2010-2015): 3.103 - Number of Crashes: 4 - KY 2486, 2015 ADT: 2,209 - Halls Road, 2015 ADT: 300 	<ul style="list-style-type: none"> - Poor sight distance - Elevated speeds



Label	Improvement	Description	Construction Cost	Total Cost
A	Signs	Install retroreflective pavement markings and signs.	Costs included in #13	
B	Access Management	Consider closing west approach to thru traffic.		
C	Signs	Stripe center yellow line and edge lines along KY 2486 (from KY 15 to KY 2476).		
D	Pavement	Move stop bar on east leg closer to intersection to improve sight distance.		
E	Signs	Change speed limit to 25 mph on KY 2486.		

Intersection 45: KY 1762 (MP 0.278) at Oakhurst Avenue Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.510 - CRF (2010-2015): 6.7825 - Number of Crashes: 4 - KY 1762, 2015 ADT: 1,235 - Oakhurst Ave, 2015 ADT: 150 	<ul style="list-style-type: none"> - On vertical curve - Multiple driveways on approaches - Driver expectation for highway

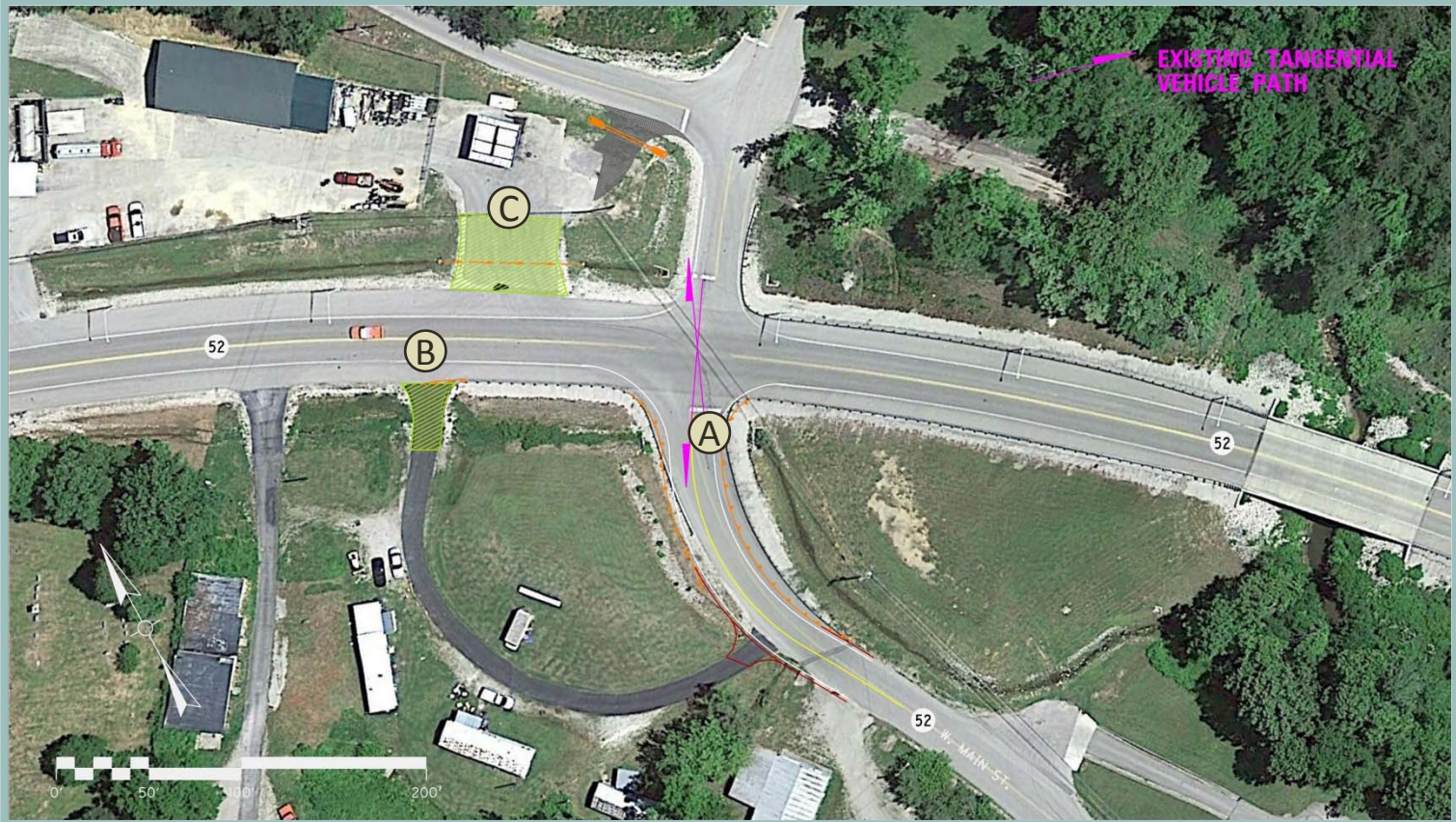


Label	Improvement	Description	Construction Cost	Total Cost
A	Pavement	Add edge line striping on all approaches.	\$2,000	\$6,000
B	Pavement	Re-apply stop bars on all approaches.	\$1,000	
C	Signs	Install new stop signs.	\$3,000	

Intersection 46: KY 52 (MP 12.257) at Old KY 52 / Carlisle Avenue Lee County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 1.503 - CRF (2010-2015): 3.394 - Number of Crashes: 4 - KY 52, 2015 ADT: 1,994 - West Main Street, 2015 ADT: 300 	<ul style="list-style-type: none"> - Intersection configuration - High speed traffic movements - Access points on approaches

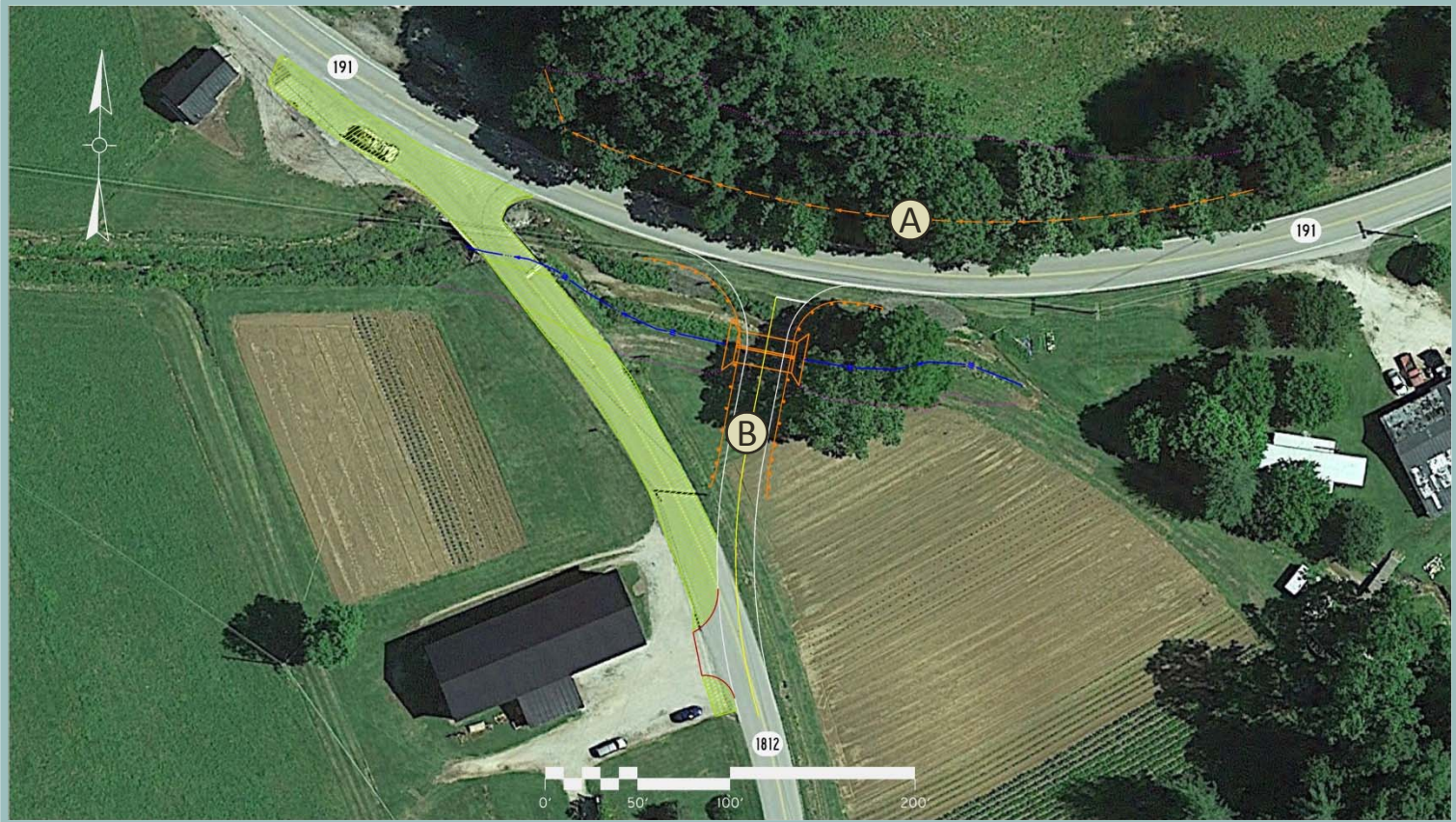


Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Realign curve to West Main Street and adjust guard rail.	\$62,900	\$230,000
B	Access Management	Eliminate driveway access to KY 52 and install end treatment.	\$5,500	
C	Access Management	Eliminate business entrance along KY 52 and utilize new access point.	\$6,600	

Intersection 47: KY 191 (MP 4.865) at KY 1812 (MP 6.254) Wolfe County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 0.582 - CRF (2010-2015): 4.038 - Number of Crashes: 2 - KY 191, 2015 ADT: 1,697 - KY 1812, 2015 ADT: 420 	<ul style="list-style-type: none"> - Poor sight distance - High speed corridor - On horizontal curve

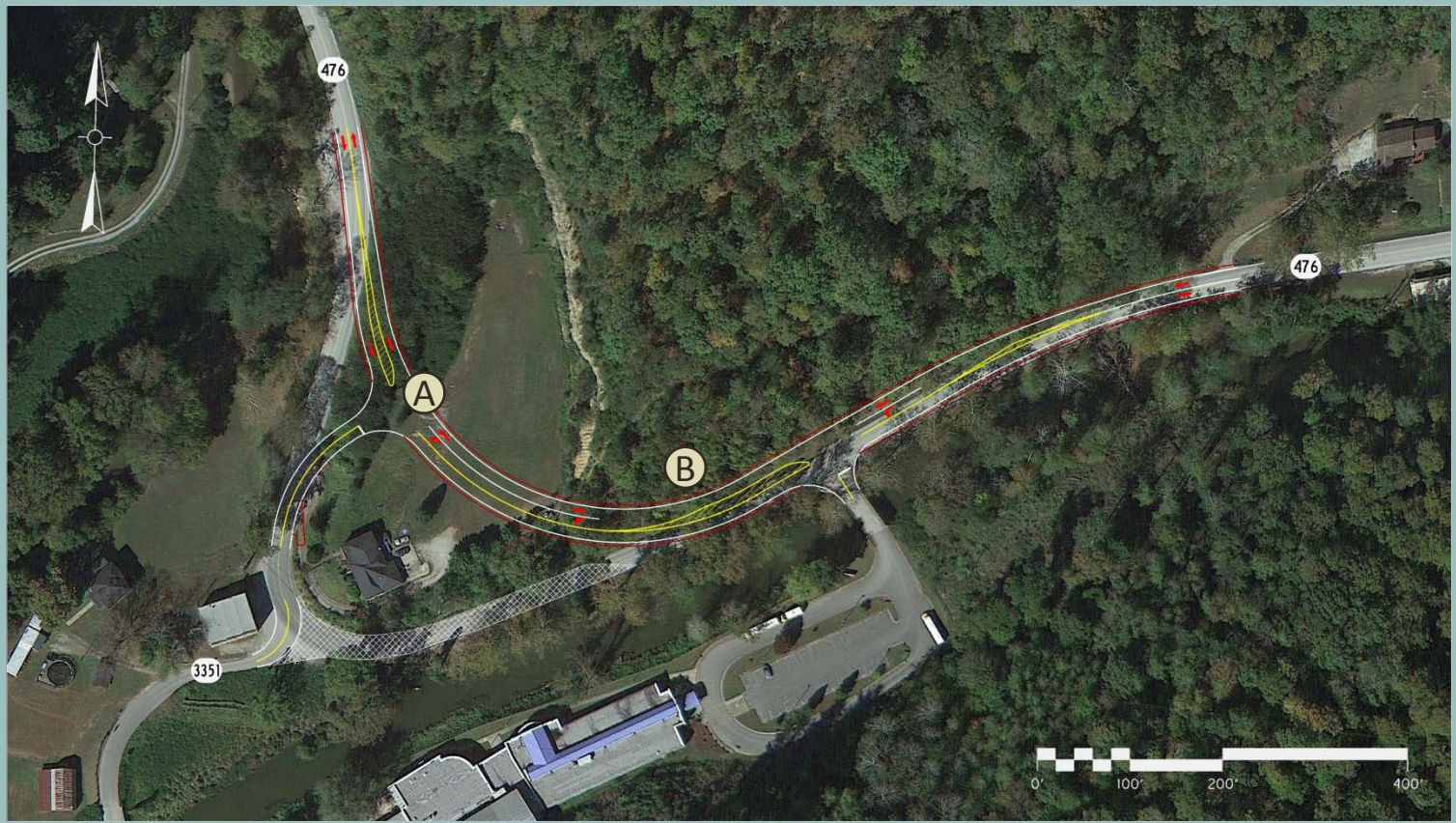


Label	Improvement	Description	Construction Cost	Total Cost
A	Sight Distance	Cut back slope on inside of KY 191 curve.	\$118,400	\$460,000
B	Realignment	Improve sight distance, realign intersection to "T" in curve.	\$191,600	

Intersection 48: KY 476 (MP 11.533) at KY 3351 (MP 3.424) Perry County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 0.430 - CRF (2010-2015): 4.813 - Number of Crashes: 2 - KY 476, 2015 ADT: 1,697 - KY 3351, 2015 ADT: 78 	<ul style="list-style-type: none"> - Poor sight distance - Horizontal curve - Skewed approaches



Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Improve connection of KY 3351 to KY 476.	\$2,480,000	\$2,772,500
B	Maintenance	Cut back trees on KY 476 EB so flashers are visible.		

Intersection 49 - 1: KY 1812 (MP 0.802) at Snowden Branch Road Breathitt County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 0.191 - CRF (2010-2015): 2.524 - Number of Crashes: 1 - KY 15, 2015 ADT: 5,919 - Snowden Branch, 2015 ADT: 150 	<ul style="list-style-type: none"> - Intersection alignment - Access points on approaches - Grades on approaches

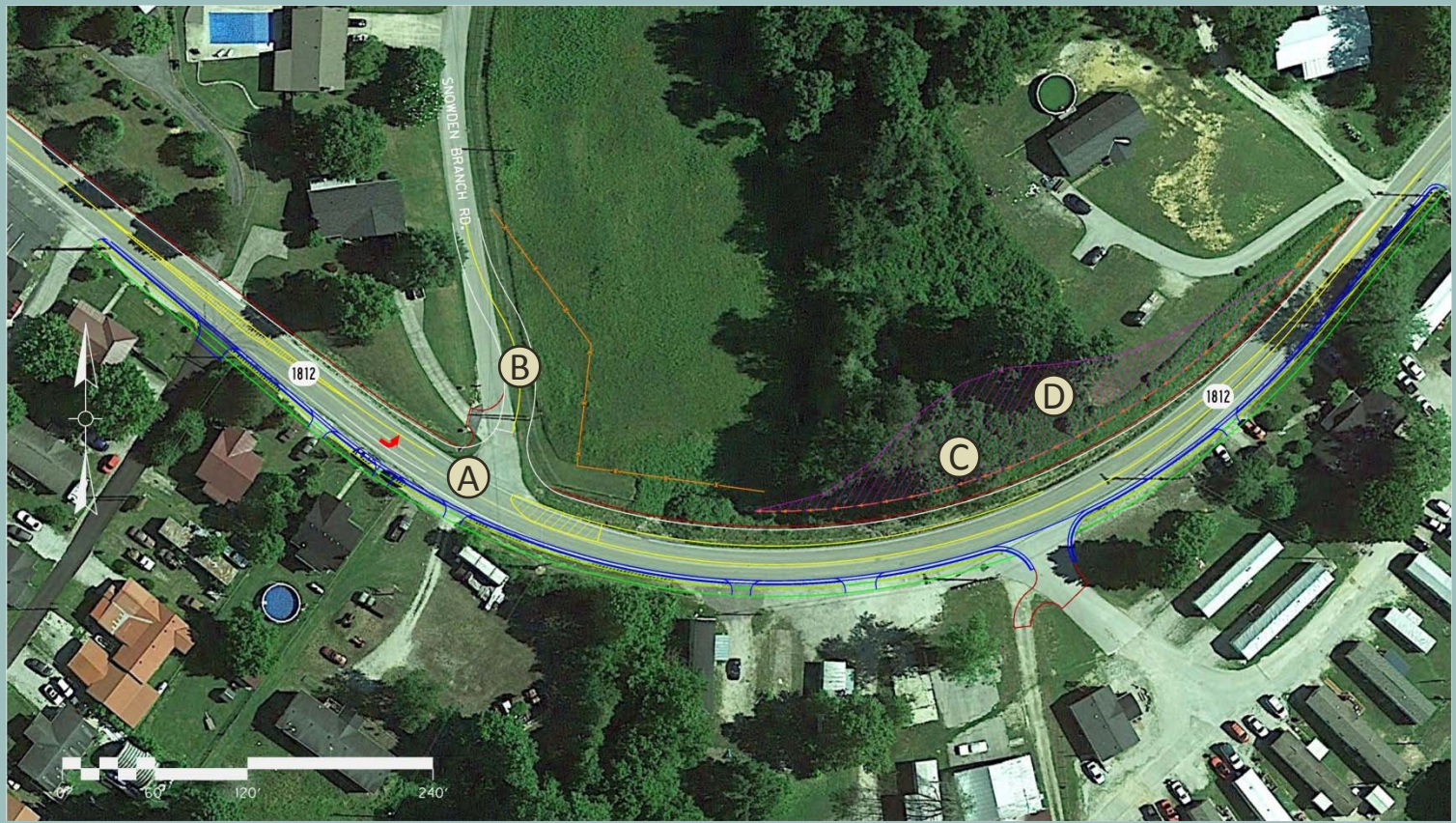


Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Provide 90 degree approach for Snowden Branch Road intersection with KY 1812.	\$80,000	\$339,000
B	Sight Distance	Regrade / repave pavement west of intersection to improve sight distance.	\$50,000	
C	Sight Distance	Improve sight distance with tree removal in curve and widen ditch.	\$34,000	

Intersection 49 - 2: KY 1812 (MP 0.802) at Snowden Branch Road Breathitt County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: 0.191 - CRF (2010-2015): 2.524 - Number of Crashes: 1 - KY 15, 2015 ADT: 5,919 - Snowden Branch, 2015 ADT: 150 	<ul style="list-style-type: none"> - Intersection alignment - Access points on approaches - Grades on approaches



Label	Improvement	Description	Construction Cost	Total Cost
A	Widening	Increase shoulder width and eliminate on-street parking. Turn lane added.	\$405,000	\$780,000
B	Re-alignment	Provide 90 degree approach for Snowden Branch Road intersection with KY 1812.	\$76,000	
C	Sight Distance	Improve sight distance with tree removal in curve.	3,000	
D	Sight Distance	Widen ditch and lay back slopes.	\$53,000	

Intersection 50-1: KY 191 (MP 9.714) at KY 1010 (MP 7.110) Wolfe County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: -0.071 - CRF (2010-2015): 0.000 - Number of Crashes: 0 - KY 191, 2015 ADT: 1,390 - KY 1010, 2015 ADT: 104 	<ul style="list-style-type: none"> - Poor sight distance - High speed corridor - On horizontal curve - Skewed intersection

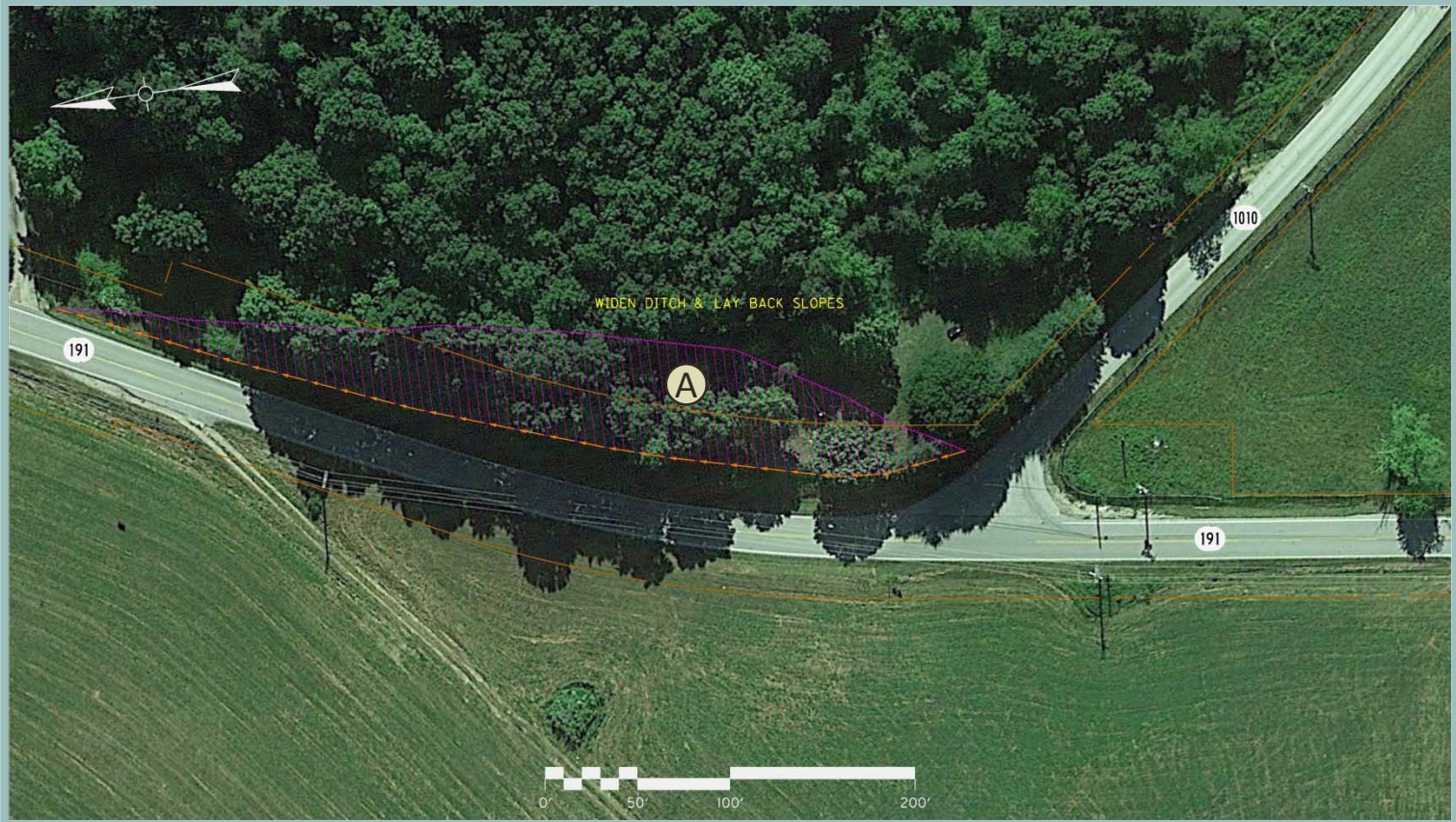


Label	Improvement	Description	Construction Cost	Total Cost
A	Realignment	Improve sight distance, realign intersection to "T" away from curve.	\$180,000	\$265,000

Intersection 50-2: KY 191 (MP 9.714) at KY 1010 (MP 7.110) Wolfe County



Existing Conditions	Issues
<ul style="list-style-type: none"> - PCR: -0.071 - CRF (2010-2015): 0.000 - Number of Crashes: 0 - KY 191, 2015 ADT: 1,390 - KY 1010, 2015 ADT: 104 	<ul style="list-style-type: none"> - Poor sight distance - High speed corridor - On horizontal curve - Skewed intersection



Label	Improvement	Description	Construction Cost	Total Cost
A	Sight Distance	Cut back slopes and widen ditch along KY 191 to improve sight distance.	\$210,000	\$210,000

6.0 FUTURE PROJECT DEVELOPMENT INFORMATION

6.1 Project Categorization

As previously noted, projects may be categorized as HSIP or PIF based on the estimated cost of completion. Those with a total estimated cost of less than \$500,000 could be funded through the federal HSIP. The remaining projects would require the development of a PIF in order to be considered in future long-range planning efforts.

Of the 50 intersections identified within this study, 33 are eligible for HSIP funding and 17 might require a PIF. Six of these 17 intersections (Intersections #7, 20, 35, 37, 39, and 49), however, include at least one option with a cost under \$500,000, potentially making them eligible for HSIP funding.

6.2 PIF Project Needs

Detailed purpose statements have been developed for the 11 projects that have no HSIP-eligible options and will require a PIF. Together with the project sheets, these purpose statements will provide the additional information necessary to generate a PIF for each project.

Intersection #9: KY 550 at Combs Lane

Improve safety through management of multiple conflict points at the intersection of KY 550 (MP 1.349) at Combs Lane in Perry County.

Intersection #11: KY 550 at Grand Vue Plaza

Improve safety through management of multiple conflict points at the intersection of KY 550 (MP 1.394) at Grand Vue Plaza in Perry County.

Intersection #13: KY 11 at KY 2486

Improve safety through improved sight distance and defined access at the intersection of KY 11 (MP 15.813) at KY 2486 (MP 0.000) in Powell County.

Intersection #16: KY 15 at KY 191

Improve safety and traffic flow at the intersection of KY 15 (MP 9.486) at KY 191 (MP 0.000) in Wolfe County.

Intersection #17: KY 15X at Turner Street

Improve safety through improved sight distance at the intersection of KY 15X (MP 1.593) at Turner Street in Perry County.

Intersection #19: KY 15X at Newland Street

Improve safety and traffic movement circulation at the intersection of KY 15X (MP 0.937) at Newland Street in Perry County.

Intersection #27: KY 550 at Smitty Drive

Improve safety through management of multiple conflict points at the intersection of KY 550 (MP 1.304) at Smitty Drive in Perry County.

Intersection #29: KY 52 at Old KY 52 Connector

Improve safety through improved sight distance at the intersection of KY 52 (MP 3.560) at Old KY 52 Connector in Estill County.

Intersection #43: KY 15X at Elizabeth Drive

Improve safety through improved sight distance at the intersection of KY 15X (MP 1.637) at Elizabeth Drive in Perry County.

Intersection #44: KY 2486 at Halls Road

Improve safety through improved sight distance and speed management at the intersection of KY 2486 (MP 0.041) at Halls Road in Powell County.

Intersection #48: KY 476 at KY 3351

Improve safety and connectivity of KY 476 (MP 11.533) at KY 3351 (MP 3.424) in Perry County.

7.0 CONTACTS / ADDITIONAL INFORMATION

Written requests for additional information should be sent to:

John Moore, Director
KYTC Division of Planning
200 Mero Street
Frankfort, Kentucky 40622

Additional information regarding this feasibility study can also be obtained from KYTC District 10 Project Manager, Jason Blackburn, at (606) 666-8841 or via email at Jason.Blackburn@ky.gov.