

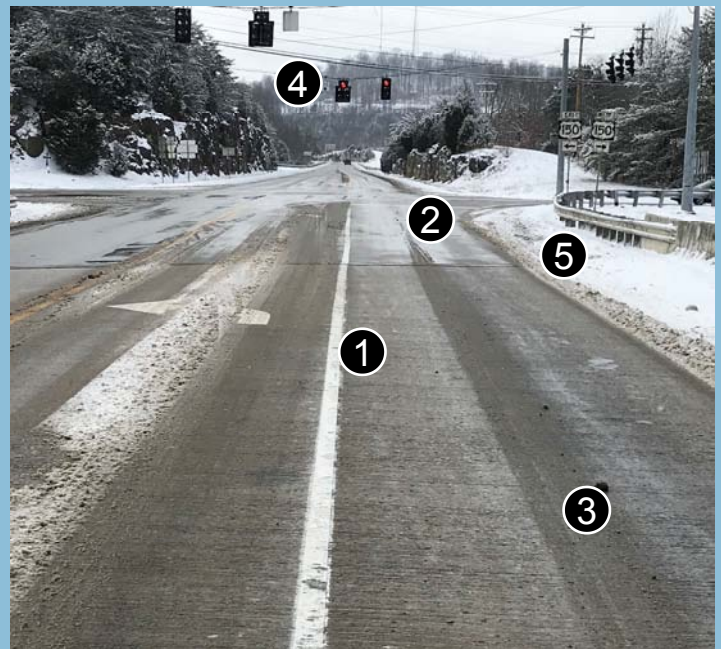
Existing Site Information

- KY 461 ADT: 10,588 (2016); T%: 14.488
- US 150 ADT: 6,886 (2016); T%: 16.163
- Study range: 10/16/2012 – 10/15/2017
- Number of crashes: 30
- Speed Limit: 55 mph
- Signalized intersection.
- KY 461 and US 150 are 2-way, 2-lane sections that become 3-lane sections with left-turn lanes at the intersection.
- KY 461 is a principal arterial used as the route connecting I-75 and Somerset; US 150 is a minor arterial used as the route connecting Danville and Mount Vernon.

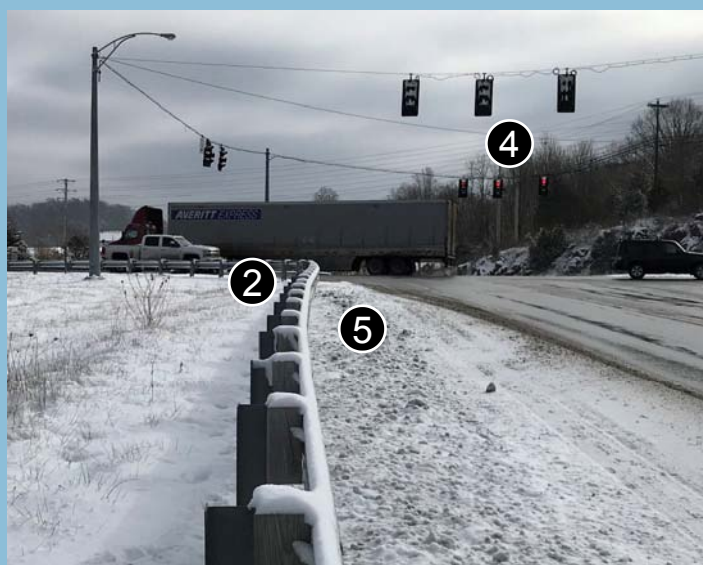
- All approaches have Signal Ahead signs located on both sides of the pavement in advance of the intersection approx.:
 - 1200' (KY 461 SB) 1000' (KY 461 NB)
 - 900' (US 150 EB) 600' (US 150 WB)
- US 150 WB approach has pole-mounted signal head on southern strain pole.



US 150 (looking west)



KY 461 (looking south)



US 150 (looking east)

Risks and Deficiencies

1. KY 461 operates at a faster speed than the speed limit.
2. High volume of right turns made from KY 461 SB approach creates slowdown for thru-moving vehicles.
3. Addition of pavement for a KY 461 SB right-turn lane is constrained by a bridge over an abandoned railroad approx. 100' in advance of the stop bar.
4. Retroreflective tape missing from existing backplates on all span-mounted signal heads.
5. Small NW corner radius with guardrail makes the right-turn movement difficult for trucks.
6. Limited sight distance for US 150 WB due to vertical climb during approach to intersection.

Crash History Analysis

Description of Manner of Collision	Number of Collisions	Percent of Total Number of Collisions	Number of Injury Collisions	Percent of Total Number of Injury Collisions
Angle Collisions	4	13.33%	0	0.00%
- Both vehicles going straight	2		0	
- Entering/Leaving entrance	1		0	
- One vehicle turning right	1		0	
Opposing Left Turn Collisions	2	6.67%	1	20.00%
Rear End Collisions	22	73.33%	2	40.00%
- Both vehicles going straight	3		0	
- In traffic, both vehicles moving	10		0	
- In traffic, one vehicle stopped	4		1	
- Other	5		1	
Sideswipe Collisions	1	3.33%	1	20.00%
- Opposite direction	1		1	
Single Vehicle Collisions	1	3.33%	1	20.00%
- Fixed object in intersection	1		1	

Description of Roadway Condition	Number of Collisions	Percent of Total Number of Collisions	Number of Injury Collisions	Percent of Total Number of Injury Collisions
Dry Conditions	25	83.33%	5	100.00%
Wet Conditions	5	16.67%	0	0.00%

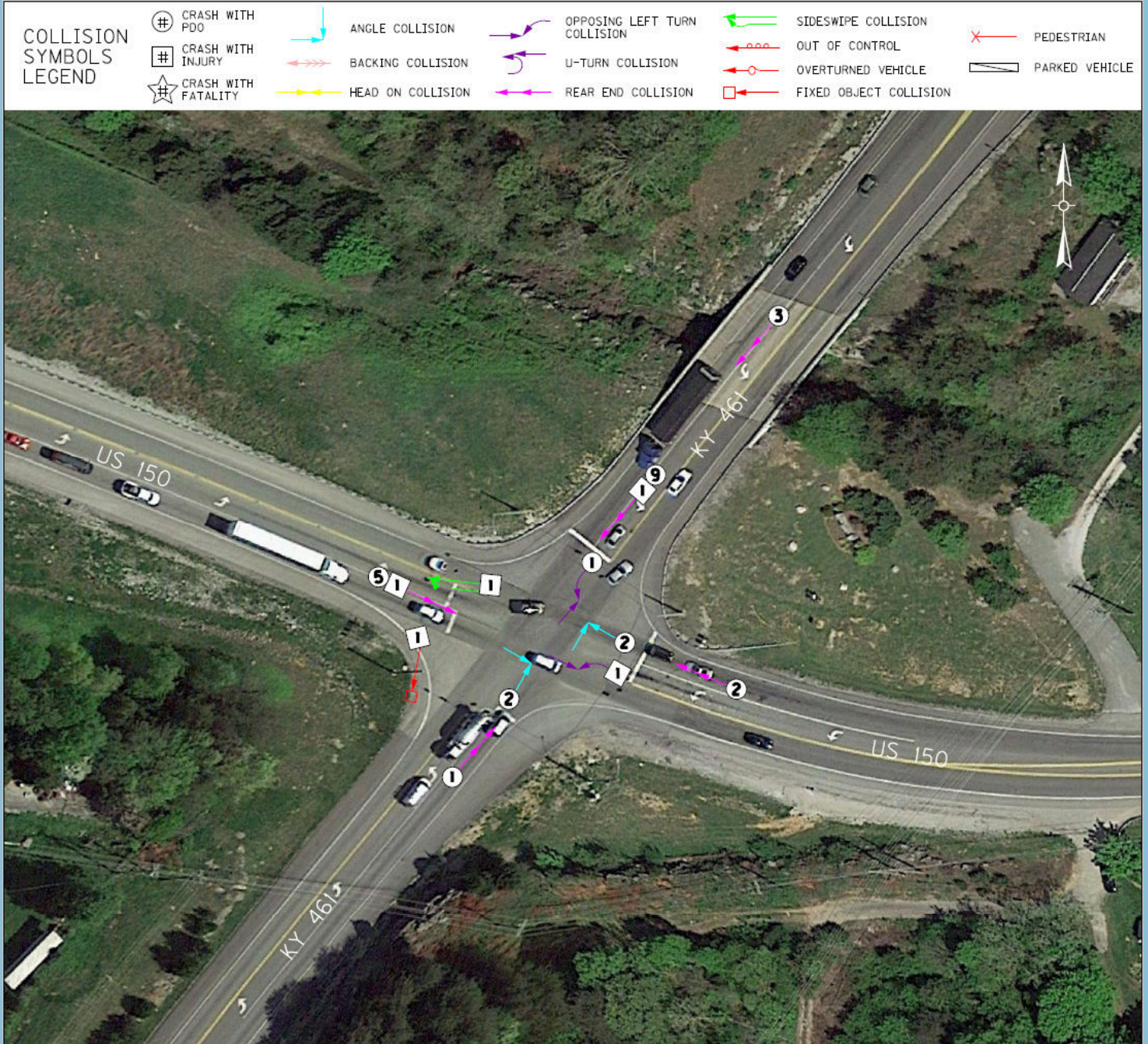
Description of Lighting Condition	Number of Collisions	Percent of Total Number of Collisions	Number of Injury Collisions	Percent of Total Number of Injury Collisions
Daylight Conditions	25	83.33%	5	100.00%
Dawn/Dusk/Night Conditions	5	16.67%	0	0.00%

	2012 (Oct - Dec)		2013		2014		2015		2016		2017 (Jan - Sept)	
	Total Crashes	Injury Crashes	Total Crashes	Injury Crashes	Total Crashes	Injury Crashes	Total Crashes	Injury Crashes	Total Crashes	Injury Crashes	Total Crashes	Injury Crashes
Angle					1	0	1	0			2	0
Backing												
Head On												
Opposing Left							2	1				
Rear End			5	0	2	0	5	1	4	0	6	1
Sideswipe					1	1						
Single Vehicle							1	1				
TOTALS	0	0	5	0	4	1	9	3	4	0	8	1

KABCO Severity Rating	K	A	B	C	O
Number of Crashes	0	1	2	2	25



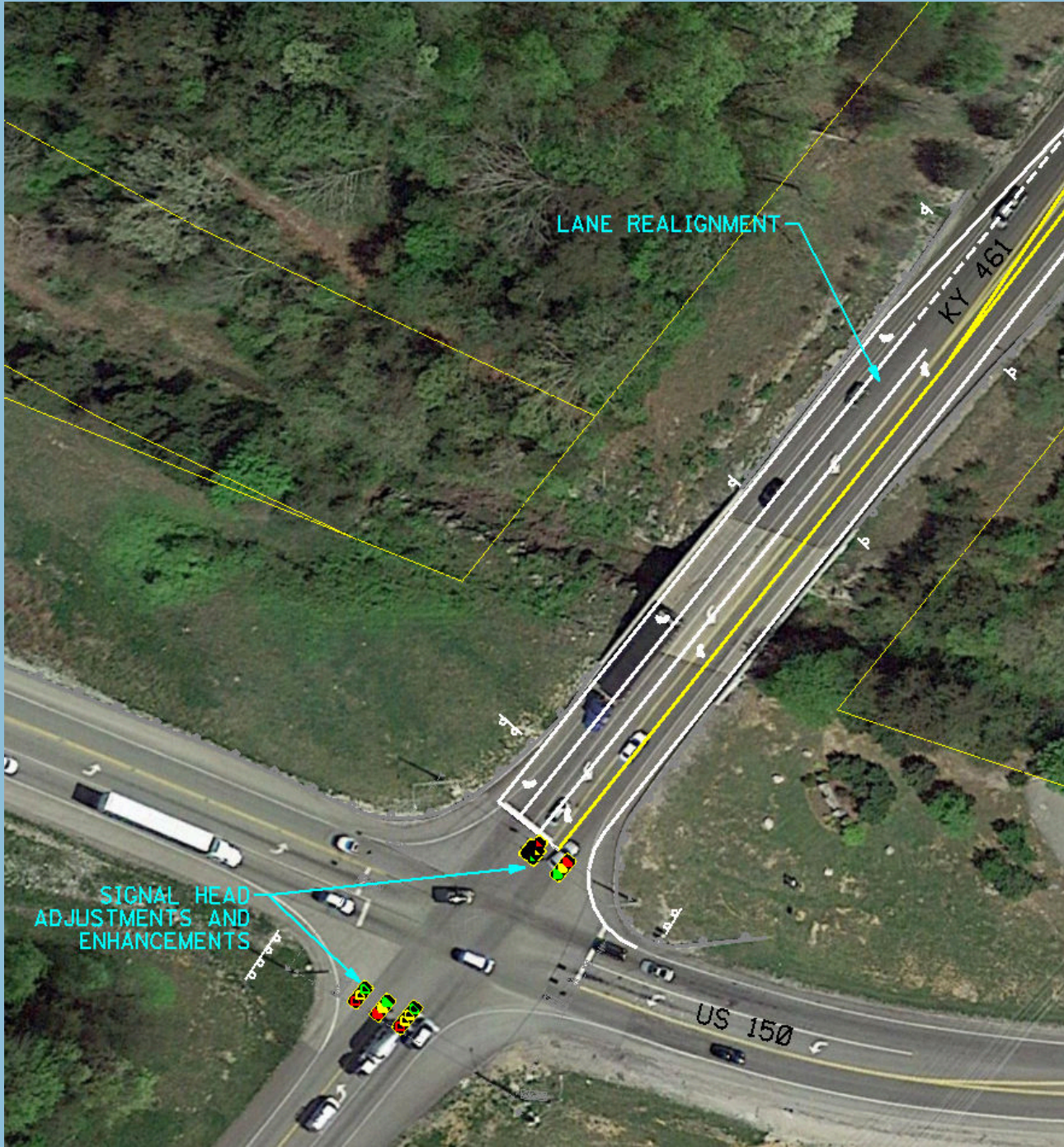
Crash History Analysis



Summary of Analysis

- Over the previous 6 years, 5.83 crashes per year (1.00 fatal/injury).
- Over the previous 3 years, 7.00 crashes per year (1.00 fatal/injury).
- Fatality occurred in 2012 (outside of study range) when vehicle traveling US 150 WB was involved in an Angle collision.
- Large number of Rear End collisions with only a small percentage resulting in injury suggests a congestion issue. These crashes are more frequent on the KY 461 SB and US 150 EB approaches.

Potential Safety Improvement Alternatives



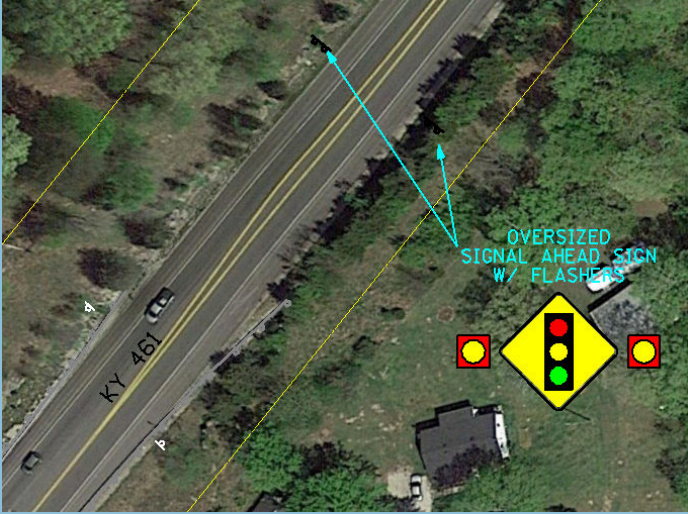
Road Reconfiguration Striping (Three 12' Lanes with 8' Shoulders to Four 12' Lanes with 2' Shoulders) with KY 461 Signal Head Adjustments (Thru-Lane 3-Section Heads, NB 5-Section Protected-Permissive Head, SB 3-Section Right-Turn Head and SB 4-Section Flashing Yellow Head)

Improvement Alternative	Addressed Issue(s)
Road Reconfiguration Striping	Improve traffic flow by providing a dedicated KY 461 SB right-turn lane; reduce congestion and Rear End crashes

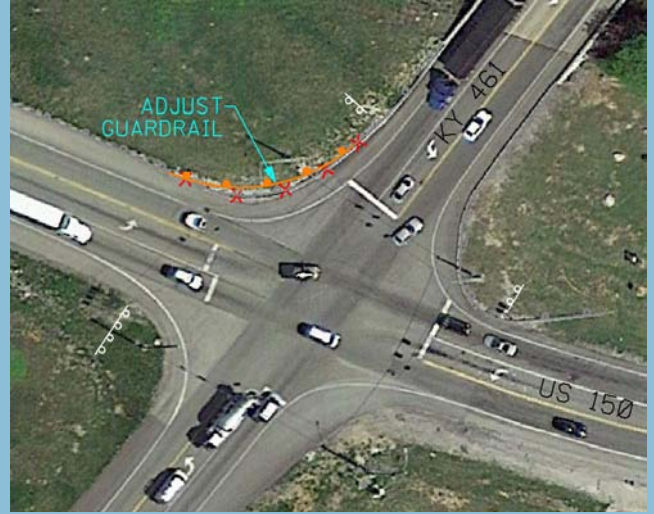
Cost Estimates of Improvement Alternatives

Road Reconfiguration Striping					
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
301	CL2 ASPH SURF 0.38D PG64-22	TON	60	\$67.54	\$4,052.40
2568	MOBILIZATION	LS	1	\$661.50	\$661.50
2650	MAINTAIN & CONTROL TRAFFIC	LS	1	\$5,000.00	\$5,000.00
2676	MOBILIZATION FOR MILL & TEXT	LS	1	\$3,000.00	\$3,000.00
2677	ASPHALT PAVE MILLING & TEXTURING	TON	60	\$15.48	\$928.80
6406	SBM ALUM SHEET SIGNS .080 IN	SQFT	12	\$12.40	\$148.80
6514	PAVE STRIPING-PERM PAINT-4 IN	LF	5766	\$0.21	\$1,210.86
6568	PAVE MARKING-THERMO STOP BAR-24 IN	LF	36	\$11.11	\$399.96
6572	PAVE MARKING-DOTTED LANE EXTENSION	LF	150	\$1.37	\$205.50
6574	PAVE MARKING-THERMO CURV ARROW	EACH	6	\$107.88	\$647.28
22664EN	WATER BLASTING EXISTING STRIPE	LF	5766	\$0.58	\$3,344.28
23875NC	REMOVE THERMOPLASTIC ARROWS	EACH	4	\$118.01	\$472.04
	3 SECTION SIGNAL HEAD WITH BACKPLATE	EACH	3	\$430.00	\$1,290.00
	4 SECTION SIGNAL HEAD WITH BACKPLATE	EACH	1	\$600.00	\$600.00
	5 SECTION SIGNAL HEAD WITH BACKPLATE	EACH	1	\$750.00	\$750.00
				SUBTOTAL:	\$22,711.42
				SMALL PROJECT FACTOR (20%):	\$4,542.28
				TOTAL with CONTINGENCY (20%):	\$32,704.44

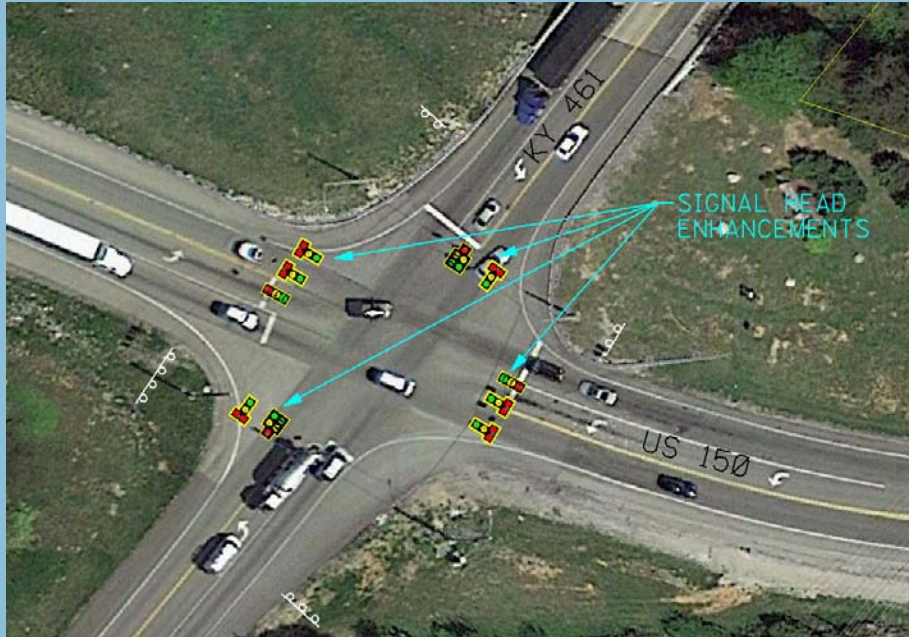
Potential Safety Improvement Alternatives



Oversized Signal Ahead Signs w/ Flashers (All Approaches)



Guardrail Adjustment



Signal Head Enhancements (Thru-Lane Dual-Red Heads and Retroreflective Backplates)

Improvement Alternative

Addressed Issue(s)

Oversized Signal Ahead Signs w/ Flashers	Improve intersection recognition to reduce red-light running (Angle) and Rear End crashes
Guardrail Adjustment	Improve KY 461 SB right-turn movement to reduce Rear End crashes
Signal Head Enhancements	Improve signal visibility to reduce red-light running (Angle and Opposing Left) and Rear End crashes

Cost Estimates of Improvement Alternatives

Oversized Signal Ahead Signs w/ Flashers

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
2568	MOBILIZATION	LS	1	\$184.92	\$184.92
6406	SBM ALUM SHEET SIGNS .080 IN	SQFT	128	\$12.40	\$1,587.20
6410	STEEL POST TYPE 1	LF	176	\$5.96	\$1,048.96
21373ND	REMOVE SIGN	EACH	8	\$38.71	\$309.68
24525EC	ADVANCE WARNING FLASHER	EACH	16	\$197.10	\$3,153.60
24631EC	BARCODE SIGN INVENTORY	EACH	8	\$8.07	\$64.56
				SUBTOTAL:	\$6,348.92
				SMALL PROJECT FACTOR (20%):	\$1,269.78
				TOTAL with CONTINGENCY (20%):	\$9,142.44

Guardrail Adjustment

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
3	CRUSHED STONE BASE	TON	20	\$22.61	\$452.20
212	CL2 ASPH BASE 1.00D PG64-22	TON	9	\$70.87	\$637.83
301	CL2 ASPH SURF 0.38D PG64-22	TON	4	\$67.54	\$270.16
1987	DELINEATOR FOR GUARDRAIL B/W	EACH	2	\$7.57	\$15.14
2381	REMOVE GUARDRAIL	LF	105	\$1.37	\$143.85
2568	MOBILIZATION	LS	1	\$168.25	\$168.25
2575	DITCHING AND SHOULDERING	LF	100	\$4.06	\$406.00
2650	MAINTAIN & CONTROL TRAFFIC	LS	1	\$2,000.00	\$2,000.00
5990	SODDING	SQYD	33	\$4.64	\$153.12
21802EN	G/R STEEL W BEAM-S FACE (7-FT POST)	LF	100	\$15.30	\$1,530.00
				SUBTOTAL:	\$5,776.55
				SMALL PROJECT FACTOR (20%):	\$1,155.31
				TOTAL with CONTINGENCY (20%):	\$8,318.23

Signal Head Enhancements

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
2568	MOBILIZATION	LS	1	\$283.80	\$283.80
2650	MAINTAIN & CONTROL TRAFFIC	LS	1	\$2,000.00	\$2,000.00
	3 SECTION SIGNAL HEAD WITH BACKPLATE	EACH	2	\$430.00	\$860.00
	5 SECTION SIGNAL HEAD WITH BACKPLATE	EACH	2	\$750.00	\$1,500.00
	4 SECTION DUAL RED SIGNAL HEAD WITH BACKPLATE	EACH	6	\$850.00	\$5,100.00
				SUBTOTAL:	\$9,743.80
				SMALL PROJECT FACTOR (20%):	\$1,948.76
				TOTAL with CONTINGENCY (20%):	\$14,031.07