
chapter

7

Recommendations

7 Recommendations

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7.1 Study Recommendations

The Eastern Shore Safety Study provided a comprehensive evaluation of the U.S. Route 13 and Route 175 corridors with the express purpose of developing a series of recommended treatments which have proven safety benefits. The range of treatments address existing, short-term, and long-term corridor needs. The study incorporated systemic template application, crossover and intersection evaluation, and site specific assessment toward the development of the recommendations. The recommendations supersede the 2002 Study recommendations except for those discussed in Section 6.2.1 of the 2002 Study regarding new U.S. Route 13 alignments and recommended grade separated intersections.

Through the approach presented in this report, the most prevalent and most severe crash types have been comprehensively considered and addressed.

- ◆ The most common crash type during the 2010-2014 study period was roadway departure accounting for 33 percent or 520 reported crashes. The rumble strips installed by 2014 demonstrate a 27 percent reduction in roadway departure crashes in the one-year comparison. Widening shoulders, installing safety edge, enhancing roadway delineation, and lighting in select locations provides additional guidance and recovery measures for enhanced safety.

- ◆ Animal related crashes were the second most prevalent crash type within the study area representing 22 percent of total crashes. However, this crash type only represented three percent of fatal and severe crashes. These crashes are widespread, random, and difficult to predict; therefore, more typical and expensive measures such as fencing, separated animal crossings, or dynamic warning systems were not included. The effectiveness of other less costly measures, such as installation of deer reflectors or deer warning signs is limited and as such, were not included in the recommendations. As animal crashes represented such a small portion of the severe and fatal crashes, they were not included as a focus crash type in the systemic analysis. Some of the measures identified as a result of the site specific analysis, such as lighting, improved roadway delineation, shoulder widening, and installation of safety edge, have the potential to help address animal related crashes by improving drivers' ability to see, respond, and recover from wildlife in the roadway.
- ◆ Intersection-type crashes (angle crashes and rear end crashes) represent 39 percent of all crashes or 614 reported crashes. Crossover and intersection modifications as well as the access management strategies presented in this report, address these crash types and based on available research, could potentially have the most impact on enhancing the safety of the corridor.

The recommendations are presented in tables divided into 15 U.S. Route 13 segments and one Route 175 segment (see Table 5.1). The tables present the costs associated with the treatments and provide the detail on the cost for each tier of implementation, see Tables 7.1 – 7.16. See Appendix E for additional details.

The spreadsheets used to create the following tables have been provided as a supplement to this study report. The spreadsheets are tools that can be used in planning the implementation of the countermeasures. Considerations for implementation include the most influential techniques in reducing the most severe crash types, the time frame in which countermeasures can be installed, and the funding source identified. This study and the spreadsheets provide a basis for an action plan that VDOT can use to implement the countermeasures to make U.S. Route 13 and Route 175 safer transportation facilities for all who use them.

Table 7.1.
Recommended Improvements - U.S. Route 13 Segment #1.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
1	70.00	74.78	Route 600 (Kiptopeke) to Route 624 (Cape Charles)							
Systemic Treatments										
			Template 2 - Unsignalized Intersection - 4-leg (2-way stop controlled)				\$267,102	\$34,924		\$302,026
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$74,038	\$6,854		\$80,892
			Template 10 - Corridor - Divided Roadway				\$190,683	\$1,500		\$192,183
			Template 12 - Curve - Divided Roadway				\$6,080	\$14,386		\$20,466
Crossover and Intersection Treatments										
			Retain	8						
			Close with 2 left turn lanes	1	\$29,532	\$29,532				\$29,532
			Install 1 Left Turn Lane	1	\$48,000	\$48,000				\$48,000
Site Specific Treatments										
			None							
Total Segment #1						\$77,532	\$537,903	\$57,664		\$673,099

7 Recommendations

Table 7.2.
Recommended Improvements - U.S. Route 13 Segment #2

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
2	74.78	78.91	Route 624 (Cape Charles) to Route 642 (Cape Charles)							
Systemic Treatments										
			Template 2 - Unsignalized Intersection - 4-leg (2-way stop controlled)				\$53,440	\$6,985	\$14,761	\$75,186
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$155,980	\$16,210		\$172,190
			Template 10 - Corridor - Divided Roadway				\$154,377	\$1,500		\$155,877
			Template 12 - Curve - Divided Roadway				\$12,160	\$28,771		\$40,931
Crossover and Intersection Treatments										
			Retain	14						
			Close with No Left Turn Lanes	3	\$4,102	\$12,306				\$12,306
			Close with 1 turn left lane	1	\$17,106	\$17,106				\$17,106
			Lengthen Existing Left Turn Lane	2	\$21,000	\$42,000				\$42,000
			Install 1 Left Turn Lane	3	\$48,000	\$144,000				\$144,000
			Install 2 Left Turn Lanes	2	\$96,000	\$192,000				\$192,000
Site Specific Treatments										
			Location #1				\$14,633	\$500	\$107,422	\$122,555
Total Segment #2						\$407,412	\$390,590	\$53,966	\$122,183	\$974,151

Table 7.3.
Recommended Improvements - U.S. Route 13 Segment #3.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
3	78.91	86.55	Route 642 (Cape Charles) to Route 630 (Martin Siding)							
Systemic Treatments										
			Template 2 - Unsignalized Intersection - 4-leg (2-way stop controlled)				\$211,064	\$27,940		\$239,004
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$155,980	\$6,484		\$162,464
			Template 5 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (no crossover)				\$110,228	\$14,547		\$124,775
			Template 8 - Signalized Intersection - 4-leg				\$40,422			\$40,422
			Template 10 - Corridor - Divided Roadway				\$211,667	\$500	\$4,145	\$216,312
			Template 12 - Curve - Divided Roadway				\$42,559	\$43,157	\$109,356	\$195,072
Crossover and Intersection Treatments										
			Retain	5						
			Close with No Left Turn Lanes	2	\$4,102	\$8,204				\$8,204
			Lengthen Existing Left Turn Lane	10	\$21,000	\$210,000				\$210,000
			Install 1 Left Turn Lane	4	\$48,000	\$192,000				\$192,000
			Install 2 Left Turn Lanes	10	\$96,000	\$960,000				\$960,000
			Install RCUT Intersection Treatment	1	\$196,102	\$196,102				\$196,102
Site Specific Treatments										
			Location #2				\$103,329	\$27,258	\$1,069,864	\$1,200,451
			Location #3				\$59,185	\$2,842	\$378,589	\$440,616
			Location #4				\$31,098	\$3,211	\$123,142	\$157,451
Total Segment #3						\$1,566,306	\$965,532	\$125,939	\$1,685,096	\$4,342,873

7 Recommendations

Table 7.4.
Recommended Improvements - U.S. Route 13 Segment #4.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
4	86.55	89.03	Route 630 (Martin Siding) to Route 628 (Treherneville and Machipongo)							
Systemic Treatments										
			Template 2 - Unsignalized Intersection - 4-leg (2-way stop controlled)				\$53,440			\$53,440
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$218,372			\$218,372
			Template 5 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (no crossover)				\$4,471			\$4,471
			Template 10 - Corridor - Divided Roadway				\$173,575			\$173,575
			Template 12 - Curve - Divided Roadway				\$18,240			\$18,240
Crossover and Intersection Treatments										
			Retain	0						
			Close with No Left Turn Lanes	1	\$4,102	\$4,102				\$4,102
			Close with 1 turn left lane	2	\$17,106	\$34,212				\$34,212
			Lengthen Existing Left Turn Lane	7	\$21,000	\$147,000				\$147,000
			Install 1 Left Turn Lane	6	\$48,000	\$288,000				\$288,000
			Install 2 Left Turn Lanes	2	\$96,000	\$192,000				\$192,000
Site Specific Treatments										
			None							
Total Segment #4						\$665,314	\$468,098			\$1,133,412

Table 7.5.
Recommended Improvements - U.S. Route 13 Segment #5.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
5	89.03	93.9	Route 628 (Treherneville and Machipongo) to Route 617 (Nassawadox)							
Systemic Treatments										
			Template 2 - Unsignalized Intersection - 4-leg (2-way stop controlled)				\$160,319			\$160,319
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$62,534	\$6,484		\$69,018
			Template 5 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (no crossover)				\$5,451			\$5,451
			Template 10 - Corridor - Divided Roadway				\$147,070	\$500		\$147,570
Crossover and Intersection Treatments										
			Retain	3						
			Close with No Left Turn Lanes	1	\$4,102	\$4,102				\$4,102
			Lengthen Existing Left Turn Lane	7	\$21,000	\$147,000				\$147,000
			Install 1 Left Turn Lane	5	\$48,000	\$240,000				\$240,000
			Install 2 Left Turn Lanes	4	\$96,000	\$384,000				\$384,000
			Access Management	2	\$16,213	\$32,426				\$32,426
Site Specific Treatments										
			Location #5				\$74,046	\$8,053	\$111,199	\$193,298
			Location #6				\$87,528	\$7,432	\$95,277	\$190,236
			Total Segment #5			\$807,528	\$536,948	\$22,469	\$206,475	\$1,573,420

7 Recommendations

Table 7.6.
Recommended Improvements - U.S. Route 13 Segment #6.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
6	93.9	98.48	Route 617 (Nassawadox) to Route 618 (Exmore)							
Systemic Treatments										
			Template 2 - Unsignalized Intersection - 4-leg (2-way stop controlled)				\$53,440			\$53,440
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$125,068	\$3,242		\$128,310
			Template 5 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (no crossover)				\$4,559			\$4,559
			Template 8 - Signalized Intersection - 4-leg				\$80,844			\$80,844
			Template 10 - Corridor - Divided Roadway				\$165,781			\$165,781
			Template 12 - Curve - Divided Roadway				\$6,080			\$6,080
Crossover and Intersection Treatments										
			Retain	4						
			Close with No Left Turn Lanes	1	\$4,102	\$4,102				\$4,102
			Close with 2 left turn lanes	1	\$29,532	\$29,532				\$29,532
			Lengthen Existing Left Turn Lane	8	\$21,000	\$168,000				\$168,000
			Install 1 Left Turn Lane	4	\$48,000	\$192,000				\$192,000
			Install 2 Left Turn Lanes	3	\$96,000	\$288,000				\$288,000
Site Specific Treatments										
			None							
			Total Segment #6			\$681,634	\$435,772	\$3,242		\$1,120,648

Table 7.7.
Recommended Improvements - U.S. Route 13 Segment #7.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
7	98.48	103.03	Route 618 (Exmore) to Route 607 (Melfa, Keller, Painter)							
Systemic Treatments										
			Template 2 - Unsignalized Intersection - 4-leg (2-way stop controlled)				\$267,197	\$6,985		\$274,182
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$187,602			\$187,602
			Template 5 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (no crossover)				\$150,164			\$150,164
			Template 8 - Signalized Intersection - 4-leg				\$202,108	\$11,620		\$213,728
			Template 10 - Corridor - Divided Roadway				\$73,427			\$73,427
			Template 12 - Curve - Divided Roadway				\$18,240			\$18,240
Crossover and Intersection Treatments										
			Retain	3						
			Close with 1 turn left lane	1	\$17,106	\$17,106				\$17,106
			Lengthen Existing Left Turn Lane	14	\$21,000	\$294,000				\$294,000
			Install 1 Left Turn Lane	5	\$48,000	\$240,000				\$240,000
			Install RCUT Intersection Treatment	1	\$196,102	\$196,102				\$196,102
			Remove Signal	1	\$10,000	\$10,000				\$10,000
			Pedestrian Crossing Improvement	1	\$60,000	\$60,000				\$60,000
Site Specific Treatments										
			None							
Total Segment #7						\$817,208	\$898,738	\$18,605		\$1,734,551

7 Recommendations

Table 7.8.
Recommended Improvements - U.S. Route 13 Segment #8.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
8	103.03	110.41	Route 607 (Melfa, Keller, Painter) to Route 639 (Accomac and Onley)							
Systemic Treatments										
			Template 1 - Unsignalized Intersection - 4-leg (2-way stop controlled), undivided				\$46,013			\$46,013
			Template 2 - Unsignalized Intersection - 4-leg (2-way stop controlled)				\$53,440			\$53,440
			Template 3 - Unsignalized Intersection - 3-leg (1-way stop controlled), undivided				\$88,226			\$88,226
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$136,056			\$136,056
			Template 5 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (no crossover)				\$18,464			\$18,464
			Template 8 - Signalized Intersection - 4-leg				\$121,265			\$121,265
			Template 9 - Corridor - Undivided Roadway				\$54,166			\$54,166
			Template 10 - Corridor - Divided Roadway				\$193,000			\$193,000
Crossover and Intersection Treatments										
			Retain	0						
			Close with No Left Turn Lanes	1	\$4,102	\$4,102				\$4,102
			Close with 1 turn left lane	1	\$17,106	\$17,106				\$17,106
			Lengthen Existing Left Turn Lane	9	\$21,000	\$189,000				\$189,000
			Install 1 Left Turn Lane	3	\$48,000	\$144,000				\$144,000
			Install 2 Left Turn Lanes	6	\$96,000	\$576,000				\$576,000
			Install RCUT Intersection Treatment	3	\$196,102	\$588,306				\$588,306
			Pedestrian Crossing Improvement	1	\$60,000	\$60,000				\$60,000
Site Specific Treatments										
			Location #7				\$10,549	\$660	\$120,258	\$131,467
			Location #8				\$53,555	\$7,432	\$88,198	\$149,185
Total Segment #8						\$1,578,514	\$774,734	\$8,092	\$208,456	\$2,569,796

Table 7.9.
Recommended Improvements - U.S. Route 13 Segment #9.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
9	110.41	117.54	Route 639 (Accomac and Onley) to Business 13/Route 663 (Mary N Smith Area)							
Systemic Treatments										
			Template 2 - Unsignalized Intersection – 4-leg (2-way stop controlled)				\$160,319	\$20,955	\$29,522	\$210,796
			Template 4 - Unsignalized Intersection – 3-leg (1-way stop controlled), median separated (with crossover)				\$187,602	\$3,242		\$190,844
			Template 5 - Unsignalized Intersection – 3-leg (1-way stop controlled), median separated (no crossover)				\$186,259	\$28,754		\$215,013
			Template 8 - Signalized Intersection – 4-leg				\$242,530	\$34,860		\$277,390
			Template 10 - Corridor – Divided Roadway				\$134,105	\$500	\$4,145	\$138,750
			Template 12 - Curve – Divided Roadway				\$30,400	\$43,157		\$73,557
Crossover and Intersection Treatments										
			Retain	6						
			Close with No Left Turn Lanes	1	\$4,102	\$4,102				\$4,102
			Lengthen Existing Left Turn Lane	20	\$21,000	\$420,000				\$420,000
			Install 1 Left Turn Lane	6	\$48,000	\$288,000				\$288,000
			Install RCUT Intersection Treatment	1	\$196,102	\$196,102				\$196,102
			Access Management	3	\$16,213	\$48,639				\$48,639
			Remove Signal	1	\$10,000	\$10,000				\$10,000
Site Specific Treatments										
			Location #9				\$43,936	\$4,347	\$48,438	\$96,721
			Location #10				\$118,804	\$12,382	\$72,817	\$204,003
			Location #11				\$53,997	\$7,617	\$100,237	\$161,851
			Location #12				\$54,143	\$7,617	\$312,552	\$374,312
			Location #13				\$61,671	\$12,593	\$196,074	\$270,338
			Location #14				\$100,947	\$19,880	\$227,905	\$348,732
Total Segment #9						\$966,843	\$1,374,713	\$195,904	\$991,690	\$3,529,150

7 Recommendations

Table 7.10.
Recommended Improvements - U.S. Route 13 Segment #10.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
10	117.54	120.23	Business 13/Route 663 (Mary N Smith Area) to Route 679							
Systemic Treatments										
			Template 3 - Unsignalized Intersection – 3-leg (1-way stop controlled), undivided				\$66,893			\$66,893
			Template 4 - Unsignalized Intersection – 3-leg (1-way stop controlled), median separated (with crossover)				\$93,801	\$3,242		\$97,043
			Template 9 - Corridor – Undivided Roadway				\$22,000			\$22,000
			Template 10 - Corridor – Divided Roadway				\$55,741	\$500		\$56,241
			Template 11 - Curve – Undivided Roadway				\$13,751			\$13,751
			Template 12 - Curve – Divided Roadway				\$12,160			\$12,160
Crossover and Intersection Treatments										
			Retain	0						
			Close with No Left Turn Lanes	1	\$4,102	\$4,102				\$4,102
			Lengthen Existing Left Turn Lane	7	\$21,000	\$147,000				\$147,000
			Install 1 Left Turn Lane	2	\$48,000	\$96,000				\$96,000
Site Specific Treatments										
			Location #15				\$63,731	\$20,817	\$167,888	\$252,436
			Location #16				\$22,486	\$3,985	\$56,463	\$82,934
			Total Segment #10			\$247,102	\$350,563	\$28,544	\$224,351	\$850,560

Table 7.11.
Recommended Improvements - U.S. Route 13 Segment #11.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
11	120.23	123.47	Route 679 to Route 681 (Nelsonia)							
Systemic Treatments										
			Template 2 - Unsignalized Intersection - 4-leg (2-way stop controlled)				\$53,440			\$53,440
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$175,580	\$3,242		\$178,822
			Template 5 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (no crossover)				\$54,617			\$54,617
			Template 10 - Corridor - Divided Roadway				\$87,773	\$500		\$88,273
			Template 12 - Curve - Divided Roadway				\$12,160			\$12,160
Crossover and Intersection Treatments										
			Retain	0						
			Close with No Left Turn Lanes	1	\$4,102	\$4,102				\$4,102
			Close with 1 turn left lane	3	\$17,106	\$51,318				\$51,318
			Close with 2 left turn lanes	3	\$29,532	\$88,596				\$88,596
			Lengthen Existing Left Turn Lane	5	\$21,000	\$105,000				\$105,000
			Install 2 Left Turn Lanes	5	\$96,000	\$480,000				\$480,000
			Install RCUT Intersection Treatment	3	\$196,102	\$588,306				\$588,306
			Access Management	1	\$16,213	\$16,213				\$16,213
Site Specific Treatments										
			Location #17				\$81,885	\$10,686	\$374,137	\$466,708
			Total Segment #11			\$1,333,535	\$465,455	\$14,428	\$374,137	\$2,187,555

7 Recommendations

Table 7.12.
Recommended Improvements - U.S. Route Segment #12.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
12	123.47	125.57	Route 681 (Nelsonia) to Route 729 (Mappsville)							
Systemic Treatments										
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$72,753			\$72,753
			Template 9 - Corridor - Undivided Roadway				\$35,052			\$35,052
			Template 10 - Corridor - Divided Roadway				\$67,949	\$500		\$68,449
			Template 11 - Curve - Undivided Roadway				\$13,751			\$13,751
			Template 12 - Curve - Divided Roadway				\$24,320			\$24,320
Crossover and Intersection Treatments										
			Retain	0						
			Close with 1 turn left lane	2	\$17,106	\$34,212				\$34,212
			Lengthen Existing Left Turn Lane	3	\$21,000	\$63,000				\$63,000
			Install 1 Left Turn Lane	1	\$48,000	\$48,000				\$48,000
			Install 2 Left Turn Lanes	3	\$96,000	\$288,000				\$288,000
			Install RCUT Intersection Treatment	1	\$196,102	\$196,102				\$196,102
			Access Management	1	\$16,213	\$16,213				\$16,213
Site Specific Treatments										
			Location #18				\$121,000	\$11,564	\$122,862	\$255,426
Total Segment #12						\$645,527	\$334,825	\$12,064	\$122,862	\$1,115,278

Table 7.13.
Recommended Improvements - U.S. Route Segment #13.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
13	125.57	128.9	Route 729 (Mappsville) to Route 692 (Oak Hall and Temperanceville)							
Systemic Treatments										
			Template 1 - Unsignalized Intersection - 4-leg (2-way stop controlled), undivided				\$23,007			\$23,007
			Template 3 - Unsignalized Intersection - 3-leg (1-way stop controlled), undivided				\$25,611			\$25,611
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$187,176			\$187,176
			Template 5 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (no crossover)				\$5,492			\$5,492
			Template 9 - Corridor - Undivided Roadway				\$14,560			\$14,560
			Template 10 - Corridor - Divided Roadway				\$56,053			\$56,053
			Template 12 - Curve - Divided Roadway				\$18,240			\$18,240
Crossover and Intersection Treatments										
			Retain	2						
			Close with No Left Turn Lanes	1	\$4,102	\$4,102				\$4,102
			Close with 2 left turn lanes	1	\$29,532	\$29,532				\$29,532
			Lengthen Existing Left Turn Lane	4	\$21,000	\$84,000				\$84,000
			Install 1 Left Turn Lane	4	\$48,000	\$192,000				\$192,000
			Install 2 Left Turn Lanes	1	\$96,000	\$96,000				\$96,000
			Install RCUT Intersection Treatment	3	\$196,102	\$588,306				\$588,306
Site Specific Treatments										
			Location #19				\$189,628	\$75,487	\$489,101	\$749,216
			Location #20				\$68,819	\$8,034	\$355,320	\$432,173
			Total Segment #13			\$993,940	\$583,586	\$83,520	\$844,421	\$2,505,468

7 Recommendations

Table 7.14.
Recommended Improvements - U.S. Route Segment #14.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
14	128.9	133.93	Route 692 (Oak Hall and Temperanceville) to Route 175							
Systemic Treatments										
			Template 4 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (with crossover)				\$164,732	\$6,484		\$171,216
			Template 5 - Unsignalized Intersection - 3-leg (1-way stop controlled), median separated (no crossover)				\$20,123	\$1,374		\$21,497
			Template 8 - Signalized Intersection - 4-leg				\$80,844			\$80,844
			Template 9 - Corridor - Undivided Roadway				\$19,104			\$19,104
			Template 10 - Corridor - Divided Roadway				\$118,468			\$118,468
			Template 11 - Curve - Undivided Roadway				\$13,751			\$13,751
			Template 12 - Curve - Divided Roadway				\$12,160			\$12,160
Crossover and Intersection Treatments										
			Retain	3						
			Close with No Left Turn Lanes	7	\$4,102	\$28,714				\$28,714
			Close with 1 turn left lane	1	\$17,106	\$17,106				\$17,106
			Close with 2 left turn lanes	1	\$29,532	\$29,532				\$29,532
			Lengthen Existing Left Turn Lane	13	\$21,000	\$273,000				\$273,000
			Install 1 Left Turn Lane	4	\$48,000	\$192,000				\$192,000
			Install 2 Left Turn Lanes	3	\$96,000	\$288,000				\$288,000
Site Specific Treatments										
			Locations #21 & #22				\$180,301	\$151,321	\$453,673	\$785,295
Total Segment #14						\$828,352	\$609,483	\$159,179	\$453,673	\$2,050,687

Table 7.15.
Recommended Improvements - U.S. Route Segment #15.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
15	133.93	138.1	Route 175 to Maryland State Line							
Systemic Treatments										
			Template 2 - Unsignalized Intersection – 4-leg (2-way stop controlled)				\$53,440			\$53,440
			Template 4 - Unsignalized Intersection – 3-leg (1-way stop controlled), median separated (with crossover)				\$297,494	\$3,242		\$300,736
			Template 5 - Unsignalized Intersection – 3-leg (1-way stop controlled), median separated (no crossover)				\$17,673			\$17,673
			Template 10 - Corridor – Divided Roadway				\$133,615			\$133,615
Crossover and Intersection Treatments										
			Retain	1						
			Close with No Left Turn Lanes	3	\$4,102	\$12,306				\$12,306
			Close with 1 turn left lane	2	\$17,106	\$34,212				\$34,212
			Close with 2 left turn lanes	2	\$29,532	\$59,064				\$59,064
			Lengthen Existing Left Turn Lane	14	\$21,000	\$294,000				\$294,000
			Install 1 Left Turn Lane	4	\$48,000	\$192,000				\$192,000
			Install 2 Left Turn Lanes	2	\$96,000	\$192,000				\$192,000
			Access Management	1	\$16,213	\$16,213				\$16,213
Site Specific Treatments										
			Location #23				\$40,277	\$12,118	\$93,393	\$145,788
Total Segment #15						\$799,795	\$542,499	\$15,360	\$93,393	\$1,451,047

7 Recommendations

Table 7.16.
Recommended Improvements - Route 175.

Segment #	Start Mile Post	"End Mile Post"	Corridor	Qty	Unit Cost	Crossovers and Intersections	Tier 1	Tier 2	Tier 3	Total
16	0	6.98	Route 175 from U.S. Route 13 to Mosquito Creek							
Systemic Treatments										
			Template 1 - Unsignalized Intersection - 4-leg (2-way stop controlled), undivided				\$23,007			\$23,007
			Template 3 - Unsignalized Intersection - 3-leg (1-way stop controlled), undivided				\$180,968			\$180,968
			Template 8 - Signalized Intersection - 4-leg				\$40,422			\$40,422
			Template 9 - Corridor - Undivided Roadway				\$251,344			\$251,344
			Template 11 - Curve - Undivided Roadway				\$13,751			\$13,751
Site Specific Treatments										
			Location #24				\$5,241	\$6,477	\$12,929	\$24,647
			Location #25				\$6,106	\$4,290	\$5,016	\$15,412
Total Route 175							\$520,839	\$10,767	\$17,945	\$549,551