

8.2 BUILD ALTERNATIVES SAFETY EVALUATIONS

To determine the potential safety benefits of the proposed build alternatives a crash modification factor (CMF) based safety evaluation was performed for this study. CMFs were obtained from the Highway Safety Manual (HSM).

The safety evaluation was developed exclusively for SR 121 since the proposed build improvements will mainly affect operations along SR 121. Both Build Alternative 1 and Alternative 2 propose the addition of a signal to the ramp terminal intersection of westbound I-10 at SR 121. Build Alternative 1 will add a new westbound I-10 to northbound SR 121 exit ramp on the east side of SR 121 connected as a signal approach while removing the left turn movement that currently exists at the loop ramp. Build Alternative 2 retains the existing lane configuration with the addition of the signal at the westbound I-10 ramp terminal intersection. The CMFs applicable to proposed improvements are summarized in **Table 16**.

Table 16: Crash Modification Factor (CMF) Summary Table

ID	Description	CMF	Applicability	
			Alt. 1	Alt. 2
(14.4.2.6.) *	Convert Stop Control to Signal Control - All types (All severities)	0.95	✓	✓
(14.4.2.6.) *	Convert Stop Control to Signal Control - Angle (All severities)	0.33	✓	✓
(14.4.2.6.) *	Convert Stop Control to Signal Control - Rear-end (All severities)	2.43	✓	✓

*Highway Safety Manual CMF ID

The CMFs are applied to the crashes at the intersection of SR 121 and westbound I-10. At this location, the crashes will result in 67 percent decrease in angle crashes, 143 percent increase in rear end crashes, and 5% decrease in all other applicable crash types for both Alternative 1 and Alternative 2. Overall, along SR 121 within study limit, there will be approximately 17 percent increase in rear end crashes (signalized intersections tend to increase rear end crashes) and 22 percent reduction in angle crashes with Build Alternative 1 and Build Alternative 2.

The safety evaluation is summarized in **Table 17**. The detail calculation of safety evaluation and CMF reports are provided in **Appendix E**.

Table 17: Build Alternatives Safety Evaluation Summary

Crash Type	Historical Crashes (2012-2016)		Alternative 1		Alternative 2	
	Total Crashes	Crashes Per Year	Est. Crashes After Improvements	% Change	Est. Crashes After Improvements	% Change
Angle	12	3.0	1.86	-22%	0.66	-22%
Rear-End	25	2.4	5.86	17%	11.34	17%
Other Crashes	15	5.0	2.99	0%	5.06	0%