



In the Design Year 2045 Build Alternative, the 95th Percentile queue lengths do not exceed the proposed storage length at either intersection within the study area. **Table 5-4** summarizes the queue analysis for the Design Year 2045 Build Alternative.

Table 5-4: 95th Percentile Queue Length Summary Design Year 2045 Build Alternative

Intersection	Time Period	95 th Percentile Queue Length (feet)									
		Eastbound		Northbound			Westbound		Southbound		
		Left	Right	Left	Through	Right	Left	Right	Left	Through	Right
S.R. 87 at I-10 EB On/Off-Ramps	AM Peak	#334*	115		271	43			113	31	
	PM Peak	#351*	134		274	34			#236	143	
	Proposed Storage (feet)		250			500			200		
S.R. 87 at I-10 WB On/Off-Ramps	AM Peak			m118	31		92*	148		195	65
	PM Peak			m80	43		151*	58		227	64
	Proposed Storage (feet)			200				300			700

m: Volume for 95th percentile queue is metered by upstream signal.

#: 95th percentile volume exceeds capacity and queue may be longer.

* The queues are less than the total off-ramp length of approximately 1300 feet.

5.3 Build Alternative Safety Analysis

A quantitative safety analysis was performed to determine if the proposed improvements address the existing safety concerns for this IOAR. The safety analysis performed follows the guidelines in the 2020 IARUG Safety Analysis Guidance.

The proposed improvements include changing the ramp terminal intersections from stop-controlled to signal-controlled intersections. Signalizing the right-turn lanes is anticipated to reduce the number of right-turn related crashes at the intersections. Therefore, crash modification factors (CMF) for “Install a traffic signal” was obtained from the CMF Clearinghouse maintained by FHWA. CMF ID: 322 and CMF ID: 7848 were determined applicable for the proposed improvement. CMF 322 was not selected because the analyst is interested in the number of crashes that are not interchange-related. CMF 7848 was developed to account for all crashes not specifying the location, and as a result, was used for the predictive analysis.

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I-10 at S.R. 87
FPID: 413062-4-22-01 and 413062-5-22-01



The CMF (ID: 7848) of 0.61 was applied to observed crashes. The complete quantitative crash analysis is summarized in **Table 5-5**. The CMF is provided in **Appendix G**.

Table 5-5: Build Alternative Annual Crash Reduction Calculations

Study Locations	Total Number of Crashes	Annual Crash Frequency (crashes/year)	CMF	Predicted Annual Crash Frequency	Annual Reduction in Crashes (crashes/year)
S.R. 87 at I-10 EB On/Off-Ramps	27	5.4	0.61	3.294	2.106
S.R. 87 at I-10 WB On/Off-Ramps	20	4	0.61	2.440	1.560
Total Reduction					3.666

By implementing the proposed modifications, a total crash reduction of 3.666 crashes a year is expected.