

# INTERCHANGE OPERATIONAL ANALYSIS REPORT (IOAR)

I-10 at Garcon Point Road  
FPID: 413062-4-22-01 and 413062-5-22-01



Table 5-3: Design Year 2045 Build Intersection Analysis Summary

Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay	LOS	Delay (sec)	LOS
			AM (PM)	AM (PM)		
Garcon Point Road at I-10 EB On/Off-Ramps	EB	Left	26.1 (36.4)	C (D)	17.4 (24.2)	B (C)
		Right	0.2 (0.8)	A (A)		
	NB	Thru/Right	12.2 (11.5)	B (B)		
	SB	Left	14.4 (24.8)	B (C)		
		Thru	10.0 (10.5)	A (B)		
Garcon Point Road at I-10 WB On/Off-Ramps*	WB	Left	19.9 (24.0)	C (C)		
		Right	14.6 (12.4)	B (B)		

\*Delay reported for worst-case movement only.

In the Design Year 2045 Build Alternative, the available storage accommodates the 95<sup>th</sup> Percentile queue lengths at all approaches of the study intersections within the study area. **Table 5-4** summarizes the queue analysis for Design Year 2045 Build Alternative.

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

Intersection	Time Period	95 <sup>th</sup> Percentile Queue Length (feet)						
		EB		NB	WB		SB	
		Left	Right	Through	Left	Right	Left	Through
Garcon Point Rd at I-10 EB On/Off-Ramps	AM Peak	191	0	47			100	47
	PM Peak	#293	4	30			#212	64
	Proposed Storage (feet)		200				400	
Garcon Point Rd at I-10 WB On/Off-Ramps	AM Peak			5	77	77		0
	PM Peak			2	56	56		0
	Proposed Storage (feet)					230		

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

## 5.3 Build Alternative Safety Analysis

A quantitative safety analysis was performed to determine if the study alternative addressed the existing safety concerns. The safety analysis performed follows the guidelines in the 2020 IARUG. The safety analysis was performed using Crash Modification Factors (CMFs) from CMF Clearinghouse maintained by FHWA.

**Table 5-5**, presented below, shows the reduction in crashes based on the Build Alternative for the study area. These crash frequencies were then used to determine the safety impact of the proposed

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improvements. The proposed improvement of changing the I-10 eastbound ramp terminal intersection from stop-controlled to signal-controlled intersection has a known CMF. It is important to note that the CMF for the proposed improvement was not available for an interchange setting. However, the CMF utilized in the IOAR is the most applicable and is not expected to have a large deviation from an interchange setting. The CMF used to quantify the benefits of the project is:

- Clearinghouse CMF 1459: Install a traffic signal: 0.83.

By implementing the proposed modification, a total crash reduction of 0.476 crashes a year is expected. The CMF Clearinghouse summary reports are provided in **Appendix G**.

The safety benefits of some other improvements within the study area must be looked at qualitatively. For example, the change of the shared through/left-turn lane to a left-turn lane only on the southbound movement at the I-10 eastbound ramp terminal intersection cannot be analyzed using HSM and the FHWA Clearinghouse.

At the I-10 eastbound ramp terminal intersection, most of the angle and rear-end crashes were attributed to following too closely and failing to yield the right-of-way. These crashes can also be due to the failure to judge whether or not a gap in on-coming northbound traffic is long enough to complete the turn safely. Converting the inside through lane to a left-turn lane separates turning vehicles from the through traffic, which reduces the conflicts identified. Separating through movement from left-turning vehicles can decrease headway between vehicles and improve the flow rate for both northbound and southbound movements.

Table 5-5: Build Alternative Annual Crash Reduction Calculations

Study Locations	Number of Crashes (2013-2017)	Annual Crash Frequency (crashes/year)	CMF	Expected Annual Crash Frequency (crashes/year)	Annual Reduction in Crashes (crashes/year)
I-10 EB at Garcon Point Road	14	2.8	0.83	2.324	0.476
Total Reduction					0.476