

Table 22 Future Ramp Queue Analysis

Intersection	Ramp Length* (ft.)	95 th Percentile Queue Length (ft.)			
		2023 (No-Build)	2023 (Build)	2033 (No-Build)	2033 (Build)
Fiske Blvd at I-95 NB off-ramp	1,300	1,000	225	1,475	325
Fiske Blvd at I-95 SB off-ramp	1,350	450	175	650	225
Fiske Blvd at I-95 NB off-ramp	1,300	1,175	350	1,325	400
Fiske Blvd at I-95 SB off-ramp	1,350	325	125	450	175

*Ramp lengths are measured as the distance from the stop bar to the painted nose of the gore

5.5 Future Safety Performance

All left turn movements leading into a ramp or from a ramp in the study area will experience increased capacity from the addition of an extra turn lane. The dual left turn lane movements will operate with protected only phasing operations at the Fiske Boulevard and I-95 interchange. Additionally, increase in the storage lengths of the left turns further improve queue storage at intersections. The existing right turn channelizing islands at the northbound right turn on Fiske Boulevard onto I-95 southbound and the southbound right turn at Fiske Boulevard onto I-95 northbound are removed and the movement is modified to be controlled at the signal. These improvements result in improved pedestrian safety. The improvements also aid in reducing crashes by effectively increasing the queue storage and service capacities of the movements to/from the interstate.

Federal Highway Administration (FHWA) Crash Modification Factors (CMF) and FDOT Crash Reduction Factors (CRF) were reviewed to quantify safety benefits. While there are no CMFs that can be applied to quantify the benefits for double left turn lanes, FDOT CRFs for the proposed improvements with their ID numbers and anticipated total percent crash reductions are shown below and summarized in **Table 23**

- Increase storage lane (ID #17) – 11% and
- Add turn bay (ID #18) – 10%

Table 23 Summarized FDOT Crash Reduction Factors

ID	Improvement	Number of Projects	Total	Fatal	Injury	PDO	Rear-End	Angle	Sideswipe	Head-On
17	Increased storage lane	8	11	-76	15	9	0	8	7	-68
18	Add turn bay	8	10	52	16	-1	5	6	20	-190

Additionally, the FHWA Signalized Intersections Safety Guide cites studies performed at intersection with dual left turn lane improvements showing reduction in crashes. The literature review also found that dual left-turn lanes with protected-only phasing generally operate with minimal negative safety impacts. With the proposed dual left turns, we can anticipate at least a 20% reduction in angle fatal/injury collisions and 29% reduction in fatal/injury rear-end collisions for the Build scenario when compared to the No-Build. A snapshot of FHWA's anticipated safety benefits and the CRF factors reference table with improvement ID numbers of 17 and 18 are provided in **Appendix D**.