

I-95 at Hypoluxo Road Interchange Modification Report

7.3 Safety Analysis

A brief safety analysis was conducted comparing the No-Build Alternative and the Build Alternatives using *Highway Safety Manual (HSM)* methods. The analysis was qualitative and Crash Modification Factors (CMF), or Crash Reduction Factors (CRF), for the improvements were identified.

The future 2045 number of crashes for the No-Build Alternative and Build Alternatives are calculated for I-95 freeway segments, I-95 ramp weaving, merge, and diverge segments, I-95 interchange terminal, and nearby intersections using FDOT *HSM* safety analysis spreadsheets as directed by Central Office. Crash Modification Factors (CMF) from the *HSM* were then applied to the predicted crashes using Safety Performance Functions (SPF). The *HSM* safety analysis spreadsheets are attached in **Appendix J**. The predicted 2045 crashes are summarized in **Table 26**.

Table 26 Predicted 2045 Number of Crashes

	No-Build			Build Alternative 1			Build Alternative 2		
	Fatal & Injury	PDO	Total	Fatal & Injury	PDO	Total	Fatal & Injury	PDO	Total
I-95 from Lantana Road to Hypoluxo Road	13.70	35.10	48.8	13.34	35.10	48.4	12.47	31.94	44.4
I-95 from Hypoluxo Road to Gateway Blvd	10.63	28.01	38.6	10.31	28.01	38.3	9.67	25.49	35.2
I-95 SB On-ramp Merge from Hypoluxo Road	1.37	4.94	6.3	1.37	4.94	6.3	0.81	2.92	3.7
I-95 NB Off-ramp Diverge to Hypoluxo Road	0.25	0.48	0.7	0.25	0.48	0.7	0.15	0.28	0.4
I-95 Southbound Ramps Terminal	5.91	11.54	17.5	5.68	11.09	16.8	3.50	6.83	10.3
I-95 Northbound Ramps Terminal	7.26	16.73	24.0	7.03	15.56	22.6	4.30	9.90	14.2
Hypoluxo Road at High Ridge Road Intersection	3.0	5.2	8.2	2.6	4.6	7.2	3.0	5.2	8.2
Hypoluxo Road at Seacrest Blvd Intersection	2.9	5.2	8.1	2.7	4.9	7.6	2.9	5.2	8.1
Total	45.02	107.20	152.2	43.28	104.68	147.9	36.80	87.76	124.5

The existing I-95 ramps has left-turn and right-turn lanes. The improvement of adding turn lanes could not be reflected in the Build Alternative 1 HSM safety analysis. Therefore, the CRF of 22% was used for the Build Alternative 1 per the FDOT CRF Table. In the Build Alternative 1, the existing bridge will be widened. The shoulder width on I-95 will remain the same as the No-Build Alternative. There will be no safety improvement for the I-95 mainline. Therefore, the number of

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crashes for the Build Alternative 2 was predicted using the FHWA CMF factors from the CMF clearinghouse. Based on the CMF clearinghouse, the crash modification factor for DDI is 59.2%. The CMF clearinghouse summary sheets is attached in **Appendix J**. The bridge will be reconstructed under the Build Alternative 2. The shoulder width along I-95 could be widened to enhance overall mobility and safety along mainline I-95. The CMF of 91% was used as the CRF is 9% for the widen shoulder from the FDOT CRF Table.

Based on the future predicted 2045 number of crashes, the No-Build Alternative expected number of crashes will be 152.2. The Build Alternative 1 expected crashes will be 147.9. The expected number of crashes under the DDI Build Alternative 2 will be 124.5, which means that there will be a 27.7 crashes reduction as compared to the No-Build Alternative and a 23.4 crashes reduction as compared to the Build Alternative 1 in future year 2045.

7.4 Alternatives Comparison

The No-Build Alternative and Build Alternatives were compared and summarized.

For the No-Build Alternative and the Build Alternatives, the lane geometry and volumes on the I-95 and the I-95 ramps at the junction areas will be the same. The ramp analysis results are the same for the No-Build Alternative, Build Alternative 1, and Build Alternative 2.

The intersection analysis results in future year 2025 and 2045 are summarized in **Table 27** for the interchange termini.

Table 27 Delay and LOS Comparison of All Alternatives

Year	Intersection	No-Build				Build Alternative 1				Build Alternative 2 (DDI)			
		AM		PM		AM		PM		AM		PM	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
2025	Hypoluxo Road at I-95 SB Ramps	34.9	C	38.5	D	28.1	C	36.1	C	14.6	B	16	B
	Hypoluxo Road at I-95 NB Ramps	42.5	D	67.5	E	25.6	C	32.1	C	19	B	19.8	B
2045	Hypoluxo Road at I-95 SB Ramps	49.3	D	52.5	D	32.3	C	40.8	D	13.9	B	19.6	B
	Hypoluxo Road at I-95 NB Ramps	59.4	E	121.3	F	44.9	D	40.4	D	19.9	B	21.8	C