

SECTION FIVE

5.1 SAFETY ANALYSIS OF THE 2045 NO-BUILD AND BUILD ALTERNATIVES

5.1.1 HSM Analysis

A safety analysis was conducted to study the impacts of the proposed Build Alternative on the local street network within the AOI. The study area focused on the Florida's Turnpike freeway segments, ramp terminals, and ramp segments for US 1, SW 328th Street / Lucy Street, Krome Avenue and SW 312th Street/ Campbell Drive arterial segments and major intersections along the arterials. The analysis was conducted using the predictive methods in Chapters 12 and 19 of the HSM, where available, and the Enhanced Interchange Safety Analysis Tool (ISATe), which apply a combination of Safety Performance Functions (SPFs), crash modification factors (CMFs), and calibration factors to estimate frequency and cost of crashes for each segment and intersection. Note that the resulting predictions should be used with caution if the input AADTs (highlighted cell in the HSM tools) exceed the range of data used to develop one or more of the SPFs. The growth rates were estimated based on 2025 and 2045 AADTs.

The following crash severity level costs were used for the crash cost saving analysis (Source: FDOT 2022 Design Manual Crash Cost Table 122.6.2)

- Fatal (K) \$10,890,000
- Severe Injury (A) \$888,030
- Moderate Injury (B) \$180,180
- Minor Injury (C) \$103,950
- Property Damage Only (O) \$7,700

The No-Build and Build Alternatives were evaluated, the predicted number of crashes and associated costs were compared for the 2025 to 2045 analysis period. The results of the safety analysis are summarized in **Table 5.18**. It is important to note that the safety analysis tools available to date are deterministic in nature and estimate future crashes mainly based on AADT and roadway characteristics. These tools do not account for vehicle interactions. The No-Build Alternative is expected to have extensive congestion and queues that may potentially impact crashes specially along US 1. Consequently, cost savings would be higher than reported. Nevertheless, the overall predicted crashes are lower for the Build Alternative compared to the No-Build Alternative due to added capacity along the Florida's Turnpike Extension mainline and fly over ramps over Palm Drive that divert traffic from US 1. The following intersections under the Build Alternative are anticipated to perform better than No-Build where existing safety ratios were greater than one (see **Table 3.9**):

- US 1 at SW 328th Street/Lucy Street (predicted crashes reduced by approximately 14 percent)
- US 1 at Florida's Turnpike Extension southbound off-ramp/Davis Parkway (predicted crashes reduced by approximately 15 percent)
- US 1 at SW 344th Street/Palm Drive (predicted crashes reduced by approximately 40 percent)
- Krome Avenue at Davis Parkway (predicted crashes reduced by approximately 9 percent)

SECTION FIVE

- Krome Avenue at SW 344th Street/Palm Drive (predicted crashes reduced by approximately 5 percent)
- SW 312th Street/Campbell Drive at SW 152nd Avenue (predicted crashes reduced by approximately 15 percent)

The following existing ramp terminals showed reduction in predictive crashes under the Build Alternative compared to the No-Build Alternative. This reduction is due to the anticipated diversion of traffic due to a new interchange at Lucy Street.

- US 1 at Florida's Turnpike Extension southbound off-ramp/Davis Parkway (predicted crashes reduced by approximately 15 percent)
- Southbound US 1 to Turnpike northbound on-ramp (predicted crashes reduced by approximately 25 percent)
- Campbell Drive Interchange Ramp Terminals (predicted crashes reduced by approximately 6 percent)

The Build Alternative has several additional merge/diverge segments and new access points along the freeway and SW 328th Street/Lucy Street when compared to the No-Build Alternative, resulting in a higher number of potential crashes at the adjacent intersections and segments along Lucy Street. However, the Build Alternative will overall relieve congestion along US 1, Krome Avenue, and SW 312th Street/Campbell Drive.

Note that there are bike lanes and sidewalks which will be maintained for bicyclist and pedestrian safety, and there will not be any free-flow right-turn movements at the new interchange.

Based on these results, the Build Alternative is predicted to have a 21-year crash cost savings of approximately \$60 Million compared to the No-Build Alternative, in 2020 present value. Detailed analysis tables are provided in **Appendix M**.

SECTION FIVE

Table 5.18
2025 to 2045 Predicted Number of Crashes and Cost Saving

Site	No-Build		Build	
	N _{predicted} *	2020 Present Value	N _{predicted} *	2020 Present Value
Florida Turnpike Extension				
Freeway Segments	1,061.62	\$98,016,821	809.48	\$75,242,169.37
US 1 Ramp Segments	227.31	\$17,509,047	234.89	\$18,249,142.20
SW 328 th Street/Lucy Street Ramp Segments	-	-	28.31	\$2,144,520.88
Campbell Drive Ramp Segments	217.81	\$16,829,812	193.99	\$14,982,150.36
SW 328 th Street/Lucy Street Ramp Terminals	-	-	196.55	\$20,029,164.12
Campbell Drive Interchange Ramp Terminals	785.49	\$83,151,303.	700.58	\$74,079,152.84
SUBTOTAL	2,292.24	\$215,506,984	2,163.80	\$204,726,299.77
US 1 Intersections				
SW 328 th Street/Lucy Street	327.44	\$39,373,200	281.84	\$33,037,085
Florida's Turnpike Extension southbound off-ramp / Davis Parkway	267.74	\$31,507,879	226.90	\$26,640,047
Southbound US 1 to Turnpike northbound on-ramp	208.81	\$24,550,497	155.8	\$18,292,661
SW 344 th Street/Palm Drive	543.33	\$63,765,680	323.27	\$37,766,998
Krome Avenue	130.40	\$14,970,932	127.55	\$14,575,998
SUBTOTAL (Intersection)	1,477.71	\$174,168,188	1,115.36	\$130,312,790
US 1 Segments				
SW 33300 Block to SW 328 th Street/Lucy Street	54.23	\$6,597,986	43.28	\$5,169,599
Davis Parkway to SW33300 Block	25.44	\$2,997,961	22.44	\$2,639,381
Southbound US 1 northbound Turnpike on-ramp to Davis Parkway	7.26	\$856,441	13.08	\$1,540,793
Turnpike southbound off-ramp to southbound US 1 northbound Turnpike on-ramp	15.72	\$1,856,092	9.21	\$1,085,282
SW 344 th Street/Palm Drive to Turnpike southbound off-ramp	62.42	\$7,343,574	15.42	\$1,783,692
Krome Avenue to SW 344 th Street/Palm Drive	251.23	\$29,461,691	251.23	\$29,461,691
SUBTOTAL (Segment)	416.31	\$49,113,745	354.65	\$41,680,438
Krome Avenue Intersections				
Davis Parkway	120.36	\$13,772,262	109.22	\$12,343,125
SW 344 th Street/Palm Drive	233.65	\$26,990,123	221.94	\$25,545,991
SUBTOTAL (Intersection)	354.01	\$40,762,385	331.16	\$37,889,117

*Predicted Crashes

Sources:

FDOT 2022 Design Manual Crash Cost Table 122.6.2

HSM Crash Distribution for Florida Table 122.6.4

SECTION FIVE

Table 5.18 (continued)
2025 to 2045 Predicted Number of Crashes and Cost Saving

Site	No-Build		Build	
	N _{predicted} *	2020 Present Value	N _{predicted} *	2020 Present Value
SW 328th Street/Lucy Street Intersections				
SE 6 th Avenue	118.01	\$13,511,621	208.02	\$23,912,185
SW 167 th Avenue**	113.69	\$12,859,370	-	-
SW 162 nd Avenue	212.41	\$24,078,540	281.65	\$34,290,733
SUBTOTAL (Intersection)	444.11	\$50,449,531	489.67	\$58,202,918
SW 328th Street/Lucy Street Segments				
US 1 to SE 6 th Avenue	35.82	\$4,083,843	50.69	\$5,768,749
SE 6 th Avenue to SW 167 th Avenue	44.24	\$5,049,808	46.79	\$5,333,474
SW 167 th Avenue to SW 162 nd Avenue	51.55	\$5,876,919	64.68	\$7,382,277
SUBTOTAL (Segment)	131.61	\$15,010,570	162.16	\$18,484,500
SW 312th Street/Campbell Drive Intersections				
Kingman Road	210.66	\$25,431,624	193.53	\$23,324,650
SW 152 nd Avenue	202.85	\$24,600,559	173.06	\$20,915,287
SUBTOTAL (Intersection)	413.51	\$50,032,184	366.59	\$44,239,936
SW 312th Street/Campbell Drive Segments				
Kingman Road to west Northbound Ramps	32.42	\$3,912,306	27.80	\$3,376,828
Total	5,561.91	\$598,955,893	5,011.29	\$538,912,8264
Crash Cost Savings	\$60,043,066.83			

*Predicted Crashes

** Included under Ramp Terminal.

Sources:

FDOT 2022 Design Manual Crash Cost Table 122.6.2

HSM Crash Distribution for Florida Table 122.6.4