

4.5 Future Safety Analysis

For 2040 No-Build and Build Alternatives, the number of crashes was predicted using Highway Safety Manual (HSM) method for interchange ramp terminus. The number of predicted crash equation (equation 19-28 in HSM Manual) is as follows:

$$N = \exp(a + b \cdot \ln(c \cdot 0.5(AADT_{in} + AADT_{out}) + d \cdot \ln(c \cdot AADT_{exit} + c \cdot AADT_{entrance})))$$

The coefficients for fatal and injury crashes are: $a=-0.872$, $b=0.379$, $c=0.001$, $d=0.394$. For property damage only crashes, the coefficients are $a=-1.984$, $b=0.797$, $c=0.001$, $d=0.384$. For the No-Build Alternative, the AADT for the Royal Palm Boulevard west of the interchange without I-75 southbound ramps ($AADT_{out}$) is 49,000 in 2040. The $AADT_{in}$ is 33,000. The I-75 southbound on ramp is not considered in the three-leg ramp terminal with diagonal exit. Therefore, the $AADT_{entrance}$ is 0. The $AADT_{exit}$ is 19,045. For Build Alternative, the $AADT_{out}$ is 49,068. The $AADT_{in}$ is 33,320. The $AADT_{entrance}$ is 23. The $AADT_{exit}$ is 19,045. Crash Modification Factors (CMF) from HSM were applied to the predicted crash frequency. The 2040 crashes for the No-Build and Build Alternatives are predicted using the HSM safety analysis spreadsheet for Ramp Terminus and summarized in **Table 25**. The HSM safety analysis spreadsheets are attached in **Appendix N**. It can be seen that there is no significant difference in the safety performance of the ramp terminus with the proposed modifications in the Build Alternative in comparison with the No-Build Alternative.

Table 25 Predicted 2040 Crashes

Predicted Crashes in 2040	Total	Fatal and injury	Property Damage Only (PDO)
2040 No-Build	11.670	5.829	5.841
2040 Build Alternative	13.444	5.666	7.778

4.6 Consistency with Other Plans/Projects

The proposed improvements at the I-75 at Royal Palm Boulevard interchange is consistent with the current adopted Broward MPO 2040 LRTP and FDOT SIS Funding Strategy Second Five Year Plan for FY 2021/2022 through FY 2025/2026.