

## 8.0 Build Safety Analysis

The Highway Safety Manual procedures and historic crash data were used to quantitatively analyze the safety impacts of No-Build and Build Alternatives. The quantitative safety analysis for the proposed Build Alternative conditions of converting a diamond interchange to a Diverging Diamond Interchange (DDI) follows the Countermeasure CMF methodology and documents the impact the facility's safety with the AOI. The quantitative safety analysis method for this IOAR was determined by the FDOT *Interchange Access Request User's Guide* and complies with the guidelines of the FDOT Interchange Access Request User's Guide Safety Analysis Guidance in determining the estimated change in the expected number of crashes due to the proposed modifications of the project.

The Countermeasure CMF methodology utilizes CMFs to compute the expected number of crashes after implementing a selected countermeasure. CMFs were selected from the FHWA Crash Modification Factors Clearinghouse ([www.cmfclearinghouse.org](http://www.cmfclearinghouse.org)). The selected CMFs for the for the I-75/Pine Ridge Road Interchange have a higher star rating than the minimum requirement of three stars to provide a greater level of confidence when estimating the safety performance by determining the reduction of crashes. Primary transportation improvements proposed as part of the Build Alternative are as follows:

- Convert the interchange ramp terminals from a traditional diamond interchange to a diverging diamond interchange.
- Convert the Whippoorwill Lane intersection from a traditional intersection to a restricted crossing U-turn (RCUT) intersection.
- Convert the Livingston Road intersection from a traditional intersection to a continuous flow intersection (CFI).

The Build Alternative shows a greater safety improvement within the AOI when compared to the No-Build Alternative. Proposed improvements from the Build Alternative provide a safer operation due to the following safety benefits:

- Reduction of conflict points.
- Improved sight distance at the turns.
- Lower design speeds resulting in reductions in crash severity.
- Traffic calming effects due to the small geometric deflection on Pine Ridge Road.
- Elimination of the wrong way movements into ramps.
- Crash reductions from the elimination of loop ramps.

**Table 8.1** provides a summary of the selected CRFs, associated descriptions, and estimated total crashes reduced. The CMF Details including calculation of crash reduction are presented in **Appendix L**.

**Table 8.1: Crash Reduction Factors**

CRF Source	CRF ID	CRF Description	CRF	Total Crashes	Total Crashes Reduced
CMF Clearinghouse	10761	Convert diamond interchange to Diverging Diamond Interchange (DDI)	14.2%	49	6.96
CMF Clearinghouse	10301	Convert a conventional signalized intersection to a continuous flow intersection (CFI)	12.3%	86	10.58
CMF Clearinghouse	10382	Convert intersection to Restricted Crossing U-Turn (RCUT) Intersection	20.0%	50	10.00