

12. COMPARATIVE SAFETY ANALYSIS

The purpose of the comparative safety analysis was to determine the safety impacts for improvements within the study's area of influence. To determine these impacts, a predicted crash frequency analysis was performed utilizing the Enhanced Interchange Safety Analysis Tool (ISATe) Build 06.10 – Modified to Include Present Worth Analysis. The ISATe analysis can be performed on three unique freeway features: freeway mainline, freeway ramps, and freeway ramp terminals. For purposes of the comparative analysis, only facilities with noted geometric differences between the No-Build and Build conditions were assessed. The following facilities/limits within the study's area of influence were noted to be different and analyzed in ISATe for the No-Build and Build conditions:

- Freeway Mainline – gore points for the interchange ramps remained unchanged and no other freeway mainline modifications were made, thus no changes between the No-Build and Build conditions.
- Freeway Ramps –
 - I-75 southbound off ramp to CR 484;
 - I-75 northbound off ramp to CR 484; and
 - I-75 northbound on ramp from CR 484.
- Freeway Ramp Terminals –
 - I-75 southbound ramp terminal intersection with CR 484; and
 - I-75 northbound ramp terminal intersection with CR 484.

The results of the ISATe analysis are presented in the **Ramp and Ramp Terminal Results** section.

In addition to the ramp and ramp terminal improvements, turn lane/signal phasing improvements are proposed at the CR 484/CR 475A intersection. The FDOT's Safety Performance for Intersection Control Evaluation (SPICE) tool was utilized to assess safety impacts at this intersection. The results of this analysis are discussed in the **Intersection Results** section. The opening year of the analysis was 2024 and the design year of the analysis was 2034.

Access management improvements are also proposed along CR 484 to reduce the number of conflict points and better align directional median openings with driveways. A qualitative analysis was performed for these proposed improvements, and the results are discussed in the **Access Management Qualitative Assessment** section.

12.1. Ramp and Ramp Terminal Results

Table 67 provides the results of the ISATe analysis for the interchange ramp and ramp terminal analyses. The preliminary ISATe crash prediction outputs were converted to Florida specific crash distributions using the 2022 FDM Table 122.6.4. Freeway ramp distributions were utilized for the ramps and the "All Roadways and Ramps" distribution was utilized for the ramp terminal intersections. Then FDOT KABCO crash costs from the 2022 FDM Table 122.6.2 were applied to obtain the total present value of crashes.

Table 67: No-Build vs Build ISATe Predicted Crash Frequency Results

Scenario/ Feature	Predicted Fatal Crashes	Predicted Injury Crashes	Predicted Property Damage Only Crashes	Total Predicted Crashes	Total Present Value
No-Build – Ramps	0.08	7.40	13.72	21.20	\$2,500,000
No-Build – Ramp Terminals	3.35	182.80	292.39	478.54	\$77,640,000
No-Build – Totals	3.43	190.20	306.10	499.74	\$80,140,000
Build – Ramps	0.09	7.88	14.60	22.57	\$2,660,000
Build – Ramp Terminals	1.05	91.37	169.39	261.80	\$30,910,000
Build – Totals	1.14	99.25	183.99	284.37	\$33,570,000
<i>Difference – Build minus No-Build</i>	-2.30	-90.95	-122.11	-215.37	(\$46,570,000)

Note: Some values in **Table 67** may not sum due to rounding from the ISATe output spreadsheets.

The results of the analysis show the proposed improvements are predicted to experience approximately 215 less crashes, which equates to over \$46.5 million in crash cost savings over the 10-year life cycle of the project. A majority of this crash reduction is observed at the ramp terminal intersections due to the proposed condition being protected-only left turn operations, as opposed to the existing protected-permissive operations.

12.2. Intersection Results

The following improvements are proposed at the CR 484 and CR 475A intersection:

- Westbound Approach – Changing from protected-permissive to protected-only left turn operation.
- Southbound Approach –
 - Adding an exclusive right turn lane.
 - Changing from protected-permissive to protected-only left turn operation.
- Eastbound Approach – Adding a second left turn lane and changing from protected-permissive to protected-only left turn operation.
- Northbound Approach – Adding a second left turn lane and changing from protected-permissive to protected-only left turn operation.

As shown in **Table 68**, crashes at the CR 484/CR 475A intersection are predicted to decrease with the proposed improvements. This is largely due to changing the left turn signal operations from protected-permissive to protected only operations.