

# INTERCHANGE OPERATIONAL ANALYSIS REPORT (IOAR)

I-10 at Garcon Point Road  
FPID: 413062-4-22-01 and 413062-5-22-01



## EXECUTIVE SUMMARY

The purpose of this Interchange Operational Analysis Report (IOAR) is to provide the required documentation for obtaining approval for improvements at the Interstate 10 (I-10) and Garcon Point Road interchange in Santa Rosa County. The current interchange is a full diamond interchange with stop-controlled operation at both ramp terminal intersections. The primary need of the project is to improve future traffic operations at the ramp terminals thereby improving safety at the interchange.

The primary basis for traffic projections in this IOAR is consistent with the Project Traffic Analysis Report (PTAR) dated May 2020, which incorporates the field traffic counts, Florida Traffic Online (FTO) and the Northwest Florida Regional Planning Model Version 2.1 (NWFRPM v2.1) with base year 2010 and horizon year 2040. The analysis years for the study include Existing Year 2019, Opening Year 2025, and Design Year 2045. The operational analysis for this study was performed using Synchro 10. The delay and LOS for the unsignalized intersection analyses were reported based on Highway Capacity Manual (HCM 6th Edition) methodology. The delay and LOS for the signalized intersection analyses were reported based on Synchro 10 methodology.

If no improvements are made, traffic operations and safety within the study area will continue to deteriorate as traffic volumes increase.

Two alternatives were evaluated to address the purpose and needs identified in this IOAR. The alternatives analyzed include:

- No-Build Alternative – This alternative includes the existing configuration plus all programmed improvements with future traffic.
- Build Alternative – This alternative includes signaling the I-10 eastbound (EB) ramp terminal intersection. Also, it is recommended at the eastbound ramp terminal the existing configuration of Garcon Point Road southbound (SB) (through and shared through/left-turn lane) be converted to one through the lane and one left-turn lane.

As part of this study, an existing crash analysis was performed. The data collected from FDOT State Safety Office Map-Based Query Tool (SSOGis) shows angle and sideswipe crashes are the most prominent crashes within the project area. The Recommended Build Alternative shows improved traffic operations and safety within the project study area when compared to the No-Build Alternative.

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Based on the evaluations of the No-Build and Build Alternatives, the recommended alternative for approval in this study is the Build Alternative.

This IOAR has been developed in accordance with the FDOT Policy No. 000-525-015: Approval of New or Modified Access to Limited Access Highways on the State Highway System (SHS), FDOT Procedure No. 525-030-160: New or Modified Interchanges, FDOT Procedure No. 525-030-120: Project Traffic Forecasting, Interchange Access Request User's Guide (IARUG) and the FDOT Project Traffic Forecasting Handbook.

## E.1 Compliance with FHWA General Requirements

The following requirements serve as the primary decision criteria used in the approval of an IOAR. Responses to each of the two Federal Highway Administration (FHWA) policy points are provided to show that the proposed improvements at the I-10/Garcon Point Road interchange are viable based on the conceptual analysis performed to date.

### E.1.1 FHWA Policy Point 1

*An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis should, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (23 CFR 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, should be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access should include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute, and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request should also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).*

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An in-depth operational and safety analysis conducted for this IOAR confirmed that the proposed improvement to the existing interchange will not have a significant adverse impact on the operation and safety of the project area. Several performance measures were used to compare the operations of the existing system under No-Build and Build conditions. Key measures included delays, 95<sup>th</sup> percentile queue lengths, crash rate, crash type and crash severity under existing and proposed conditions.

From an operational perspective in the Design Year 2045 under the No-Build Alternative, operational and safety deficiencies exist. The eastbound left-turn movement at the I-10 eastbound ramp terminal intersection will operate at LOS F in both the AM and PM peak hours. These deficiencies are attributed to the high through traffic volume along Garcon Point Road and high left-turn traffic volume exiting the freeway. At the I-10 eastbound ramp terminal intersection, queues are anticipated to be longer than the available storage in the eastbound direction in Design Year 2045 under the No-Build Alternative. The operational analysis indicates that the I-10 westbound (WB) ramp terminal will operate at acceptable LOS in the Design Year 2045 under the No-Build Alternative. Hence, no improvements are proposed at the I-10 westbound ramp terminal intersection in the Build Alternative.

The Build Alternative for this study performs substantially better than the No-Build Alternative for all future years. The I-10 ramp terminals will operate at LOS C or better during the AM and PM peak hours. When compared to the No-Build Alternative, the proposed improvements provide a reduction in delay for the eastbound left-turn movement at the I-10 eastbound ramp terminal intersection. The delay for the eastbound left-turn movement at the I-10 eastbound ramp terminal intersection is reduced by 87.8 seconds and 750.1 seconds during the AM and PM peak hours, respectively. The queues observed in the No-Build Alternative are anticipated to be longer than the available storage in the eastbound direction. These queues are reduced significantly in the Build Alternative, where the available storage can accommodate the queues at the I-10 eastbound ramp terminal intersection.

The safety analysis performed for this study indicated a total of 22 crashes occurred within the project area during the five study years (2013-2017). The predominant crash types that occurred within the study area were angle and sideswipe collisions. Crashes of these types are typically attributed to high traffic volumes, unexpected traffic crossings, or drivers not stopping at stop signs.

The improved operations under the Build Alternative are anticipated to enhance safety within the project area. A quantitative safety analysis was performed for the study area, where improvements are to be implemented. Based on the safety analysis, it is predicted that a total annual crash reduction of 0.476

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crashes per year will occur at the I-10 eastbound ramp terminal intersection with the proposed improvements. This was determined by applying a known crash modification factor (CMF) of 0.83 to the existing annual crash frequency. The CMF for providing a traffic signal at the intersection were determined using the CMF Clearinghouse maintained by FHWA.

Overall, the Build Alternative provides significantly better traffic operations and enhanced safety when compared to the No-Build Alternative. All proposed improvements as part of this project will be done within the existing right-of-way.

In conclusion, the comparison of the No-Build and Build Alternatives (**Table 6-1**) shows that the proposed improvements provide enhanced operation and improved safety conditions.

### E.1.2 FHWA Policy Point 2

*The proposed access connects to a public road only and will provide for all traffic movements. Less than “full interchanges” may be considered on a case-by-case basis for applications requiring special access, such as managed lanes (e.g., transit, HOVs, HOT lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). In rare instances where all basic movements are not provided by the proposed design, the report should include a full-interchange option with a comparison of the operational and safety analyses to the partial-interchange option. The report should also include the mitigation proposed to compensate for the missing movements, including wayfinding signage, impacts on local intersections, mitigation of driver expectation leading to wrong-way movements on ramps, etc. The report should describe whether future provision of a full interchange is precluded by the proposed design.*

The proposed improvements apply to the I-10 and Garcon Point Road interchange in Santa Rosa County and no new access is required. The improvements are proposed to preserve all the existing connections between public roads and preserve existing traffic movements onto and off of I-10. These improvements are designed to meet current standards for federal-aid projects on the interstate system and conform to American Association of State Highway and Transportation Officials (AASHTO) and the FDOT Design Manual.