EXECUTIVE SUMMARY

The purpose of this IOAR is to provide the required documentation for obtaining approval for improvements at the I-10/U.S. 90 interchange in Gadsden County. The current interchange is a four-quadrant partial cloverleaf 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 projection in this IOAR is field traffic counts, Florida Traffic Online (FTO) and the latest version of the Capital Region Transportation Planning Agency (CRTPA) Model with the base year 2007 and horizon year 2035. The analysis years for the study include Existing Year 2019, Opening Year 2025, and Design Year 2045. The operation analysis for this study was performed using Synchro 10. Delay and level of services (LOS) for unsignalized intersections analysis was reported based on Highway Capacity Manual (HCM 6th Edition) 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. These include the No-Build Alternative and Build Alternative. 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 signalizing the I-10/U.S. 90 interchange ramp terminal intersections.

As part of this study, an existing crash analysis was performed. The data provided by FDOT State Safety Office Map-Based Query Tool (SSOGis) shows rear-end crashes and angle 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 due to the reduction in congestion.

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 (Procedure No. 525-030-120).

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 FHWA policy points are provided to show that the proposed improvements at I-10/U.S. 90 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)).

An in-depth operational and safety analysis conducted for this IOAR confirmed that the proposed improvement to the existing I-10 eastbound (EB) and westbound (WB) ramp terminal intersections would 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, 95th percentile queue lengths and safety under existing and proposed conditions.

From an operational perspective in the Design Year 2045 under No-Build Alternative, operational and safety deficiencies exist. All minor movements at the intersections will operate at LOS F except EB right traffic at the I-10 EB ramp terminal in the PM peak hour. These deficiencies are attributed by the high through traffic volume along U.S. 90 and high left-turn traffic exiting the freeway. The WB approach at the I-10 WB ramp terminal intersection will experience excessive queues, which could possibly affect freeway operations. The U.S. 90 and Fortune Boulevard intersection will operate with queues longer than the available storage in the NB and SB directions affecting the I-10 WB ramp terminal intersection.

The Build Alternative for this study performs substantially better than the No-Build Alternative for all future years. When compared to the No-Build Alternative, the proposed improvements provide a reduction in delay at both study intersections. The most significant reduction in delay and improvement in LOS occurs at U.S. 90 and I-10 WB On/Off-ramp intersection. The delay at the I-10 WB ramp terminal for the left-turn movement is reduced by 512.9 seconds and 2561.0 seconds during the AM and PM peak hours, respectively. Also, the LOS changes from F to D in the AM and PM peak hour. The queues observed in the No-Build Alternative also are reduced significantly, where the available storage can accommodate the queues at the I-10 WB ramp terminal intersection. However, the SB approach queues at the U.S. 90 and Fortune Boulevard intersection will impact the Dupont Road intersection north of Fortune Boulevard intersection in the Build Alternative. A traffic engineering evaluation is recommended to identify the traffic operations and safety trade-offs between the two closely spaced intersections of U.S. 90 with Fortune Boulevard and Dupont Road intersection.

The safety analysis performed for this study indicated a total of 35 crashes occurred within the project area during the five study years (2013-2017). The predominant crash types that occurred within the study area were other crashes that were attributed by careless driving and the failure to comply with traffic laws followed by rear-end and angle crashes. Rear-end and angle crashes were typically attributed to congestion along the arterials and interchange ramps.

With the improved operations under the Build Alternative, it is anticipated to enhance safety within the project area. A predictive safety analysis was performed for the study area, where improvements were implemented. Based on the safety analysis, it is predicted that a total annual crash reduction of 1.190 crashes per year will occur at the ramp terminal intersections.

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 show that the proposed improvements provide enhanced operation and improve 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/U.S. 90 ramp terminal intersections in Gadsden County and no new access is requested. The improvements are designed to preserve all the existing connections between public roads and preserve existing traffic movements onto and off 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.