EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study for the project limits concurrently with this Systems Interchange Modification Report (SIMR). The Interstate 95 (I-95) SIMR limits extend from north of the I-10 system-to-system interchange to south of the Martin Luther King Jr. Parkway interchange (SR 115/US 1), approximately two and a half miles. FDOT is proposing to widen the I-95 mainline to add two general purpose lanes in each direction between the I-95 C-D road entrance and north of 8th street. Lane additions of one to two lanes are proposed along the I-95 C-D road in both directions. In addition, modifications are proposed at several interchanges and intersections along the corridor to address capacity deficiencies, enhance safety and upgrade roadway design elements to meet current standards.

The purpose of this project is to add capacity, enhance operations, provide better travel time reliability and improve safety along the I-95 corridor and at the study interchanges. The need for this project is driven by current peak hour congestion and forecasted increased volumes along this segment of the interstate with periods of congestion extending the peak periods of travel. Several I-95 segments between I-10 and Martin Luther King Jr. Parkway are additionally listed as high crash segments. The spacing of interchanges has a significant effect on the operations and safety of any corridor. The spacing between ramps at several of the interchanges does not meet current standards. Also, several exit and entrance ramps are located on the left side of the mainline travel lanes in the segment between Myrtle Avenue and Kings Road which also effect the operations and safety. This SIMR considers safe connections to the interstate. Additionally, the capacity modifications will aid in reducing the number of crashes within the project limits by lessening congestion within the corridor and at the interchanges and providing better travel time reliability for the users.

The methodology used in this SIMR is documented in the Methodology Letter of Understanding (MLOU), signed in October 2020. The MLOU was approved by the FDOT District Two Interchange Review Coordinator (IRC) and FDOT Central Office. The MLOU outlines the criteria, assumptions, processes, analyses and documentation requirements for the project. The MLOU was prepared in accordance with the FDOT's Interchange Access Request User's Guide (IARUG). Traffic operational and safety analyses for this project were performed following the methodology approved in the MLOU. I-95 is a north-south limited access facility that serves as the main entryway to the Jacksonville Central Business District. The

proposed I-95 mainline modifications are in the City of Jacksonville in Duval County, Florida. I-95 between the I-10 interchange and Martin Luther King Jr. Parkway is primarily six lanes (three in each direction) with various auxiliary lanes and collector-distributor roads (mainly near the I-10 interchange). The I-95 corridor within the study area is functionally classified as a Divided Urban Principal Arterial Interstate and has a posted speed limit of 55 miles per hour. There are seven interchanges within the area of influence (AOI) that provide connections to arterial facilities. Four ramps at two additional interchanges, I-10 and Martin Luther King Jr. Parkway, within the AOI, are also analyzed. The ramps at I-10 are the I-10 eastbound to I-95 northbound to off ramp and I-95 southbound to I-10 westbound/southbound C-D road. The ramps at Martin Luther King Jr. Parkway are the northbound to eastbound off ramp and the southbound on ramp.

In 2019, this segment of I-95 carried Annual Average Daily Traffic (AADT) volume of 151,000 vehicles north of the I-10 interchange at the beginning of the study corridor, 133,000 north of Kings Road, and 131,500 north of W 8th Street interchange which is towards the northern end of the study corridor.

A comparative assessment performed for the No-Build and Build Alternatives for the Design Year 2045 shows that the Build Alternative performs better than the No-Build Alternative. By providing additional lanes on the I-95 mainline and I-95 C-D road, the Build Alternative increases the overall capacity and reduces the densities at each segment along I-95 within the study area. The acceptable LOS target for the freeway, ramps and intersections within the AOI in this SIMR is LOS D. In the Design Year 2045 during the AM and PM peak hours, the I-95 mainline Build Alternative will operate at LOS D or better for all segments except those south of the I-95 northbound C-D Road entrance that will operate LOS E. For the same time period, the No-Build Alternative will have 73 percent of the I-95 mainline segments operating at LOS E or worse. A similar pattern is noticed for the I-95 C-D road which is forecasted to operate at LOS D or better with the 2045 Build Alternative during the AM and PM peak hours. Fifty percent of the I-95 C-D Road is forecasted to operate at an unacceptable LOS during the 2045 No-Build Alternative. Five of the 13 study intersections will operate at unacceptable LOS E or worse under the No-Build Alternative.

In the Design Year 2045, significant operational benefits result from the Build Alternative. Overall, the total delay along the network will decrease by 75 percent. The average speed in the network will increase by 75 percent, and the total travel time will decrease by 39 percent. All the intersections are expected to operate without excessive delay. These improvements will help process traffic traveling along I-95 and to and from the study interchanges.

Crash data over the five-year span (2013-2017) indicated 1,891 crashes occurred within the study area. Of those 1,891 crashes, 1,232 crashes occurred along the I-95 mainline corridor, of which eight were fatal and 330 crashes involved injuries. Rear-end crashes are the most predominant crash type within the study area and indicate stop-and-go conditions reflective of congestion. In addition to the crashes along the I-95 mainline, the existing crash data was collected along the I-95 C-D roadway and arterials within the AOI. 40 crashes occurred on the I-95 C-D roadway, 86 along Forest Street, 4 along Church Street, 227 along Kings Road and 302 along 8th Street. A detailed Predictive Safety Analysis was conducted for this project to evaluate the No-Build Alternative and the Build Alternative that adds two lanes in the northbound and southbound directions along the I-95 and one to two lanes along the I-95 C-D road within the study area. The Build Alternative will reduce crashes by approximately 10.4 crashes/year compared to the No-Build Alternative.

In conclusion, the Build Alternative showed significant operational improvements over the No-Build in Opening Year 2025 and the Design Year 2045. Based on the safety and traffic operations benefits of the Build, it is considered the preferred alternative for this SIMR.

This SIMR has been developed in accordance with relevant procedures and processes contained in the latest FDOT Project Traffic Forecasting Handbook (2019), FDOT Traffic Analysis Handbook (2021), FDOT Interchange Access Request User's Guide (2020) and FDOT Design Manual (2020).

E.1 Compliance with FHWA General Requirements

The proposed modifications to I-95 will provide traffic relief and enhance safety within the AOI. The preferred Build Alternative will operate better than the No-Build Alternative for this project.

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 was conducted to study the operational and safety benefits offered by the proposed improvements when compared to the No-Build Alternative.

Several performance measures were used to compare the traffic operations and safety of the existing system under No-Build and Build conditions. Key measures include freeway densities, freeway volume to capacity (V/C) ratios, intersection delays, level of service (LOS), max queue lengths, crash rates and frequency, predominant crash patterns, expected crashes and potential crash reduction.

During the Opening Year 2025, the No-Build Alternative analysis showed that traffic operations are expected to degrade significantly, and several freeway segments will operate at unacceptable LOS E or worse during the AM and PM peak hours. These operational deficiencies are due to the increase in traffic within the study area by 2025. The Build Alternative, which provides general use lane capacity improvements through the extent of the study area, shows significant improvements over the No-Build, with all the freeway segments operating at acceptable LOS C or better in both AM and PM peak hours in Opening Year 2025. Arterial roadways will also benefit from the proposed improvements. By 2025 all study intersections will operate at an acceptable LOS in both AM and PM peak hours under the Build Alternative. The proposed improvements at the study intersections indicate a reduction in max queue length under the 2025 Build Alternative, where most of the proposed storage can accommodate the queues.

The Design Year 2045 operational analysis results show that the Build Alternative improved traffic operations within the I-95 study area compared to the No-Build Alternative. By providing two additional mainline lanes northbound and southbound on I-95 and an additional one to two lanes northbound and southbound on the I-95 C-D Road, the Build Alternative increases the overall capacity and reduces the densities along I-95 within the study area. In terms of intersection delay, the Build Alternative decreased the overall delay at the study intersections. The 42 percent of study intersections that were operating

with unacceptable delay in 2045 No-Build Alternative improve to only one intersection performing at an unacceptable in the PM peak hour. This intersection (8th Street at Illinois Street) is not a terminal intersection and will not impact I-95 operations.

A total of 1,891 crashes occurred within the study area over a five-year span from 2013-2017. Of those 1,891 crashes, 1,232 crashes occurred along the I-95 mainline, which included eight fatalities and 330 injuries. A detailed Predictive Safety Analysis was conducted for this project for the period 2025 to 2045 to evaluate the No-Build Alternative and the Build Alternative that adds two lanes in the northbound and southbound directions along the I-95 corridor within the study area and one to two lanes on the I-95 C-D Road in the northbound and southbound directions. This analysis indicated that the predicted yearly average crashes for the I-95 mainline under the No-Build Alternative will be approximately 84.1 crashes whereas the Build Alternative is predicted to have approximately 71.3 crashes per year. The Build Alternative will reduce crashes by approximately 12.8 crashes/year along the mainline and by three crashes/year along the ramps compared to the No-Build Alternative. In addition to the improvements along I-95, improvements at the 8th Street interchange should reduce the number of crashes by 3.09 crashes/year. The Kings Road southbound terminal intersection should experience approximately the same number of crashes, with a 0.38 crashes/year difference between No-Build and Build Alternatives. New intersection connections at Union Street and Church Street may increase the number of crashes by 8.04 crashes/year and 0.13 crashes/year, respectively

Lastly, several interchanges and intersection improvements are proposed that cannot be accounted for using the HSM Part C methodology or CMF methodology. The proposed improvements are at I-95 at Forest Street interchange, I-95 at Church Street and Cleveland Street intersection, I-95 northbound at Beaver Street new terminal intersection, Beaver Street roundabout and I-95 southbound at I-95 C-D Road off ramp. As a result, a qualitative safety analysis was performed and concluded the overall safety benefits of these improvements:

- Reduction of conflict points and improved operations at intersections
- Reduced crash severity and conflict points due to eliminating some mainline weaving segments
- Reduction in speed at a roundabout intersection and a significant reduction in angle crash possibility
- Reduce the potential for mainline ramp queueing

- Reduced congestion-related accidents on mainline

Overall, the proposed improvements will benefit the study corridor (I-95) with a reduction in density, delay and crashes for future traffic conditions. Therefore, the proposed improvements will enhance the traffic operations and safety of the study corridor (I-95).

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.

I-95 is a public facility and all interchanges within the study area provide full access (interchanges at Forsyth Street/Bay Street, Monroe Street/Adams Street and Union Street connect to one-way streets) and will continue to do so with the Build Alternative. The Build alternative will maintain and provide all interchange accesses catering to all traffic movements to/from existing interchanges within the study limits.

The proposed improvements under the Build Alternative were designed to meet current standards for federal-aid projects on the interstate system and conform to the AASHTO and the FDM.