



EXECUTIVE SUMMARY

The purpose of this Systems Interchange Modification Report (SIMR) Re-evaluation is to seek Safety, Operational and Engineering (SO&E) acceptability for the proposed improvements to the currently under construction Design-Build project that will deploy express lanes along Interstate 295 (I-295) between SR 9B and SR 202 (J.T. Butler Boulevard) (milepost 17.439 and milepost 23.560) in Duval County, Florida. The I-295 corridor within the project limits is a significant component of the Strategic Intermodal System (SIS) and provides a key transportation element in linking the major ports, airports, and railways that handle Florida's passenger and freight traffic.

I-295 East Express Phase I project provides much needed capacity improvements to the study area corridor by adding two express lanes and reconstructing the existing general purpose (GP) lanes to accommodate the new express lanes in either direction of I-295 within the project limits. However, recent developments and land use changes near the study area are anticipated to increase the traffic demand or change existing travel patterns from what was considered during the I-295 East Express Phase I evaluation. The Northeast Regional Planning Model (NERPM) Activity-Based (AB) was utilized and traffic forecasts were re-developed for Opening Year (2025) and Design Year (2045) to account for these recent anticipated developments within the study area. NERPM AB predicted higher volumes along I-295 and SR 9B by Horizon Year (2040) than what was previously anticipated with the I-295 East Express Phase I SIMR (October 2014). Thus, to ensure optimal functionality of the express lanes, safer and efficient operations of the GP lanes, an additional GP lane is needed in both the northbound and southbound directions along I-295 within the study area.

A Methodology Letter of Understanding (MLOU) was approved by the Florida Department of Transportation (FDOT) District 2 Interchange Review Coordinator (IRC), the FDOT Central Office, and the Federal Highway Administration (FHWA) in September 2019 laying the foundation for this SIMR Re-evaluation. The project area of influence was maintained similar to the I-295 East Express Phase I SIMR (October 2014) and the I-295 East Express Phase I SIMR Re-evaluation (July 2016) to maintain consistency. Traffic forecasting and traffic operational and safety analyses for this project were performed in accordance with the approved MLOU.

Two build alternatives were considered for this SIMR Re-evaluation. The Original Build Alternative that was developed through the Alternative Technical Concept (ATC) process during the Design-Build team procurement and the current proposed Preferred Build Alternative. The design changes with the Original Build Alternative were documented in the I-295 East Express Phase I SIMR Re-evaluation approved in July 2016. This concept is currently under construction and is anticipated to be completed by Spring 2020. The Preferred Build Alternative proposes to widen northbound I-295 by adding an additional GP lane from the off-ramp to SR 152 to north of the Gate Parkway on-ramp and from south of SR 152 off-ramp to the SR 9B off-ramp in the southbound I-295 direction.

Crash data from the most recent five years (2012-2016) indicated that approximately 1,360 crashes occurred along the I-295 project corridor, including 11 fatalities and 33 severe injury crashes. Rear-end crashes are the most predominant crash type within the region and are indicative of stop-and-go conditions reflective of bottlenecks. With the construction of capacity improvements through the on-going Design-Build project, relief can be obtained from these crashes with the availability of additional capacity.

This SIMR Re-evaluation documents the volume development process used (**Section 6.0**) and evaluates the operational and safety benefits realized by the proposed Preferred Build Alternative (**Section 7.0**).

E.1 Compliance with FHWA Requirements

The proposed interchange modifications are consistent with the requirements of the FHWA "Policy on Access to the Interstate System" dated May 22, 2017 (Federal Register Volume 74, Number 43743) and the FDOT's "New or Modified Interchanges," Topic No. 525-030-160-I effective January 19, 2018. The responses provided herein for each of the two policy points demonstrate compliance with these requirements and provides justification for the proposed interchange modifications to the I-295 corridor from SR 9B to SR 202 in Duval County, Florida:

Point #1: Proposal does not adversely impact operational safety of the existing freeway
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, and 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 (Title 23, Code of Federal Regulations (CFR), paragraphs 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 Original Build Alternative currently under construction. The area of influence of the study included one interchange on either side of the proposed access points along the mainline and the first major intersection on either side of the proposed change in access along the arterials.

Several performance measures were used to compare the traffic operations of the Original Build Alternative with the proposed Preferred Build Alternative. Key measures included link speeds, link densities, number of vehicles served, number of vehicles denied entry, travel times between important zones, average delay of vehicles traversing the project corridor, and safety under both Original and Preferred Build conditions.

Significant increase in travel demand was observed within the study area as a result of recent developments and anticipated future land use changes. Travel demand forecasting completed for this project using the recently available socioeconomic data indicated an increase in traffic demand between **approximately 13 percent to 42 percent** over the I-295 East Express Phase I

SIMR (October 2014) and the I-295 East Express Phase I SIMR Re-evaluation (July 2016) evaluations during a five-hour peak period in the AM and PM peak hours.

Both Original and Preferred Build Alternatives performed similarly under the Opening Year (2025) traffic conditions in the AM and PM peak hours. The southbound I-295 and eastbound SR 202 entry locations created latent demand due to lack of existing capacity at these boundary conditions. Traffic backups were observed near the I-295 northbound merge north of Town Center Parkway where the number of lanes drops from four to two lanes in both build alternative models. Even though both alternatives performed similarly in the Opening Year (2025) when link level speeds, densities and throughputs are evaluated, the Preferred Build Alternative led to an approximate **5 seconds per vehicle** less average delay when reviewing the system-wide results during the AM peak period. This equated to about **280 vehicle-hours of delay** savings considering all vehicles that were served in the AM peak period. The build alternatives showed similar delays during the PM peak period.

When Design Year (2045) operations were reviewed, the Preferred Build Alternative outperformed the Original Build Alternative along several link specific MOEs that included speeds and densities. Overall throughput remained constant between the two alternatives. In Design Year (2045), the proposed improvements increase the average speed across the study area from 35.2 mph with the Original Build Alternative to 36.0 mph during the PM peak period. The proposed improvements with the Preferred Build Alternative also reduced travel time along GP lanes of I-295 from south of SR 9B until Town Center Parkway. In the northbound I-295 direction, during the AM peak period, approximately **140 seconds per vehicle** in travel time savings was observed with the Preferred Build Alternative along northbound I-295 from south of the SR 9B interchange to south of the Town Center Parkway interchange on the GP lanes during the AM peak period. Similarly, **180 seconds per vehicle** in travel time savings was observed in the GP lanes with the Preferred Build Alternative from SR 9B vehicles entering the I-295 corridor to south of Town Center Parkway during the AM peak period. Approximately **80 seconds per vehicle** and **100 seconds per vehicle** in travel time savings was observed during the AM peak period for the express lanes for the same origin-destination pairs, respectively. In the southbound I-295 direction, during the PM peak period, approximately **85 seconds per vehicle** in travel time savings was observed with the Preferred Build Alternative to both the



SR 9B and the I-295 south of the SR 9B interchange destinations from I-295 at Town Center Parkway during the PM peak periods in the GP lanes. Express lane travel time savings is less significant in the Preferred Build Alternative at approximately **12 seconds per vehicle** during the PM peak period in the southbound direction.

The utilization of express lanes is similar between the Original Build Alternative and the Preferred Build Alternative during the Opening Year (2025). With congestion building up in GP lanes the Original Build Alternative by Design Year (2045) saw increased utilization of the express lanes when compared with the Preferred Build Alternative. However, the overall volumes served (GP + Express) is similar between the two Alternatives in the Design Year (2045).

Critical segments 1 through 9 were also evaluated in detailed in this SIMR Re-evaluation to provide thorough details of operations at these important locations. The Preferred Build Alternative outperformed the Original Build Alternative in almost all of these segments indicating its superior operational benefits.

A total of over 1,300 crashes occurred within the study area in the recent five-years (2012-2016), which included 11 fatalities along the project corridor. A detailed Predictive Safety Analysis was conducted for this project to evaluate the Original Build Alternative and the Preferred Build Alternative that adds an additional GP lane in the northbound and southbound direction along I-295 within the study areas. This analysis indicated that the predicted average crashes with the Original Build Alternative will be approximately 207.747 crashes in the Opening Year (2025) and approximately 409.979 crashes in the Design Year (2045). Whereas, the Preferred Build Alternative is predicted to have approximately 202.211 crashes in the Opening Year (2025) and 395.135 crashes in Design Year (2045). The Preferred Build Alternative will reduce crashes by approximately **4 percent** by Design Year (2045) when compared to the Original Build Alternative.

A Conceptual Signing Plan was prepared for the Preferred Build Alternative and is provided as part of this SIMR Re-evaluation in **Appendix** and a typical section of I-295 East Express Phase I is provided in **Appendix G**.

In summary, the proposed improvements will benefit the study corridor (I-295) with increase in travel speeds in the GP lanes, reduction in travel times, and decrease in crashes for future traffic conditions. Therefore, the proposed improvements will enhance the traffic operations and safety of the study corridor (I-295) with the proposed addition of an extra GP lane.

Point #2: A full interchange with all traffic movements at a public road is provided

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 or high occupancy vehicle and high occupancy toll 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-295 is a public facility and all interchanges within the study area provide full access and will continue to do so with both the Original Build Alternative and the proposed Preferred Build Alternative. All existing general use lanes will remain toll free with both alternatives. Both of these alternatives will maintain and provide all interchange accesses catering to all traffic movements to/from existing interchanges within the study limits.

Most of the proposed improvements with the Original Build and the Preferred Build Alternatives were designed to meet the current standards for federal-aid projects on the interstate system conforming to FDOT and AASHTO standards. However, a design exception and five design variations were required for the Original Build Alternative. The Preferred Build Alternative will require no additional design exceptions or variations other than those anticipated with the Original Build Alternative. These design exceptions and variations are summarized in Section 5 of this SIMR Re-evaluation. They will minimize reconstruction, right of way impacts, and overall



motorist inconvenience. The benefits of the operational improvements are expected to outweigh potential impacts related to the design exceptions and variations.

The improvements proposed with the Preferred Build Alternatives can be constructed within the existing interstate limited access right-of-way.