EXECUTIVE SUMMARY

The US 17/Roosevelt Boulevard (SR 15) from south of Wells Road to Collins Road serves as an important access point in Duval and Clay Counties' transportation network. It provides connectivity to major employers such as Naval Air Station (NAS) Jacksonville and Fleming Island. The Florida Department of Transportation (FDOT) District Two completed a Project Development and Environment (PD&E) Study to evaluate several enhancements to improve traffic operations and safety at this key interchange with I-295.

During peak periods, traffic queues from SR 15 ramp terminal intersections extend onto I-295 mainline creating congestion and causing crashes. Therefore, this project is needed to improve operational and safety issues along SR 15 within the study limits. This project proposes to address the following issues at the I-295 and SR 15 interchange:

- Southbound congestion on SR 15 interferes with traffic exiting to Naval Air Station Jacksonville.
- During the PM peak, traffic exiting from I-295 northbound to SR 15 queues several miles onto the right lanes of I-295 northbound.
- Backup onto I-295 from the I-295 southbound off-ramp is also observed during peak hours.

In addition, several other needs related to roadway capacity/deficiencies, system linkage, legislation/plan consistency, social demands or economic development, modal interrelationships and hurricane evacuation support the need for these proposed improvements.

This IOAR document aims to evaluate Build Alternative operational and safety results and compare with the No-Build Alternative. The following FHWA policy points serve as primary decision criteria used in the approval of IOAR.

Federal Highway Administration (FHWA) Policy Points

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, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis shall, 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, shall 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 must 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 must 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)).

For this IOAR study, the VISSIM analysis was conducted to evaluate the performance of the study corridor (SR 15) for the Exisitng Year (2019), the Opening Year (2025) and Design Year (2045) for both No-Build and Build conditions. The operational analysis results indicate that several intersections along SR 15, especially I-295 ramp terminal interchange intersections operate at failing conditions (LOS F or E) mainly due to peak period demand exceeding the available capacity.

Also, due to failing conditions of I-295 ramp terminal interchange intersections, the I-295 northbound and southbound ramp queues extend to the I-295 mainline, which deteriorates the mainline operations. With the increase in traffic for future conditions, the traffic operations further deteriorate if no improvements are implemented along SR 15. The proposed improvements listed in **Section 4-2** will improve traffic operations and the safety of the study corridor over No-Build conditions.

An operational analysis performed for the Build conditions showed improved traffic operations that decrease excessive delays throughout the study area, thereby improving safety compared to the No-Build conditions. The queue lengths on the I-295 northbound and southbound off-ramps, which spill back onto the I-295 mainline in the No-Build conditions, will significantly improve in the Build conditions. In the Design Year (2045), average queue lengths along the I-295 northbound and southbound off-ramps for the left movements are reduced by **92 percent** and **76 percent** in the AM peak hour compared to No-Build conditions, respectively. Similar, a **99 percent** and **93 percent** reduction in the PM Peak Hour compared to No-Build conditions, respectively.

Table E-1 compares No-Build and Build Alternatives intersection delay for I-295 ramp terminal intersections during AM and PM peak hour.

Table E-1: VISSIM Overall Ramp Terminal Intersection Delay

Intersection Delay (seconds/vehicle)	Opening Year (2025)					
	AM Peak Hour			PM Peak Hour		
	No-Build	Build	Percentage Improvement	No-Build	Build	Percentage Improvement
I-295 NB Off Ramp and SR 15	38.7	32.5	16%	46.4	24.6	47%
I-295 SB Off Ramp and SR 15	37.8	17.1	55%	57.3	11.1	81%
Intersection Delay (seconds/vehicle)	**Design Year (2045)**					
	AM Peak Hour			**PM Peak Hour**		
	No-Build	**Build**	**Percentage Improvement**	**No-Build**	**Build**	**Percentage Improvement**
I-295 NB Off Ramp and SR 15	138.3	53.3	66%	260.7	144.6	45%
I-295 SB Off Ramp and SR 15	84.4	40.7	52%	318.3	25	92%

VISSIM analysis results indicate, as shown in **Table E-1**, the proposed build improvements significantly improve traffic operations at I-295 ramp terminal intersections compared to No-Build conditions. The operational benefits with proposed build improvements range from **16 percent** to **92 percent** reduction in intersection delay during peak hours.

Table E-2 provides a comparison of network-wide MOEs for Opening Year (2025) and Design Year (2045) for both No-Build and Build conditions during AM and PM peak periods.

Table E-2: Traffic Operational Analysis Comparison

Network-wide MOEs	Opening Year (2025)					
	AM Peak			PM Peak		
	No-Build	Build	Percentage Improvement	No-Build	Build	Percentage Improvement
Average Speeds (mph) across 6-hours	24	34	42%	21	35	67%
Average Delay (sec/veh) across 6-hours	160	54	66%	213	53	75%
Latent Demand at End of 6-hours (Vehicles)	0	0	0%	0	0	0%
Network-wide MOEs	**Design Year (2045)**					
	AM Peak			PM Peak		
	No-Build	Build	Percentage Improvement	No-Build	Build	Percentage Improvement
Average Speeds (mph) across 6-hours	17	22	29%	12	22	83%
Average Delay (sec/veh) across 6-hours	305	189	38%	504	196	61%
Latent Demand at End of 6-hours (Vehicles)	8,148	1,493	82%	8,114	1,429	82%

The study area experiences approximately 659 crashes during five years (2013 to 2017). The predominant crash type for this area was front to rear collisions accounting for 44.5 percent of the crashes attributed to the congested conditions within the study area. The predicted safety analysis results indicated that the traffic safety performance improved significantly with the Build improvements compared with the No-Build conditions. The Build improvements reduce the ramp and ramp terminals predicted average crash frequency by approximately **14.3 percent** and **15.2 percent** in the Opening Year (2025) and Design Year (2045) compared to No-Build conditions, respectively. The overall predicted crash reduction for the study area is **6.0 percent** and **6.7 percent** in the Opening Year (2025) and Design Year (2045), respectively.

The project also provides safety benefits within the study area by reducing both the high severity crashes and property damage only crashes. The annual crash costs predicted for the Build Alternative are lower than the No-Build Alternative by approximately 1.3million dollars and 2.4 million dollars in the Opening Year (2025) and Design Year (2045), respectively. This is approximately 5.7 percent reduction and 7.0 percent reduction in the crash costs in the Opening Year (2025) and the Design Year (2045), respectively. The Build Alternative reduces the overall crash cost by approximately 38.3 million dollars over the entire life of the project when compared to the No-Build Alternative, as shown in **Table 6-3**.

Therefore, the proposed build improvements for the project improves overall traffic operations and safety of the study corridor (SR 15).

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 for 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 for federal-aid projects on the interstate system (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)).

The improvements proposed along SR 15 from south of Wells Road to Collins Road will provide full interchange access and caters to all traffic movements from SR 15 to/from I-295.

The Build Alternative was designed to meet all current FDOT and FHWA design standards of federal-aid projects on the interstate system.