

# 1. GENERAL PROJECT INFORMATION

## 1.1 Introduction

The Florida Department of Transportation (FDOT) District Five (D5) has prepared this Interchange Operational Analysis Report (IOAR) for the proposed ramp improvements to the I-95 interchange at SR-46 located in Brevard County. Love's Travel Plaza, a private developer, is coordinating the proposed improvements with D5. 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), and FDOT Procedure No. 525-030-120 (Project Traffic Forecasting) have been utilized in this report.

Preparation of this IOAR results from a Traffic Impact Analysis (TIA) for a proposed Love's Travel Center located at the intersection of SR-46 and North Carpenter Road approximately 800 feet west of the I-95 Southbound Off-Ramp. The TIA identified the need to signalize the project access at North Carpenter Road and the I-95 Southbound Off-Ramp. Due to the signal spacing not meeting access management standards, the TIA was reviewed by the Access Management Review Committee (AMRC) and the spacing variance was approved in January of 2020. As part of the approval, an IOAR was required to determine if the addition of the signal would be operationally sound; this report provides the results of the analysis.

Per FDOT's Interchange Access Request User's Guide (IARUG) section 1.5.4, an IOAR is required for "Replacement of an unsignalized free-flow, right-turn lane on an off-ramp with a signalized right-turn or installation of a signal or roundabout to a stop-controlled ramp terminal intersection". As a result, this report has been completed in order to satisfy FDOT guidelines.

## 1.2 Purpose and Need

The purpose and need of this report is to evaluate the safety and operation for the proposed I-95 Southbound Off-Ramp modification due to the installation of a traffic signal that will also bring the southbound right-turn under signal control at the I-95 Southbound Ramps / SR-46 intersection. Signalization is a result of approved development access improvements to address existing delays for the southbound left-turn movement from the ramp. Additionally, signalization of the Southbound Off-Ramp will provide better progression along SR-46 and better accommodate traffic generated by the Love's Travel Plaza development.

In order to sufficiently address the impact of the proposed ramp modification, the analyses of Existing Year (2020), Opening Year (2021), and Design Year (2031) conditions of the influence area intersections are required. Analysis elements include LOS, delay, and queues. Respective technical documentation pertaining to these analyses is to be provided for approval of the proposed ramp modification.

I-95 accommodates the heavy peak-hour traffic due to daily commuters and also provides non-local drivers passage to and from their destination. The interchange serves as an access point to Seminole and Volusia County to the west on SR-46 for the eastbound morning rush hour traffic and westbound afternoon rush hour traffic. It also serves the City of Titusville to the east with westbound morning rush hour traffic and eastbound afternoon rush hour traffic.

Currently, both existing signalized intersections within the influence area of the I-95 / SR-46 interchange operate at the target LOS. The unsignalized intersection of SR-46 at North Carpenter Road is not meeting target LOS on its minor approach, and the intersection of I-95 at Southbound Ramps is not meeting target LOS on the southbound approach. As previously identified, the southbound left-turn movement at the Southbound Off-Ramp experiences high delays and does not meet the target LOS of D. The movement is currently stop-sign controlled.

Accordingly, the proposed Southbound Off-Ramp modification is recommended to reduce the delay for the southbound left-turn movement at the off-ramp intersection. The proposed modification consists of the elimination of the yield control merge, and the addition of a signal to control the southbound left and right turns at the Southbound Off-Ramp. Under the Build Alternative, it is anticipated that the ramp modification will provide a smoother transition for I-95 southbound exiting traffic onto SR-46.

The western unsignalized intersection in the influence area, SR-46 / North Carpenter Road, is expected to be under construction for signalization and roadway improvements by February of 2021. In addition to signalization, improvements include construction of eastbound and northbound left-turn lanes, a westbound right-turn lane, dual southbound left-turn lanes, and a southbound shared through-right turn lane. The improvements mentioned above have been incorporated into the No-Build and Build analyses.

Additionally, land uses within the immediate influence area of the study interchange will remain essentially the same in the southwest, southeast, and northeast quadrants. However, the land use in the northwest quadrant is being developed as Love's Travel Plaza, truck parking, truck tire facility and a future hotel.

### **1.3 Project Location**

The study interchange of I-95 / SR-46 is located in Brevard County and FDOT District 5. The interchange is located within unincorporated Brevard County and it is located approximately 3.62 miles north of the I-95 / SR-406 interchange and approximately 7.60 miles south of the I-95 / Dearing Parkway interchange. The location of the study interchange is depicted in Figure 1.

### **1.4 Methodology**

#### **1.4.1 Overview**

Per the 2020 FDOT Interchange Access Request User's Guide section 1.5.1 regarding the Methodology Letter of Understanding (MLOU), "The MLOU is optional for an Interchange Operational Analysis Report (IOAR) and is determined on a case-by-case basis." Accordingly, an MLOU was deemed unnecessary by FDOT personnel as agreed to at the January 23, 2020 District 5 Interchange Coordination meeting due to the scope of the interchange modification. Although a formal MLOU was not necessary, Love's Travel Plaza and D5 agreed to follow the general methodology as shown in the methodology letter included as Appendix A.

#### **1.4.2 Analysis Years**

Section 2.4.3 of the 2020 FDOT IARUG requires at least three (3) analysis years for any Interchange Access Report (IAR). This section also requires a minimum IOAR design year of 10 years beyond the opening year. The years of analysis were determined based on a meeting held on October 6, 2020. A copy of the email correspondence is included in Appendix B. Analysis years for the IOAR are provided below. It should be noted that the No-Build and Build Alternatives were analyzed in the Opening and Design Years.

- Existing Year: 2020
- Opening Year: 2021
- Design Year: 2031

### **1.5 Area of Influence**

The I-95 / SR-46 interchange is located within unincorporated Brevard County. The nearest interchanges are I-95 / Dearing Parkway 7.60 miles to the north and I-95 / SR 406 3.62 miles to the south. Due to the distance, they are not included in the area of influence (AOI). The intersection of SR-46 at Australian Way / Hammock Trail is shown in the figures throughout this report for the purpose of balancing the volumes along the corridor. However, local residents have not expressed any traffic concerns and observations during the data collection phase did not yield any operational concerns. Therefore, it was negotiated in the methodology phase to not include this intersection as part of the analysis. Figure 2 graphically denotes the AOI. The following is a list of interchange components and immediate area intersections to be analyzed within the AOI:

- SR-46 at North Carpenter Road
- I-95 at SR-46 Southbound Ramps
- I-95 at SR-46 Northbound Ramps
- SR-46 at Pine Avenue / Holder Road