

1 INTRODUCTION

1.1 BACKGROUND

The Interstate 10 (I-10) interchange with State Road (SR) 121 serves as an important access point in Baker County, Florida. The I-10 and SR 121 interchange also provides primary access to commuters for the City of Macclenny to the north and Lake Butler to the south of I-10, as well as a key access point for trucks serving these communities. This section of SR 121 is an important link in Baker County's transportation network and provides major north-south connectivity.

The purpose of this Interchange Modification Report (IMR) is to seek approval from the Florida Department of Transportation (FDOT) Central Office for the proposed interim improvements to the of I-10 with SR 121 in Baker County, Florida. This IMR has been prepared in accordance with FDOT Policy No. 000-525-015, FDOT Procedure No. 525-030-160, and the FDOT Traffic Forecasting Handbook (Procedure No. 525-030-120).

This project is being proposed under the Programmatic agreement between FDOT and Federal Highway Administration (FHWA) and will be reviewed by FDOT, Central Office. The project will be subject to FHWA oversight because the proposed changes evaluated in this report may impact the interstate highway system.

Two roadway improvement projects are planned or programmed within the immediate study area. These projects include the No-Build with Signal (IOAR Concept) Alternative and Interim Build Alternative.

1.2 PURPOSE AND NEED

The purpose of this project is to provide interim capacity relief and improve traffic operations and safety near the SR 121 and I-10 interchange in Baker County.

The I-10 and SR 121 interchange is a partial cloverleaf configuration with loops in the southeast and northwest quadrants. Under existing conditions, these loop ramps hinder normal traffic operations, especially in the westbound I-10 direction. The westbound I-10 off-ramp is currently a three-center radii loop ramp that terminates at a stop-controlled intersection with SR 121. This configuration does not provide efficient operations and results in traffic backups, specifically during the AM and PM peak hours. Additionally, southbound drivers encounter poor sight distance due to the vertical curve over I-10.

In the year 2020, SR 121 carried an Annual Average Daily Traffic (AADT) of 12,100 vehicles to the south and 13,000 vehicles to the north of I-10 on a two-lane facility as shown from counts collected between January 14, 2020 and January 16, 2020. The I-10 mainline within the project study area carried an AADT of 33,100 vehicles to the west of SR 121 and 39,600 vehicles to the east of SR 121 on a four-lane facility from Existing Year (2020) traffic counts.

If no improvements are made, traffic operations and safety within the interchange area will continue to deteriorate as traffic and freight movement to and from the City of Macclenny increases. For this reason, the ultimate build improvements from the approved IMR (August 2016), which can be found in **Appendix A**, were proposed to address operational and safety deficiencies of the study area. For immediate relief, FDOT District Two proposed to install a signal at the ramp terminal intersection of the I-10 westbound off-ramp with SR 121 through a Traffic Operations Push Button Contract as documented in the approved Interchange Operational Analysis Report (September 2019) provided in

Appendix B. With the continued growth in traffic volumes and even with signalization of this ramp terminal intersection, traffic operations will progressively worsen and deteriorates conditions at the I-10 and SR 121 interchange by Design Year (2045) if no geometric roadway improvements are made. Therefore, this report analyzes the improvements proposed with the Interim Build Alternative that includes adding a directional ramp to westbound I-10 to serve northbound traffic along SR 121 which are proposed to address the immediate capacity need at this critical interchange for Baker County, FL.

1.3 PROJECT LOCATION

The I-10 and SR 121 interchange is in Baker County, Florida at mile marker (MM) 335 along I-10. The closest interchange is County Road (CR) 125, approximately 2.36 miles to the west and SR 228, approximately 1.17 miles to the east of SR 121. The study area along SR 121 consists of half a mile-long segment between Woodlawn Road to the south and Willis Hodges Road to the north. The following freeway segments, merge and diverge segments, and intersections were included in the study:

- I-10 – from CR 125 to SR 228
- SR 121 – from Woodlawn Road to Willis Hodges Road
 - SR 121 at Woodlawn Road/I-10 eastbound ramps – Signalized
 - SR 121 at I-10 westbound ramps - Unsignalized
 - SR 121 at George Hodges Road - Unsignalized
 - SR 121 at Willis Hodges Road - Signalized
- CR 125 – Eastbound on-ramp and westbound off-ramp
- SR 228 – Eastbound off-ramp and westbound on-ramp

Figure 1 shows the project location and area of influence.

1.4 CHARACTERISTICS OF MAJOR STUDY CORRIDORS

The land use of surroundings adjacent to the study area is predominantly agricultural. However, it also includes some commercial and residential land uses. The functional classification and posted speed limit for major roadways within the influence area are presented in **Table 1**.

Table 1: Functional Classification and Posted Speed Limit of Major Roadways

No.	Roadways	Functional Classification	Posted Speed (mph)
1	I-10	Urban/Rural Interstate	70
2	SR 121	Urban Minor Arterial	45
3	CR 125	Urban Major Collector	45
4	SR 228	Urban Minor Arterial	45