INTERCHANGE OPERATIONAL ANALYSIS REPORT (IOAR)

I-10 at Garcon Point Road

Santa Rosa County, Florida

FPID: 413062-4-22-01 and 413062-5-22-01
FAP No(s): D319157B

February 2021

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Prepared for:

Florida Department of Transportation - District Three
Chipley, Florida

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Florida Department of Transportation

Determination of Safety, Operational and Engineering Acceptability

Acceptance of this document indicates successful completion of the review and determination of safety, operational and engineering acceptability of the Interchange Access Request. Approval of the access request is contingent upon compliance with applicable Federal requirements, specifically the National Environmental Policy Act (NEPA) or Department's Project Development and Environment (PD&E) Procedures. Completion of the NEPA/PD&E process is considered approval of the project location design concept described in the environmental document.

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SYSTEMS IMPLEMENTATION OFFICE

QUALITY CONTROL CERTIFICATION FOR INTERCHANGE ACCESS REQUEST SUBMITTAL

Submittal Date: February 2021

FM Number: 413062-4-22-01 and 413062-5-22-01

Project Title: I-10 at Garcon Point Road Interchange Operational Analysis Report (IOAR)

District: District 3

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Document Type: ☐ MLOU ☐ IJR ☐ IMR ☒ IOAR ☐ OTHER_____

Status of Document (Only complete documents will be submitted for review; however, depending on the complexity of the project, interim reviews may be submitted as agreed upon in the MLOU)

Quality Control (QC) Statement

This document has been prepared following FDOT Procedure Topic No. 525-030-160 (New or Modified Interchanges) and complies with the FHWA Two Policy requirements. Appropriate District level quality control reviews have been conducted and all comments and issues have been resolved to their satisfaction. A record of all comments and responses provided during QC review is available in the project file or Electronic Review Comments (ERC) system.

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Iris Waters, P.E.

IRC DocuSigned by: Starsky Harrell E3E2EA2D0E5440D... Date: 3/9/2021 | 10:57 AM EST

Starsky Harrell

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Hanson Professional Services Inc., a Florida corporation authorized under the provisions of Section 471.023, Florida Statutes, to offer engineering services to the public through a Professional Engineer, duly licensed under Chapter 471, Florida Statutes, by the State of Florida Board of Professional Engineers and I have prepared or approved the evaluation, findings, opinions, conclusions or technical advice hereby reported for:

PROJECT: I-10 at Garcon Point Road Interchange Operational Analysis Report (IOAR)

LOCATION: Santa Rosa County, FL

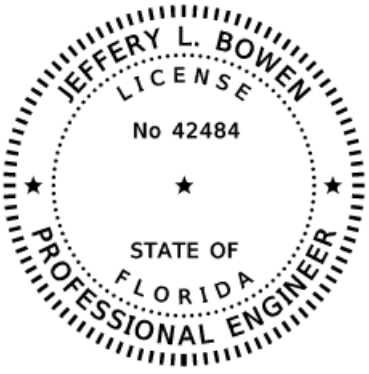
FINANCIAL PROJECT ID: 413062-4-22-01 and 413062-5-22-01

This report includes a summary of data collection effort, traffic analysis, discussion of preferred alternative and summary of conclusions. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering and planning as applied through professional judgement and experience.

Name: Jeffery L. Bowen, P.E.

Florida P.E. No.: 42484

Signature: Jeffery L Bowen Digitally signed by Jeffery L Bowen Date: 2021.03.01 07:25:44 -05'00'



Date: 3/1/2021

EXECUTIVE SUMMARY

The purpose of this Interchange Operational Analysis Report (IOAR) is to provide the required documentation for obtaining approval for improvements at the Interstate 10 (I-10) and Garcon Point Road interchange in Santa Rosa County. The current interchange is a full diamond interchange with stop-controlled operation at both ramp terminal intersections. The primary need of the project is to improve future traffic operations at the ramp terminals thereby improving safety at the interchange.

The primary basis for traffic projections in this IOAR is consistent with the Project Traffic Analysis Report (PTAR) dated May 2020, which incorporates the field traffic counts, Florida Traffic Online (FTO) and the Northwest Florida Regional Planning Model Version 2.1 (NWFRPM v2.1) with base year 2010 and horizon year 2040. The analysis years for the study include Existing Year 2019, Opening Year 2025, and Design Year 2045. The operational analysis for this study was performed using Synchro 10. The delay and LOS for the unsignalized intersection analyses were reported based on Highway Capacity Manual (HCM 6th Edition) methodology. The delay and LOS for the signalized intersection analyses were reported based on Synchro 10 methodology.

If no improvements are made, traffic operations and safety within the study area will continue to deteriorate as traffic volumes increase.

Two alternatives were evaluated to address the purpose and needs identified in this IOAR. The alternatives analyzed include:

- No-Build Alternative – This alternative includes the existing configuration plus all programmed improvements with future traffic.
- Build Alternative – This alternative includes signalizing the I-10 eastbound (EB) ramp terminal intersection. Also, it is recommended at the eastbound ramp terminal the existing configuration of Garcon Point Road southbound (SB) (through and shared through/left-turn lane) be converted to one through the lane and one left-turn lane.

As part of this study, an existing crash analysis was performed. The data collected from FDOT State Safety Office Map-Based Query Tool (SSOGis) shows angle and sideswipe crashes are the most prominent crashes within the project area. The Recommended Build Alternative shows improved traffic operations and safety within the project study area when compared to the No-Build Alternative.

Based on the evaluations of the No-Build and Build Alternatives, the recommended alternative for approval in this study is the Build Alternative.

This IOAR has been developed in accordance with the 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, FDOT Procedure No. 525-030-120: Project Traffic Forecasting, Interchange Access Request User's Guide (IARUG) and the FDOT Project Traffic Forecasting Handbook.

E.1 Compliance with FHWA General Requirements

The following requirements serve as the primary decision criteria used in the approval of an IOAR. Responses to each of the two Federal Highway Administration (FHWA) policy points are provided to show that the proposed improvements at the I-10/Garcon Point Road interchange are viable based on the conceptual analysis performed to date.

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 conducted for this IOAR confirmed that the proposed improvement to the existing interchange will not have a significant adverse impact on the operation and safety of the project area. Several performance measures were used to compare the operations of the existing system under No-Build and Build conditions. Key measures included delays, 95th percentile queue lengths, crash rate, crash type and crash severity under existing and proposed conditions.

From an operational perspective in the Design Year 2045 under the No-Build Alternative, operational and safety deficiencies exist. The eastbound left-turn movement at the I-10 eastbound ramp terminal intersection will operate at LOS F in both the AM and PM peak hours. These deficiencies are attributed to the high through traffic volume along Garcon Point Road and high left-turn traffic volume exiting the freeway. At the I-10 eastbound ramp terminal intersection, queues are anticipated to be longer than the available storage in the eastbound direction in Design Year 2045 under the No-Build Alternative. The operational analysis indicates that the I-10 westbound (WB) ramp terminal will operate at acceptable LOS in the Design Year 2045 under the No-Build Alternative. Hence, no improvements are proposed at the I-10 westbound ramp terminal intersection in the Build Alternative.

The Build Alternative for this study performs substantially better than the No-Build Alternative for all future years. The I-10 ramp terminals will operate at LOS C or better during the AM and PM peak hours. When compared to the No-Build Alternative, the proposed improvements provide a reduction in delay for the eastbound left-turn movement at the I-10 eastbound ramp terminal intersection. The delay for the eastbound left-turn movement at the I-10 eastbound ramp terminal intersection is reduced by 87.8 seconds and 750.1 seconds during the AM and PM peak hours, respectively. The queues observed in the No-Build Alternative are anticipated to be longer than the available storage in the eastbound direction. These queues are reduced significantly in the Build Alternative, where the available storage can accommodate the queues at the I-10 eastbound ramp terminal intersection.

The safety analysis performed for this study indicated a total of 22 crashes occurred within the project area during the five study years (2013-2017). The predominant crash types that occurred within the study area were angle and sideswipe collisions. Crashes of these types are typically attributed to high traffic volumes, unexpected traffic crossings, or drivers not stopping at stop signs.

The improved operations under the Build Alternative are anticipated to enhance safety within the project area. A quantitative safety analysis was performed for the study area, where improvements are to be implemented. Based on the safety analysis, it is predicted that a total annual crash reduction of 0.476

crashes per year will occur at the I-10 eastbound ramp terminal intersection with the proposed improvements. This was determined by applying a known crash modification factor (CMF) of 0.83 to the existing annual crash frequency. The CMF for providing a traffic signal at the intersection were determined using the CMF Clearinghouse maintained by FHWA.

Overall, the Build Alternative provides significantly better traffic operations and enhanced safety when compared to the No-Build Alternative. All proposed improvements as part of this project will be done within the existing right-of-way.

In conclusion, the comparison of the No-Build and Build Alternatives (**Table 6-1**) shows that the proposed improvements provide enhanced operation and improved safety conditions.

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.

The proposed improvements apply to the I-10 and Garcon Point Road interchange in Santa Rosa County and no new access is required. The improvements are proposed to preserve all the existing connections between public roads and preserve existing traffic movements onto and off of I-10. These improvements are designed to meet current standards for federal-aid projects on the interstate system and conform to American Association of State Highway and Transportation Officials (AASHTO) and the FDOT Design Manual.

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1. PROJECT OVERVIEW

1.1 Introduction

This Interchange Operational Analysis Report (IOAR) has been prepared to evaluate the impacts of signalizing the Interstate 10 (I-10) eastbound ramp terminal intersections at Garcon Point Road and the changing of Garcon Point Road southbound shared through/left-turn lane to left-turn lane only. The Florida Department of Transportation (FDOT), District 3 is the Requestor seeking approval of this IOAR that presents the necessary documentation for such improvements.

The State of Florida established the Strategic Intermodal System (SIS), which consists of high priority transportation facilities and services of statewide and interregional significance. These SIS facilities are critical to the movement of people and goods in Florida, and their function is vital to Florida's economic competitiveness.

I-10, which is a designated SIS facility, is an east-west roadway that begins at the border of Alabama through Pensacola, Tallahassee and ends in Jacksonville, Florida. It is a vital thoroughfare that links multi-modal hubs to facilitate the safe and efficient movement of goods and people. The I-10 at Garcon Point Road interchange is significant for passenger movements.

This IOAR stems from a recently completed Project Traffic Analysis Report (PTAR), dated May 2020. The PTAR was part of two Project Development and Environment (PD&E) studies done to evaluate the need for widening I-10 from four to six lanes in Santa Rosa County and Okaloosa County. The two PD&E studies are intended to improve capacity, safety, and operations of I-10. The two projects include I-10 from West of Avalon Boulevard to West of Log Lake Road PD&E Study (FPID No.: 413062-4-22-01 and FPID No.: 413062-5-22-01) and I-10 from West of Log Lake Road to East of State Route (S.R.) 85 (Ferdon Boulevard) (FPID No.: 441038-1-22-01). The PTAR is provided in **Appendix A**.

The IOAR is evaluating the proposed improvements to the I-10 eastbound at Garcon Point Road ramp terminal intersection in Santa Rosa County. This IOAR has been developed in accordance with the 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 Interchange, FDOT Procedure No. 525-030-120: Project Traffic Forecasting, IARUG, and the FDOT Project Traffic Forecasting Handbook.

1.2 Purpose and Need for Project

The main purpose of this IOAR is to document the safety, operational, engineering (SO&E) performance of signalizing the I-10 eastbound at Garcon Point Road ramp terminal intersection. In this report, both ramp terminal intersections will be analyzed to evaluate the traffic operations at the I-10 and Garcon Point Road interchange.

As part of this study, the existing operational analysis revealed operational deficiency at the I-10 eastbound ramp terminal intersection. The existing analysis results revealed that the left-turn and right-turn traffic from the I-10 eastbound off-ramp would operate at LOS F in the PM peak hour. By signalizing the I-10 eastbound ramp terminal intersection, the eastbound traffic volume will be metered, which will mitigate the simultaneous release of traffic volume onto Garcon Point Road by creating a platooning effect through the ramp terminal signal control. The I-10 eastbound ramp terminal intersection also requires additional geometric improvements to accommodate future traffic. The geometric improvement on southbound Garcon Point Road is the change of shared through/left lane to left-turn lane only at the I-10 eastbound ramp terminal intersection.

The need for this project derives from the PTAR. As part of this study, the existing and future traffic volumes along Garcon Point Road were studied and utilized in the analysis of existing and future traffic conditions. Recent traffic projections completed in the region identified increased traffic congestion and potential deficiencies in the vicinity of the interchange. Currently, the daily traffic volume on Garcon Point Road varies between 2,200 and 10,300 vehicles per day, with a daily truck factor of 7.9% at the vicinity of the interchange. By the year 2045, the daily traffic volume is expected to increase to a range of 2,800 to 13,300 vehicles per day. With this increase in traffic along Garcon Point Road, the operating conditions at the intersections are expected to deteriorate.

A review of the crash data provided in **Section 3** shows a total of 22 crashes for the five-year period (2013-2017), of which 7 were injury crashes. No fatal crashes occurred during the five-year period. The actual crash rate at the I-10 eastbound ramp terminal intersection is 2.845 crashes per million entering vehicles, which is higher than the average statewide crash rate for similar facilities. Analysis of the crashes revealed the following notable characteristics.

- Angle crashes (54%) were the predominant crash type, followed by Sideswipe crashes (23%).
- Angle crashes were most concentrated at the I-10 eastbound ramp terminal intersection.

If no improvements are made at the I-10 eastbound and Garcon Point Road ramp terminal intersection, traffic operations within the study area will continue to deteriorate as traffic continues to grow.

1.3 Project Location

The I-10 at Garcon Point Road interchange is located in Santa Rosa County at Milepost 9.309, Section number 58002000. The I-10 at Garcon Point Road interchange is located between the Avalon Boulevard interchange and the Ward Basin Road interchange. Garcon Point Road is approximately 4.23 miles east of Avalon Boulevard and 2.46 miles west of Ward Basin Road. The project location and the study area are shown in **Figure 1-1**.

Florida Department of Transportation District Three Chipley, Florida	**I-10 at Garcon Point Road** Project Development & Environment Study FPID No.: 413062-4-22-01, 413062-5-22-01	Area of Influence	Figure 1-1

2. METHODOLOGY

2.1. Area of Influence

The area of influence (AOI) for the IOAR includes the study interchange of I-10 and Garcon Point Road located in Santa Rosa County. Along Garcon Point Road, the adjacent intersections of Flowerwood Drive and Pelican Palms RV Park are approximately 0.12 miles to the north and south of the ramp terminal intersections. These intersections are not included within the AOI as they are not anticipated to impact the ramp terminals. Similarly, these adjacent intersections carry low traffic volumes that are accounted for in the ramp terminal intersections performed in this IOAR. The major study corridor is Garcon Point Road.

Garcon Point Road is a north-south highway running from Avalon Boulevard Frontage Road to Forsyth Street west of Bagdad. Within the study area, Garcon Point Road is a four-lane divided arterial with a posted speed limit of 45 miles per hour (mph). Garcon Point Road serves residential communities.

In this report, the AOI includes the two ramp terminal intersections along Garcon Point Road:

- I-10 eastbound at Garcon Point Road Interchange Ramps (Un-signalized).
- I-10 westbound at Garcon Point Road Interchange Ramps (Un-signalized).

The AOI is shown in **Figure 1-1**.

2.2. Analysis Years

The analysis years for the project are:

- Existing Year: 2019
- Opening Year: 2025
- Design Year: 2045

2.3. Data Collection and Sources

The primary sources of traffic data for this study are the field traffic counts, Florida Traffic Online (FTO) and the Northwest Florida Regional Planning Model Version 2.1 (NWFRPM v2.1) with base year 2010 and horizon year 2040. The existing traffic data for this study were collected from October 29th through October 31, 2019 as part of the PTAR.

The intersection turning movement counts (TMCs) were collected at both of the I-10 and Garcon Point Road interchange ramp terminal intersections. This data collection effort was performed on Tuesday, October 31, 2019, concurrently with the 72-hour traffic counts. In general, the traffic data for each intersection included 8-hour TMCs (6:00 – 10:00 AM and 2:00 – 6:00 PM), including the heavy vehicle counts. There were no bicycles or pedestrians observed during the TMCs data collection.

72-hour vehicle classification counts were conducted using road tubes and automated traffic counters along the I-10 mainline east and west of the Garcon Point Road interchange and on all ramps at the interchange. Also, the 72-hour vehicle classification counts were conducted using road tubes and automated traffic counters on Garcon Point Road north and south of the interchange.

Information from the FTO was used to check reasonableness with the traffic data collected and to confirm the growth rate used to develop future traffic. Adjustments were made if necessary, to ensure that turning movement volumes at ramp terminals sum to the peak hour ramp volumes.

The factors used for design traffic analysis include the K factor, D factor, T_{Daily} percentage and Design Hour Truck (DHT) percentage. The Standard K factor and D factors were used to develop the Directional Design Hour Volumes (DDHV) for this study.

- The T_{Daily} factor is the adjusted, annual daily percentage of truck traffic.
- The DHT percentage is calculated as one half of the daily truck percentage.

The traffic factors from the Traffic Analysis Methodology Report are recommended for use in this IOAR and are presented in **Table 2-1**. The Traffic Analysis Methodology Report (TAMR) is included in **Appendix A**.

Table 2-1: Summary of Traffic Factors

Roadway	K	D	T_{Daily}	DHT
I-10 from Avalon Boulevard to Garcon Point Road	9.0%	54.1%	20.7%	10.35%
Garcon Point Road	9.5%	55.4%	7.9%	3.95%
I-10 from Garcon Point Road to Ward Basin Road	9.0%	54.1%	21.1%	10.55%

The peak hour factor (PHF) for the existing condition analysis at the ramp terminal intersections was based on the TMC. In the future analysis, a 0.95 PHF was used at the intersections.

All printouts of the data collected are included in the PTAR (see **Appendix A**).

2.4. Travel Demand Forecasting

The development of design traffic for this IOAR followed the procedure outlined in the 2019 FDOT Project Traffic Forecasting Handbook. The travel demand forecasting methodology utilized was consistent with that provided in the PTAR. A growth rate was developed based on the growth from the latest version of the NWFRPM Model, historical traffic data, population projection data for Santa Rosa County published by the Bureau of Economic and Business Research (BEBR) at the University of Florida, Woods & Poole employment forecasts, and historical trends analysis. The future traffic counts were obtained by applying the growth rate to the existing traffic counts collected in the field. Growth rate development and future traffic development are further discussed in **Section 4** of this IOAR.

2.5. Safety Analysis Procedure

Crash data were obtained from FDOT State Safety Office Map-Based Query Tool (SSOGis) for the most recent five years available (2013-2017). The data collected includes the number of crashes, type of crashes, location of crashes, crash severity, weather conditions, road surface conditions and date/time information. **Section 3.9** documents the crash rates and compares the rates to the statewide averages for similar facilities. **Section 3.9** also provides tables and figures summarizing the crash analysis results. Safety analysis for the Build Alternative was performed by applying the appropriate Crash Modification Factor (CMF) to the existing observed crash frequency.

2.6. Operational Analysis Procedures

Traffic operational analyses were performed for the existing conditions and future No-Build and Build Alternative. Intersection analyses have been conducted for the study intersections using Synchro 10. The delay and LOS for the unsignalized intersection analyses was reported based on Highway Capacity Manual (HCM 6th Edition) Methodology. The 95th percentile queues were reported based on Synchro 10 methodology for both signalized and unsignalized intersections. The analyses were performed for the following conditions:

- Existing Year – 2019 conditions, AM and PM peak hours.
- Opening Year – 2025 conditions for No-Build and Build Alternatives, AM and PM peak hours.
- Design Year – 2045 conditions for No-Build and Build Alternatives, AM and PM peak hours.

2.7. LOS Target

FDOT Topic No. 000-525-006 provides LOS targets for the State Highway System (SHS). The term LOS is defined as the system of six designated ranges from “A” (best) to “F” (worst) used to evaluate roadway facility performance. The FDOT minimum acceptable operating LOS targets were used for this IOAR. The I-10 at Garcon Point Road interchange is located in an urban area. The LOS targets for major roadways analyzed in this IOAR is shown below:

- Study Intersections: LOS D

3. EXISTING CONDITIONS

The following section provides a discussion and evaluation of the existing conditions at the subject interchange of I-10 at Garcon Point Road.

3.1 Geometry

Garcon Point Road at I-10 eastbound ramps is a four-leg unsignalized intersection, with the following lane configuration:

- Eastbound off-ramp to Garcon Point Road: One left-turn lane and one channelized right-turn lane.
- Garcon Point Road northbound (NB) movement: One through lane and one shared through/right-turn lane.
- Garcon Point Road southbound movement: One through lane and one shared through/left-turn lane.

Garcon Point Road at I-10 westbound ramps is a four-leg unsignalized intersection, with the following lane configuration:

- Westbound off-ramp to Garcon Point Road: one left-turn lane and one channelized right-turn lane.
- Garcon Point Road northbound movement: One through lane and one shared through/left-turn lane.
- Garcon Point Road southbound movement: One through lane and one shared through/right-turn lane.

Figure 3-1 shows the existing layout design of the study area.

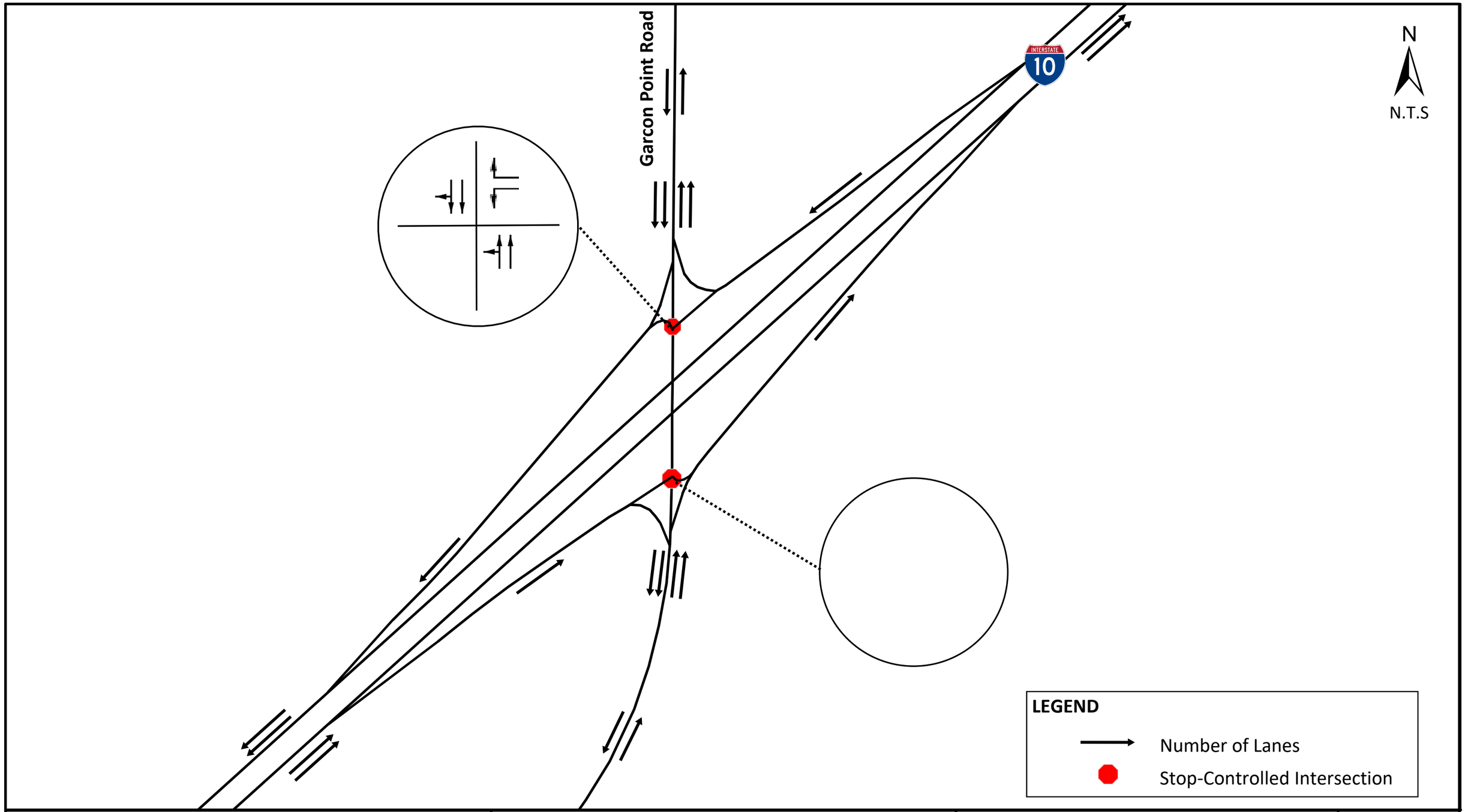
3.2 Functional Classification

FDOT Functional Classification:

- Garcon Point Road north and south of I-10 is classified as Minor Arterial Urban and Minor Collector Rural, respectively.
- I-10 is classified as Urban Principal Arterial - Interstate.

3.3 Posted Speed Limits

- Garcon Point Road has a posted speed limit of 45 mph.
- I-10 ramps have a posted speed limit of 35 mph.
- I-10 East and West of Garcon Point Road has a posted speed limit of 70 mph.



Florida Department of Transportation District Three Chipley, Florida	**I-10 at Garcon Point Road** Project Development & Environment Study FPID No.: 413062-4-22-01, 413062-5-22-01	Existing Year 2019 Lane Configuration	Figure 3-1

3.4 Typical Section

The I-10 typical section at Garcon Point Road consists of a four-lane divided section providing two general-purpose lanes in each direction. The existing median width for I-10 is 64 feet. I-10 crosses over Garcon Point Road.

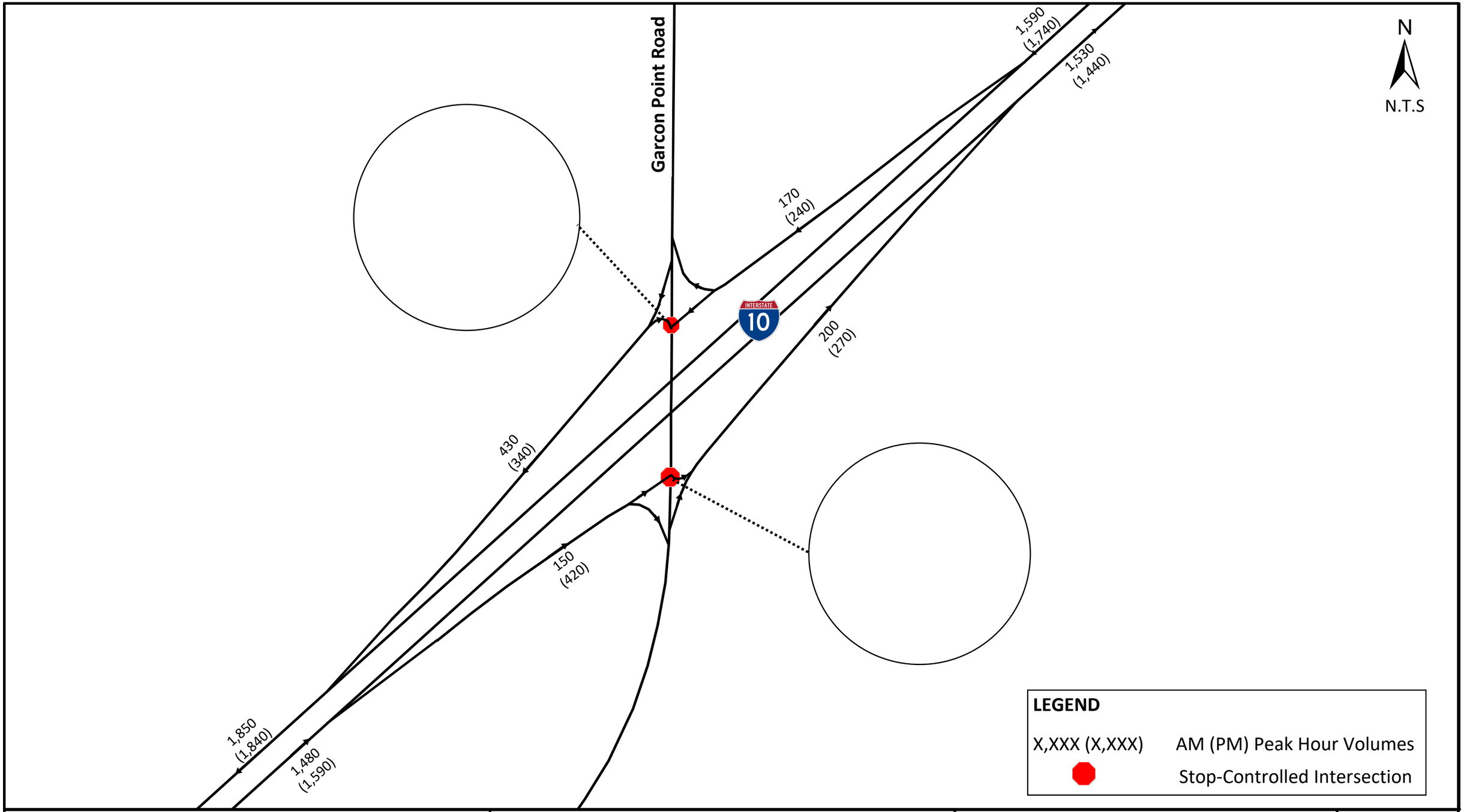
Garcon Point Road typical section within the study limits is a four-lane urban divided roadway with a 4 foot wide raised concrete separator dividing the roadway.

3.5 Interchange Layout

The study interchange is a full diamond interchange and the existing lane configuration is provided in **Figure 3-1**.

3.6 Existing Traffic Volume

The existing AM and PM peak hour volumes were based on the existing counts collected. The Existing Year 2019 peak hour volumes within the study limits are shown in **Figure 3-2**.



Florida Department of Transportation District Three Chipley, Florida	**I-10 at Garcon Point Road** Project Development & Environment Study FPID No.: 413062-4-22-01, 413062-5-22-01	Existing Year Peak Hour Volumes	Figure 3-2

3.7 Existing 2019 Traffic Operational Performance

A detailed operational analysis for Existing Year 2019 was performed at the ramp terminal intersections. For the ramp terminal intersections, the length of the I-10 eastbound off-ramp is approximately 1300 feet long and the I-10 westbound off-ramp length is approximately 1250 feet long. Documentation of the existing year analysis is provided in **Appendix B**.

Intersection Analysis

The Existing Year 2019 intersection analysis results are summarized in **Table 3-1**. In Existing Year 2019, all movements at the I-10 westbound ramp terminal intersection operate at LOS C or better. However, at the I-10 eastbound ramp terminal intersection, the eastbound left-turn movement (left and right-turn traffic) and the overall intersection operate at a failing LOS F in the PM peak hour.

Table 3-1: Existing Year 2019 Intersection Analysis Summary

Intersection	Intersection Approach			
	Approach	Movement	Delay*	LOS
			AM (PM)	AM (PM)
Garcon Point Road at I-10 EB On/Off-Ramps	EB	Left	18.3 (105.8)	C (F)
		Right	8.7 (8.8)	A (A)
Garcon Point Road at I-10 WB On/Off-Ramps	WB	Left	11.9 (18.0)	B (C)
		Right	9.7 (12.0)	A (B)

*Delay reported for worst-case movement only.

Figure 3-2 illustrates the peak hour volumes for the Existing Year 2019 intersection analyses.

In the Existing Year 2019, the 95th percentile queue length exceeds the existing storage for the eastbound right-turn movement at the I-10 eastbound ramp terminal intersection in the PM peak hours. **Table 3-2** summarizes the queue analysis for the Existing Year 2019.

Table 3-2: 95th Intersection Percentile Queue Length Summary – Existing Year 2019

Intersection	Time Period	95th Percentile Queue Length (feet)					
		EB		NB	WB		SB
		Left	Right	Through	Left	Right	Through
Garcon Point Road at I-10 EB On/Off-Ramps	AM Peak	44	44	0			10
	PM Peak	453	453	0			11
	Existing Storage (feet)		200				
Garcon Point Road at I-10 WB On/Off-Ramps	AM Peak			2	15	15	0
	PM Peak			3	30	30	0
	Existing Storage (feet)					230	

3.8 Safety Review

Vehicular crash data at I-10 and Garcon Point Road were obtained from the FDOT SSOGis and Signal Four Analytics. SSOGis is a database maintained annually by FDOT for crashes reported along the SHS. Signal Four Analytics is a statewide interactive, web-based geospatial crash analytical tool hosted at the University of Florida that reports crashes along local roads and the SHS. These databases provide information on various characteristics associated with each crash including; collision type, severity, weather conditions, road surface conditions and date/time information. The crash data was collected for the most recent five years available (2013- 2017). The crashes were analyzed to assess safety conditions at the I-10 eastbound and Westbound ramp terminal intersections within the project limits. The existing crash analysis performed for the IOAR is consistent with the methods outlined in the Highway Safety Manual 1st Edition (HSM). The raw crash data is provided in **Appendix C**.

The crash frequency and crash rate were calculated within the study limits. The 'Average Crash Rate Method' of crash analysis, based on AADT and number of crashes occurring, was used for calculating the segment crash rate for the segment between the ramp terminals along Garcon Point Road and intersection crash rate for the ramp terminal intersections. The crash rate for the study area from the year 2013 to 2017 was compared with the statewide average crash rate for the same type of facility.

I-10 Eastbound Ramp Terminal Intersection

The crash analysis results revealed that there was a total of 15 crashes at the intersection during the five study years (2013-2017). Of these 15 crashes, angle crashes were the most common type of crashes, accounting for 67% (10 crashes) of the total crashes. There were 11 total injuries and no fatalities. The average crash rate for the intersection is 2.846 crashes per million entering vehicles which is higher than the average statewide crash rate for similar facilities.

I-10 Westbound Ramp Terminal Intersection

The crash analysis results revealed that there was a total of 7 crashes at the intersection during the five study years (2013-2017). Of these 7 crashes, angle and sideswipe crashes were the most common types of crashes, with each accounting for 29% (2 crashes) of the total crashes. There was 3 total injury and no fatalities. The average crash rate for the intersection is 1.354 crashes per million entering vehicles which is higher than the average statewide crash rate for similar facilities.

Summaries of the crash analysis are provided in **Figure 3-3**, **Table 3-3** and **Table 3-4**.

Figure 3-3: Crash Types (2013-2017)

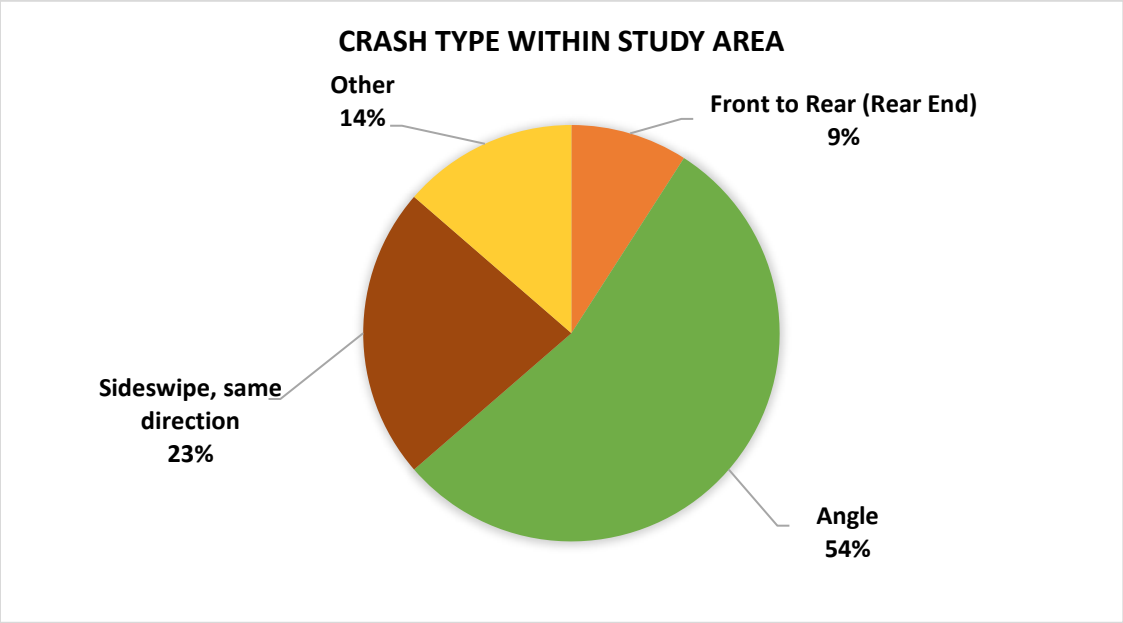


Table 3-3: Severity Summary (2013-2017)

Injury Type	2013	2014	2015	2016	2017	Total	Percent of Total
Number of Property Damage Only Crashes	1	4	7	3	0	15	68%
Number of Crashes with Injuries	1	0	0	2	4	7	32%
Number of Crashes with Fatalities	0	0	0	0	0	0	0%
Total	2	4	7	5	4	22	100%
Number of Injuries	1	0	0	4	9	14	
Number of Fatalities	0	0	0	0	0	0	

Table 3-4: Existing Crash Summary (2013-2017)

Study Locations	Number of Crashes	Daily Entering (AADT)	Annual Crash Frequency (crashes/year)	Cash Rate (crashes/million entering)	Statewide Average Crash Rate	Total # of Injuries	Total # of Fatalities
Garcon Point Road at I-10 EB Ramp Terminal	15	2888	3	2.846	0.466	11	0
Garcon Point Road at I-10 WB Ramp Terminal	7	2833	1.4	1.354	0.466	3	0

4. FUTURE NO-BUILD CONDITIONS

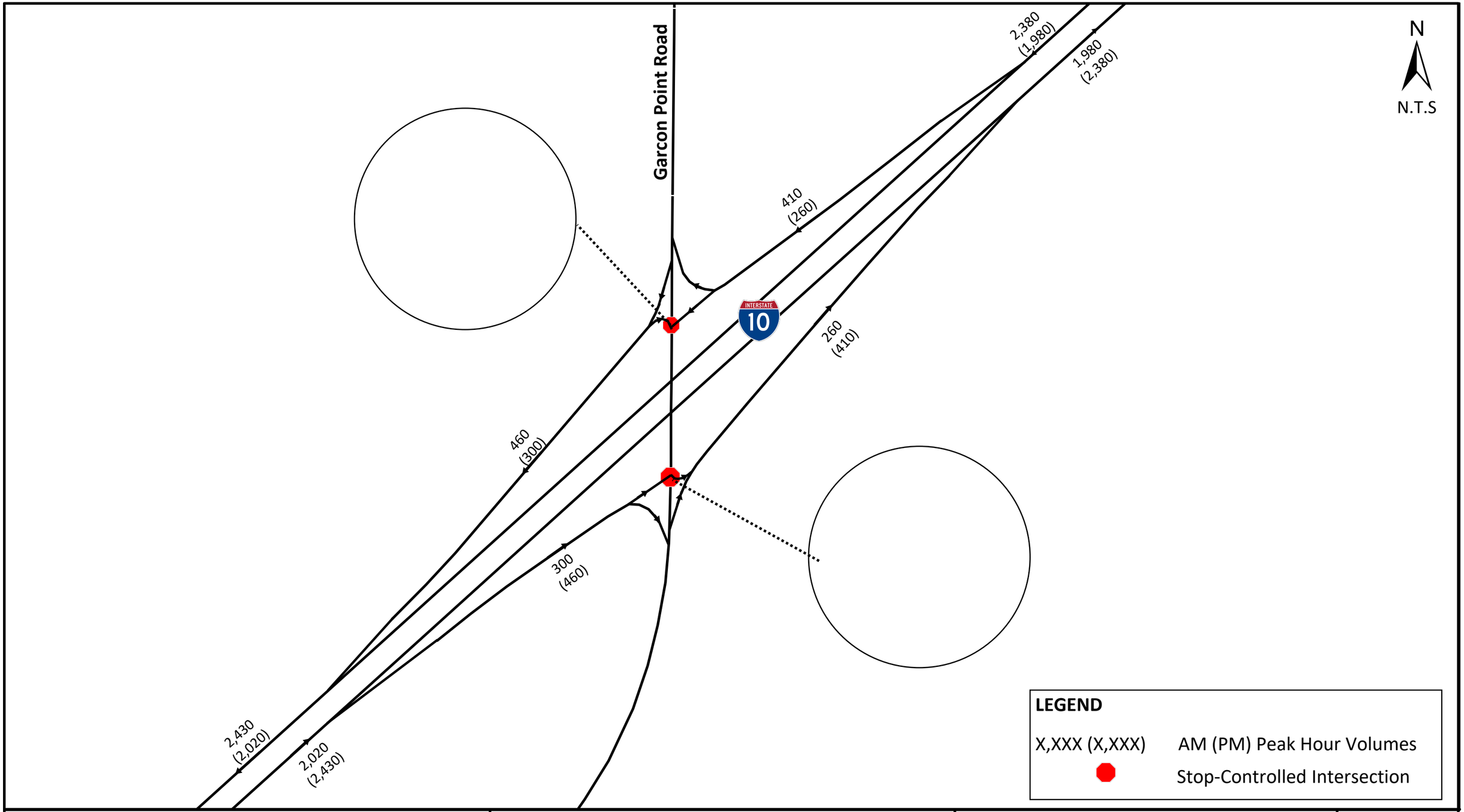
This section documents the future conditions within the I-10 at Garcon Point Road interchange AOI for the No-Build Alternative. The No-Build Alternative represents existing physical and operational conditions within the study area, including all planned and programmed roadway improvements over the analysis years. At this time, the No-Build Alternative considers the existing configuration. The No-Build Alternative does not satisfy the purpose and need of this project.

The analysis years considered under the No-Build Alternative are Opening Year 2025 and Design Year 2045. The operational analysis includes the future year peak hour traffic forecasts for the AOI. The primary objective of this analysis was to establish the No-Build operational conditions at the study intersections.

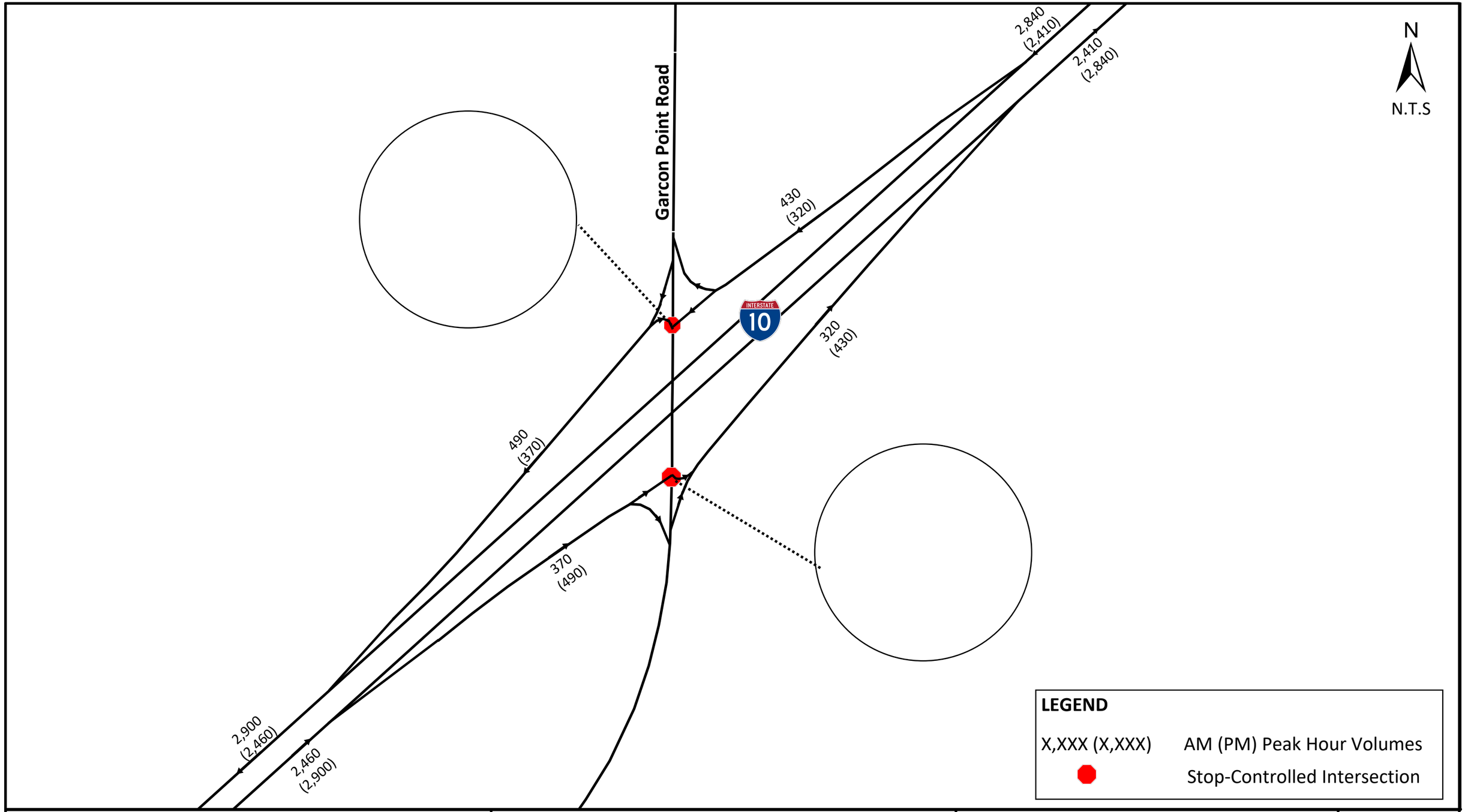
4.1 Future Traffic Development

Future traffic projections were based on previously approved growth rates prepared in the PTAR as part of the I-10 PD&E Study from West of Avalon Boulevard to West of Log Lake Road PD&E Study (FPID No.: 413062-4-22-01 and FPID No.: 413062-5-22-01). In order to develop 2025 and 2045 traffic volumes, a growth rate was developed for the study area based on the comparison of NWFRPM model volumes, historical traffic data, BEBR population estimates, Woods & Poole employment forecasts and Trends analysis. Based on the comparison of the sources, a 1% compound growth rate was applied to forecast the baseline 2025 and 2045 No-Build traffic volumes. To develop the 2025 and 2045 Build volumes, a 5% growth rate was applied to the 2025 and 2045 No-Build volumes along the I-10 mainline and ramps. The Build volumes along Garcon Point Road remained the same as the No-Build volumes. These growth rates were estimated by averaging the growth rates calculated from the above sources and an understanding of the project study area.

The Opening Year 2025 and Design Year 2045 No-Build traffic volumes are shown in **Figures 4-1 and 4-2** respectively.



Florida Department of Transportation District Three Chipley, Florida	**I-10 at Garcon Point Road** Project Development & Environment Study FPID No.: 413062-4-22-01, 413062-5-22-01	Opening Year 2025 No-Build Peak Hour Volumes	Figure 4-1



Florida Department of Transportation District Three Chipley, Florida	**I-10 at Garcon Point Road** Project Development & Environment Study FPID No.: 413062-4-22-01, 413062-5-22-01	Design Year 2045 No-Build Peak Hour Volumes	Figure 4-2

4.2 Future No-Build Operational Analysis

This section discusses the future No-Build operational analysis within the study area. The intersection analysis was performed for the Opening Year 2025 and Design Year 2045 using Synchro 10. **Figure 4-1** and **Figure 4-2** illustrate the peak hour volumes utilized for the Opening Year 2025 and Design Year 2045 No-Build Alternative Synchro analysis. The study intersections were analyzed with two-way stop control under the No-Build condition. Documentation of the No-Build Alternative analysis is provided in **Appendix D**.

4.2.1 Opening Year 2025 No-Build Analysis

Intersection Analysis

The Opening Year 2025 No-Build intersection analysis results are summarized in **Table 4-1**. In Opening Year 2025, the results indicate operational deficiencies at the I-10 eastbound ramp terminal intersection. The eastbound left-turn movement at the intersection operates at LOS E in the AM peak hour. In the PM peak hour, the eastbound left-turn movement operates at a failing LOS F.

Table 4-1: Opening Year 2025 No-Build Intersection Analysis Summary

Intersection	Intersection Approach			
	Approach	Movement	Delay*	LOS
			AM (PM)	AM (PM)
Garcon Point Road at I-10 EB On/Off-Ramps	EB	Left	38.5 (617.2)	E (F)
		Right	8.7 (8.9)	A (A)
Garcon Point Road at I-10 WB On/Off-Ramps	WB	Left	14.9 (18.9)	B (C)
		Right	13.1 (11.6)	B (B)

*Delay reported for worst-case movement only.

In the Opening Year 2025, the 95th percentile queue length exceeds the storage available for the eastbound right-turn movement at the I-10 eastbound ramp terminal intersection in the PM peak hour. **Table 4-2** summarizes the queue analysis for Opening Year 2025 No-Build Alternative.

Table 4-2: 95th Percentile Queue Length Summary Opening Year 2025 No-Build Alternative

Intersection	Time Period	95th Percentile Queue Length (feet)					
		EB		NB	WB		SB
		Left	Right	Through	Left	Right	Through
Garcon Point Road at I-10 EB On/Off-Ramps	AM Peak	180	180	0			12
	PM Peak	1018	1018	0			25
	Existing Storage (feet)		200				
Garcon Point Road at I-10 WB On/Off-Ramps	AM Peak			3	62	62	0
	PM Peak			1	27	27	0
	Existing Storage (feet)					230	

4.2.2 Design Year 2045 No-Build Analysis

Intersection Analysis

The Design Year 2045 No-Build intersection analysis results are summarized in **Table 4-3**. In Design Year 2045, the results indicate operational deficiencies at the I-10 eastbound ramp terminal intersection. The eastbound left-turn movement at the intersection operates at a failing LOS F in the AM and PM peak hours. The results indicate that the eastbound approach fails in the AM and PM peak hours.

Table 4-3: Design Year 2045 No-Build Intersection Analysis Summary

Intersection	Intersection Approach			
	Approach	Movement	Delay*	LOS
			AM (PM)	AM (PM)
Garcon Point Road at I-10 EB On/Off-Ramps	EB	Left	113.9 (786.5)	F (F)
		Right	8.8 (9.2)	A (A)
Garcon Point Road at I-10 WB On/Off-Ramps	WB	Left	18.4 (22.6)	C (C)
		Right	14.2 (12.1)	B (B)

*Delay reported for worst-case movement only.

In Design Year 2045, the 95th percentile queue length exceeds the storage available for the eastbound right-turn movement at the I-10 eastbound ramp terminal intersection in the AM and PM peak hours. The eastbound off-ramp length (1,300 feet) does not provide adequate storage to accommodate the eastbound queues and affect deceleration vehicles from the I-10. **Table 4-4** summarizes the queue analysis for Design Year 2045 No-Build Alternative.

Table 4-4: 95th Percentile Queue Length Summary Design Year 2045 No-Build Alternative

Intersection	Time Period	95th Percentile Queue Length (feet)					
		EB		NB	WB		SB
		Left	Right	Through	Left	Right	Through
Garcon Point Rd at I-10 EB On/Off-Ramps	AM Peak	412	412	0			14
	PM Peak	1161	1161	0			26
	Existing Storage (feet)		200				
Garcon Point Rd at I-10 WB On/Off-Ramps	AM Peak			5	72	72	0
	PM Peak			2	46	46	0
	Existing Storage (feet)					230	

5. BUILD CONDITIONS

5.1 Build Alternative

The future Build Alternative incorporates the roadway conditions described under **Section 4** for the No-Build Alternative plus the following improvements.

- Changing the I-10 eastbound ramp terminal intersection from stop control to signal control intersection.
- Changing the Garcon Point Road southbound shared through/left-turn lane to a left-turn lane only. The stripe-out of the lanes downstream from the signal is presented in a signing and pavement marking concept plan provided in **Appendix E**. No changes are proposed upstream of the signal.

The Build Alternative lane configuration is shown in **Figure 5-1**. The travel demand forecast for the project assumes that the above improvements will not impact overall future traffic patterns within the study. Furthermore, the forecast traffic volume for the Build Alternative is discussed in **Section 4.1** of this report and presented in **Figure 5-2** and **Figure 5-3**.

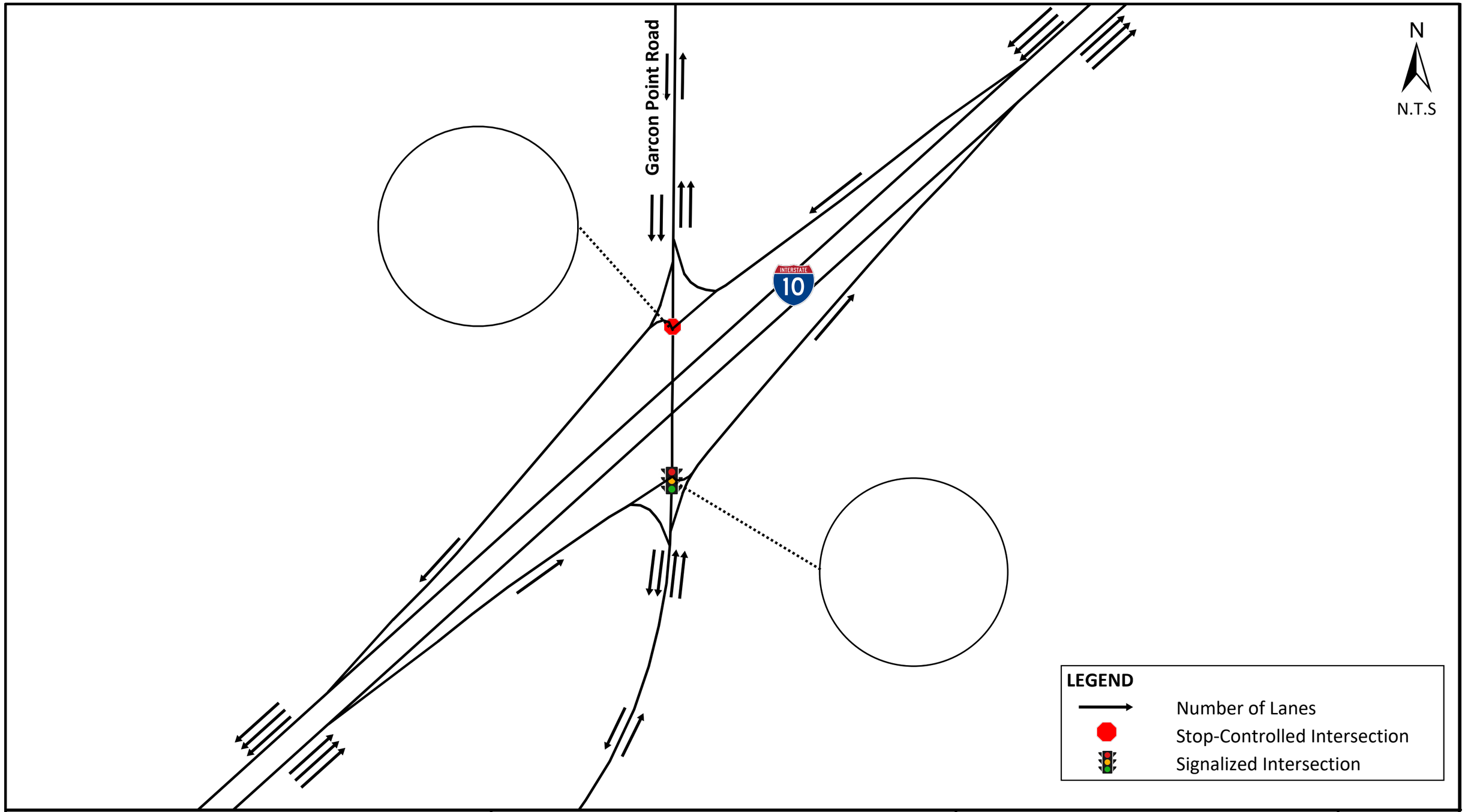
5.2 Build Alternative Operational Analysis

The Build Alternative being considered for the Garcon Point Road interchange along I-10 is described in **Section 5.1**. The Build Alternative includes modification of the I-10 eastbound ramp terminal intersection. Therefore, Synchro analysis was performed to determine delay, LOS, and 95th percentile queue lengths. Documentation of the Build Alternative analysis is provided in **Appendix F**.

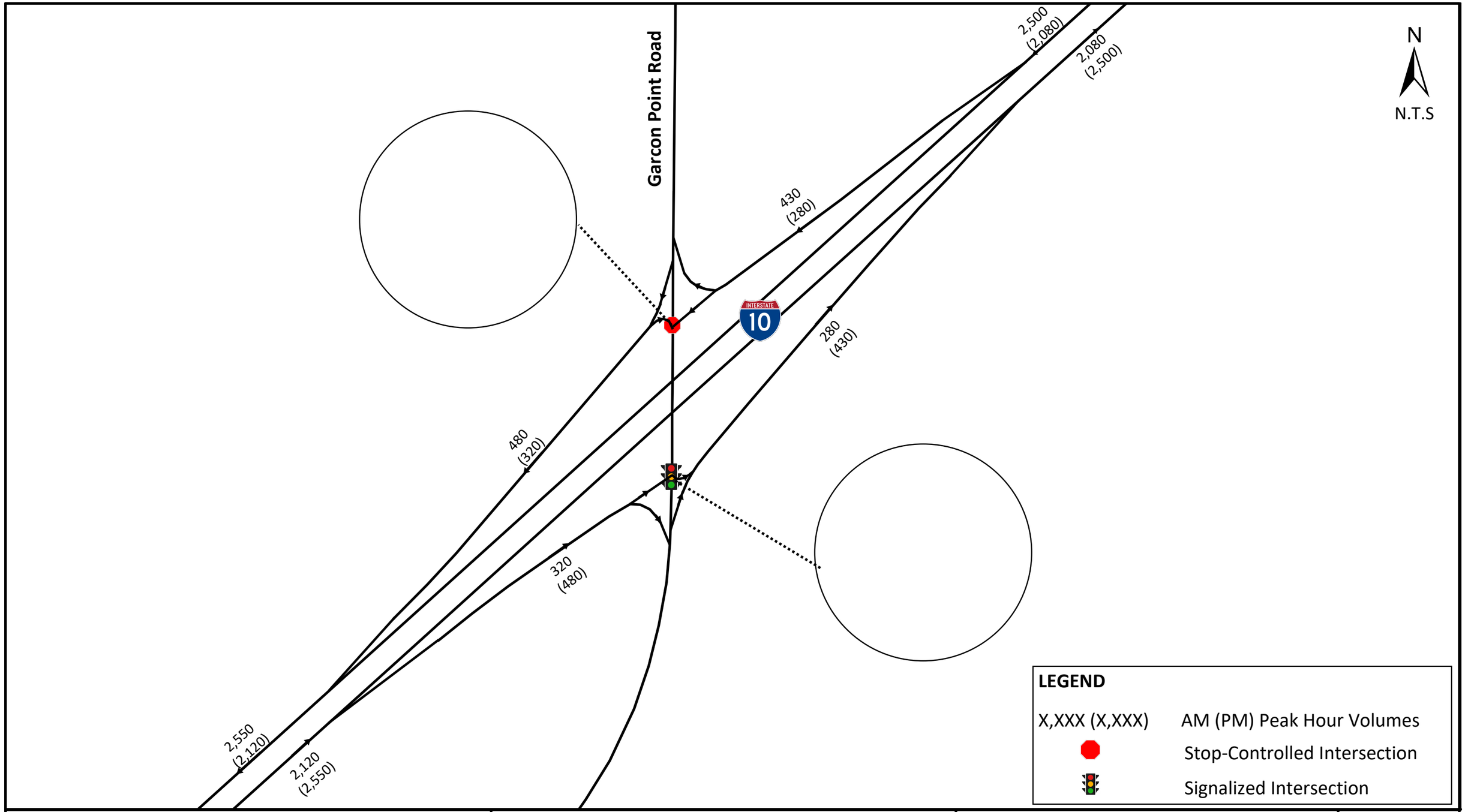
5.2.1 Opening Year 2025 Build Alternative Analysis

Intersection Analysis

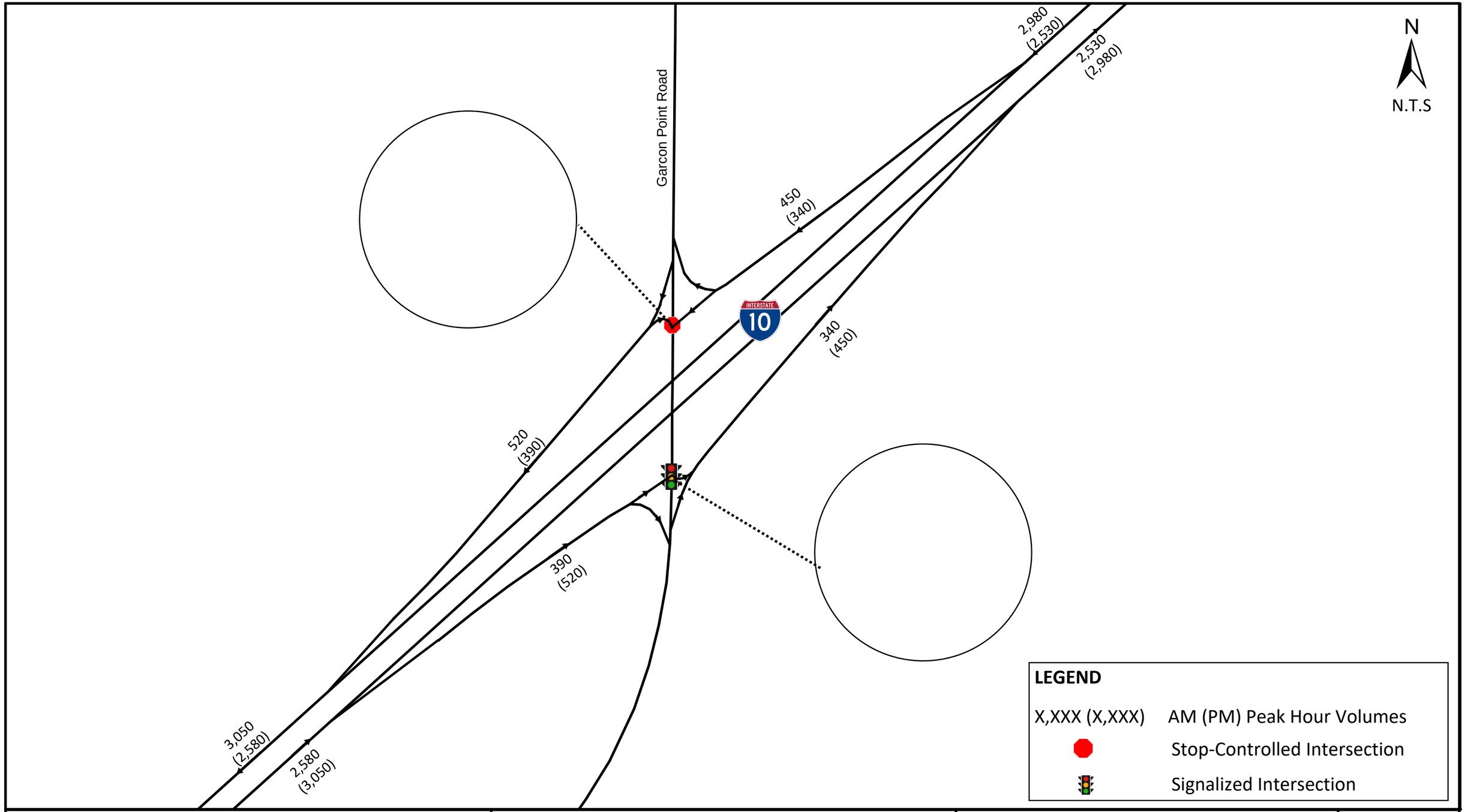
The I-10 eastbound ramp terminal intersection was analyzed as a signalized intersection. The Opening Year 2025 Build intersection analysis results are summarized in **Table 5-1**. **Figure 5-2** illustrates the peak hour volumes utilized for the Opening Year 2025 Build Alternative intersection analysis. The I-10 eastbound ramp terminal intersection will operate below the LOS target of D during the AM and PM peak hours. The I-10 eastbound left-turn movement will operate at LOS D during the PM peak hour. The I-10 westbound ramp terminal intersection is unsignalized and both minor movements will operate at LOS C or better in AM and PM peak hours. No operational issues are observed at either of the study intersections in the Opening Year 2025 Build Alternative.



Florida Department of Transportation District Three Chipley, Florida	**I-10 at Garcon Point Road** Project Development & Environment Study FPID No.: 413062-4-22-01, 413062-5-22-01	Build Alternative Lane Configuration	Figure 5-1



Florida Department of Transportation District Three Chipley, Florida	**I-10 at Garcon Point Road** Project Development & Environment Study FPID No.: 413062-4-22-01, 413062-5-22-01	Opening Year 2025 Build Peak Hour Volumes	Figure 5-2



Florida Department of Transportation District Three Chipley, Florida	**I-10 at Garcon Point Road** Project Development & Environment Study FPID No.: 413062-4-22-01, 413062-5-22-01	Design Year 2045 Build Peak Hour Volumes	Figure 5-3

Table 5-1: Opening Year 2025 Build Intersection Analysis Summary

Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay	LOS	Delay (sec)	LOS
			AM (PM)	AM (PM)	AM (PM)	AM (PM)
Garcon Point Road at I-10 EB On/Off-Ramps	EB	Left	22.8 (33.9)	C (C)	15.6 (23.1)	B (C)
		Right	0.1 (0.4)	A (A)		
	NB	Thru/Right	11.6 (12.1)	B (B)		
	SB	Left	12.5 (21.8)	B (C)		
		Thru	9.3 (10.1)	A (B)		
Garcon Point Road at I-10 WB On/Off-Ramps*	WB	Left	15.9 (19.4)	C (C)		
		Right	13.4 (11.8)	B (B)		

*Delay reported for worst-case movement only.

In the Opening Year 2025 Build Alternative, the available storage accommodates the 95th Percentile queue lengths at all approaches of the study intersections. **Table 5-2** summarizes the queue analysis for Opening Year 2025 Build Alternative.

Table 5-2: 95th Percentile Queue Length Summary Opening Year 2025 Build Alternative

Intersection	Time Period	95th Percentile Queue Length (feet)						
		EB		NB	WB		SB	
		Left	Right	Through	Left	Right	Left	Through
Garcon Point Road at I-10 EB On/Off-Ramps	AM Peak	148	0	36			86	42
	PM Peak	#274	0	27			#191	49
	Proposed Storage (feet)		200				400	
Garcon Point Road at I-10 WB On/Off-Ramps	AM Peak			4	66	66		0
	PM Peak			1	30	30		0
	Proposed Storage (feet)					230		

#: 95th percentile volume exceeds capacity, queue may be longer.

5.2.2 Design Year 2045 Build Alternative Analysis

Intersection Analysis

The Design Year 2045 Build intersection analysis results are summarized in **Table 5-3**. **Figure 5-3** illustrates the peak hour volumes for the Design Year 2045 intersection analysis. In Design Year 2045, both of the intersections operate at LOS C or better in the AM and PM peak hours. No operational issues are observed at either of the study intersections in the Design Year 2045 Build Alternative.

Table 5-3: Design Year 2045 Build Intersection Analysis Summary

Intersection	Intersection Approach				Overall Intersection	
	Approach	Movement	Delay	LOS	Delay (sec)	LOS
			AM (PM)	AM (PM)	AM (PM)	AM (PM)
Garcon Point Road at I-10 EB On/Off-Ramps	EB	Left	26.1 (36.4)	C (D)	17.4 (24.2)	B (C)
		Right	0.2 (0.8)	A (A)		
	NB	Thru/Right	12.2 (11.5)	B (B)		
	SB	Left	14.4 (24.8)	B (C)		
		Thru	10.0 (10.5)	A (B)		
Garcon Point Road at I-10 WB On/Off-Ramps*	WB	Left	19.9 (24.0)	C (C)		
		Right	14.6 (12.4)	B (B)		

*Delay reported for worst-case movement only.

In the Design Year 2045 Build Alternative, the available storage accommodates the 95th Percentile queue lengths at all approaches of the study intersections within the study area. **Table 5-4** summarizes the queue analysis for Design Year 2045 Build Alternative.

Table 5-4: 95th Percentile Queue Length Summary Design Year 2045 Build Alternative

Intersection	Time Period	95th Percentile Queue Length (feet)						
		EB		NB	WB		SB	
		Left	Right	Through	Left	Right	Left	Through
Garcon Point Rd at I-10 EB On/Off-Ramps	AM Peak	191	0	47			100	47
	PM Peak	#293	4	30			#212	64
	Proposed Storage (feet)		200				400	
Garcon Point Rd at I-10 WB On/Off-Ramps	AM Peak			5	77	77		0
	PM Peak			2	56	56		0
	Proposed Storage (feet)					230		

#: 95th percentile volume exceeds capacity, queue may be longer.

5.3 Build Alternative Safety Analysis

A quantitative safety analysis was performed to determine if the study alternative addressed the existing safety concerns. The safety analysis performed follows the guidelines in the 2020 IARUG. The safety analysis was performed using Crash Modification Factors (CMFs) from CMF Clearinghouse maintained by FHWA.

Table 5-5, presented below, shows the reduction in crashes based on the Build Alternative for the study area. These crash frequencies were then used to determine the safety impact of the proposed

improvements. The proposed improvement of changing the I-10 eastbound ramp terminal intersection from stop-controlled to signal-controlled intersection has a known CMF. It is important to note that the CMF for the proposed improvement was not available for an interchange setting. However, the CMF utilized in the IOAR is the most applicable and is not expected to have a large deviation from an interchange setting. The CMF used to quantify the benefits of the project is:

- Clearinghouse CMF 1459: Install a traffic signal: 0.83.

By implementing the proposed modification, a total crash reduction of 0.476 crashes a year is expected. The CMF Clearinghouse summary reports are provided in **Appendix G**.

The safety benefits of some other improvements within the study area must be looked at qualitatively. For example, the change of the shared through/left-turn lane to a left-turn lane only on the southbound movement at the I-10 eastbound ramp terminal intersection cannot be analyzed using HSM and the FHWA Clearinghouse.

At the I-10 eastbound ramp terminal intersection, most of the angle and rear-end crashes were attributed to following too closely and failing to yield the right-of-way. These crashes can also be due to the failure to judge whether or not a gap in on-coming northbound traffic is long enough to complete the turn safely. Converting the inside through lane to a left-turn lane separates turning vehicles from the through traffic, which reduces the conflicts identified. Separating through movement from left-turning vehicles can decrease headway between vehicles and improve the flow rate for both northbound and southbound movements.

Table 5-5: Build Alternative Annual Crash Reduction Calculations

Study Locations	Number of Crashes (2013-2017)	Annual Crash Frequency (crashes/year)	CMF	Expected Annual Crash Frequency (crashes/year)	Annual Reduction in Crashes (crashes/year)
I-10 EB at Garcon Point Road	14	2.8	0.83	2.324	0.476
				Total Reduction	0.476

6. EVALUATION OF ALTERNATIVES

This section discusses the analysis of alternatives based on safety, operational and engineering acceptability. The No-Build Alternative was evaluated in **Section 4** and the Build Alternative was analyzed in **Section 5**. A comparison of the No-Build and the Build Alternative is provided in this section. The evaluation criteria are described as follows:

- Compliance with FHWA Requirements
- Traffic Operational Performance

6.1 Compliance with Policies and Engineering Standards

The design criteria for this project are based on design parameters outlined in the FDOT Design Manual, the FDOT Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways and AASHTO's A Policy on Geometric Design of Highway and Streets published in 2018.

6.2 Alternative Comparison

This section compares the operational performance of the No-Build and Build Alternatives.

Intersection Analysis

In Design Year 2045, operational deficiencies exist at the I-10 eastbound ramp terminal intersection for the No-Build Alternative. The Eastbound left-turn movement at the intersection operates at LOS F in the AM and PM peak hours. A comparison of the Design Year 2045 No-Build and Build results are provided in **Table 6-1**.

Table 6-1: Design Year 2045 No-Build and Build Alternatives Intersections Comparison

Intersections	Approach	Movement	2045 No-Build				2045 Build			
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
			Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Garcon Point Road at I-10 EB On/Off-Ramps	EB	Left	113.9	F	786.5	F	26.1	C	36.4	D

The Build Alternative will improve the delay for the eastbound left-turn movement at the I-10 eastbound ramp terminal intersection. The delay for the eastbound left-turn movement at the I-10 eastbound ramp terminal intersections is reduced by 87.8 seconds and 750.1 seconds during the AM and PM peak hours, respectively.

In the Design Year 2045, the Build Alternative will also improve the queues at the study intersections compared to the No-Build Alternative. In the No-Build results, an error was provided indicating that the queues are so long that Synchro 10 cannot calculate their length, in the Build Alternative these are reduced to queue lengths that do not exceed the existing storage capacity.

6.3 Recommended Alternative

The proposed improvement at the I-10 eastbound ramp terminal intersection at the I-10/Garcon Point Road interchange will provide traffic relief and enhance safety within the AOI by reducing delay and queuing on the exit ramp.

The No-Build Alternative will not accommodate the travel demand at the interchange. In the Design Year 2045, significant operational deficiencies are predicted. Movements at the I-10 eastbound ramp terminal intersection operate at an unacceptable LOS in the Design Year 2045. The Build Alternative for this study is expected to provide acceptable results at the I-10 eastbound ramp terminal intersection in the Design Year 2045.

A predicted quantitative safety analysis was also performed to determine if the Build Alternative addressed the existing safety concerns. Based on the proposed improvements, crashes are expected to be reduced by 0.476 crashes per year.

Based on these findings, the Build Alternative is recommended as the preferred Alternative for this study's approval. A final comparison of the No-Build and Build Alternatives is provided in **Section 6.2**.

6.4 Project Costs

The anticipated cost of this project based on the FDOT Long Range Estimating (LRE) System is provided in **Appendix H**. The project cost for Build Alternative is estimated to be $1,819,816.79. There is no funding for the design or construction at this time for FPID 413062-4-22-01 nor 413062-5-22-01. However, there are safety improvements under FPID 445656-1 under Highways/Preliminary Engineering in Fiscal 2021 and $625,836 of preliminary design funded for 2021.

6.5 Design Exceptions and Variations

Design exceptions and variations are not anticipated, but if an exception or variation should arise, it will be processed per FDOT and FHWA procedures during the design phase.

7. JUSTIFICATION

The proposed improvements at the Garcon Point Road interchange with I-10 are consistent with the requirements set by the FHWA Access to the Interstate System Policy dated May 22,2017. The roadway improvements in this IOAR will provide traffic relief, thereby enhancing safety within the AOI. The I-10 at Garcon Point Road interchange will operate at an acceptable LOS through the Design Year 2045.

7.1 Assessment of FHWA'S Policy on Access to Interstate System

The following requirements serve as the primary decision criteria used in approval of interchange operational analysis projects. Responses to each of the two FHWA policy points are provided to show that the proposed improvements at the I-10/Garcon Point Road interchange are viable based on the conceptual analysis performed to date.

7.1.1 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 conducted for this IOAR confirmed that the proposed improvement to the existing interchange will not have a significant adverse impact on the operation and safety of the project area. Several performance measures were used to compare the operations of the

existing system under No-Build and Build conditions. Key measures included delays, 95th percentile queue lengths, crash rate, crash type and crash severity under existing and proposed conditions.

From an operational perspective in the Design Year 2045 under the No-Build Alternative, operational and safety deficiencies exist. The eastbound left-turn movement at the I-10 eastbound ramp terminal intersection will operate at LOS F in both the AM and PM peak hours. These deficiencies are attributed to the high through traffic volume along Garcon Point Road and high left-turn traffic volume exiting the freeway. At the I-10 eastbound ramp terminal intersection, queues are anticipated to be longer than the available storage in the eastbound direction in Design Year 2045 under the No-Build Alternative. The operational analysis also for indicated indicates that the I-10 westbound ramp terminal will operate at acceptable LOS in the Design Year 2045 under the No-Build Alternative. Hence, no improvements are proposed at the I-10 westbound ramp terminal intersection in the Build Alternative.

The Build Alternative for this study performs substantially better than the No-Build Alternative for all future years. The I-10 ramp terminals will operate at LOS C or better during the AM and PM peak hours. When compared to the No-Build Alternative, the proposed improvements provide a reduction in delay for the eastbound left-turn movement at the I-10 eastbound ramp terminal intersection. The delay for the eastbound left-turn at the I-10 eastbound ramp terminal intersection is reduced by 87.8 seconds and 750.1 seconds during the AM and PM peak hours, respectively. The queues observed in the No-Build Alternative are anticipated to be longer than the available storage in the eastbound direction. These queues are reduced significantly in the Build Alternative, where the available storage can accommodate the queues at the I-10 eastbound ramp terminal intersection.

The safety analysis performed for this study indicated a total of 22 crashes occurred within the project area during the five study years (2013-2017). The predominant crash types that occurred within the study area were angle and sideswipe collisions. Crashes of these types are typically attributed to high traffic volumes, unexpected traffic crossings, or drivers not stopping at the stop signs.

The improved operations under the Build Alternative are anticipated to enhance safety within the project area. A quantitative safety analysis was performed for the study area, where improvements are to be implemented. Based on the safety analysis, it is predicted that a total annual crash reduction of 0.476 crashes per year will occur at the I-10 eastbound ramp terminal intersection with the proposed improvements. This was determined by applying a known crash modification factor (CMF) of 0.83 to the

existing annual crash frequency. The CMF for providing a traffic signal at the intersection were determined using the CMF Clearinghouse maintained by FHWA.

Overall, the Build Alternative provides significantly better traffic operations and enhanced safety when compared to the No-Build Alternative. All proposed improvements as part of this project will be done within the existing right-of-way.

In conclusion, the comparison of the No-Build and Build Alternatives (**Table 6-1**) shows that the proposed improvements provide enhanced operations and improved safety conditions. The proposed modifications in the Build Alternative are not anticipated to have a negative impact on operations or safety of the I-10 mainline or the adjacent intersections along Garcon Point Road.

7.1.2 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.

The proposed improvements apply to the I-10 and Garcon Point Road interchange in Santa Rosa County and no new access is requested. The improvements are proposed to preserve all the existing connections between public roads and preserve existing traffic movements onto and off of I-10. These improvements are designed to meet current standards for federal-aid projects on the interstate system and conform to American Association of State Highway and Transportation Officials (AASHTO) and the FDOT Design Manual.

8. INTERCHANGE IMPROVEMENT SCHEDULE

The improvements proposed as part of the Build Alternative at the I-10 at Garcon Point Road interchange are performed under the Programmatic Agreement with FHWA. Therefore, FDOT Central Office will conduct necessary review and assessment of the justification for the proposed improvements. Currently there are no design or construction improvements to the I-10 at Garcon Point Road interchange planned in the five year program.

List of Appendices

Appendix A	Project Traffic Analysis Report and Traffic Analysis Methodology Report
Appendix B	Existing Year 2019 Operational Analysis
Appendix C	Raw Crash Data
Appendix D	No-Build Opening Year 2025 and Design Year 2045 Operational Analysis
Appendix E	Build Alternative Signing and Pavement Marking Concept Plan
Appendix F	Build Alternative Opening Year 2025 and Design Year 2045 Operational Analysis
Appendix G	Quantitative Safety Analysis
Appendix H	FDOT Long Range Estimating (LRE) System