



Interchange Justification Report (IJR) Re-Evaluation

Interstate 10 at Antioch Road

FPID: 407918-5-52-01

January 31, 2022



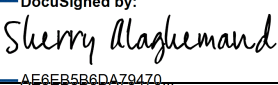

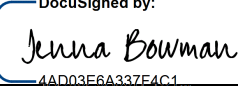

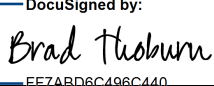
Interchange Justification Report (IJR)

Interchange Justification Report (IJR) Re-Evaluation Interstate 10 at Antioch Road 407918-5-52-01

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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Interchange Review Coordinator	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <small>DocuSigned by:</small>  <small>E3F2EA2D0F5440D...</small> </div> <div style="text-align: right;"> 2/2/2022 9:57 AM EST </div> </div> <div style="text-align: center; margin-top: 5px;"> Starsky Harrell District Three Interchange Review Coordinator </div> <div style="text-align: right; margin-top: 5px;"> Date </div>
Systems Management Administrator	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <small>DocuSigned by:</small>  <small>4AD03E6A337E4C1</small> </div> <div style="text-align: right;"> 2/7/2022 10:54 AM EST </div> </div> <div style="text-align: center; margin-top: 5px;"> Jenna Bowman, PE Systems Implementation Office – Central Office </div> <div style="text-align: right; margin-top: 5px;"> Date </div>
State Chief Engineer	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <small>DocuSigned by:</small>  <small>022E6284290B41A...</small> </div> <div style="text-align: right;"> 2/7/2022 5:51 PM EST </div> </div> <div style="text-align: center; margin-top: 5px;"> Will Watts, P.E. Central Office </div> <div style="text-align: right; margin-top: 5px;"> Date </div>
Assistant Secretary of Strategic Development	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <small>DocuSigned by:</small>  <small>EE7ABD6C496C440...</small> </div> <div style="text-align: right;"> 2/8/2022 10:38 AM EST </div> </div> <div style="text-align: center; margin-top: 5px;"> Brad Thoburn Assistant Secretary of Strategic Development, Central Office </div> <div style="text-align: right; margin-top: 5px;"> Date </div>

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Executive Summary

This Interchange Justification Report (IJR) re-evaluation documents the request for a new interchange on Interstate 10 (I-10) at PJ Adams Parkway (referred to as the I-10 at Antioch Road interchange). The Original IJR and Project Development and Environment (PD&E) study were completed by FDOT District Three in August 2019. FDOT District Three initiated the design phase in February 2019 and the right-of-way phase in 2021 following the completion of the IJR and PD&E study. FDOT District Three selected the Design-Build firm for the construction of the interchange in June 2021. The interchange is scheduled for construction in Spring 2022.

The Design-Build team has proposed design modifications to the I-10 at Antioch Road IJR design concept in the original approved IJR. Therefore, a re-evaluation of the IJR is required to demonstrate that the proposed concept performs equal to or better than the Original IJR concept.

As shown in **Figure A**, the proposed interchange is located in Okaloosa County, approximately 2.4 miles west of the interchange with SR 85. PJ Adams Parkway will be extended north to tie into I-10 approximately 0.25 miles east of where Antioch Road bridges over I-10 (FPID 407918-5). The Southwest Crestview Bypass (SW Bypass) is being constructed to tie into the PJ Adams Parkway extension and continue north to US 90 (Okaloosa County project). In addition, Okaloosa County is constructing the East-West Connector which will connect Antioch Road to the SW Bypass and then to Physician's Way near SR 85.

The Original IJR design connects PJ Adams Parkway (south of the interstate) and the SW Bypass (north of the interstate) by raising PJ Adams Parkway over the existing I-10 corridor. The concept proposed by the Design-Build team in the Alternative Technical Concept raises I-10 over PJ Adams Parkway. The Design-Build concept adds approximately 4,600 linear feet of construction along I-10, reduces mechanically stabilized earth (MSE) walls by 130,000 square feet, reduces the maximum height of the MSE walls from 57 feet to 27 feet, and eliminates all double two-tier MSE walls. By raising I-10 over PJ Adams Parkway, this allows the profile of PJ Adams Parkway to be lowered closer to existing ground when compared to the Original IJR design. By lowering the profile of PJ Adams Parkway, the profiles of the ramps are closer to existing ground, reducing the amount of earthwork fill and MSE walls needed to construct the ramps. In short, the revised roadway geometry of the interchange matches the existing topography more closely than the Original IJR design. This results in a lower initial construction cost and reduced long term maintenance costs for FDOT. The elevation changes for the horizontal and vertical geometry of the ramps and mainline were necessary to meet the criteria for design speeds defined in the Request for Proposals, and still fit within the proposed right-of-way shown in the conceptual plans. The interchange in the proposed Design-Build concept remains a tight diamond, consistent with the Original IJR, with signalized ramp terminals. The horizontal alignment for PJ Adams Parkway also remains consistent with the Original concept.

This IJR re-evaluation document serves to provide determination of safety, operational, and engineering (SO&E) acceptability of the modified concept per Federal Highway Administration (FHWA) to advance the project and for inclusion in subsequent National Environmental Policy Act (NEPA) documentation.

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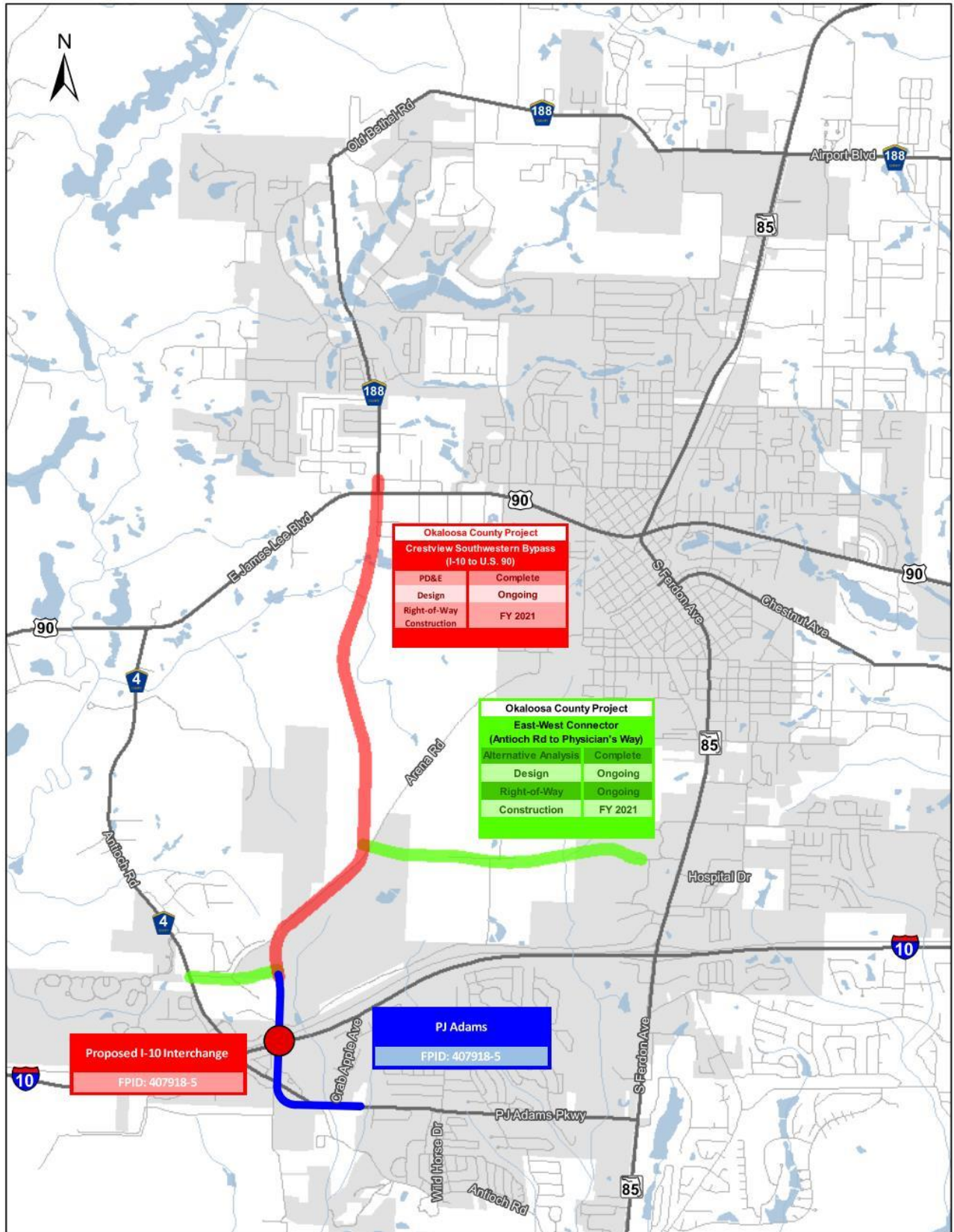


Figure A | Project Location, Southwest Bypass and East-West Connector

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E.1 Purpose and Need

The purpose and need for the project is provided below from the Efficient Transportation Decision Making (ETDM) Summary Report for Project 14237.

Purpose: The purpose of this project is to improve regional mobility and increase local accessibility to the transportation network that supports the planned Crestview Bypass.

Need: The SR 85 corridor carries nearly twice the annual average daily traffic (AADT) of I-10 and provides access between the Alabama state line to the north, and Ft. Walton Beach to the south, which includes Eglin Air Force base and surrounding beach communities. At present, the interchange between I-10 and SR 85 is the one and only access serving the Crestview urban area. The alternate access to I-10 from the proposed new interchange has potential to improve operations within the adjacent network by relieving congestion.

E.2 Re-Evaluation Reasons

There are three primary reasons necessitating the re-evaluation of the IJR. These are listed below.

Reason 1 – Design Change Due to Design-Build Alternative Concept: A design modification to the approved I-10 at Antioch Road interchange concept was proposed during the Design-Build selection process. The Original IJR concept includes PJ Adams Parkway over the existing I-10. The proposed Design-Build concept raises I-10 over PJ Adams Parkway causing changes to ramp lengths and gore points while maintaining the Original IJR geometry and intersection control at the PJ Adams Parkway ramp terminal intersections. This means the re-evaluation shall demonstrate that the proposed Design-Build concept satisfies the MOEs used in the evaluation of the Original IJR concept.

Reason 2 – New Traffic Pattern from Southwest Crestview Bypass and East-West Connector: Since the approval of the Original IJR, Okaloosa County has advanced funding for construction of the SW Bypass and East-West Connector projects (see Figure 1) which will provide connection to north leg of the proposed I-10 at Antioch Road interchange. These projects were not funded for right-of-way and construction at the time of approval of the Original IJR at Antioch Road interchange IJR and PD&E and, thus, not included in the Original IJR evaluation. Completion of these projects are anticipated to bring additional traffic to the subject interchange. As such, an update to the traffic and safety analysis is needed to reflect this background condition change.

Reason 3 – Design Change at I-10 at Antioch Road: The following intersections within the area of influence (AOI) for the Original IJR were modified by Okaloosa County since the approval of the Original IJR. These changes will be evaluated in this re-evaluation, as follows:

- PJ Adams Parkway and Arena Road changed from stop-controlled intersection to a traffic signal as a part of the SW Bypass construction.
- PJ Adams Parkway and Antioch Road changed from roundabout to a traffic signal.

Per the 2020 Interchange Access Request Users Guide (IARUG), the re-evaluation shall show that the Design-Build concept satisfies the FHWA's policy points requirements.

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E.3 Methodology

The traffic and safety analysis methodology for this re-evaluation is consistent with the approved Methodology Letter of Understanding (MLOU) (see **Appendix A**). The AOI includes the proposed interchange at PJ Adams Parkway, the existing interchange at SR 85, the associated ramps, and PJ Adams Parkway. The analysis years are 2024 (Opening Year) and 2044 (Design Year). The analysis tools are Highway Capacity Software (HCS version 6.9) for the freeway and ramps, and Synchro 10 for intersections. The quantitative safety analysis was performed using the Enhanced Interchange Safety Analysis Tool (ISATe) consistent with the Original IJR.

E.4 Alternatives

Consistent with the MLOU, the following three alternatives were evaluated:

- **Alternative 1 - Approved IJR Alternative:** This alternative is same as the Original IJR concept.
- **Alternative 2 - Approved IJR Alternative with SW Bypass and East-West Connector:** Since the approval of the Original IJR, Okaloosa County has advanced funding for construction of the SW Bypass and East-West Connector projects which will provide a connection to north leg of the proposed I-10 at Antioch Road interchange. During the development of the Original IJR, these projects were unfunded and were not considered at the time. Therefore, Alternative 2 is created to evaluate traffic and safety impacts to Alternative 1 due to additional traffic from aforementioned projects. The Original IJR concept was evaluated with Okaloosa County SW Bypass and East-West Connector traffic and design changes made at PJ Adams Parkway and Arena Road and PJ Adams Parkway and CR 4 (Antioch Road) intersections.
- **Alternative 3 - Design Build Alternative with SW Bypass and East-West Connector:** The Design Build concept was evaluated with Okaloosa County SW Bypass and East-West Connector traffic and design changes made at PJ Adams Parkway and Arena Road and PJ Adams Parkway and Antioch Road intersections. Alternative 2 also includes Design Build concept modifications to ramp lengths and merge/diverge distances and they are discussed in Section 3.5.

Per the 2020 FDOT IARUG, the Original IJR concept and the proposed Design-Build concept are required to be analyzed. In order to provide a fair comparison of concepts, the additional traffic from the new SW Bypass and East-West Connector was accounted for in Alternative 2 and 3 to understand the impacts to traffic operations and safety due to the design changes. Alternative 1 was used as a reference because it does not include the SW Bypass and East-West Connector projects which will provide connection to north leg of the proposed I-10 at Antioch Road interchange.

E.5 Compliance with FHWA General Requirements

The FHWA Policy on Access to the Interstate System provides the requirements for the justification and documentation necessary to substantiate any proposed changes in access to the Interstate System. The policy is published under the Federal Register, Volume 74, Number

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43743, dated May 22, 2017. The responses provided herein for each of the two policy statements demonstrate compliance with these requirements and justification for the proposed interchange. The following two FHWA Policy Criteria (effective May 22, 2017) are addressed below:

Policy

It is in the national interest to preserve and enhance the Interstate System to meet the needs of the 21st Century by assuring that it provides the highest level of service in terms of safety and mobility. Full control of access along the interstate mainline and ramps, along with control of access on the crossroad at interchanges, is critical to providing such service. Therefore, FHWA's decision to approve new or revised access points to the Interstate System under Title 23, United States Code (U.S.C.), Section 111, must be supported by substantiated information justifying and documenting that decision. The FHWA's decision to approve a request is dependent on the proposal satisfying and documenting the following requirements.

Policy Point 1: The proposal does not adversely impact operations or 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)).

Response:

Operational Analysis Findings

A detailed traffic operational analysis was conducted for freeway segments, ramp merge/diverge locations and intersections within the AOI using HCS and Synchro software implementing HCM 2010 methodologies for the opening year (2024), and design year (2044) conditions. Consistent with the approved MLOU and Section 2.5 of this report, Alternative 1, Alternative 2, and Alternative 3 were included in this re-evaluation. Alternative 1 is same as the Original IJR concept. Alternative 2 and 3 are the

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Original IJR concept and Design-Build concept, respectively, with the SW Bypass and East-West Connector projects in place and design changes made at PJ Adams Parkway and Arena Road and PJ Adams Parkway and Antioch Road intersections. The traffic operational analysis was performed for Alternative 2 and Alternative 3. The performance of Alternative 3 was compared against Alternative 2. The following observations provide a brief summary of traffic operational results:

Freeway Segments:

- Since both the Original IJR Concept and the Design Build concept maintain the same number of lanes along freeway and at ramp merge/diverge locations, freeway analysis indicate that Alternative 2 and Alternative 3 are expected to operate at similar conditions with additional traffic from the SW Bypass and East-West Connector projects. I-10 freeway segments are anticipated to operate at LOS B or better in the 2024 and 2044 conditions in Alternatives 1, 2 and 3.

Ramp Junctions:

- The Original IJR indicates that the Alternative 1 expected to operate at LOS B or better in the 2024 and at LOS C or better 2044 conditions.
- Similarly, the Alternative 2 and 3 expected to operate at LOS B or better in the 2024 and at LOS C or better 2044 conditions with additional traffic from the SW Bypass and East-West Connector projects.
- Minor changes in ramp acceleration lane lengths in the Design-Build concept (Alternative 3) will maintain the same LOS as the Original Build concept (Alternative 2) and a minimal change in density with the exception of the I-10 at PJ Adams Parkway EB. The I-10 at PJ Adams Parkway EB is expected to operate at LOS B (with density at 10.6 pcpmpl) in Alternative 3 when compared to Alternative 2 expected to operate at LOS A (with density at 10.0 pcpmpl) in 2024 AM peak hour.

Intersections:

- All intersections are expected to operate at similar conditions in Alternatives 2 and 3.
- All intersections in Alternative 3 are expected to operate at similar or better delay and LOS as the operations in Alternative 1.
- In the opening year, the intersections on PJ Adams Parkway operate at LOS B or better in Alternatives 2 and 3. Similarly, in the design year, the intersections on PJ Adams Parkway operate at LOS D or better.

PJ Adams Parkway Ramp Queue

- The I-10 eastbound and westbound off-ramps at PJ Adams Parkway intersections are expected to operate at similar conditions in Alternatives 2 and 3 and expected to accommodate 95th percentile queues and necessary deceleration distances for exiting traffic in both the Opening Year and Design Year.

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Safety Analysis Findings

A quantitative analysis was completed to provide a comparison between the Alternative 2 and Alternative 3. The quantitative safety analysis was performed using the Enhanced Interchange Safety Analysis Tool (ISATe) consistent with approved MLOU and the Original IJR. The following observations provide a brief summary of safety operational results:

- Similar to Alternative 1, Alternative 2, and Alternative 3 show the majority of predicted crashes are single injury (C) and property damage only crashes.
- The overall facility predictive crash total for the Alternative 3 is expected to be slightly less than the Alternative 2 with additional traffic from the SW Bypass and East-West Connector projects. The difference between the two alternatives is 0.5%, with Alternative 3 experiencing less property damage crashes. Differences in predictive crash totals are due to varying factors such as ramp segment lengths, inside and outside barrier presence, segmentation of the freeway and associated AADTs and ramp terminals.
- Of the overall 1500 crashes expected to occur for Alternative 3 during the 20-year time span, approximately 69% of those crashes are anticipated to occur at the crossroad ramp terminals. The PJ Adams Parkway ramp terminals experienced a small increase in crashes in Alternative 3 compared to Alternative 2 due to design modifications such as the increased median width and its associated effect on protected left-turn operations, as well changes in channelized right turns.
- Associated costs by severity for the overall predictive crash totals for Alternative 3 decreased by 0.9% when comparing to Alternative 2. The number of total fatal crashes are expected to remain unchanged, while suspected injury-related crashes for Alternative 3 showed an anticipated slight decrease.

Conceptual Signing Plan

The signing plans for Design Build Alternative were developed in compliance with FDOT Design Standards and the 2009 Manual of Uniform Traffic Control Devices (MUTCD) and in accordance with 2020 IARUG requirements and is included in **Appendix H**.

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Policy 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.

Response:

I-10 is a public facility, and the proposed interchange will provide full access for all traffic movements. PJ Adams Parkway will be extended north to tie into I-10 approximately 0.25 miles east of where Antioch Road bridges over I-10. The SW Bypass is being constructed to tie into the PJ Adams Parkway extension and continue north to US 90. The proposed design connects PJ Adams Parkway south of the interstate and the SW Bypass north of the interstate by raising I-10 over PJ Adams Parkway. The interchange in the re-evaluation remains a tight diamond, consistent with the Original IJR and provides full access for all movements.

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1.0 Introduction

This Interchange Justification Report (IJR) re-evaluation documents the request for a new interchange on Interstate 10 (I-10) at PJ Adams Parkway (referred to as the I-10 at Antioch Road interchange). Since the approval of the Original IJR in August 2019, the Florida Department of Transportation (FDOT) has selected a Design-Build team with proposed design modifications to the Original IJR design concept. Per the FDOT Interchange Access Request User's Guide (IARUG), a re-evaluation of the IJR is required to show that the new Design-Build concept satisfies the safety, operational, and engineering (SO&E) requirements per Federal Highway Administration (FHWA) policy points. This IJR re-evaluation provides documentation of the SO&E requirements, FHWA policy points, and the proposed concept's ability to perform equal to or better than the Original IJR concept.

1.1 Project Location

As shown in **Figure 1**, the proposed interchange is located in Okaloosa County, approximately 2.4 miles west of the interchange with SR 85. PJ Adams Parkway will be extended north to tie into I-10 approximately 0.25 miles east of where Antioch Road bridges over I-10 (FPID 407918-5). The SW Bypass is being constructed to tie into the PJ Adams Parkway extension and continue north to US 90 (Okaloosa County project). In addition, Okaloosa County is constructing the East-West Connector which will connect Antioch Road to the SW Bypass and then to Physician's Way near SR 85.

1.2 Background

The Original IJR (included in **Appendix B**) and Project Development and Environment (PD&E) study were completed by FDOT District Three in August 2019. FDOT District Three selected the Design-Build firm for the construction of the interchange in June 2021 with construction currently scheduled for Spring 2022. The Design-Build team has proposed design modifications to the I-10 at Antioch Road IJR design concept and a re-evaluation of the IJR is required and provided herein.

The Original IJR design connects PJ Adams Parkway (south of the interstate) and the SW Bypass (north of the interstate) by raising PJ Adams Parkway over the existing I-10 corridor. The concept proposed by the Design-Build team in the Alternative Technical Concept raises I-10 over PJ Adams Parkway. The Design-Build concept adds approximately 4,600 linear feet of construction along I-10, reduces mechanically stabilized earth (MSE) walls by 130,000 square feet, reduces the maximum height of the MSE walls from 57 feet to 27 feet, and eliminates all double two-tier MSE walls. The revised roadway geometry of the interchange matches the existing topography more closely than the Original IJR design. This results in a lower initial construction cost and reduced long term maintenance costs for FDOT. The elevation changes for the horizontal and vertical geometry for the ramps and mainline were necessary to meet the criteria for design speeds defined in the Request for Proposals, and still fit within the proposed right-of-way shown in the conceptual plans. The interchange in the proposed Design-Build concept remains a tight diamond, consistent with the Original IJR, with signalized ramp terminals. The horizontal alignment for PJ Adams Parkway also remains consistent with the Original concept.

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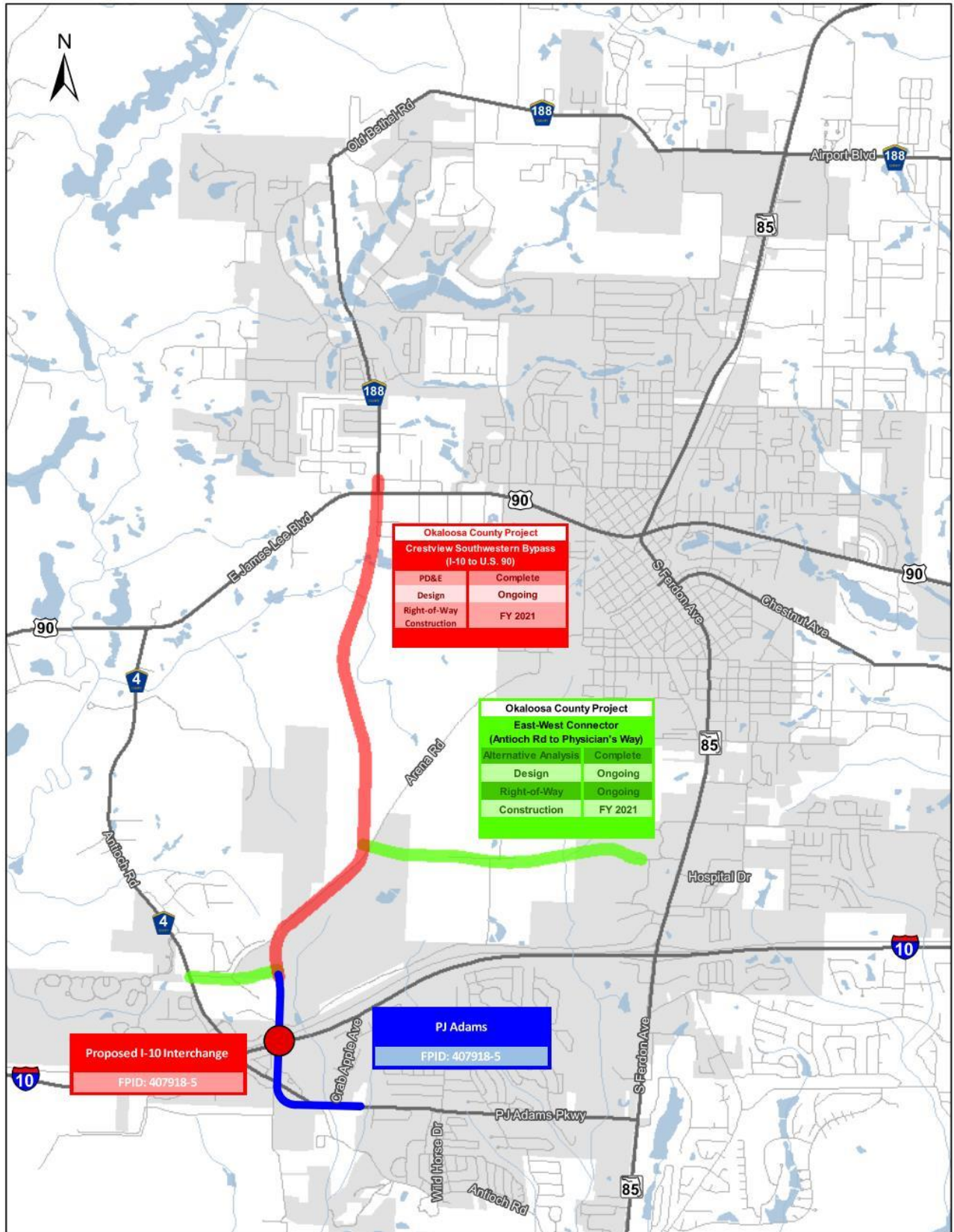


Figure 1 | Project Location, Southwest Bypass and East-West Connector

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1.3 Purpose and Need

The purpose and need for the project is provided below from the Efficient Transportation Decision Making (ETDM) Summary Report for Project 14237.

Purpose: The purpose of this project is to improve regional mobility and increase local accessibility to the transportation network that supports the planned Crestview Bypass.

Need: The SR 85 corridor carries nearly twice the annual average daily traffic (AADT) of I-10 and provides access between the Alabama state line to the north, and Ft. Walton Beach to the south, which includes Eglin Air Force base and surrounding beach communities. At present, the interchange between I-10 and SR 85 is the one and only access serving the Crestview urban area. The alternate access to I-10 from the proposed new interchange has potential to improve operations within the adjacent network by relieving congestion.

1.4 Re-Evaluation Reasons

There are three primary reasons necessitating the re-evaluation of the IJR. These are listed below.

Reason 1 – Design Change Due to Design-Build Alternative Concept: A design modification to the approved I-10 at Antioch Road interchange concept was proposed during the Design-Build selection process. The approved IJR concept includes PJ Adams Parkway over the existing I-10. The proposed Design-Build concept raises I-10 over PJ Adams Parkway causing changes to ramp lengths and gore points while maintaining the Original IJR geometry and intersection control at the PJ Adams Parkway ramp terminal intersections. Per the 2020 Interchange Access Request Users Guide (IARUG), the re-evaluation shall show that the Design-Build concept satisfies the SO&E acceptability requirements and FHWA's policy points. This means the re-evaluation shall demonstrate that the proposed Design-Build concept satisfies the MOEs used in the evaluation of the approved IJR concept.

Reason 2 – New Traffic Pattern from Southwest Crestview Bypass (SW Bypass) and East-West Connector: Since the approval of the IJR, Okaloosa County has advanced funding for construction of the SW Bypass and East-West Connector projects (see Figure 1) which will provide connection to north leg of the proposed I-10 at Antioch Road interchange. These projects were not funded for right-of-way and construction during the development of the Original I-10 at Antioch Road interchange IJR and PD&E and, thus, not included in the Original IJR. Completion of these projects are anticipated to bring additional traffic to the subject interchange. As such, an update to the traffic and safety analysis is needed to reflect this background condition change.

Reason 3 – Design Change at I-10 at Antioch Road: The following intersections within the area of influence (AOI) for the Original IJR were modified by the County since the approval of the IJR. These changes will be evaluated in this re-evaluation, as follows:

- PJ Adams Parkway and Arena Road changed from stop-controlled intersection to a traffic signal as a part of the SW Bypass construction.
- PJ Adams Parkway and Antioch Road changed from roundabout to a traffic signal.

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2.0 Methodology

The methodology for this analysis is consistent with the approved MLOU in **Appendix A**.

2.1 Area of Influence

The AOI for the project is depicted in **Figure 2** and is consistent with the approved MLOU. The AOI includes the proposed interchange at PJ Adams Parkway, the existing interchange at SR 85, the associated ramps, and the crossroad of PJ Adams Parkway.

The following interchanges (ramps and weaving areas) are included in the AOI:

- I-10 and SR 85
- I-10 and PJ Adams Parkway/Antioch Road (proposed interchange)

The following intersections are included in the AOI:

- PJ Adams Parkway and Arena Road (signalized)
- PJ Adams Parkway and I-10 WB interchange ramp (signalized)
- PJ Adams Parkway and I-10 EB interchange ramp (signalized)
- PJ Adams Parkway and CR 4 (Antioch Road) (signalized)
- SR 85 and I-10 WB interchange ramp (signalized)
- SR 85 and I-10 EB interchange ramp (signalized)

The proposed design modifications and the surrounding background traffic changes are not anticipated to increase traffic on SR 85 nor Antioch Road. As such, those crossroads are not included in the AOI, as agreed to in the approved MLOU.

2.2 Analysis Years and Periods

This re-evaluation utilized the same travel demand model years as the Original IJR as listed below. The adopted model has not changed since the IJR approval.

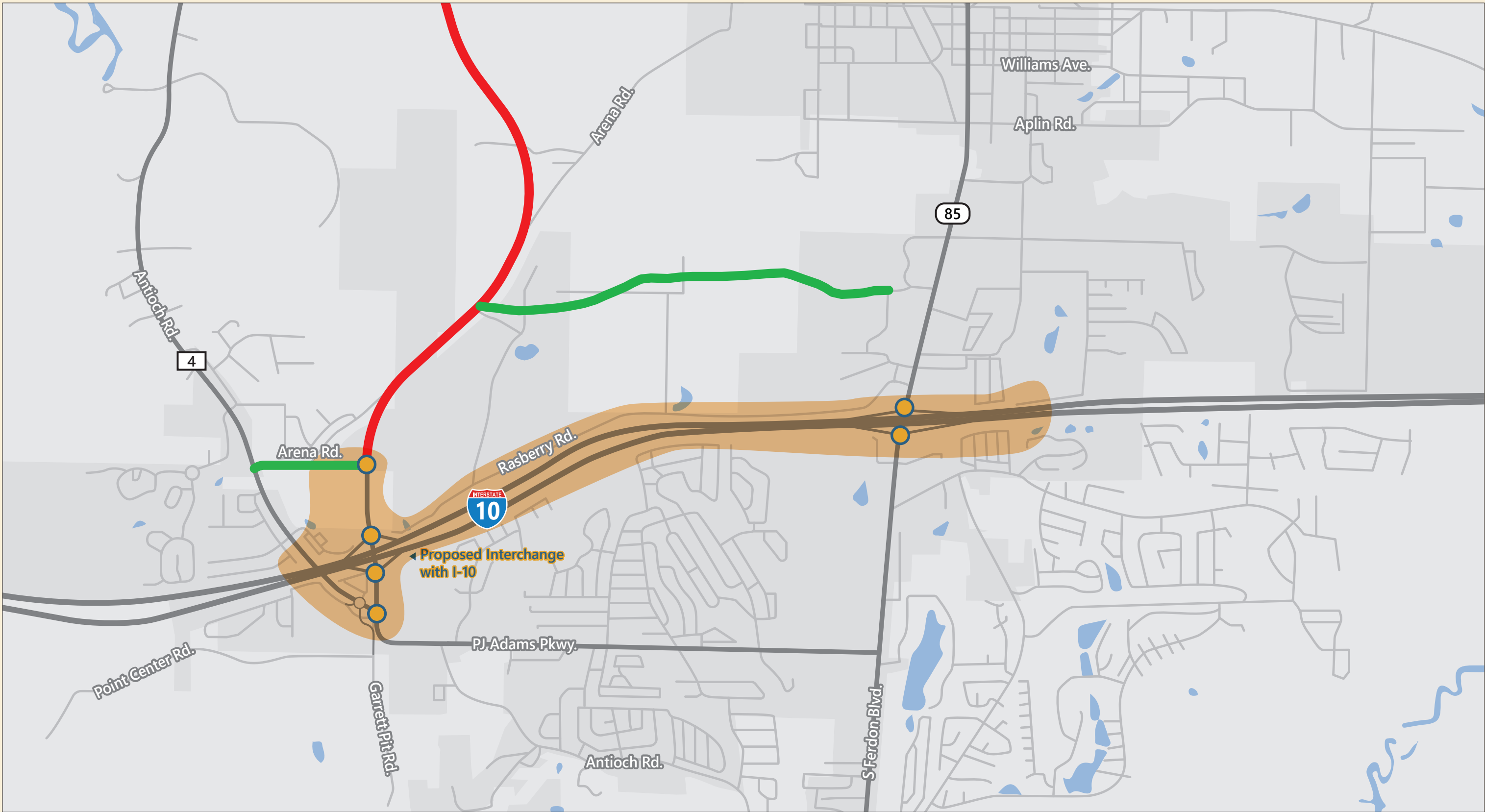
- Base Year 2010
- Horizon Year 2040

Consistent with the Original IJR, the analysis years are as follows:

- Opening Year 2024
- Design Year 2044

Existing year analysis is not required in this re-evaluation.

The traffic operation analysis includes the AM and PM peak hours.



-  Area of Influence
-  Study Intersections
-  Crestview Southwestern Bypass
-  East-West Connector

Source: Modified from 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018



FIGURE 2: AREA OF INFLUENCE MAP

Interchange Justification Report (IJR) Re-Evaluation

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2.3 LOS Targets

The LOS targets for each roadway classification, including mainline, ramps, and intersections are shown in Table 1.

Table 1 | LOS Targets

Roadway	Mainline/Roadway	Ramps/Intersections
I-10	D	D
SR 85	D	D
PJ Adams Parkway	D	D

2.4 Analysis Tools

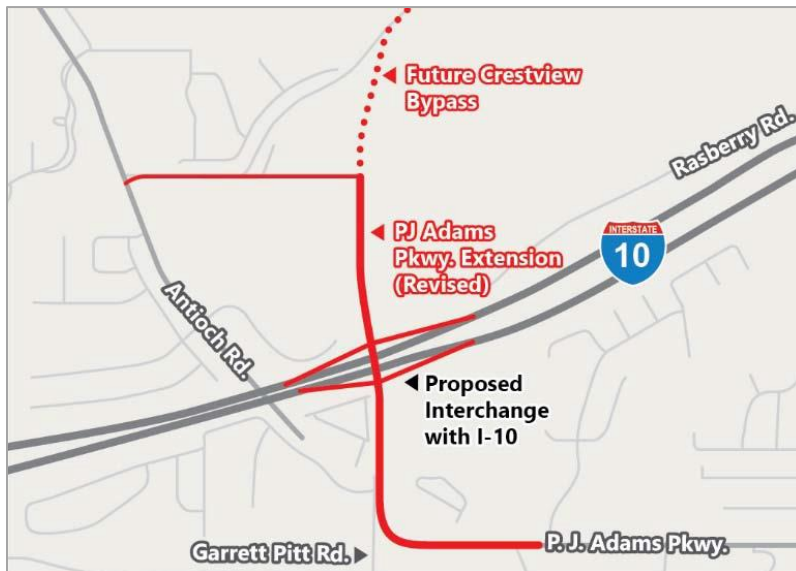
Traffic analysis files from the Original IJR are used and geometrical modification were made per the proposed Design-Build concept. The Original IJR conducted operational analysis using Synchro 9 for intersection and Highway Capacity software (HCS version 6.9) to evaluate freeway operations implementing Highway Capacity Manual (HCM) 2010 methodologies. This re-evaluation uses Synchro 10 implementing HCM 2010 methodologies.

2.5 Alternatives

Consistent with the MLOU, the following three alternatives are evaluated:

Alternative 1 - Approved IJR Alternative

This alternative is same as the Original IJR concept. As shown in **Figure 3**, this concept involves extending PJ Adams Parkway north and to the east of Antioch Road. The Original IJR concept raises the PJ Adams Parkway extension over the existing I-10 corridor. A tight diamond interchange was recommended at PJ Adams Parkway with signalized ramp terminals. The alternative requires a reconfiguration of Antioch Road between I-10 and PJ Adams Parkway with a recommended roundabout at the Garrett Pitt Road / Whitehurst Lane / Addison Place / Antioch Road intersection.



Source: 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018

Figure 3 | Original IJR Build Alternative

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Interstate 10 at Antioch Road

Alternative 2 - Approved IJR Alternative with SW Bypass and East-West Connector

In this Alternative, the Original IJR concept (as discussed in Alternative 1) is updated and evaluated with the SW Bypass and East-West Connector projects in place and background design changes made at PJ Adams Parkway and Arena Road and PJ Adams Parkway and Antioch Road intersections.

Since the approval of the IJR, Okaloosa County advanced funding for construction of the SW Bypass and East-West Connector projects (see **Figure 1**) which will provide connection to north leg of the proposed I-10 at Antioch Road interchange. These projects were not funded for right-of-way and construction during the development of the Original IJR and PD&E and, thus, not included in the analysis. Completion of these projects are anticipated to bring additional traffic to the subject interchange.

In addition, the following intersections within the AOI for the Original IJR were modified by the County since the approval of the IJR. These changes are as follows:

- PJ Adams Parkway and Arena Road changed from stop-controlled intersection to a traffic signal as a part of the SW Bypass construction.
- PJ Adams Parkway and Antioch Road changed from roundabout to a traffic signal.

Since these background changes were not included in the Original IJR, this alternative is necessary to understand how the Original IJR concept performs with the additional traffic and background changes. With an increase in traffic and other background changes applied to both alternative concepts, a fair comparison can be provided to assess the operational and safety impacts due to the proposed Design-Build design changes.

Alternative 3 – Design-Build Alternative with the SW Bypass and East-West Connector

This Alternative evaluates the Design-Build concept with the SW Bypass and East-West Connector projects in place and design changes made at PJ Adams Parkway and Arena Road and PJ Adams Parkway and Antioch Road intersections.

The concept proposed by the Design-Build team (**Figure 4**) raises I-10 over PJ Adams Parkway utilizing an Alternative Technical Concept. This adds approximately 4,600 linear feet of construction along I-10, reduces mechanically stabilized earth (MSE) walls by 130,000 square feet, reduces the maximum height of the MSE walls from 57 feet to 27 feet, and eliminates all the double two-tier MSE walls. The elevation changes caused the horizontal and vertical geometry for the ramps and I-10 to be modified to meet the criteria for design speeds defined in the Request for Proposals, and still fit within the proposed right-of-way shown in the conceptual plans. The interchange in the proposed design remains a tight diamond, consistent with the Original IJR, with signalized ramp terminals. The horizontal alignment for PJ Adams Parkway also remains consistent with the Original concept.

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Interstate 10 at Antioch Road

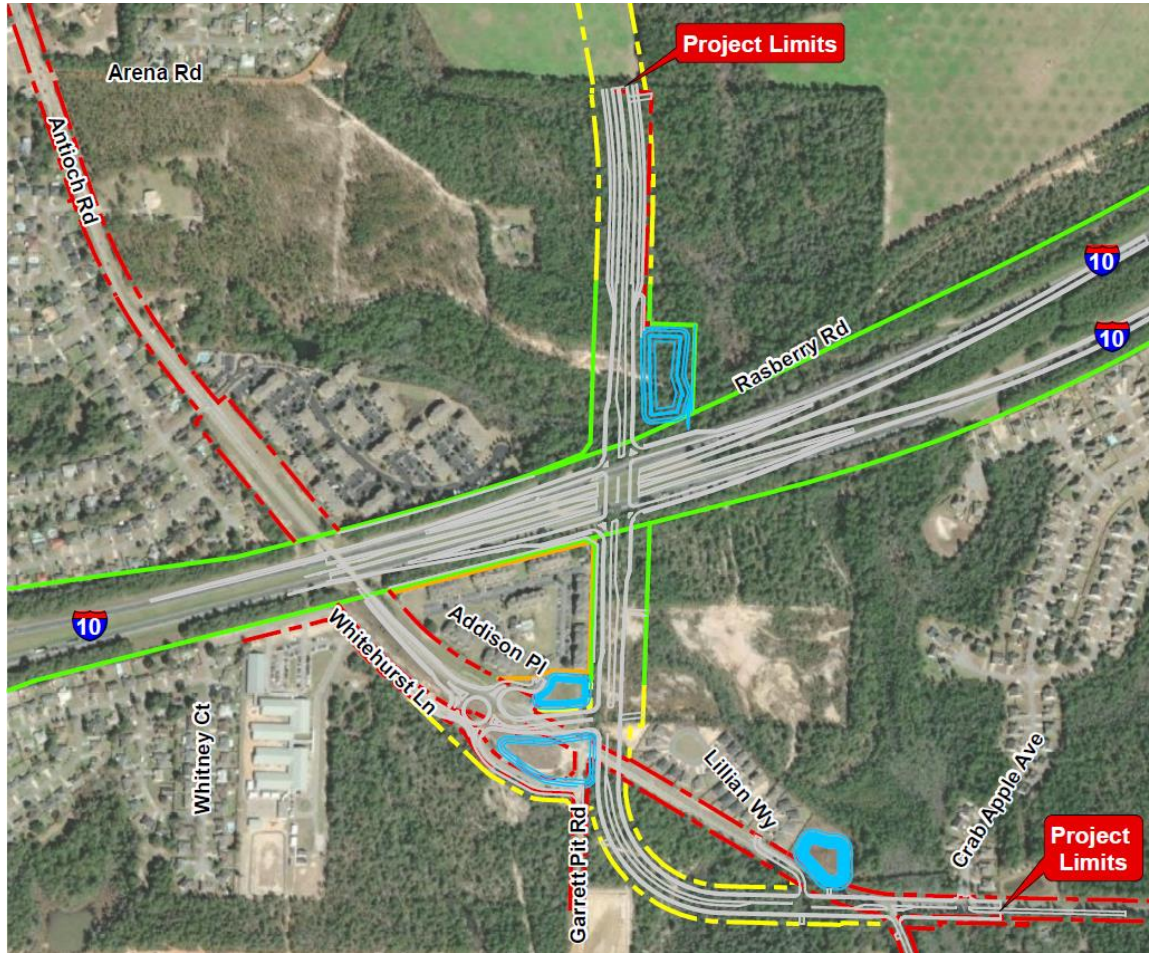


Figure 4 | Design-Build Proposed Concept

The SW Bypass, East-West Connector, and background design changes to PJ Adams Parkway and Arena Road and PJ Adams Parkway and Antioch Road intersections are the same as those discussed in Alternative 2.

The Alternative 3 also includes the following:

- Merge/diverge acceleration distance modifications (shown in **Table 2**) per HCM criteria shown in **Figure 5**.
- Ramp length modifications as summarized in **Table 3**.

Interchange Justification Report (IJR) Re-Evaluation

Interstate 10 at Antioch Road

Figure 5 | HCM Ramp Acceleration (L_A) and Deceleration (L_D) Lane Lengths Definitions

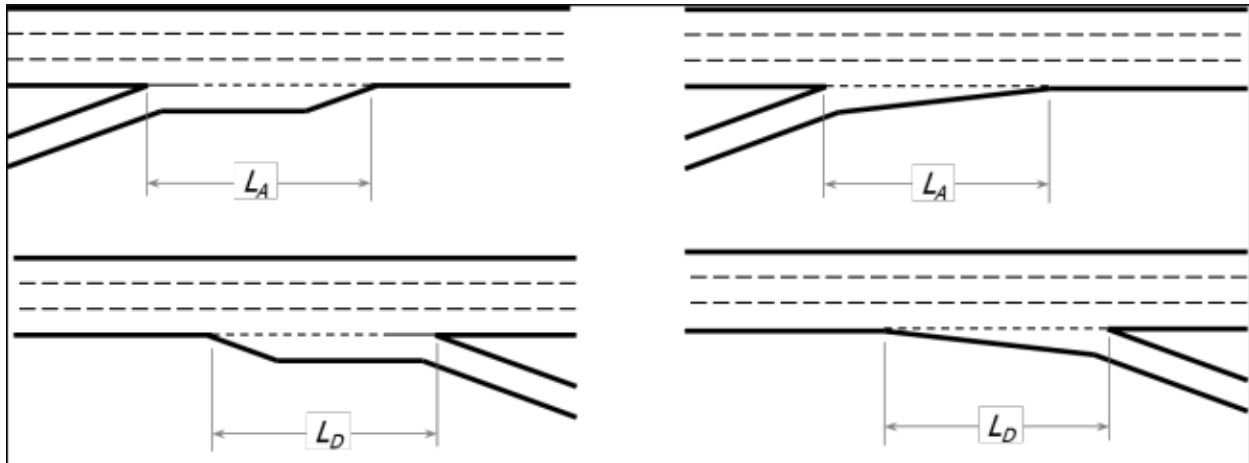


Table 2 | Original IJR and Design-Build Acceleration (L_A) and Deceleration (L_D) Lane Lengths (ft.)

Off-Ramp	Original IJR Concept (Alternative 1 & 2)	Design Build Concept (Alternative 3)
EB off-ramp (stop bar to painted nose)	1,400	1,300'
WB off-ramp (stop bar to painted nose)	200'	190'
EB on-ramp (painted nose to cross street edge of travel lane)	900'	1,090
WB on-ramp (painted nose to cross street edge of travel lane)	240'	200'

Table 3 | PJ Adams Parkway Ramp Lengths (ft.)

Off-Ramp	Original IJR Concept (Alternative 1 & 2)	Design Build Concept (Alternative 3)
EB off-ramp (stop bar to painted nose)	1,012'	1,170'
WB off-ramp (stop bar to painted nose)	1,614'	1,230'
EB on-ramp (painted nose to cross street edge of travel lane)	1,409'	1,630'
WB on-ramp (painted nose to cross street edge of travel lane)	1,384'	1,200'

Interchange Justification Report (IJR) Re-Evaluation

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Alternatives Comparison: Per the 2020 FDOT IARUG, the Original IJR concept is analyzed as the No-Build alternative, and the proposed Design-Build concept is analyzed as the Build alternative. To understand the impacts to traffic operations and safety due to the design changes of the Design-Build concept, the additional traffic from the new SW Bypass and East-West Connector needs to be accounted for in both alternatives as well as the other background changes. As such, Alternative 2 and Alternative 3 provide a reasonable comparison of design concepts using the same traffic volumes and background conditions to demonstrate that the proposed Design-Build changes operate equal to or better than the Original IJR concept.

2.6 Traffic and Safety Analysis

Traffic analysis files from the Original IJR were used and geometrical modifications were made per the proposed Design-Build concept. The Original IJR conducted operational analysis using Synchro 9 for intersection and HCS 6.9 to evaluate freeway operations implementing HCM 2010 methodologies. This re-evaluation uses Synchro 10 implementing HCM 2010 methodologies. Traffic operations were evaluated in terms of LOS, which is a qualitative measure of the traffic operations. LOS designations using the HCM methodology, range from A to F, with LOS A representing uncongested operating conditions with low delays, and LOS F representing failing conditions with high delays. The future conditions traffic operations analysis used global input values consistent with the Original IJR. The HCM LOS criteria for Freeway segments, ramp merge/diverge locations and intersections is shown in **Table 4** and **Table 5**.

Table 4 | Freeway Segments HCM 2010 LOS Criteria

LOS	Basic Freeway Density* (HCM Exhibit 11-5)	Merge/Diverge Density (HCM Exhibit 13-2)
A	≤ 11	≤ 10
B	> 11-18	> 10-20
C	> 18-26	> 20-28
D	> 26-35	> 28-35
E	> 35-45	> 35 >
F	Demand exceeds capacity or density >45	Demand exceeds capacity

*Density expressed in passenger car per mile per lane

Interchange Justification Report (IJR) Re-Evaluation

Interstate 10 at Antioch Road

Table 5 | Signalized Intersection HCM 2010 LOS Criteria

LOS	Average Control Delay (second/vehicles)
A	≤ 10
B	> 10-20
C	> 20-35
D	> 36-55
E	> 55-80
F	>80

Interchange Justification Report (IJR) Re-Evaluation

Interstate 10 at Antioch Road

3.0 Future Traffic Forecasts

3.1 Original IJR Future Traffic (Alternative 1)

The Original IJR used the adopted Northwest Florida Regional Planning Model (NWFRPM) Version 2.1 for future forecasts. A subarea model validation was performed for 2017. The model validation was performed to ensure the model is accurate enough to reflect 2017 traffic conditions in the study area and to study the traffic flow pattern for the future year 2044. The level of accuracy of the model was checked by Link Volume-Over-Count Ratios, Percent Error by Volume Groups, Volume-Over-Count Ratios and Percent Error by Facility Types, and the Percent Root Mean Square Error (RMSE) for the study area. The validation adjustments were carried over to the future year modeling.

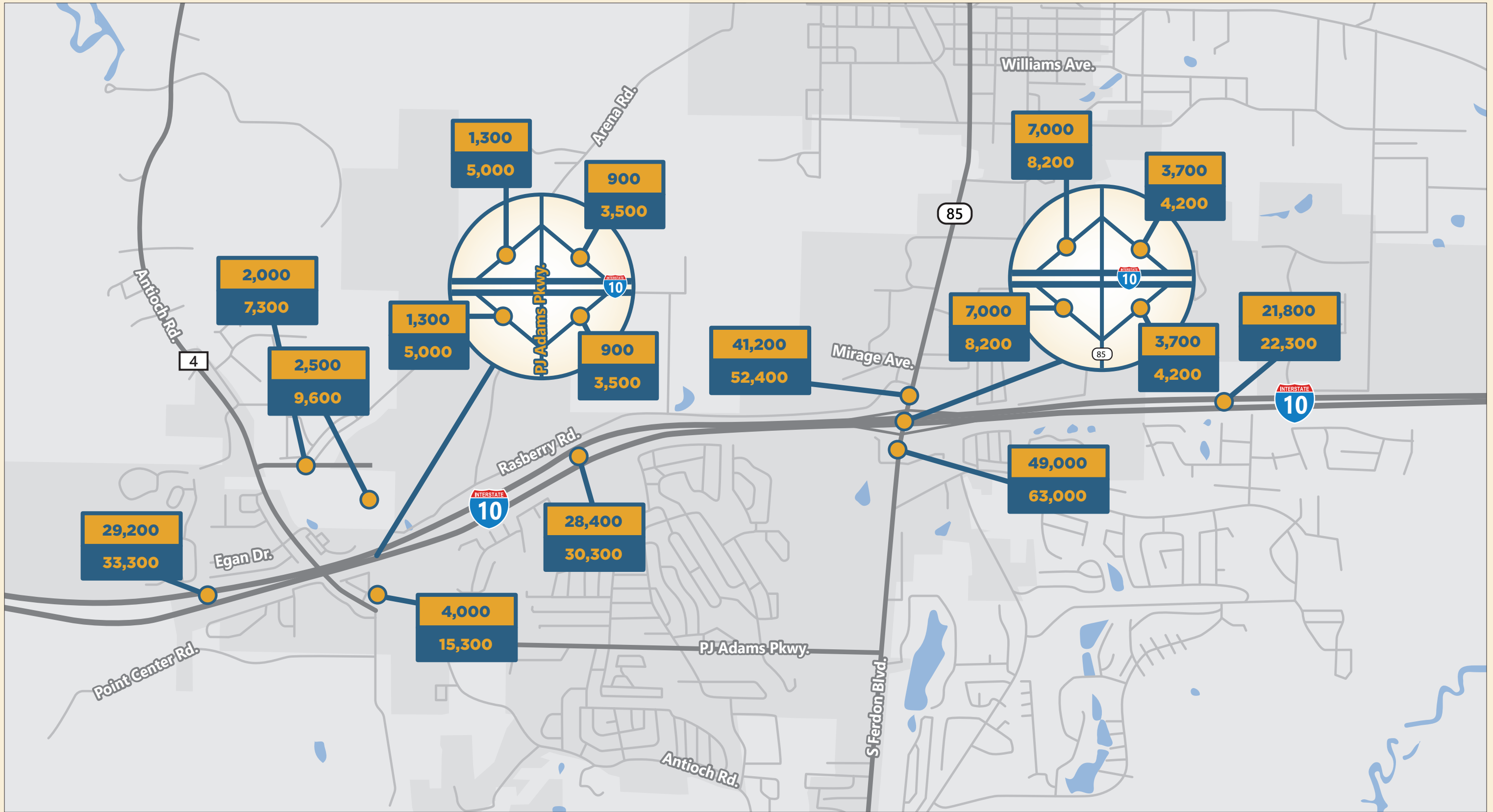
The future traffic forecasts were developed for roadways and intersections for the traffic operations analysis for the opening year (2024) and for the design year (2044) for the No-Build Alternative and Build Alternative. The No-Build Alternative represents future conditions with programmed improvements but does not include the new interchange. The Build Alternative includes the new interchange. It should be noted that neither alternative considers the SW Bypass or the East-West Connector projects (See **Figure 1**) as they were unfunded at the time of approval of the Original IJR.

The volumes obtained from the NWFRPM Version 2.1 model were converted to Annual Average Daily Traffic (AADT) using the appropriate MOCF. The AADTs were then used to develop the Directional Design Hour Volumes (DDHVs). DDHVs were calculated based on approved K and D factors from the Original MLOU (shown in **Table 6**). The 2024 and 2044 DDHVs for the intersections were developed using the TURNS5 spreadsheets.

For the purposes of this re-evaluation, the Build Alternative from the Original IJR was used as a base. Therefore, AADTs, DDHVs and intersection turning movement volumes for the Original IJR Build Alternative (referred to as Alternative 1 in this re-evaluation) are depicted in **Figures 6 through 8**.

Table 6 | Original IJR Approved Traffic Factors

Roadway	K Factor	D Factor
I-10	10.5%	53.0%
SR 85	9.0%	52.1%
CR 4 (Antioch Road)	9.0%	59.6%



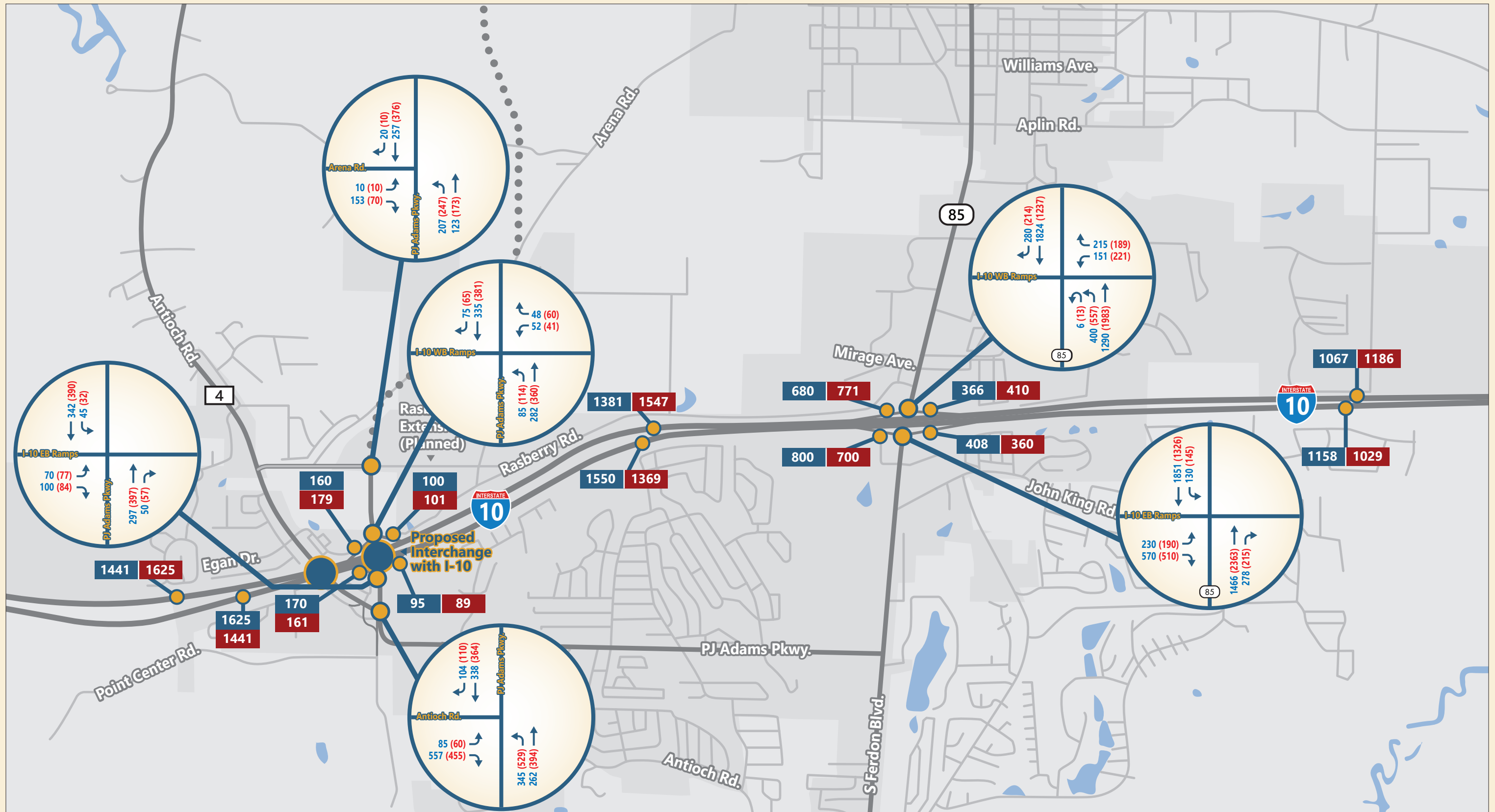
- xx,xxx 2024 Annual Average Daily Traffic
- xx,xxx 2044 Annual Average Daily Traffic
- Future Crestview Bypass

Source: 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018

I-10 AT COUNTY ROAD 4 ANTIOCH ROAD



FIGURE 6 : ALTERNATIVE 1 - 2024 & 2044 AADTS



N.T.S.
 AM (PM) Turning Movement Volumes
 AM PM I-10 Mainline & Ramp Volumes
 Future Crestview Bypass

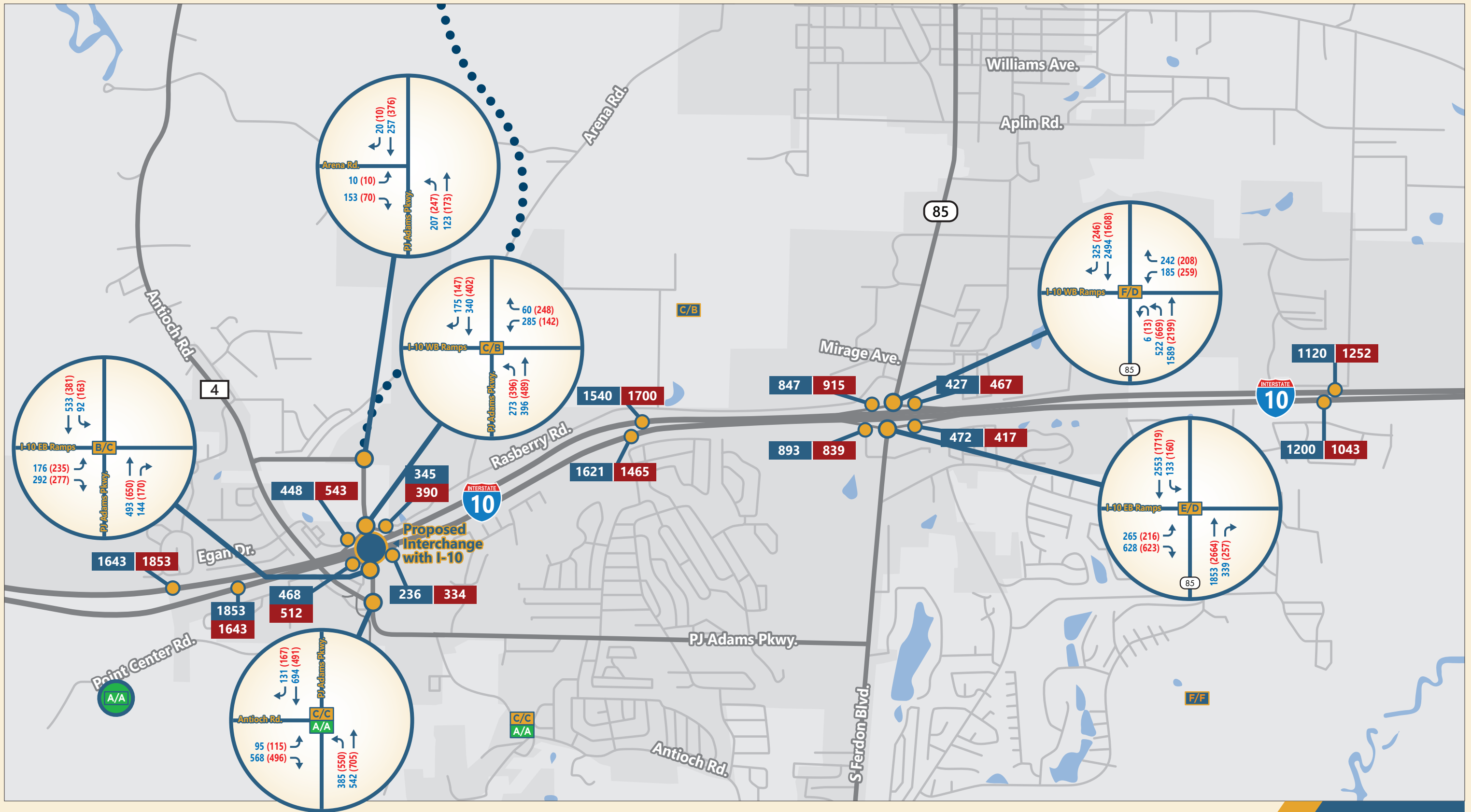
Source: 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018





I-10 AT COUNTY ROAD 4

ANTIOCH ROAD



FIGURE 7: ALTERNATIVE 1 - 2024 PEAK HOUR VOLUMES



 N.T.S.
 AM (PM) Turning Movement Volumes
 AM PM I-10 Mainline & Ramp Volumes
 Future Crestview Bypass

Source: 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018

I-10 AT COUNTY ROAD 4 ANTIOCH ROAD



FIGURE 8: ALTERNATIVE 1 - 2044 PEAK HOUR VOLUMES

Interchange Justification Report (IJR) Re-Evaluation

Interstate 10 at Antioch Road

3.2 Re-evaluation Traffic Development (Alternative 2 and Alternative 3)

Consistent with 2020 IARUG re-evaluation requirements, traffic development for this re-evaluation began with traffic validation using the traffic validation template provided in the 2020 IARUG. **Table 7** summarizes traffic validation results. The traffic validation results indicate that the Original IJR volumes from 2017 are approximately 8% lower than count data, and when interpolated to year 2019, the Original IJR volumes are approximately 5% lower than count data.

In addition to traffic validation, travel demand modeling was conducted to assess impacts of SW Bypass and East-West Connector projects (see **Figure 1**). The SW Bypass and East-West Connector projects were not funded for right-of-way and construction during the development of the Original IJR and PD&E and, thus, not included in the analysis. Since the approval of the Original IJR, Okaloosa County advanced funding for construction of these projects which will provide connection to the north leg of the proposed I-10 at Antioch Road interchange. Completion of these projects is anticipated to bring additional traffic to the subject interchange.

Consistent with the approved MLOU, the Build model developed for the Original IJR was used as a basis for travel demand modeling. A new scenario was created by adding SW Bypass and East-West Connector projects to the Original IJR Build model scenario. The model was executed for 2040 with the Original IJR land use assumptions. Travel demand model plots for both scenarios are included in **Appendix C. Table 8** compares the Original IJR Build traffic forecasts for both scenarios (with and without SW Bypass and East-West Connector projects). The comparison indicates the following with the Okaloosa County SW Bypass and East-West Connector projects:

- 2040 SR 85 AADTs north and south of I-10 decreased by 13.7% and 7.5%, respectively.
- 2040 I-10 AADT west of Antioch Road Interchange increased by 3.0%.
- 2040 I-10 AADTs east of Antioch Road Interchange and east of SR 85 decreased by 3.1% and 7.1%, respectively.
- 2040 AADTs for Antioch Road north and south of I-10 increased by 140.3% and 48.8%, respectively.

Traffic patterns are anticipated to change due to the SW Bypass and East-West Connector Projects. As such, the adjustments were based on the comparison of the Original IJR model scenarios with and without the SW Bypass and East-West Connector projects to account for this change in traffic patterns. Hence, no adjustments from traffic validation are proposed. Therefore, the above percent changes to SR 85, I-10 and Antioch Road will be applied to the Original IJR volumes due to the SW Bypass and East-West Connector projects.

Table 7 | Traffic Validation

FTO Station Number	Roadway	Location	2012 AADT	2017 AADT		2017 FTO AADT vs. 2017 Original IJR AADT	Original IJR Opening Year (2024) No Build AADT	2019 AADT		2019 FTO AADT vs. 2019 IAR AADT	Original IJR Design Year (2044) Build AADT ^{2,3}
			FTO	FTO	Original IJR			FTO	Interpolated IAR ¹		
570318	I-10	SR-8/I-10, at Antioch Rd O/P, OKALOOSA CO.	22,326	28,283	24,200	14.44%	29,200	30,616	25,629	16.29%	33,300
572004	I-10	SR 8(I-10) - 0.650 Mile E of SR 85 Overpass	19,400	20,500	18,000	12.20%	21,800	22,000	19,086	13.25%	22,300
570283	P J Adams Pkwy	P J Adams Pkwy - 0.3 M W OF SR-85 (at end of 2 Ln)	16,500	18,000	16,500	8.33%	20,500	18,400	17,643	4.11%	20,000
571607	SR 85	SR 85 - 300' N of Cracker Barrel Rd (S OF I-10 Ramp)	47,500	52,000	44,700	14.04%	47,400	47,500	45,471	4.27%	63,000
571608	SR 85	SR 85 - 500' S of Hospital Dr	40,500	44,500	43,500	2.25%	48,000	44,000	44,786	-1.79%	52,400
571606	SR 85	SR 85 - 600' S of Duggan Ave (N of Goodwin Ave)	43,500	43,500	43,500	0.00%	48,000	46,000	44,786	2.64%	58,000
All Locations			189,726	206,783	190,400	7.92%	214,900	208,516	197,400	5.33%	249,000

Notes:

1. Interpolated between IAR 2017 and IAR 2024 No Build volumes

2. There have been no model updates since the IAR was conducted; the approved IAR utilized NWFRPM v. 2.1 which is still the currently adopted model.

3. Does not include additional background improvements that have been funded for construction (including the Southwestern Bypass and the East-West Connector) at the time of approval of the Original IJR.

Table 8 | 2040 Original IJR vs Original IJR with SW Bypass and E-W Connector Projects

Location	Original IJR Build Model 2040 AADT	Original IJR Build Model with SW Bypass and E-W Connector 2040 AADT	Proposed Adjustment Factors
I-10 west of Antioch Rd Interchange	34,079	35,093	3.0%
I-10 east of Antioch Rd Interchange	28,121	27,242	-3.1%
I-10 east of SR-85 Interchange	38,179	35,475	-7.1%
Antioch Rd north of I-10	11,926	28,662	140.3%
Antioch Rd south of I-10	15,864	23,610	48.8%
SR-85 north of I-10	54,592	47,097	-13.7%
SR-85 south of I-10	66,167	61,213	-7.5%

Interchange Justification Report (IJR) Re-Evaluation

Interstate 10 at Antioch Road

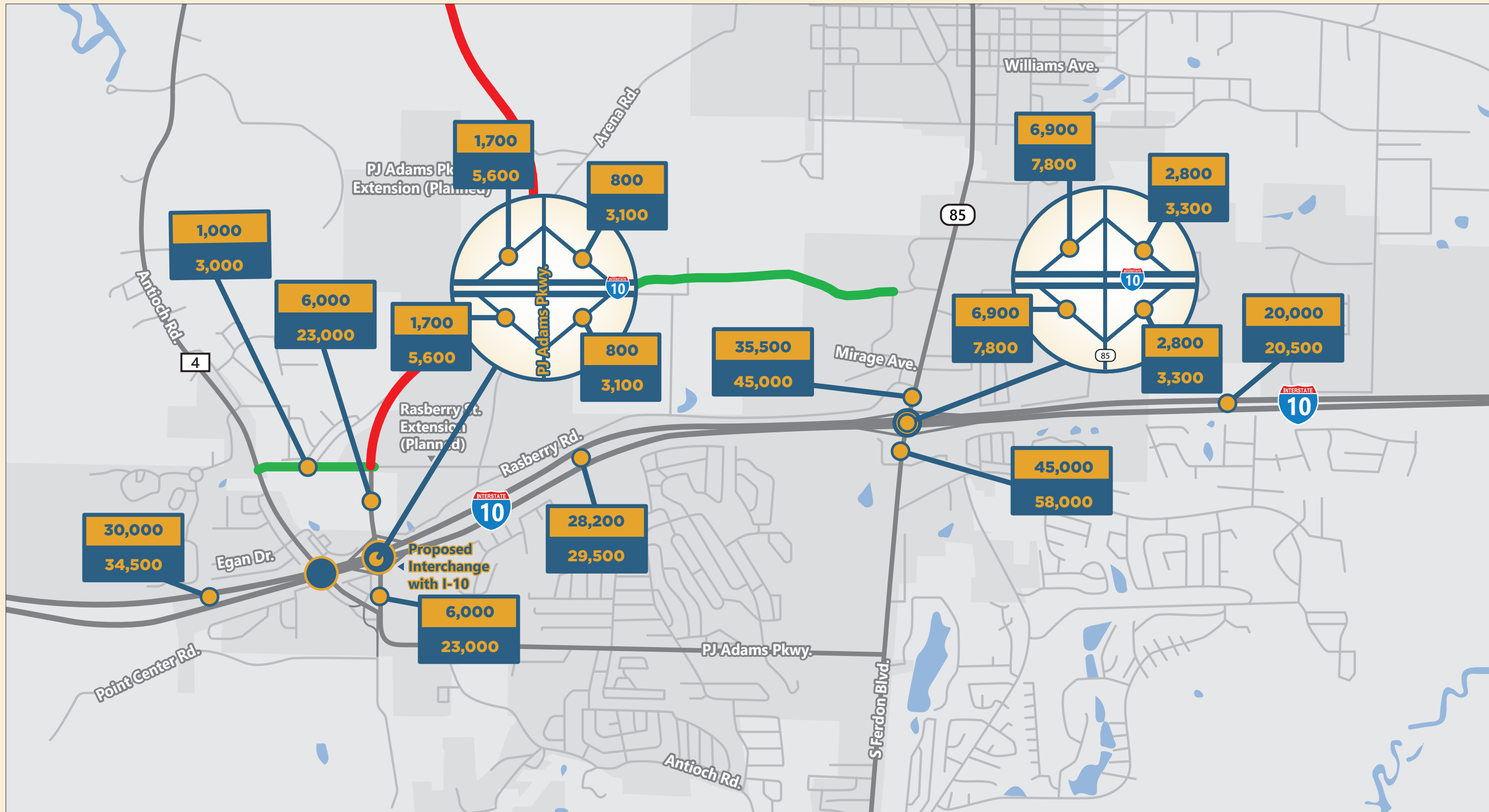
3.2.1 AADTs and Intersection Turning Movement Volumes

Alternative 2 and Alternative 3 include SW Bypass and East West Connector projects which were not included in the Original IJR.

Consistent with approved the MLOU, the following steps summarize the methodology and procedures used to determine the 2024 and 2044 Alternative 2 and Alternative 3 AADTs and intersection volumes for the operational analysis.

- The adjustment factors proposed in **Table 8** were applied to the Original IJR AADTs for I-10, SR 85, and Antioch Road segments.
- These AADTs were balanced at the ramps using ramp adjustment factors. Initial ramp adjustment factors were obtained from the model run and further adjusted for I-10 balancing purposes.
- Directional Design Hourly Volumes (DDHVs) differences were developed by applying traffic factors from **Table 6**.
- The DDHVs differences were added to the Original IJR DDHVs and balanced along I-10, SR 85, and Antioch roadways to obtain peak hour turning movement volumes and DDHVs for 2024 and 2044.

AADTs and intersection turning movement volumes for Alternative 2 and Alternative 3 are depicted in **Figures 9 through 11**.



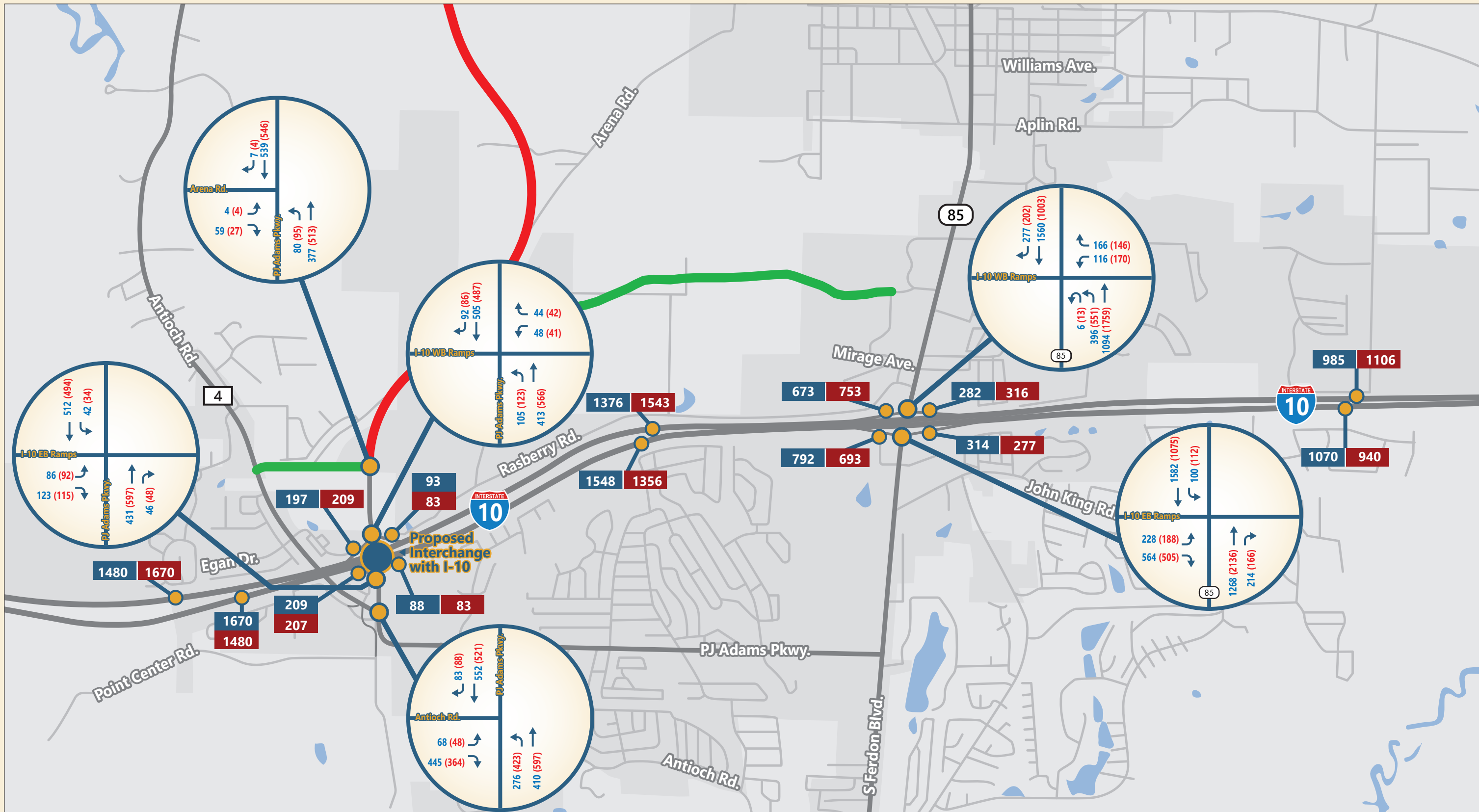
- XX,XXX 2024 Annual Average Daily Traffic
- XX,XXX 2044 Annual Average Daily Traffic
- Crestview Southwestern Bypass
- East-West Connector

Source: Modified from 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018

I-10 AT COUNTY ROAD 4 ANTIOCH ROAD



FIGURE 9: ALTERNATIVE 2 AND 3 - 2024 & 2044 AADTS



N.T.S.
 AM (PM) Turning Movement Volumes
 AM PM I-10 Mainline & Ramp Volumes

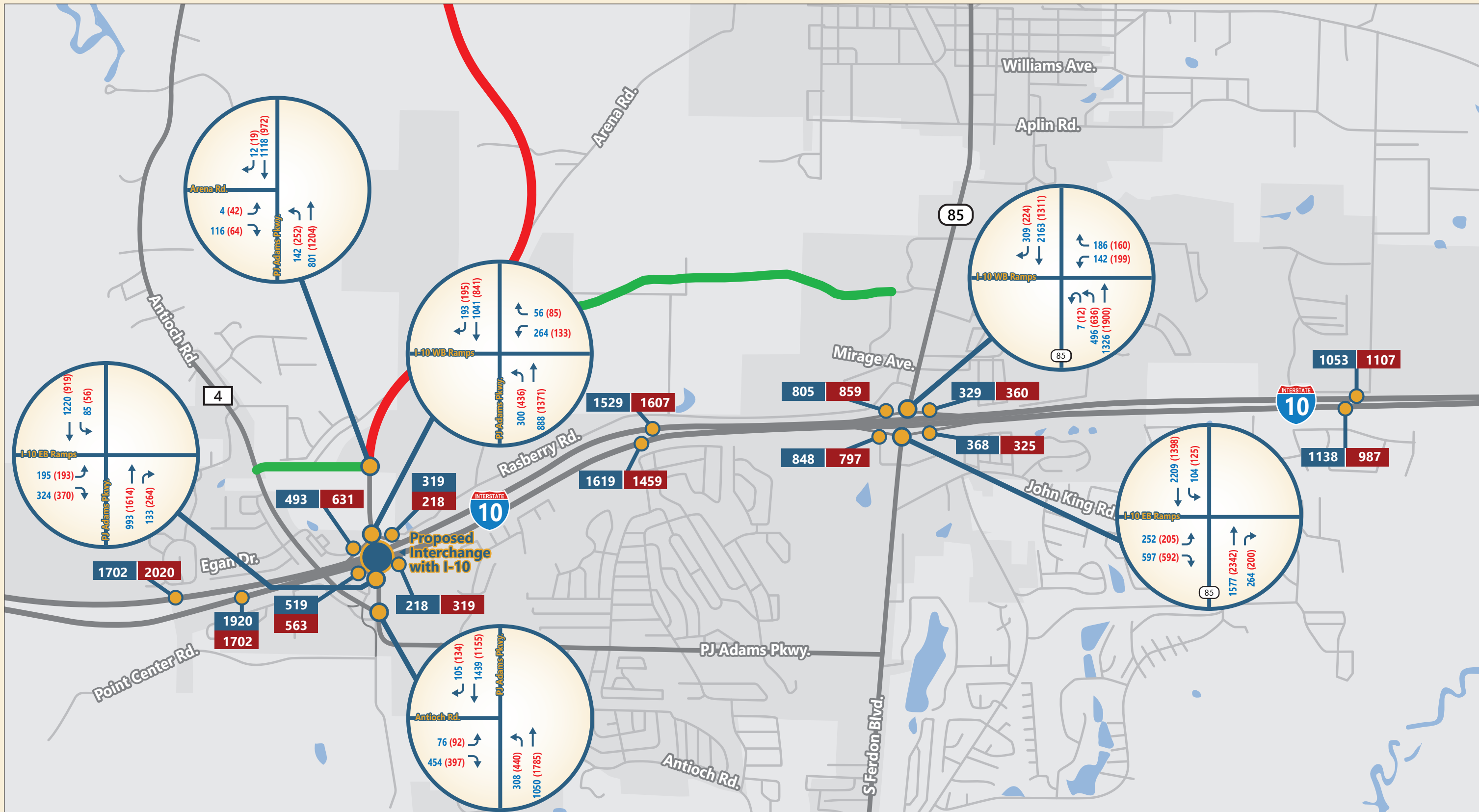
Crestview Southwestern Bypass
 East-West Connector
 Source: Modified from 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018

I-10 AT COUNTY ROAD 4

ANTIOCH ROAD



FIGURE 10 : ALTERNATIVE 2 & 3 - 2024 PEAK HOUR VOLUMES



N.T.S.
 AM (PM) Turning Movement Volumes
 AM PM I-10 Mainline & Ramp Volumes

Crestview Southwestern Bypass
 East-West Connector
 Source: Modified from 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018

I-10 AT COUNTY ROAD 4 ANTIOCH ROAD



FIGURE 11 : ALTERNATIVE 2 & 3 - 2044 PEAK HOUR VOLUMES

Interchange Justification Report (IJR) Re-Evaluation

Interstate 10 at Antioch Road

4.0 Alternative Analysis

Consistent with the approved MLOU and Section 2.5, Alternative 1, Alternative 2, and Alternative 3 were included in this re-evaluation. A traffic operational and safety analysis consistent with the Original IJR was performed for Alternative 2 and Alternative 3. The performance of Alternative 3 were compared against Alternative 2 to understand the impacts of the proposed Design-Build changes. Future traffic volumes shown in **Figures 7, 8, 10, and 11** were used in the analysis.

4.1 Traffic Operational Analysis

A traffic operational analysis was performed for freeway segments, ramp merge/diverge locations, and intersections for each analysis year. MOEs consistent with approved IJR was used for comparison. Detailed MOEs including speed and V/C Ratio are included in Appendix D consistent with the approved IJR reporting format.

4.1.1 Freeway Analysis

The basic freeway analysis was conducted using HCS version 6.9 and results were compared with LOS thresholds in **Table 4. Tables 9 and 10** show DDHV, density and LOS results for freeway segments within the study area for the years 2024 and 2044 for Alternatives 1, 2 and 3. The HCS analysis worksheets are included in **Appendix D**. The freeway analysis results indicate the following:

- The Alternative 1 expected to operate at LOS B or better in the 2024 and 2044 conditions.
- Similarly, Alternative 2, and Alternative 3 are expected to operate at similar conditions (LOS B or better) in Alternatives 2 and 3 in the 2024 and 2044 analysis years with additional traffic from the SW Bypass and East-West Connector projects.

Interchange Justification Report (IJR) Re-Evaluation

Interstate 10 at Antioch Road

Table 9 | 2024 I-10 Mainline Analysis Summary

Analysis Segments	Alternative 1			Alternative 2			Alternative 3		
	Volume	Density (pc/mi/ln)	LOS	Volume	Density (pc/mi/ln)	LOS	Volume	Density (pc/mi/ln)	LOS
2024 - AM Peak Hour									
I-10 Eastbound									
West of PJ Adams Parkway	1,625	12.8	B	1,670	13.2	B	1,670	13.2	B
Between PJ Adams and SR 85	1,550	12.2	B	1,548	12.2	B	1,548	12.2	B
East of SR 85	1,158	9.1	A	1,070	8.4	A	1,070	8.4	A
I-10 Westbound									
West of PJ Adams Parkway	1,441	11.4	B	1,480	11.7	B	1,480	11.7	B
Between PJ Adams and SR 85	1,381	10.9	A	1,376	10.9	A	1,376	10.9	A
East of SR 85	1,067	8.4	A	985	7.8	A	985	7.8	A
2024 - PM Peak Hour									
I-10 Eastbound									
West of PJ Adams Parkway	1,441	11.4	B	1,480	11.7	B	1,480	11.7	B
Between PJ Adams and SR 85	1,369	10.8	A	1,356	10.7	A	1,356	10.7	A
East of SR 85	1,029	8.1	A	940	7.4	A	940	7.4	A
I-10 Westbound									
West of PJ Adams Parkway	1,625	12.8	B	1,670	13.2	B	1,670	13.2	B
Between PJ Adams and SR 85	1,547	12.2	B	1,543	12.2	B	1,543	12.2	B
East of SR 85	1,186	9.4	A	1,106	8.7	A	1,106	8.7	A

Note: The density values for Alternative 1 are slightly different from the Original IJR Table 22 due to minor volume updates to be consistent with Original IJR traffic forecasts.

Interchange Justification Report (IJR) Re-Evaluation

Interstate 10 at Antioch Road

Table 10 | 2044 I-10 Mainline Analysis Summary

Analysis Segments	Alternative 1			Alternative 2			Alternative 3		
	Volume	Density (pc/mi/ln)	LOS	Volume	Density (pc/mi/ln)	LOS	Volume	Density (pc/mi/ln)	LOS
2044 - AM Peak Hour									
I-10 Eastbound									
West of PJ Adams Parkway	1,853	14.6	B	1,920	15.2	B	1,920	15.2	B
Between PJ Adams and SR 85	1,621	12.8	B	1,619	12.8	B	1,619	12.8	B
East of SR 85	1,200	9.5	A	1,138	9.0	A	1,138	9.0	A
I-10 Westbound									
West of PJ Adams Parkway	1,643	13.0	B	1,702	13.4	B	1,702	13.4	B
Between PJ Adams and SR 85	1,540	12.2	B	1,529	12.1	B	1,529	12.1	B
East of SR 85	1,120	8.8	A	1,053	8.3	A	1,053	8.3	A
2044 - PM Peak Hour									
I-10 Eastbound									
West of PJ Adams Parkway	1,643	13.0	B	1,702	13.4	B	1,702	13.4	B
Between PJ Adams and SR 85	1,465	11.6	B	1,459	11.5	B	1,459	11.5	B
East of SR 85	1,043	8.2	A	987	7.8	A	987	7.8	A
I-10 Westbound									
West of PJ Adams Parkway	1,853	14.6	B	2,020	15.9	B	2,020	15.9	B
Between PJ Adams and SR 85	1,700	13.4	B	1,607	12.7	B	1,607	12.7	B
East of SR 85	1,252	9.9	A	1,107	8.7	A	1,107	8.7	A

Note: The density values for Alternative 1 are slightly different from the Original IJR Table 23 due to minor volume updates to be consistent with Original IJR traffic forecasts.

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4.1.2 Merge/Diverge Analysis

The ramp merge/diverge was conducted using HCS version 6.9. Merge/diverge acceleration distances were updated for the Original IJR concept (Alternative 1 and Alternative 2) and the Design Build concept (Alternative 3) consistent with HCM definitions (shown in **Figure 5**) for the use in HCS files using distances provided in **Table 2**. **Tables 11 and 12** show the DDHV, density, and LOS of ramp merge/diverge movements within the study area for the years 2024 and 2044 for Alternatives 1, 2, and 3 using LOS thresholds shown in Table 2. The HCS analysis worksheets are included in **Appendix E**. The ramp merge/diverge analysis results indicate the following:

- The Alternative 1 would operate at LOS B or better in the 2024 and at LOS C or better 2044 conditions.
- Similarly, the Alternative 2 and 3 would operate at LOS B or better in the 2024 and at LOS C or better 2044 conditions with additional traffic from the SW Bypass and East-West Connector projects.
- Minor changes in ramp acceleration lane lengths in the Design-Build concept (Alternative 3) will maintain the same LOS as the Original Build concept (Alternative 2) and a minimal change in density with the exception of the I-10 at PJ Adams Parkway EB. The I-10 at PJ Adams Parkway EB is expected to operate at LOS B (with density at 10.6 pcpmpl) in Alternative 3 when compared to Alternative 2 expected to operate at LOS A (with density at 10.0 pcpmpl) in 2024 AM peak hour.

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Table 11 | 2024 I-10 Ramp Junction Analysis Summary

Freeway Segments	Ramp	Type of Analysis	Alternative 1			Alternative 2			Alternative 3		
			Volume	Density (pc/mi/ln)	LOS	Volume	Density (pc/mi/ln)	LOS	Volume	Density (pc/mi/ln)	LOS
2024 - AM Peak Hour											
I-10 at PJ Adams Parkway	EB On	Merge	95	10.0	A	88	10.0	A	88	10.6	B
	EB Off	Diverge	170	17.9	B	209	18.3	B	209	18.4	B
	WB On	Merge	160	12.1	B	197	12.4	B	197	11.2	B
	WB Off	Diverge	100	15.2	B	93	15.2	B	93	15.5	B
I-10 at SR 85	EB On	Merge	408	11.7	B	314	11.0	B	314	11.0	B
	EB Off	Diverge	800	17.2	B	792	17.2	B	792	17.2	B
	WB On	Merge	680	13.1	B	673	13.0	B	673	13.0	B
	WB Off	Diverge	366	11.9	B	282	11.1	B	282	11.1	B
2024 - PM Peak Hour											
I-10 at PJ Adams Parkway	EB On	Merge	89	8.4	A	83	8.3	A	83	9.0	A
	EB Off	Diverge	161	16.2	B	207	16.5	B	207	16.6	B
	WB On	Merge	179	13.7	B	209	14.1	B	209	12.9	B
	WB Off	Diverge	101	16.8	B	83	16.8	B	83	17.1	B
I-10 at SR 85	EB On	Merge	360	10.6	B	277	10.0	A	277	10.0	A
	EB Off	Diverge	700	15.5	B	693	15.3	B	693	15.3	B
	WB On	Merge	771	14.4	B	753	14.4	B	753	14.4	B
	WB Off	Diverge	410	13.0	B	316	12.2	B	316	12.2	B

Note: The density values for Alternative 1 are slightly different from the Original IJR Table 24 due to updated acceleration distances.

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Table 12 | 2044 I-10 Ramp Junction Analysis Summary

Freeway Segments	Ramp	Type of Analysis	Alternative 1			Alternative 2			Alternative 3		
			Volume	Density (pc/mi/ln)	LOS	Volume	Density (pc/mi/ln)	LOS	Volume	Density (pc/mi/ln)	LOS
2044 - AM Peak Hour											
I-10 at PJ Adams Parkway	EB On	Merge	236	10.5	B	218	10.5	B	218	11.1	B
	EB Off	Diverge	468	20.1	C	519	20.7	C	519	20.8	C
	WB On	Merge	448	13.6	B	493	14.1	B	493	12.9	B
	WB Off	Diverge	345	16.7	B	319	16.6	B	319	17.0	B
I-10 at SR 85	EB On	Merge	472	12.0	B	368	11.5	B	368	11.5	B
	EB Off	Diverge	893	17.9	B	848	17.8	B	848	17.8	B
	WB On	Merge	847	14.3	B	805	14.2	B	805	14.2	B
	WB Off	Diverge	427	12.4	B	329	11.7	B	329	11.7	B
2044 - PM Peak Hour											
I-10 at PJ Adams Parkway	EB On	Merge	333	9.0	A	319	9.0	A	319	9.6	A
	EB Off	Diverge	512	18.1	B	563	18.6	B	563	18.7	B
	WB On	Merge	543	15.4	B	631	16.7	B	631	15.5	B
	WB Off	Diverge	390	18.3	B	218	17.4	B	218	17.7	B
I-10 at SR 85	EB On	Merge	417	10.7	B	325	10.3	B	325	10.3	B
	EB Off	Diverge	839	16.4	B	797	16.3	B	797	16.3	B
	WB On	Merge	915	15.6	B	859	14.4	B	859	14.9	B
	WB Off	Diverge	467	13.6	B	360	12.3	B	360	12.3	B

Note: The density values for Alternative 1 are slightly different from the Original IJR Table 25 due to updated acceleration distances.

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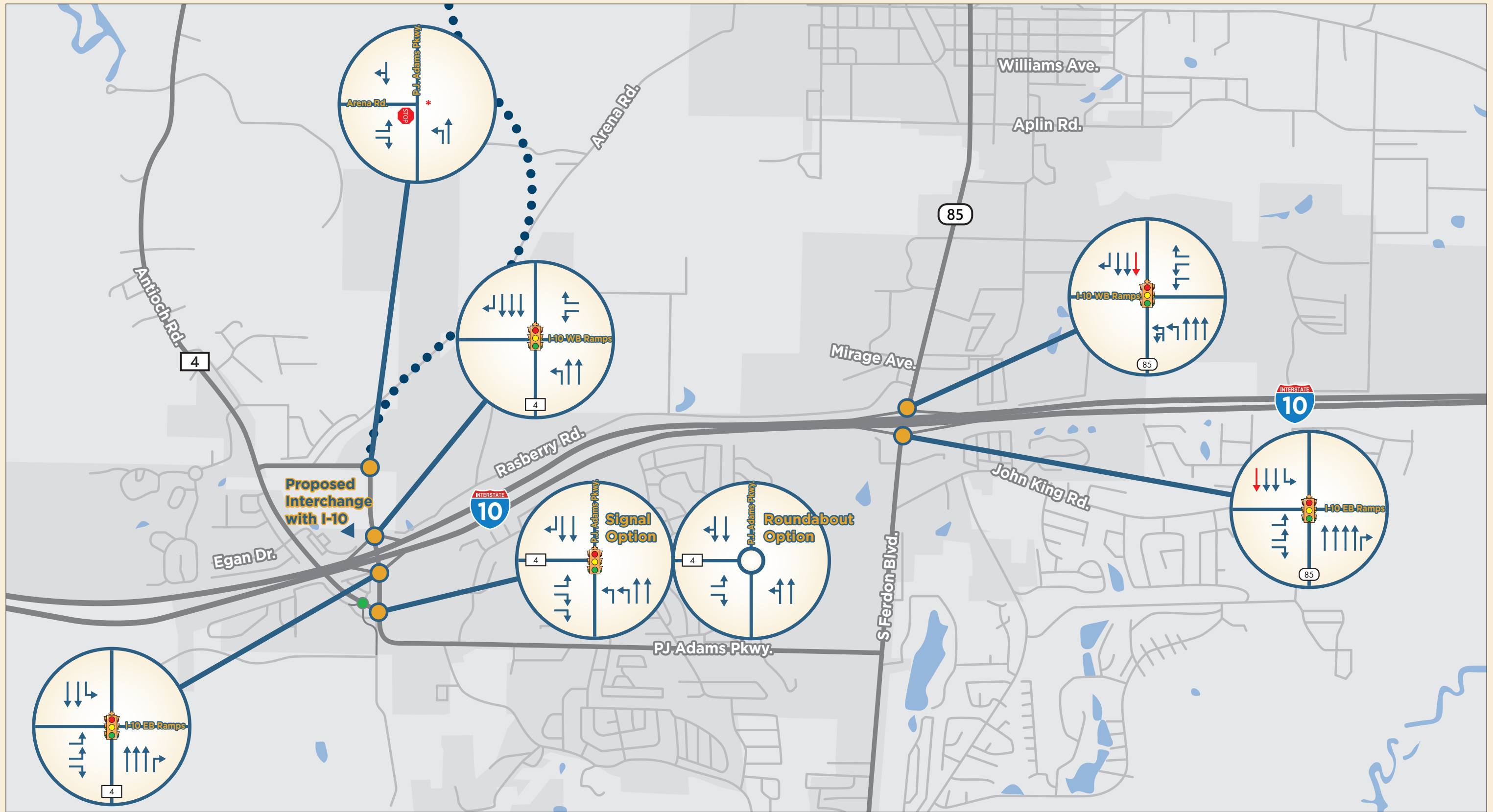
4.1.3 Intersection Operational Analysis

An intersection operational analysis for Alternatives 1, 2, and 3 was performed for the 2024 and 2044 analysis years during the AM and PM peak hour conditions. The intersection analysis included intersection design changes included in Reason 3 in Section 1.4 in Alternatives 1, 2 and 3. Additionally, the SR 85 ramp intersection geometry is updated in Alternatives 1, 2 and 3 for consistent with the following ongoing projects

- The SR 85 resurfacing project currently under construction (FPID 441548-1)
- The SR 85 PD&E future capacity widening project (FPID 220171-2)

The intersection geometry and signal control for all study intersections within the AOI are depicted in **Figures 12 through 14**. Signal timings were optimized for all future year conditions. The intersection analysis results are summarized in **Tables 13 and 14**, and the Synchro outputs and detailed MOE summaries are provided in **Appendix F**. The intersection analysis results indicate the following:

- All intersections are expected to operate at similar conditions in Alternatives 2 and 3.
- All intersections in Alternative 3 are expected to operate at similar or better delay and LOS as the operations in Alternative 1.
- In the opening year, the intersections on PJ Adams Parkway operate at LOS B or better in Alternatives 2 and 3. Similarly, in the design year, the intersections on PJ Adams Parkway operate at LOS D or better.
- No movement is operating at LOS F at the PJ Adams Parkway interchange in Alternatives 3.
- Although the overall intersection is operating at LOS D or better at the SR 85 ramp terminal intersections in Alternatives 2 and 3, a few movements are operating at LOS F in the Design Year. Both Alternatives 2 and 3 have same LOS for these movements. Operating conditions of these movements will be shared with FDOT-3 for further action during SR 85 studies (220171-2 & 441548-1).

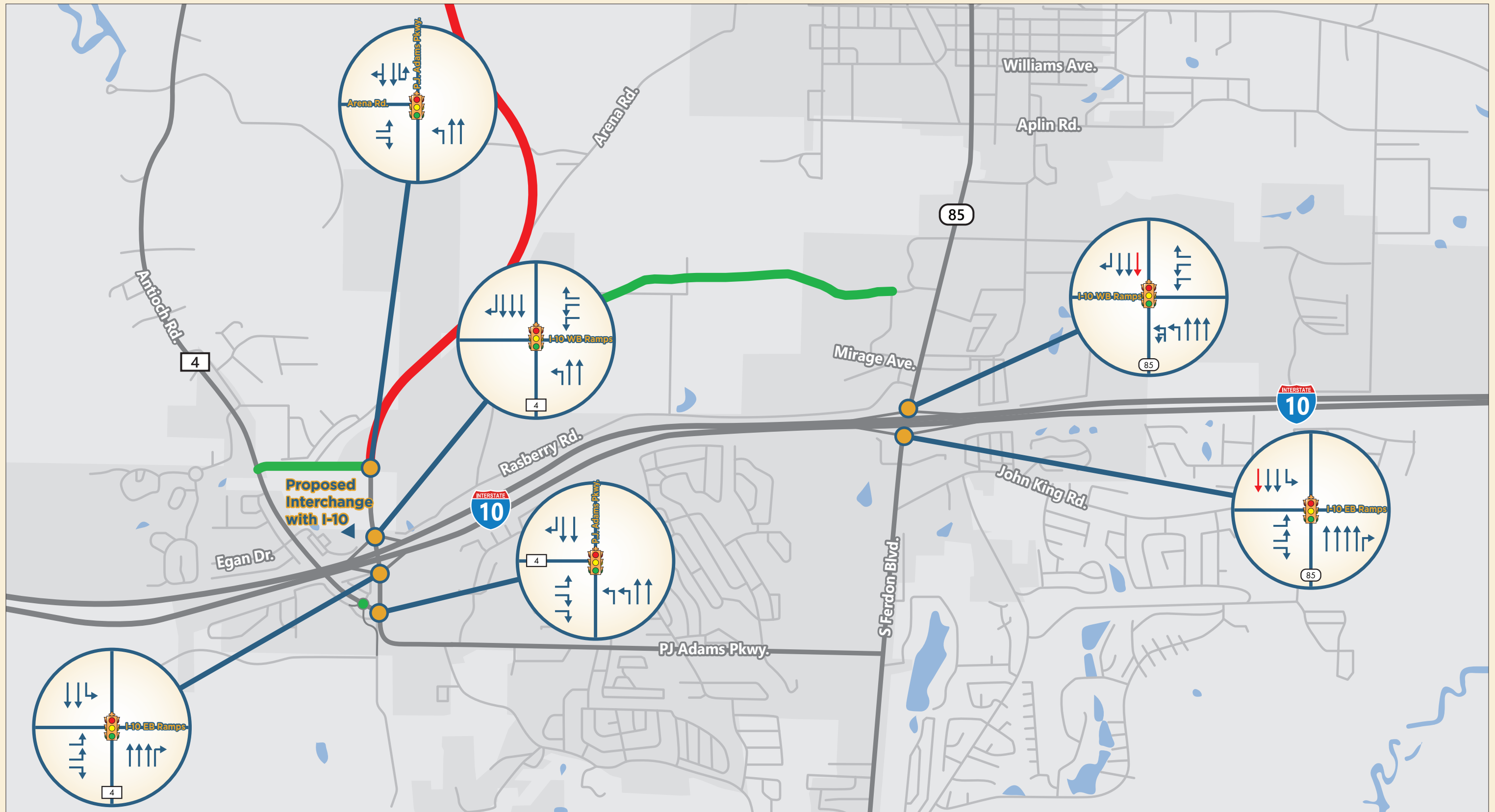


Source: 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018

I-10 AT COUNTY ROAD 4 ANTIOCH ROAD



FIGURE 12 : ALTERNATIVE 1 - GEOMETRY AND INTERSECTION CONTROL



- N.T.S.
- 2024 and 2044 Laneage
- Lanes added for 2044
- Crestview Southwestern Bypass

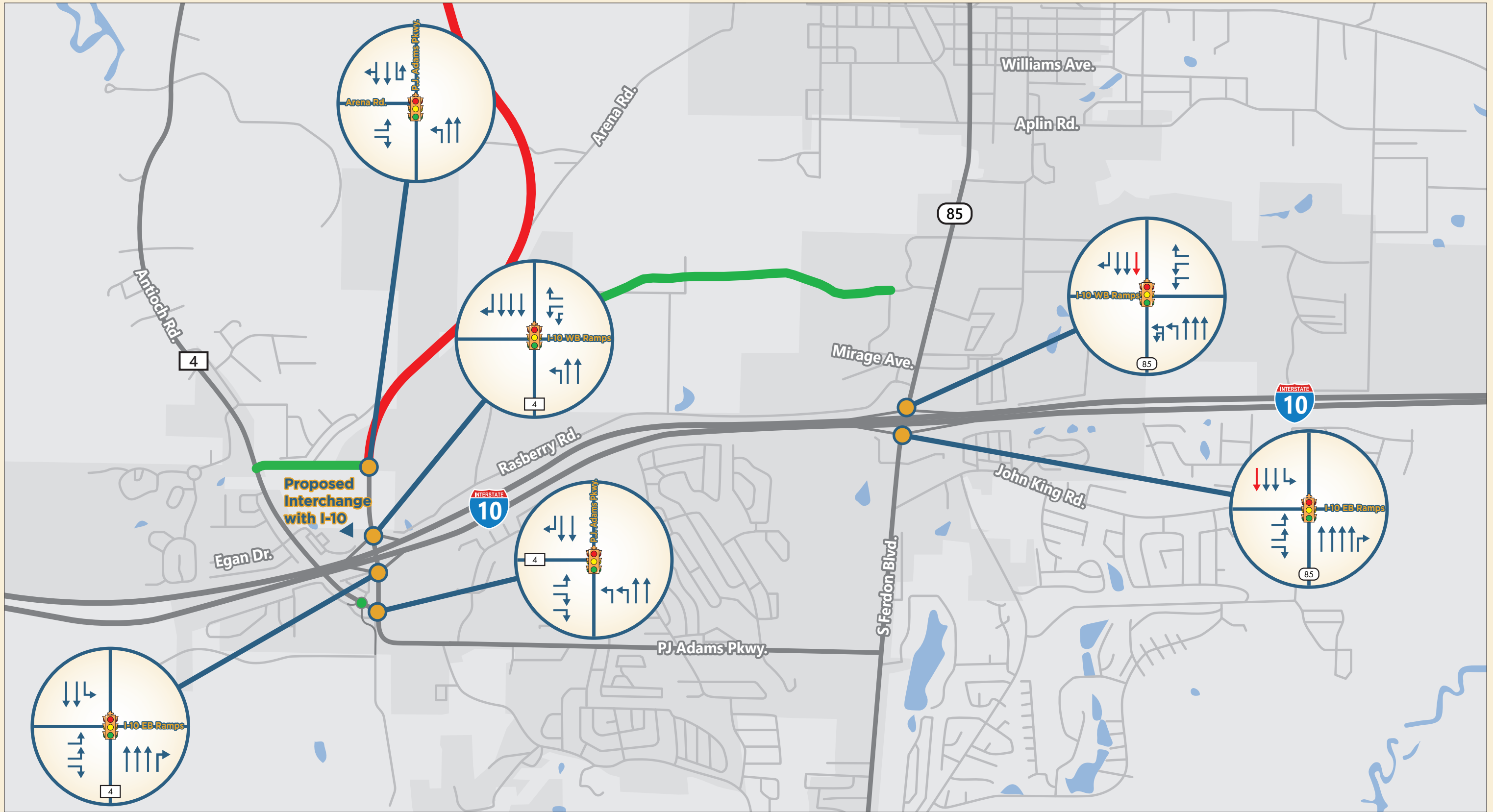
- East-West Connector
- Signalized Intersection

Source: 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018

I-10 AT COUNTY ROAD 4 ANTIOCH ROAD



FIGURE 13 : ALTERNATIVE 2 - GEOMETRY AND INTERSECTION CONTROL



- N.T.S.
- 2024 and 2044 Laneage
- Lanes added for 2044
- Crestview Southwestern Bypass
- East-West Connector
- Signalized Intersection

Source: 'Interchange Justification Report for Interstate 10 at County Road 4 (Antioch Road)' dated October 2018

I-10 AT COUNTY ROAD 4 ANTIOCH ROAD



FIGURE 14 : ALTERNATIVE 3 - GEOMETRY AND INTERSECTION CONTROL

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Table 13 | 2024 Intersection Analysis Summary

Intersection	Control Type	AM Peak Hour			PM Peak Hour		
		Alt 1 Delay/ LOS	Alt 2 Delay/ LOS	Alt 3 Delay/ LOS	Alt 1 Delay/ LOS	Alt 2 Delay/ LOS	Alt 3 Delay/ LOS
I-10 EB & SR 85 (South Ferdon Boulevard) ¹	Signal	53.8/D	46.9/D	46.9/D	48.0/D	45.8/D	45.8/D
I-10 WB & SR 85 (South Ferdon Boulevard) ¹	Signal	76.0/E	60.5/E	60.5/E	33.1/C	29.4/C	29.4/C
PJ Adams Parkway & Antioch Road (North) ²	Signal	29.3/C	19.6/B	19.6/B	17.9/B	19.2/B	19.2/B
PJ Adams Parkway & I-10 EB ¹	Signal	10.9/B	12.7/B	12.7/B	9.4/A	12.3/B	12.3/B
PJ Adams Parkway & I-10 WB ¹	Signal	11.2/B	13.3/B	13.3/B	9.4/A	9.2/A	9.2/A
PJ Adams Parkway & Arena Road ¹	Stop/Signal ³	11.5/B	4.9/A	4.9/A	13.2/B	7.3/A	7.3/A

Notes:

1. HCM 2000 outputs are presented
2. HCM 2010 outputs are presented
3. This intersection is signalized in Alternative 2 & 3

The delay values for Alternative 1 are different from the Original IJR Table 26 and 27. The reference phase adjustment in Synchro was updated to N-S from E-W at PJ Adams and I-10 ramps for signal coordination, and the right turns from the I-10 off ramps were changed from free operation to yield operation for consistency with the concept.

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Table 14 | 2044 Intersection Analysis Summary

Intersection	Control Type	AM Peak Hour			PM Peak Hour		
		Alt 1 Delay/ LOS	Alt 2 Delay/ LOS	Alt 3 Delay/ LOS	Alt 1 Delay/ LOS	Alt 2 Delay/ LOS	Alt 3 Delay/ LOS
I-10 EB & SR 85 (South Ferdon Boulevard) ¹	Signal	44.7/D	47.5/D	47.5/D	57.2/E	44.6/D	44.6/D
I-10 WB & SR 85 (South Ferdon Boulevard) ¹	Signal	71.8/E	49.6/D	49.6/D	34.7/C	31.0/C	31.0/C
PJ Adams Parkway & Antioch Road (North) ²	Signal	28.0/C	19.0/B	19.0/B	21.0/C	26.5/C	26.5/C
PJ Adams Parkway & I-10 EB ¹	Signal	15.7/B	12.9/B	12.9/B	22.8/C	15.4/B	15.4/B
PJ Adams Parkway & I-10 WB ¹	Signal	24.7/C	10.6/B	10.6/B	16.6/B	9.8/A	9.8/A
PJ Adams Parkway & Arena Road ¹	Stop/Signal ³	25.6/C	9.2/A	9.2/A	35.2/D	10.2/B	10.2/B

Notes:

1. HCM 2000 outputs are presented

2. HCM 2010 outputs are presented

The delay values for Alternative 1 are different from the Original IJR Table 26 and 27. The reference phase adjustment in Synchro was updated to N-S from E-W at PJ Adams and I-10 ramps for signal coordination, and the right turns from the I-10 off ramps were changed from free operation to yield operation for consistency with the concept.

4.1.4 PJ Adams Parkway Ramp Queue Analysis

Queue analysis was performed for PJ Adams Parkway off-ramps in Alternative 2 and Alternative 3. The maximum 95th percentile queue lengths from Synchro for the off-ramps at PJ Adams Parkway were compared with overall ramp lengths (shown in **Table 3**) and summarized in **Tables 15 and 16**. The queue analysis results indicate the following:

- The I-10 eastbound and westbound off-ramps at PJ Adams Parkway intersections are expected to operate at similar conditions in Alternatives 2 and 3 and expected to accommodate 95th percentile queues and necessary deceleration distances for exiting traffic in both the Opening Year and Design Year.

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Table 15 | 2024 Off-Ramp Queue Length Summary

Ramp/Movement	AM Peak Hour						PM Peak Hour					
	Alternative 1		Alternative 2		Alternative 3		Alternative 1		Alternative 2		Alternative 3	
	Storage Length*	95th %ile Queue	Storage Length*	95th %ile Queue	Storage Length*	95th %ile Queue	Storage Length*	95th %ile Queue	Storage Length*	95th %ile Queue	Storage Length*	95th %ile Queue
PJ Adams Parkway & I-10 EB - EBL	1,012'	40'	1,012'	47'	1,170'	47'	1,012'	43'	1,012'	50'	1,170'	50'
PJ Adams Parkway & I-10 EB - EBR	280'	0'	280'	12'	420'	12'	280'	0'	280'	6'	420'	6'
PJ Adams Parkway & I-10 WB - WBL	1,614'	65'	1,614'	30'	1,230'	30'	1,614'	54'	1,614'	27'	1,230'	27'
PJ Adams Parkway & I-10 WB - WBR	290'	0'	290'	0'	430'	0'	290'	0'	290'	0'	430'	0'

*Storage Length is measured from the painted nose of gore to the cross-street edge of travel lane measured in feet.

Table 16 | 2044 Off-Ramp Queue Length Summary

Ramp	AM Peak Hour						PM Peak Hour					
	Alternative 1		Alternative 2		Alternative 3		Alternative 1		Alternative 2		Alternative 3	
	Ramp Length*	95th %ile Queue	Ramp Length*	95th %ile Queue	Ramp Length*	95th %ile Queue	Ramp Length*	95th %ile Queue	Ramp Length*	95th %ile Queue	Ramp Length*	95th %ile Queue
PJ Adams Parkway & I-10 EB - EBL	1,012'	65'	1,012'	79'	1,170'	79'	1,012'	108'	1,012'	92'	1,170'	92'
PJ Adams Parkway & I-10 EB - EBR	280'	57'	280'	73'	420'	73'	280'	71'	280'	83'	420'	83'
PJ Adams Parkway & I-10 WB - WBL	1,614'	225'	1,614'	104'	1,230'	104'	1,614'	147'	1,614'	67'	1,230'	67'
PJ Adams Parkway & I-10 WB - WBR	290'	0'	290'	0'	430'	0'	290'	66'	290'	0'	430'	0'

*Storage Length is measured from the painted nose of gore to the cross-street edge of travel lane measured in feet

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4.2 Safety Analysis

A quantitative analysis was completed to provide a comparison between the Alternative 2 and Alternative 3, as well as to show baseline results for Alternative 1 from the previously approved IJR. The quantitative safety analysis was performed using the Enhanced Interchange Safety Analysis Tool (ISATe) consistent with approved MLOU and the Original IJR. Results for Alternative 1 were included for informational purposes only.

The ISATe was developed for inclusion as a Part C predictive method for the HSM. The ISATe predicts crashes by crash location, i.e., mainline freeway segments, ramp segments, and ramp terminals. The methodology also predicts crash severity for each crash type using the KABCO scale (K – fatal crashes; A, B, C – injury crashes of decreasing severity; O – Property Damage Only crashes). KABCO Inputs to the tool include both geometric and operational characteristics of roadway and ramp facilities. In this regard, the freeway facility is broken into one or more freeway sections based on the geometric characteristics and ramp junctions. ISATe also accounts for annual average daily traffic (AADT) volumes through user inputs. The measures are then combined as needed to describe the performance of the freeway section, interchange, or facility as a whole. The ISATe inputs and outputs are provided in **Appendix G**. Freeway Model Calibration Factors are based on the previously approved IJR safety analysis and remain unchanged.

The opening year (2024) and design year (2044) conditions were analyzed using HSM predictive methods coded in the ISATe tool, to predict the number and severity of crashes expected to occur within the interchange area. Since the ISATe tool uses a default KABCO scale based on national averages, HSM Crash Distributions from the Florida Design Manual Chapter 122 for freeways segments and ramps were applied to the ISATe results. **Table 17** shows the predicted crashes, with HSM Crash Distributions incorporated, by severity for Alternatives 1, 2, and 3 during the study period (2024 – 2044). The ISATe results indicate the following:

- Alternative 1 resulted in the most predicted crashes, totaling 1577.5 crashes over the 20-year period. Alternative 2 results in the second highest total of predicted crashes, totaling 1508.2 crashes. Alternative 3 resulted in the fewest predicted crashes, totaling 1500 crashes anticipated over the 20-year period.
- Similar to Alternative 1, Alternative 2, and Alternative 3 show the majority of predicted crashes are single injury (C) and property damage only crashes.
- The overall facility predictive crash total for the Alternative 3 is expected to be slightly less than the Alternative 2 with additional traffic from the SW Bypass and East-West Connector projects. The difference between the two alternatives is 0.5%, with Alternative 3 experiencing less property damage crashes. Differences in predictive crash totals are due to varying factors such as ramp segment lengths, inside and outside barrier presence, segmentation of the freeway and associated AADTs and ramp terminals.

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- Of the overall 1500 crashes expected to occur for Alternative 3 during the 20-year time span, approximately 69% of those crashes are anticipated to occur at the crossroad ramp terminals.

Table 17 | ISATe Output Comparison

Alternative	Crash Severity					Total	Total Percent Change
	K	A	B	C	O		
Alternative 1	3.3	38.2	174.9	638.6	722.6	1577.5	-
Alternative 2	3.1	36.5	167.1	611.2	690.2	1508.2	-
Alternative 3	3.1	36.0	165.7	609.9	685.3	1500.0	0.5% decrease from ALT 2

4.2.1 Benefit-Cost Analysis

The Benefit-Cost Analysis is used to analyze the benefit to society from the crash reduction as compared to the cost the project has to society. The FDOT documents crash costs by type in the FDOT Design Manual Section 122, Table 122.6.2, FDOT KABCO Crash Costs. **Table 18** shows the crash cost comparison and savings between alternatives using FDOT crash cost and the outputs from the ISATe evaluation.

Associated costs by severity for the overall predictive crash totals for Alternative 3 decreased by 0.9% when comparing to Alternative 2. The number of total fatal crashes and suspected injury-related crashes for Alternative 3 showed an anticipated slight decrease.

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Table 18 | Crash Cost Comparison

Alternative	Crash Severity					Total	Total Percent Change
	K	A	B	C	O		
Alternative 1	\$ 34,436,067	\$22,855,826	\$28,373,741	64,374,062	\$5,491,640	\$155,531,337	-
Alternative 2	\$33,252,616	\$21,885,734	\$27,105,222	\$61,609,771	\$5,245,731	\$149,099,075	-
Alternative 3	\$32,541,797	\$21,591,765	\$26,882,353	\$61,476,041	\$5,208,482	\$147,700,436	0.9% decrease (cost savings) from ALT 2

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5.0 Other Considerations

5.1 Funding Plan and Schedule

The Original IJR and PD&E study were completed by FDOT District Three in August 2019. FDOT District Three initiated the design phase in February 2019 and the right-of-way phase in 2021 following the completion of the IJR and PD&E study. FDOT District Three selected the Design-Build firm for the construction of the interchange in June 2021. The interchange is currently scheduled for construction in Spring 2022 (FPID 407918-5) and estimated to be completed in early Spring 2025. **Table 19** summarizes the current funding schedule from FDOT Five Year Work Program (FY 2022 – 2026).

Table 19 | FDOT Five Year Work Program (FPID 407918-5)

Project Summary					
Transportation System: INTRASTATE INTERSTATE			District 03 - Okaloosa County		
Description: SR 8 (I-10) INTERCHANGE WEST OF CRESTVIEW					
Type of Work: INTERCHANGE (NEW)			View Scheduled Activities		
Item Number: 407918-5			SIS		
Length: 1.420			View Map of Item		
Construction Contract Information					
Notice to Proceed Date	Work Begun Date	Present Contract Days	Contract Days Used	Percent Days Used	
08/09/2021	08/09/2021	1291	96	7.44%	
Vendor Name: ANDERSON COLUMBIA CO., INC.					
Project Detail					
Fiscal Year:	2022	2023	2024	2025	2026
Highways/Preliminary Engineering					<i>(On-Going)</i>
Amount:	\$134,117				
Highways/Right of Way					<i>(On-Going)</i>
Amount:	\$5,094,793				
Highways/Railroad & Utilities					<i>(On-Going)</i>
Amount:	\$3,677,982				
Highways/Environmental					
Amount:	\$450,553				
Highways/Design Build					<i>(On-Going)</i>
Amount:	\$15,055,247				
Highways/Repayment					
Amount:			\$190,000	\$20,503,933	
Item Total:					
	\$24,412,692		\$190,000	\$20,503,933	

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5.2 Environmental Considerations

The Original IJR did not identify any major environmental impacts due to the new interchange. However, the National Environmental Policy Act (NEPA) re-evaluation is being developed concurrently with this IJR re-evaluation study where the proposed project to impact the social, cultural, natural, and physical environment will be documented.

5.3 Design Exceptions and Variations

The proposed Design-Build ties into the existing deficient vertical curves which do not meet FDOT design criteria. As the result, a design variation is anticipated for both the I-10 eastbound and westbound lanes on the east end of the project where the proposed Design-Build design ties into the I-10 mainline. Additionally, a spacing variation is required as was determined in the Original IJR.

5.4 Conceptual Signing Plan

The signing plans for Design-Build Alternative were developed in compliance with FDOT Design Standards and the 2009 MUTCD and are included in **Appendix H**. It should be noted that the signing plan only depicts new signing required for the operation of the proposed new interchange at PJ Adams Parkway. The existing signing is to remain within the rest of the limits of area of influence including SR 85 interchange and thus not shown in the signing plan.

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6.0 Compliance with FHWA General Requirements

This IJR re-evaluation documents the request for a new interchange on I-10 at PJ Adams Parkway (referred to as the I-10 at Antioch Road interchange). The Original IJR and PD&E study were completed by FDOT District Three in August 2019. FDOT District Three initiated the design phase in February 2019 and the right-of-way phase in 2021 following the completion of the IJR and PD&E study. FDOT District Three selected the Design-Build firm for the construction of the interchange in June 2021. The interchange is currently scheduled for construction in Spring 2022. The Design-Build team has proposed design modifications to the I-10 at Antioch Road IJR design concept and a re-evaluation of the IJR is required to demonstrate that the proposed concept performs equal to or better than the Original IJR concept.

It is in the national interest to preserve and enhance the Interstate System to meet the needs of the 21st Century by assuring that it provides the highest level of service in terms of safety and mobility. Full control of access along the interstate mainline and ramps, along with control of access on the crossroad at interchanges, is critical to providing such service. Therefore, FHWA's decision to approve new or revised access points to the Interstate System under Title 23, United States Code (U.S.C.), Section 111, must be supported by substantiated information justifying and documenting that decision. The FHWA's decision to approve a request is dependent on the proposal satisfying and documenting the following requirements.

6.1 FHWA Policy Point #1

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, 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)).*

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Response:

6.1.1 Operational Analysis Findings

A detailed traffic operational analysis was conducted for freeway segments, ramp merge/diverge locations and intersections within the AOI using HCS and Synchro software implementing HCM 2010 methodologies for the opening year (2024) and design year (2044) conditions. Consistent with the approved MLOU and Section 2.5, Alternative 1, Alternative 2, and Alternative 3 were included in this re-evaluation. As mentioned earlier in Section 2.5, Alternative 1 is same as the Original IJR concept. Alternatives 2 and 3 are the Original IJR concept and Design-Build concept, respectively, with the SW Bypass and East-West Connector projects in place and background design changes at PJ Adams Parkway and Arena Road and PJ Adams Parkway and Antioch Road intersections. The traffic operational analysis was performed for Alternative 2 and Alternative 3. Alternative 1 was provided as a reference because it does not include the SW Bypass and East-West Connector projects which will provide connection to north leg of the proposed I-10 at Antioch Road interchange. The performance of Alternative 3 was compared against Alternative 2. The following observations provide a brief summary of traffic operational results:

Freeway Segments:

- Since both the Original IJR Concept and the Design Build concept maintain the same number of lanes along freeway and at ramp merge/diverge locations, freeway analysis indicate that Alternative 2 and Alternative 3 are expected to operate at similar conditions with additional traffic from the SW Bypass and East-West Connector projects. I-10 freeway segments are anticipated to operate at LOS B or better in the 2024 and 2044 conditions in Alternatives 1, 2 and 3.

Ramp Junctions:

- The Original IJR indicates that the Alternative 1 expected to operate at LOS B or better in the 2024 and at LOS C or better 2044 conditions.
- Similarly, the Alternative 2 and 3 expected to operate at LOS B or better in the 2024 and at LOS C or better 2044 conditions with additional traffic from the SW Bypass and East-West Connector projects.
- Minor changes in ramp acceleration lane lengths in the Design-Build concept (Alternative 3) will maintain the same LOS as the Original Build concept (Alternative 2) and a minimal change in density with the exception of the I-10 at PJ Adams Parkway EB. The I-10 at PJ Adams Parkway EB is expected to operate at LOS B (with density at 10.6 pcpmpl) in Alternative 3 when compared to Alternative 2 expected to operate at LOS A (with density at 10.0 pcpmpl) in 2024 AM peak hour.

Intersections:

- All intersections are expected to operate at similar conditions in Alternatives 2 and 3.
- All intersections in Alternative 3 are expected to operate at similar or better delay and LOS as the operations in Alternative 1.

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- In the opening year, the intersections on PJ Adams Parkway operate at LOS B or better in Alternatives 2 and 3. Similarly, in the design year, the intersections on PJ Adams Parkway operate at LOS D or better.

PJ Adams Parkway Ramp Queue

- The I-10 eastbound and westbound off-ramps at PJ Adams Parkway intersections are expected to operate at similar conditions in Alternatives 2 and 3 and expected to accommodate 95th percentile queues and necessary deceleration distances for exiting traffic in both the Opening Year and Design Year.

6.1.2 Safety Analysis Findings

A quantitative analysis was completed to provide a comparison between the Alternative 2 and Alternative 3. The quantitative safety analysis was performed using the Enhanced Interchange Safety Analysis Tool (ISATe) consistent with approved MLOU and the Original IJR. The following observations provide a brief summary of safety operational results:

- Similar to Alternative 1, Alternative 2, and Alternative 3 show the majority of predicted crashes are single injury (C) and property damage only crashes.
- The overall facility predictive crash total for the Alternative 3 is expected to be slightly less than the Alternative 2 with additional traffic from the SW Bypass and East-West Connector projects. The difference between the two alternatives is 0.5%, with Alternative 3 experiencing less property damage crashes. Differences in predictive crash totals are due to varying factors such as ramp segment lengths, inside and outside barrier presence, segmentation of the freeway and associated AADTs and ramp terminals.
- Of the overall 1500 crashes expected to occur for Alternative 3 during the 20-year time span, approximately 69% of those crashes are anticipated to occur at the crossroad ramp terminals. The PJ Adams Parkway ramp terminals experienced a small increase in crashes in Alternative 3 compared to Alternative 2 due to design modifications such as the increased median width and its associated effect on protected left-turn operations, as well changes in channelized right turns.
- Associated costs by severity for the overall predictive crash totals for Alternative 3 decreased by 0.9% when comparing to Alternative 2. The number of total fatal crashes are expected to remain unchanged, while suspected injury-related crashes for Alternative 3 showed an anticipated slight decrease.

6.2 FHWA Policy Point #2

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 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*

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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.

Response:

I-10 is a public facility, and the proposed interchange will provide full access for all traffic movements. PJ Adams Parkway will be extended north to tie into I-10 approximately 0.25 miles east of where Antioch Road bridges over I-10. The SW Bypass is being constructed to tie into the PJ Adams Parkway extension and continue north to US 90. The proposed design connects PJ Adams Parkway south of the interstate and the SW Bypass north of the interstate by raising I-10 over PJ Adams Parkway. The interchange in the re-evaluation remains a tight diamond, consistent with the approved IJR, and provides full access for all movements.

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7.0 Conclusions and Recommendations

Based on the future traffic operations analysis and safety analysis, the Design-Build concept performs equal to or better than the Original IJR concept with Okaloosa County SW Bypass and East-West Connector traffic and design changes made at PJ Adams Parkway and Arena Road and PJ Adams Parkway and CR 4 (Antioch Road) intersections in the Design Year (2044). The Design-Build concept maintains similar traffic conditions, provides slightly better safety benefits when compared to the Original IJR concept and satisfies FHWA Policy Points. Therefore, the recommended finding is that the Design-Build concept is viable for construction.