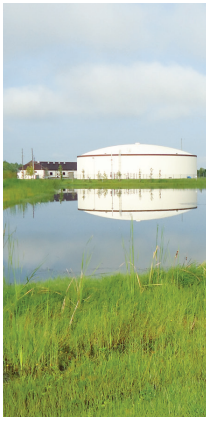
Interstate 75 & Overpass Road

Pasco County CIP No: 5020
FPID No: 432734-1

Preliminary Interchange Justification Report

August 2013



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Pasco County CIP Number: 5020

Financial Project ID: 432734-1

Prepared for: **Federal Highway Administration**

Prepared by: **Pasco County in coordination with the Florida Department of Transportation**

AUGUST 2013

Interchange Justification Report (IJR)

Interstate 75 and Overpass Road

Pasco County, Florida

FPID: 432734-1

Determination of Engineering and Operational Acceptability

Acceptance of this document indicates successful completion of the review and the Interchange Access Request is considered acceptable for engineering and operations. Approval is contingent upon compliance with applicable Federal requirements, specifically the National Environmental Policy Act (NEPA) or Department Project Development and Environment (PD&E) Procedures. Completion of the NEPA/PD&E process is considered acceptance of the general project location and concepts described in the environmental document.

Requestor

Michele Baker
County Administrator
Pasco County

Date

N/A

☒ *Expressway Authority*

[Type Name Here]
[Type Title Here]

Date

Interchange Review Coordinator

Waddah Farah
District Interchange Review Coordinator - Chairman
Florida Department of Transportation District Seven

Date

☒ *Other*

[Type Name Here]
[Type Title Here]
[Type Agency Here]

Date

State Interchange Review Coordinator

Statewide Interchange Access Management
Florida Department of Transportation Systems Planning Office

Date

☐ *Federal Highway Administration*

Chad Thompson
Program Operations Engineer
Federal Highway Administration

Date

PROFESSIONAL ENGINEERING CERTIFICATION

Interstate 75 and Overpass Road
Preliminary Interchange Justification Report
Financial Project ID: 432734-1
Pasco County, Florida

I, Domingo Noriega, Florida P.E. Number 42019, have prepared or reviewed/supervised the transportation analysis contained in this study. The study has been prepared in accordance with and following guidelines and methodologies consistent with FHWA and FDOT current policies and technical standards. Based on traffic count information, general data sources, and other pertinent information, I certify that this transportation study has been prepared using current and acceptable traffic engineering and transportation planning practices and procedures.

URS CORPORATION SOUTHERN

_____

Domingo Noriega, P.E. #42019

_____

Date

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LIST OF ACRONYMS

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
BOCC	Board of County Commissioners
BEBR	Bureau of Economic and Business Research
C-D	Collector-Distributor
CEI	Construction, Engineering and Inspection
CIP	Capital Improvement Project
CR	County Road
DDHV	Directional Design Hour Volume
DDI	Diverging Diamond Interchange
DIRC	District Seven Interchange Review Committee
DRI	Development of Regional Impact
ETAT	Environmental Technical Advisory Team
ETDM	Efficient Transportation Decision Making
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FLUCCS	Florida Land Use and Cover Classification System
F.S.	Florida Statutes
FSUTMS	Florida Standard Urban Transportation Modeling Structure
FY	Fiscal Year
GIS	Geographic Information System
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
HOV	High Occupancy Vehicle
IJR	Interchange Justification Report
L/A	Limited Access
LOS	Level of Service
LRTP	Long Range Transportation Plan

LIST OF ACRONYMS (CONTINUED)

MEV	Million Entering Vehicles
MLOU	Methodology Letter of Understanding
MOCF	Model Output Conversion Factor
MOT	Maintenance of Traffic
Mph	Miles per hour
MPO	Metropolitan Planning Organization
MPUD	Master Planned Unit Development
MUTCD	Manual on Uniform Traffic Control Devices
MVMT	Million Vehicle Miles Traveled
NBI	National Bridge Inventory
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PCP	Prestressed Concrete Piling
PCPMPL	Passenger Cars per Mile per Lane
PD&E	Project Development and Environment
PE	Preliminary Engineering
PHF	Peak Hour Factor
PIJR	Preliminary Interchange Justification Report
PSWADT	Peak Season Weekday Average Daily Traffic
ROW	Right-of-Way
SE	Socioeconomic
Sec/veh	Seconds per Vehicle
SHPO	State Historic Preservation Office
SIS	Strategic Intermodal System
SPUI	Single Point Urban Interchange
SR	State Road
SWFWMD	Southwest Florida Water Management District
TAZ	Traffic Analysis Zone
TBRPM	Tampa Bay Regional Planning Model
TWSC	Two-Way Stop Controlled
USDA SCS	United States Department of Agriculture Soil Conservation Service
USGS	United States Geological Survey
v/c Ratio	Volume-to-Capacity Ratio
VOPH	Villages of Pasadena Hills
Vpd	Vehicles per Day

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EXECUTIVE SUMMARY

The purpose of this Preliminary Interchange Justification Report (PIJR) is to document the potential benefits and impacts of a proposed interchange at Interstate 75 (I-75) and Overpass Road, located in the Wesley Chapel area of Pasco County, Florida between existing interchanges at I-75 and County Road (CR) 54 and at I-75 and State Road (SR) 52.

I-75 is a freeway designated on the Strategic Intermodal System (SIS), providing regional connectivity throughout the state of Florida, as well as access to the Hillsborough County and Pinellas County business districts via I-275. The proposed action will divert trips from the CR 54 and SR 52 interchanges with I-75 and facilitate mobility within Pasco County and the Tampa Bay region.

The Federal Highway Administration (FHWA) regulates the addition and modification of access points along the interstate system and, as such, has eight requirements that must be met before a new interchange is approved. The following summarizes how the proposed interchange at I-75 and Overpass Road will satisfy each requirement.

1 Existing system, even with reasonable improvements, is incapable of satisfactorily accommodating the design-year traffic demands…

The existing interchanges of I-75 with SR 56 and CR 54 within the area of influence have recently been improved (refer to Section 2.0 for details) and these improvements have been accounted for in the analysis conducted for the proposed interchange. In addition, the improvements programmed and/or planned within the Pasco County Metropolitan Planning Organization (MPO) 2035 Cost-Affordable Long Range Transportation Plan (LRTP) were also accounted for in preparation of the PIJR. Even with these improvements, the analysis for the No-Build Alternative shows that the adjacent I-75 interchanges are expected to operate below acceptable levels of service (LOS) with the Design Year (2040) projected traffic volumes, with excessive delays at ramp junctions and ramp terminal intersections, as well as along the I-75 mainline.

With the addition of the proposed interchange at Overpass Road (Build Alternative), traffic volumes are reduced at <u>each</u> of the CR 54 and SR 52 interchanges by approximately 13,000 vehicles per day (vpd) and delays at adjacent interchanges are significantly lower than the No-Build Alternative, with a greater reduction in delay occurring in the peak direction of travel (PM – northbound; AM-southbound). However, even with the addition of the proposed interchange at Overpass Road, the LOS at the adjacent interchanges is still projected to operate below acceptable standards. The reduction in delay for Design Year (2040) at the adjacent interchanges (SR 56, CR 54 and SR 52) are provided in Tables 5-17 and 5-20 of the PIJR and are summarized in the following table:

TABLE ES-1
DESIGN YEAR (2040) DELAY SUMMARY AT ADJACENT INTERCHANGES

Intersection	Control Type	AM Peak Delay (sec/veh)		PM Peak Delay (sec/veh)	
		No-Build	Build	No-Build	Build
I-75 northbound ramps at SR 56	Signalized	270.6	198.2	281.4	262.1
I-75 southbound ramps at SR 56	Signalized	257.3	217.7	169.8	145.9
I-75 northbound ramps at CR 54	Signalized	173.7	114.0	154.9	120.2
I-75 southbound ramps at CR 54	Signalized	344.8	210.3	182.4	171.5
I-75 northbound ramps at SR 52	Signalized	373.0	102.5	491.4	140.4
I-75 southbound ramps at SR 52	Signalized	408.1	244.1	317.4	235.4

Note that further improvements in the study area have been determined through the LRTP process to be not feasible due to land use/environmental constraints and/or non-consistency with County policies. As such, it has been determined through development of the Pasco County MPO LRTP and the current analysis presented in the PIJR that all reasonable improvements have been explored and will not satisfactorily accommodate the design-year traffic demands served by the proposed interchange.

2 All reasonable alternatives to a new interchange have been considered including ramp metering, mass transit, and High Occupancy Vehicles (HOV) facilities…

Non-traditional transportation modes and Transportation System Management strategies, such as ramp metering, Travel Demand Management and Mass Transit were considered as part of the Pasco County LRTP process and determined to be not sufficient to meet the travel demands that will be addressed by the proposed Overpass Road interchange. The recommended interchange design is intended to not preclude future implementation of any of these options nor does it preclude the implementation of other options such as managed lanes. The Build Alternative which includes five interchange configurations and the No-Build Alternative are evaluated in this PIJR.

3 The proposal does not have a significant adverse impact on the operations and safety of the Interstate facility or on the local street network based on both the current and future traffic projections…

The proposed interchange geometry and spacing between adjacent interchanges exceeds design guidelines established by FHWA and the Florida Department of Transportation (FDOT). As seen in the capacity analysis included in the PIJR, future traffic volumes and resulting vehicle delays and congestion will decrease at adjacent interchanges (CR 54 and SR 52) as a result of the proposed interchange (see response to FHWA Policy Requirement #1). The LOS on the mainline does not change between the No-Build and Build Alternatives in the peak direction of travel for the Design Year (2040), with the LOS remaining at F and densities greater than 45.0 passenger cars per mile per lane (pcpmpl). In the off-peak direction of travel, the LOS is generally also consistent between the No-Build and Build Alternatives, with the exception of the freeway segment north of SR 52. At this location, while the LOS on the mainline is D (33.2 pcpmpl) for the No-Build Alternative and E (35.9 pcpmpl) for the Build Alternative, the increase in

density is minimal at 2.7 pcpmpl. The mainline LOS results for the No-Build and Build Alternatives are provided in Tables 5-15 and 5-18 of the PIJR, respectively. It is important to note that with or without the proposed interchange at Overpass Road, the FDOT SIS Plan indicates that additional lanes (beyond six lanes) will be needed on I-75 in the future. As such, FDOT District Seven will be further evaluating improvements to address the mainline deficiencies outside of the PIJR.

In terms of safety, both vehicular delays (as summarized under Policy Requirement 1) and queue lengths at the adjacent interchanges of CR 54 and SR 52 are shown to significantly decrease. In the p.m. peak direction of travel for the Design Year (2040), the operational analysis indicates that the back of queue at the CR 54 northbound ramp terminal intersection reduces from 125 vehicles under the No-Build Alternative to 64.3 vehicles with the proposed Overpass Road interchange. Similarly, the back of queue at the SR 52 northbound ramp terminal intersection reduces from 138 vehicles under the No-Build Alternative to 89.9 vehicles under the Build Alternative. Hence, the potential for accidents due to queue spillback from the adjacent ramp terminal intersections onto I-75 are decreased.

Furthermore, the addition of the proposed interchange will enhance incident management capabilities by providing additional detour route options and enhance emergency management capabilities by providing additional access to I-75, one of the state's primary evacuation routes. While incident/emergency management capabilities are not the primary purpose or need for the project, they are a tertiary need and logical benefit realized through improved mobility, roadway connectivity and access to the interstate system.

4 A full interchange with all traffic movements connecting to a public road is provided…

All of the Build Alternatives evaluated in this PIJR provide a full interchange with all traffic movements connecting to Overpass Road, which is a County roadway.

5 The proposal considers and is consistent with local and regional land use and transportation plans…

This project is identified in the *Pasco County MPO 2035 Cost-Affordable LRTP* as a 2015-2025 roadway improvement, as well as the County's list of Capital Improvement Projects (CIP) with funding identified for the Interchange Justification Report (IJR) and the Project Development and Environment (PD&E) Study for Overpass Road.

6 Consistency with long-range systems or network plans…

The proposed interchange is identified as a cost-affordable improvement in the Pasco County MPO 2035 LRTP.

7 Coordinated with the area's development…

Approved and planned developments in the area have been integrated into the travel demand forecasting for the PIJR. The proposed interchange has previously been shown as a needed improvement as part of the Pasadena Hills Area Plan and other Development of Regional Impact (DRI) and Master Planned Unit Development (MPUD) projects and is expected to improve access to these land uses and the Wesley Chapel area of Pasco County. The project is also consistent with the adopted Pasco County Comprehensive Plan.

8 Request can be expected to be included as an alternative in the required environmental evaluation, review, and processing…

A preliminary environmental evaluation including potential physical, natural, cultural and social/economic impacts for all proposed interchange alternatives and roadway alternatives for Overpass Road to US 301 has been conducted as part of the Overpass Road PD&E Study (which began in February 2012) and an Alternatives Public Workshop was held on November 29, 2012. Based upon the preliminary environmental evaluation and public input received at the workshop, the Pasco County Board of County Commissioners has approved a recommended interchange and roadway alternative for further study in the environmental documents, contingent on FHWA determination of engineering and operational acceptability of the proposed access documented in the PIJR. Any environmental impacts for the proposed interchange will be fully evaluated and documented during the PD&E Study following all procedures and requirements of the National Environmental Policy Act (NEPA). Completion of the PD&E Study is anticipated late 2014.

Guidelines and study parameters established in the Methodology Letter of Understanding (MLOU) signed by the participating jurisdictions were followed in the preparation of this PIJR. A copy of the approved MLOU is provided in Appendix A.

All of the Build Alternatives developed provide acceptable LOS at the new interchange with the proposed geometry for each alternative. The Flyover Ramp Alternative configuration is recommended based on the following key justifications:

- It minimizes conflict points and provides the best traffic operations at the proposed interchange among all the configurations.
- It addresses the safety concern associated with the heavy westbound to southbound traffic by providing grade separation for that movement. This movement would otherwise require trip left-turn lanes.
- The Flyover Ramp Alternative provides an uninterrupted flow for the predominant left-turn movement and improves the LOS of the ramp terminal intersections at the interchange by removing a large volume of traffic.

Based on results of the analysis, it is proposed that the interchange be stage-constructed, with an initial phase consisting of a diamond interchange with dual left-turn lanes serving the westbound to southbound movement. The flyover ramp will be constructed when the westbound-to-southbound movement LOS begins to deteriorate below acceptable standards. All required right-of-way (ROW) for the Flyover Ramp Alternative will be acquired and the project will be designed such that the flyover ramp can be constructed with no additional ROW needs and without affecting any other ramp configurations.

Section 1.0
INTRODUCTION

1.1 BACKGROUND

Pasco County, Florida proposes to construct a new interchange on I-75 at Overpass Road, located in the Wesley Chapel area of Pasco County between existing interchanges at I-75 and CR 54 and at I-75 and SR 52. This PIJR has been initiated by Pasco County in collaboration with the FHWA, the FDOT Office of Systems Planning (i.e., the Central Office), and the FDOT District Seven Interchange Review Committee (DIRC). The purpose of this PIJR is to study and document the potential benefits and impacts of the proposed new interchange and to provide sufficient information to determine the justification of the interchange in accordance with federal requirements. This PIJR will also document the traffic operations in the project study area for existing conditions and future conditions under the Build and No-Build scenarios. Currently, Overpass Road exists as an overpass at I-75 and, as such, has no access to the interstate system.

Figure 1-1 shows the project study area which includes I-75 from SR 56 to SR 52 inclusive of the interchanges at SR 56, CR 54, and SR 52, as well as Overpass Road between Old Pasco Road and Boyette Road. **Figure 1-2** shows the Overpass Road extension corridor as proposed by Pasco County.

1.2 NEED FOR THE PROJECT

The large amount of population growth experienced in Pasco County, particularly in the Wesley Chapel area, has resulted in increased traffic volumes and congestion at the interchanges of I-75 with SR 56, CR 54, and SR 52. The U.S. Census data indicates that population growth in Pasco County was 34.8 percent (or approximately 120,000 new residents) between 2000 and 2010. In addition, numerous developments have been approved within the east central area of Pasco County and are in various stages of planning and construction. For example, in 2008, Pasco County approved a Comprehensive Plan Amendment for Pasadena Hills (Pasadena Hills Area Plan) consisting of 20,000 acres in east central Pasco County. Specific new land uses approved in the amendment include 41,987 residential units; 2.26 million non-residential square feet; and 500,000 square feet of office development.

FIGURE 1-1
PROJECT LOCATION AND AREA OF INFLUENCE

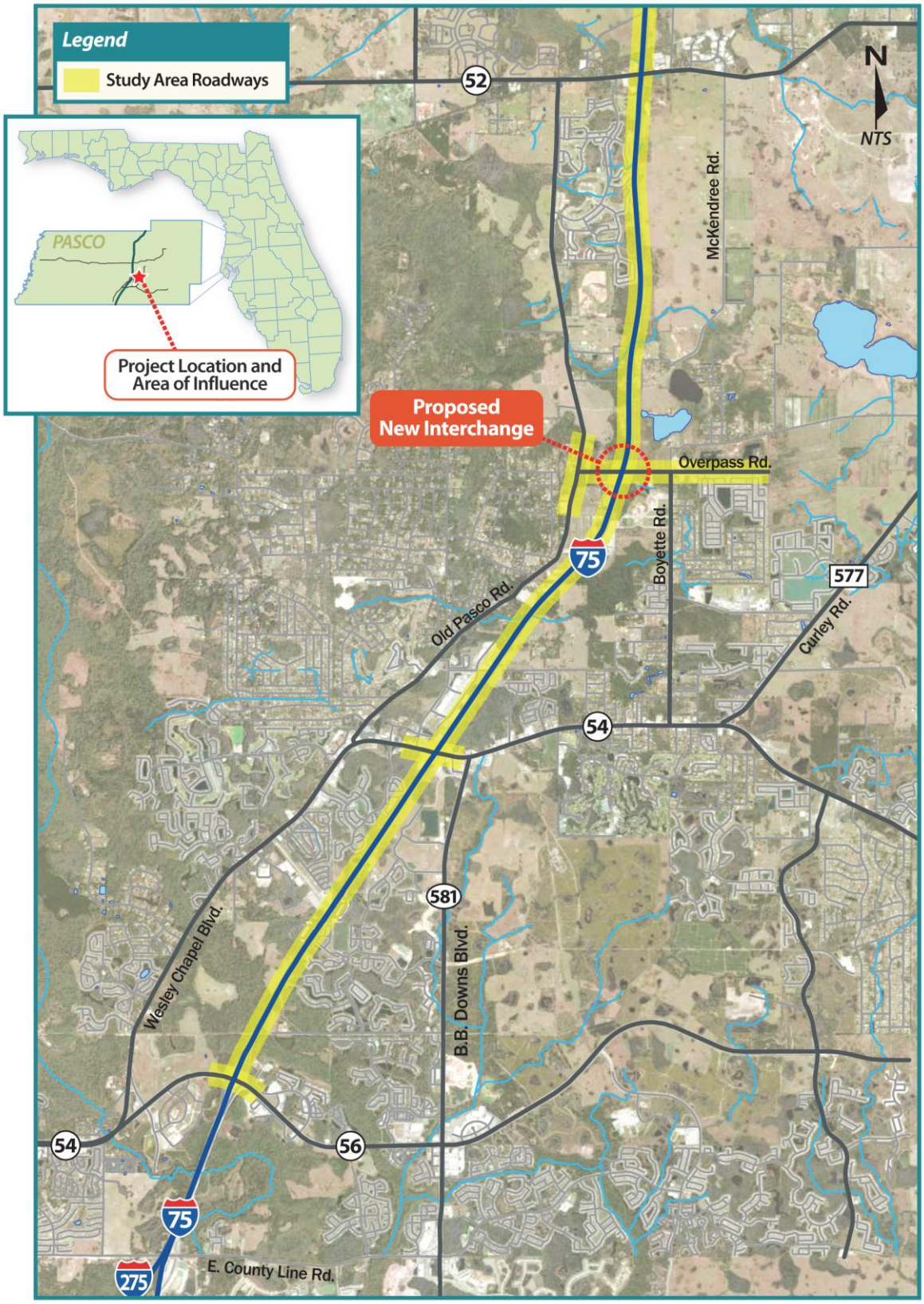
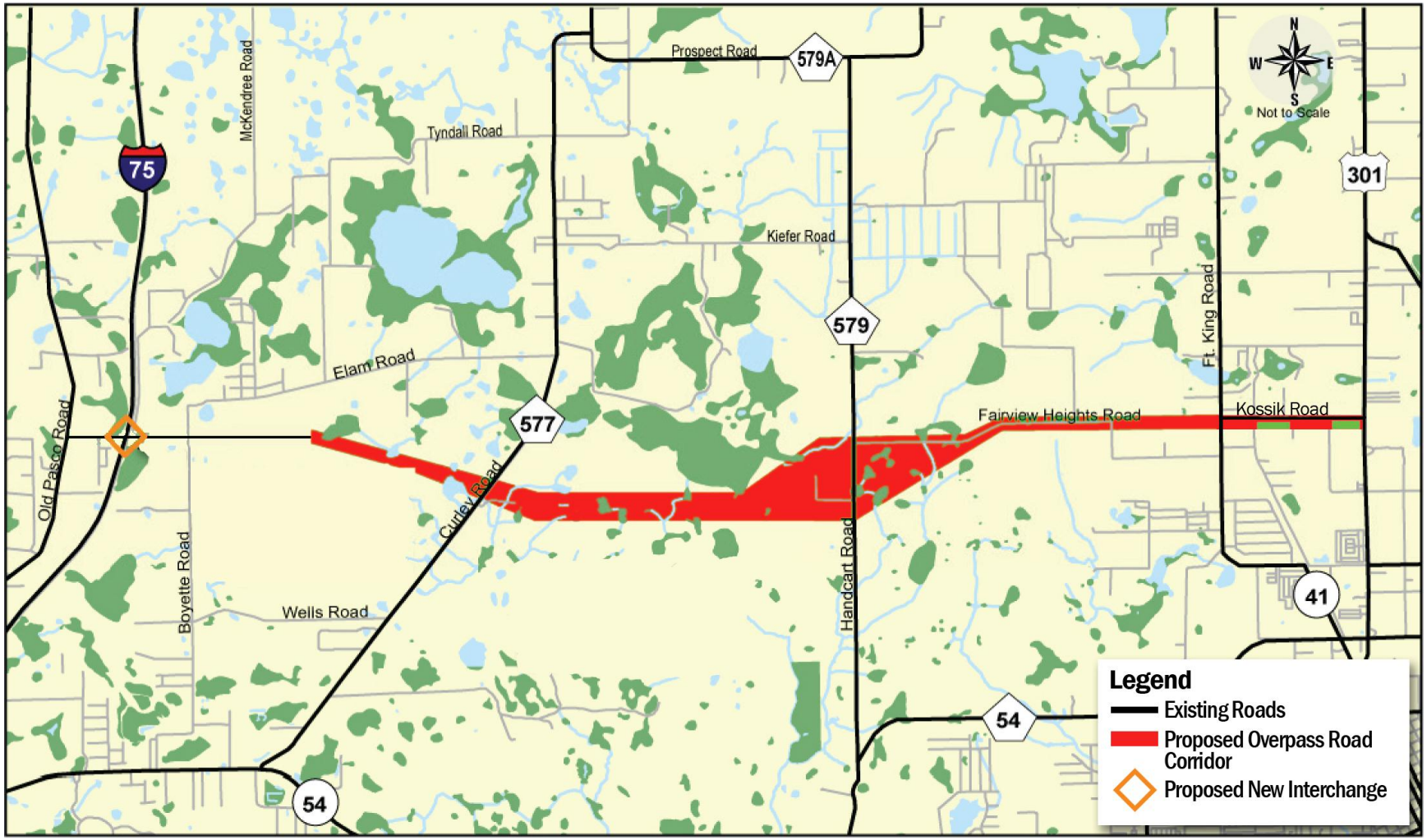


FIGURE 1-2
OVERPASS ROAD EXTENSION CORRIDOR



The impact of these developments is reflected in the projected increases in population, employment, and the number of dwelling units in the general area. A ZDATA comparison between the 2006 and 2035 *Tampa Bay Regional Planning Model (TBRPM)* for DRI and MPUD projects in the surrounding area of this study area indicates that the population in these traffic analysis zones (TAZs) is projected to grow from 53,000 in the year 2006 to 218,000 in the year 2035, with an estimated growth of 400 percent between 2006 and 2035.

The dramatic increases in population and employment projected to occur over the next 25 years in east central Pasco County will result in significant increases in traffic volumes throughout the area. The existing interchanges located at I-75/SR 56, I-75/CR 54, and I-75/SR 52 are already experiencing congestion and are not expected to be able to effectively serve the future vehicular demand entering or exiting I-75 in the project study area. The need for improved access in the Wesley Chapel area has been recognized by Pasco County and the proposed interchange at I-75 and Overpass Road is included in the MPO's adopted *2035 Cost-Affordable LRTP* and *2035 Needs Plan.*

The project was screened through the Efficient Transportation Decision Making (ETDM) Process in 2008 as a Programming Screen. As agreed to in the approved MLOU, the *Programming Screen Summary Report*, prepared as a result of the screening event, was utilized as a reference in the preparation of this PIJR. Note that the ETDM Process consists of environmental, social, and cultural issues and will, therefore, be referenced at the appropriate stage of the PD&E Study process.

1.3 METHODOLOGY

An MLOU between the FHWA, FDOT, and Pasco County was approved in August of 2010. A copy of the MLOU is provided in Appendix A. All the analysis procedures and techniques utilized in the preparation of this PIJR are documented in the MLOU. This PIJR study has been conducted in accordance with FDOT and FHWA's recommended format and has specifically addressed each of the following eight federal requirements, summarized from the *Federal Register* dated August 27, 2009:

1. Existing system, even with reasonable improvements, is incapable of satisfactorily accommodating the design year traffic demands…

2. All reasonable alternatives to a new interchange have been considered including ramp metering, mass transit, and HOV facilities…

3. The proposal does not have a significant adverse impact on the operations and safety of the Interstate facility or on the local street network based on both the current and future traffic projections…

4. A full interchange with all traffic movements connecting to a public road is provided…

5. The proposal considers and is consistent with local and regional land use and transportation plans…

6. Consistency with long-range systems or network plans…

7. Coordinated with the area's development…

8. Request can be expected to be included as an alternative in the required environmental evaluation, review, and processing…

The analysis years for this study are as follows:

- Existing Year: 2010
- Opening Year: 2022
- Interim Year: 2030
- Design Year: 2040[1]

Traffic operations analyses for the a.m. and p.m. peak hours were conducted to document the existing LOS within the IJR study area. The existing conditions analysis was performed based on the latest version of the *Highway Capacity Manual* (HCM) using *Highway Capacity Software* (HCS+, which is based on the HCM 2000 edition) and includes all ramp merge/diverge areas, signalized ramp terminal intersections, major intersections, and interstate mainline segments in the project study area. The I-75 freeway facility from SR 56 to SR 52 was analyzed using FDOT's FREEPLAN program.

As specified in the MLOU, the following LOS standards have been used for the state-designated study area roadways:

- I-75: South of CR 54 = LOS D; North of CR 54 = LOS C
- SR 56: LOS D
- CR 54/SR 54: LOS D
- SR 52: LOS D

All other County/local roadways analyzed utilized the County standard, which in all cases for the proposed project is LOS D. Signalized intersections analyzed utilized the most conservative LOS standard applicable to each road at the intersection, whether it is LOS C or D.

[1] Typically, the Design Year is 20 years from the Opening Year. Given the uncertainty in projecting traffic more than 5 years over the travel demand horizon year (2035) it was decided to keep the Design Year to 2040 (i.e., 18 years from the Opening Year).

1.4 INTERCHANGE SPACING

The distance between the I-75/SR 56 interchange and the I-75/CR 54 interchange is approximately 3.469 miles measured from crossroad to crossroad. The distance between the I-75/CR 54 interchange and the I-75/SR 52 interchange is approximately 6.625 miles. The existing interchange spacing is illustrated in **Figure 1-3**. The location of the proposed I-75/Overpass Road interchange is approximately 3.043 miles north of the I-75/CR 54 interchange and approximately 3.582 miles south of the I-75/SR 52 interchange. The interchange spacing with the proposed interchange is illustrated in **Figure 1-4**.

The American Association of State Highway and Transportation Officials (AASHTO) recommends a minimum interchange spacing of 3.0 miles in rural areas and 1.0 mile in urban areas. Also, FDOT [Florida Statutes (F.S.) 14-97.003(1)] recommends a minimum spacing of 2.0 miles for urbanized areas and 3.0 miles for those areas transitioning into urbanized areas. The Overpass Road proposed interchange with I-75 is in a transitioning area. Therefore, the proposed interchange meets the recommended spacing criteria.

FIGURE 1-3
EXISTING INTERCHANGE SPACING

FIGURE 1-4
PROPOSED INTERCHANGE SPACING

Section 2.0
EXISTING CONDITIONS

The project study area roadway network, data collection, and existing conditions analysis are documented in this section. This section also includes discussion of other interchange and roadway improvements in the vicinity of the proposed interchange.

2.1 EXISTING TRANSPORTATION NETWORK

The project study area for the IJR includes the following roadways:

- I-75 from just south of SR 56 to just north of SR 52;
- Overpass Road from Old Pasco Road to its current terminus approximately 0.86 miles east of Boyette Road;
- I-75 interchanges with SR 56, CR 54, and SR 52; and
- Overpass Road Extension from its current terminus approximately 0.86 miles east of Boyette Road to Curley Road and from Curley Road to US 301[2].

I-75 is currently a four- and six-lane freeway designated on the SIS with a posted speed limit of 70 miles per hour (mph) within the project study area. From ***south of the I-75/I-275 apex to SR 56***, improvements were recently constructed so that the northbound exit ramps from both I-75 and I-275 to SR 56 are separated from the mainline forming a Collector-Distributor (C-D) system. At the I-75/I-275 apex, northbound I-75 consists of three lanes from I-75 and two lanes from I-275 to form a five-lane section which tapers back to four lanes just before the northbound on-ramp merge from SR 56. With this configuration, the traffic exiting northbound I-275 or I-75 to SR 56 is separated from mainline traffic to eliminate the need for lane changes. In the southbound direction, four lanes from I-75 and two lanes from the SR 56 southbound on-ramp combine to form a six-lane section. From ***SR 56 to just north of SR 52***, I-75 is currently a four-lane freeway with two mainline lanes provided in each direction.

In addition, note that the project from ***south of SR 56 to north of CR 54 (FDOT Financial Project Number 408459-4)*** is programmed in the current FDOT Five-Year Work Program and is currently under construction. This project widens I-75 between SR 56 and CR 54 to four lanes in each direction. The mainline will have three northbound lanes through the CR 54 interchange and will taper back to two lanes approximately 500 feet north of CR 54. In the southbound direction, I-75 will be widened to three lanes beginning 500 feet north of CR 54 and will pick up a lane from the CR 54 southbound on-ramp to form a four-lane section. This project is

[2] A travel demand sensitivity analysis was performed as part of the PIJR process to assess logical termini for the Overpass Road extension in terms of connecting to major traffic generators and providing sufficient vehicular demand to investigate the justification of the new interchange in accordance with Part 2, Chapter 4 of the PD&E Manual.

anticipated to be complete in 2013 and was considered as part of the existing plus programmed network that was used in the existing conditions analysis.

Since the previous submittal of the PIJR (Draft Final), two I-75 Design-Build projects have been advanced into the FDOT Five-Year Work Program. The first segment, ***I-75 from North of SR 54/CR 54 to North of SR 52 (FDOT Financial Project Number 258736-2)***, is programmed to be widened to six lanes with a letting date of July 2013. As this improvement was not programmed for construction in the FDOT Five-Year Work Program at the time that the MLOU for the PIJR was approved, six lanes have not been included in the existing plus programmed network used in the existing conditions analysis. However, the widening has been assumed in the analyses conducted for the Opening Year (2022), Interim Year (2030) and Design Year (2040). The second segment, ***I-75 from North of SR 52 to the Pasco/Hernando County Line (FDOT Financial Project Number 411014-2)***, is programmed to be widened to six lanes with a letting date of October 2013. This segment of I-75 is located north of the PIJR study area; therefore, it is being cited for informational purposes only.

There are currently three interchanges located along I-75 within the project study area as described below:

- The ***SR 56 and I-75 interchange*** (Mile Post 1.6) is a diamond interchange with dual-lane ramps to/from the south and single-lane ramps to/from the north. Both ramp terminal intersections are signalized. As described above, the northbound off-ramp has been separated from the interstate mainline with construction of the new C-D system improvements.

- The ***CR 54 and I-75 interchange*** (Mile Post 5.1) is a diamond interchange with a dual-lane northbound off-ramp and single-lane ramps for the northbound on-ramp, southbound on-ramp, and southbound off-ramp movements. Both ramp terminal intersections are signalized.

- The ***SR 52 and I-75 interchange*** (Mile Post 11.7) is a diamond interchange with single-lane ramps in all four quadrants. Both ramp terminal intersections are signalized.

SR 56 is a six-lane divided arterial within the project study area from the intersection of SR 54 at CR 54 to SR 581/Bruce B. Downs Boulevard except between the I-75 ramp terminal intersections, where four through lanes are provided. The posted speed limit for SR 56 is 55 mph.

CR 54/SR 54 is a six-lane divided arterial within the project study area from west of I-75 to east of Curley Road. The posted speed limit on CR 54 near the I-75 interchange is 45 mph. An additional receiving lane is provided in the eastbound direction to accommodate the free-flow right turns from the I-75 northbound off-ramp.

SR 52 is a two-lane undivided arterial within the project study area. Two through lanes are provided in the westbound direction from the eastern access driveway of the Flying J Truck Stop

to west of the southbound I-75 ramp terminal intersection to receive traffic from two left-turn lanes on the northbound I-75 off-ramp. The posted speed limit on SR 52 near the I-75 interchange is 45 mph.

Overpass Road is an east/west corridor that extends from Old Pasco Road to approximately 0.86 miles east of Boyette Road. It is currently a two-lane undivided roadway from Old Pasco Road to Boyette Road and a four-lane roadway from Boyette Road to the eastern boundary of the Palm Cove development at Atwood Drive. It is located between SR 52 and CR 54/SR 54 and traverses over I-75 without ramp connections to the interstate. The posted speed limit on Overpass Road is 30 mph west of Boyette Road and 45 mph east of Boyette Road. Within the *Pasco County MPO 2035 Cost-Affordable LRTP*, this road is planned to be extended to US 301.

Old Pasco Road is a north/south corridor that extends from CR 54 to SR 52. It is currently a two-lane undivided roadway with a speed limit of 35 mph northbound and 30 mph southbound in the vicinity of Overpass Road. There are no paved shoulders or sidewalks along Old Pasco Road.

Boyette Road is a north/south corridor that extends from SR 54 to Overpass Road and becomes Elam Road north of Overpass Road. It is currently a two-lane, undivided roadway with a speed limit of 35 mph northbound and 45 mph southbound in the vicinity of Overpass Road. There are paved shoulders and a sidewalk on the east side.

The existing (2010) plus programmed improvements geometry for the project study area is illustrated in **Figure 2-1**.

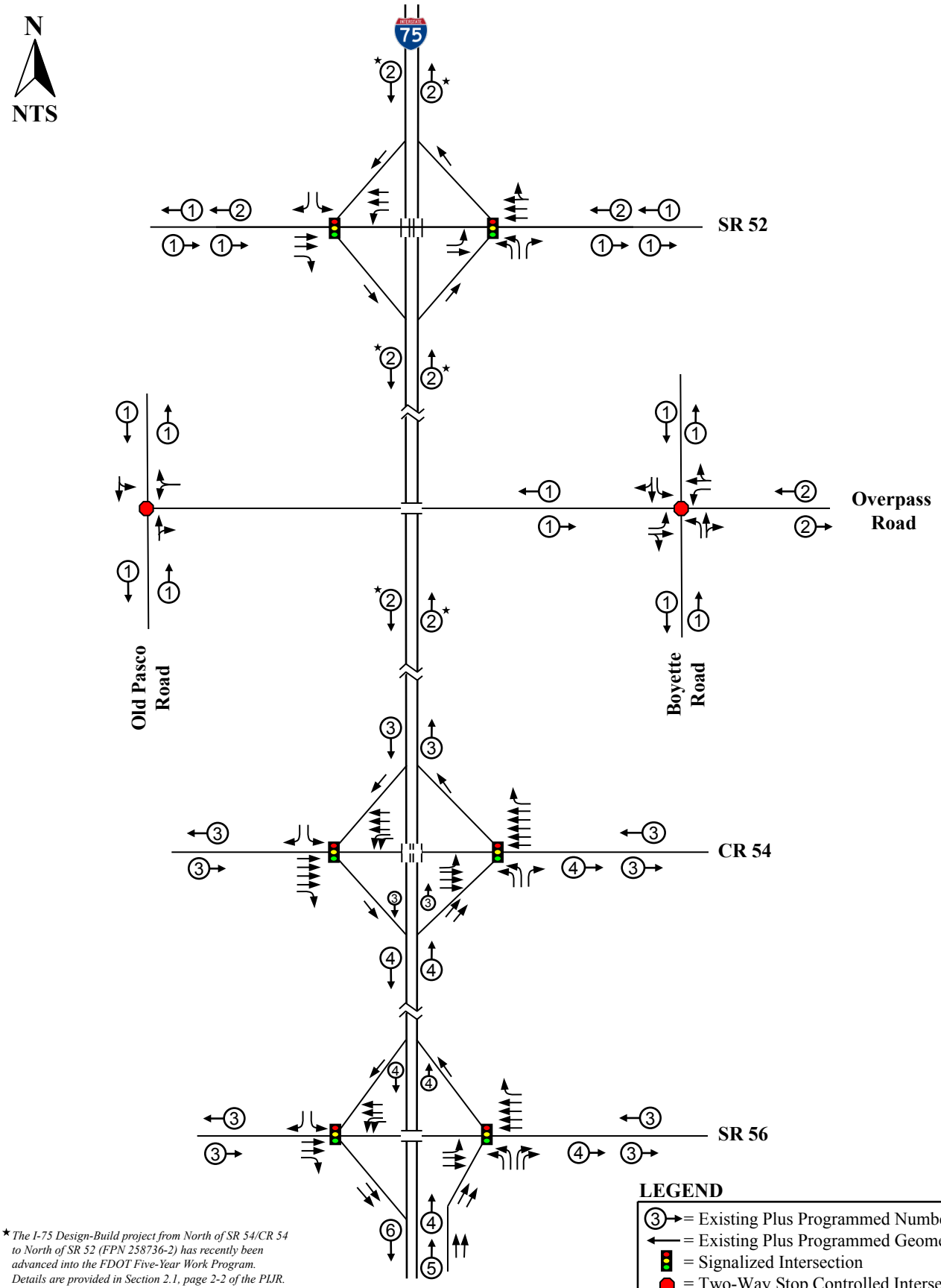
2.2 EXISTING ROADWAY CHARACTERISTICS

Existing roadway characteristics such as geometrics, speeds, and ROW information was obtained from field review and data collection. Specific roadway characteristics are described in this section.

2.2.1 FUNCTIONAL CLASSIFICATION

The current functional classification for Overpass Road is a two-lane, undivided collector between Old Pasco Road and Boyette Road and a four-lane, divided collector east of Boyette Road to the existing terminus. The posted speed limit is 30 mph between Old Pasco Road and Boyette Road and 45 mph east of Boyette Road. The roadway currently serves mostly local trips.

Overpass Road is included in the Pasco County Comprehensive Plan's *Highway Vision Plan Map* (future network) with a functional classification of arterial from Old Pasco Road to US 301. Additionally, the roadway is included in the *Pasco County MPO 2035 Cost-Affordable LRTP* as a four-lane, divided arterial in the 2016-2020 timeframe. Therefore, Overpass Road is considered part of the County's future regional network and will serve both regional and local trips.



★ *The I-75 Design-Build project from North of SR 54/CR 54 to North of SR 52 (FPN 258736-2) has recently been advanced into the FDOT Five-Year Work Program. Details are provided in Section 2.1, page 2-2 of the PIJR.*

I-75 and Overpass Road Preliminary Interchange Justification Report	Existing (2010) Plus Programmed Improvements Geometry	Figure 2-1

2.2.2 TYPICAL SECTION

Overpass Road is a rural section west of Boyette Road and an urban section east of Boyette Road. The existing typical section for the rural section consists of two 11-foot lanes (one in each direction) with unpaved shoulders and no curb and gutter. Intermittent swales exist on both sides of the roadway to handle stormwater runoff.

The existing typical section for the urban section consists of four 12-foot lanes (two in each direction) and a 20-foot median with paved shoulders and raised curb and gutter on both sides of the roadway. Photographs showing the typical sections are shown in **Figures 2-2 and 2-3**.

2.2.3 PEDESTRIAN AND BICYCLE FACILITIES

A 10-foot-wide multi-use pathway (see **Figure 2-4A**) exists along the south side of Overpass Road from Boyette Road to the eastern terminus (0.86 miles from Boyette Road). There is a marked pedestrian crossing (see **Figure 2-4B**) for Boyette Road on the south side at the Overpass Road and Boyette Road intersection. Also, there is a 5-foot paved shoulder on the north side along Overpass Road, east of Boyette Road. There are no accommodations for pedestrians or bicyclists along Overpass Road west of Boyette Road.

A conceptual multi-use trail along Overpass Road is included within the *Pasco County MPO 2035 Cost-Affordable LRTP* under multi-use trail improvements.

2.2.4 RIGHT-OF-WAY

The existing ROW width varies from 50 to 60 feet between Old Pasco Road and Boyette Road and is approximately 130 feet from Boyette Road to the eastern terminus.

2.2.5 DRAINAGE

Stormwater runoff within the project study area currently sheet flows off the existing roadway between Old Pasco Road and Boyette Road. Existing drainage patterns show contributions to wetlands and low-lying areas from sheet flow over grassed areas and small streams. Also, there are existing inlets along Overpass Road from Boyette Road to the eastern terminus.

2.2.6 FLOODPLAINS

The Flood Insurance Rate Map (FIRM) for unincorporated areas of Pasco County, published by the Federal Emergency Management Agency (FEMA), was reviewed to determine the location of the floodplains within the project study area. This map shows that the project study area is within Zone X. These areas are determined to be outside the 100- and 500-year floodplain; therefore, there are no floodplain impacts within the project corridor.

FIGURE 2-2
OVERPASS ROAD EXISTING TYPICAL SECTION WEST OF BOYETTE ROAD (LOOKING WEST)

FIGURE 2-3
OVERPASS ROAD EXISTING TYPICAL SECTION EAST OF BOYETTE ROAD (LOOKING EAST)

FIGURE 2-4A
PEDESTRIAN FACILITIES ON OVERPASS ROAD EAST OF BOYETTE ROAD
(LOOKING EAST)

FIGURE 2-4B
PEDESTRIAN CROSSING ON OVERPASS ROAD AND BOYETTE ROAD INTERSECTION
(LOOKING WEST)

2.2.7 INTERSECTIONS AND SIGNALIZATION

There are no signalized intersections along Overpass Road within the project study area. Both the intersections of Overpass Road with Old Pasco Road and Boyette Road are unsignalized. Stop signs are provided for Overpass Road at both the intersections.

2.2.8 LIGHTING

There is currently no roadway lighting along Overpass Road. There are electric utility poles located on the south side of Overpass Road from Old Pasco Road to Boyette Road and the north side of Overpass Road from Boyette Road to the eastern terminus of Overpass Road.

2.2.9 RAILROAD CROSSINGS

There are no railroads located within the project study area.

2.2.10 UTILITIES

Preliminary investigation has revealed that the following utility companies have or propose facilities within the project study limits:

- Pasco County Public Utilities,
- Peoples Gas Tampa,
- Verizon Communications,
- Withlacoochee Electric Cooperative, and
- Progress Energy.

2.3 PAVEMENT CONDITIONS

Overpass Road is paved throughout the project study limits. The pavement condition is considered good between Old Pasco Road and Boyette Road, although some lane rutting is present. The pavement condition is excellent from Boyette Road to the eastern terminus (0.86 miles east of Boyette Road).

2.4 TRAFFIC DATA COLLECTION

Traffic data collection was conducted during March 2010. The daily counts were conducted for 72 hours and peak hour turning movement counts were conducted from 7:00 to 9:00 a.m. and from 4:00 to 6:00 p.m. for the morning and evening peak hours, respectively. Turning movement counts were conducted during the same days as the link approach counts. To obtain typical weekday traffic, counts were conducted Tuesday through Thursday. Traffic count

information is provided in Appendix B. Traffic counts were conducted for the following locations:

72-Hour Link Counts:

- I-75 between SR 52 and CR 54,
- I-75 between CR 54 and SR 56,
- I-75 and SR 56 (all four ramps),
- I-75 and CR 54 (all four ramps),
- I-75 and SR 52 (all four ramps),
- Old Pasco Road just north and south of Overpass Road,
- Overpass Road west and east of I-75,
- SR 56 west and east of I-75,
- CR 54/SR 54 west and east of I-75,
- SR 52 west and east of I-75, and
- Boyette Road just north and south of Overpass Road.

Peak Hour Turning Movement Counts:

- Overpass Road at Old Pasco Road,
- Overpass Road at Boyette Road,
- I-75 at SR 52 (both ramp terminal intersections),
- I-75 at CR 54 (both ramp terminal intersections), and
- I-75 at SR 56 (both ramp terminal intersections).

The signal timing and phasing data for all of the signalized intersections in the project study area were obtained from Pasco County. This data is provided in Appendix B and was used in the existing conditions intersection analysis.

2.5 DESIGN TRAFFIC FACTORS

Traffic factors to be used in development of design hour traffic were established based upon historical traffic factors in the project study area. These factors include the K_{30} and D_{30} factors. These factors represent the percentage of daily traffic volume occurring during the peak hour and

the proportion of traffic traveling in the peak direction during the 30th highest hour of the year, respectively, and represent the amount of traffic demand that a roadway is typically designed to accommodate. Based upon the historic data and discussions held during the MLOU meeting, it was agreed that the analyses be conducted using a uniform set of K and D factors, as follows:

- K_{30} factor = 9.4 percent
- D_{30} factor = 55.0/45.0 percent for the peak/off-peak direction

These factors have been used to develop the Directional Design Hour Volumes (DDHVs) from the existing Annual Average Daily Traffic (AADT) and to develop the future DDHVs from model derived AADTs.

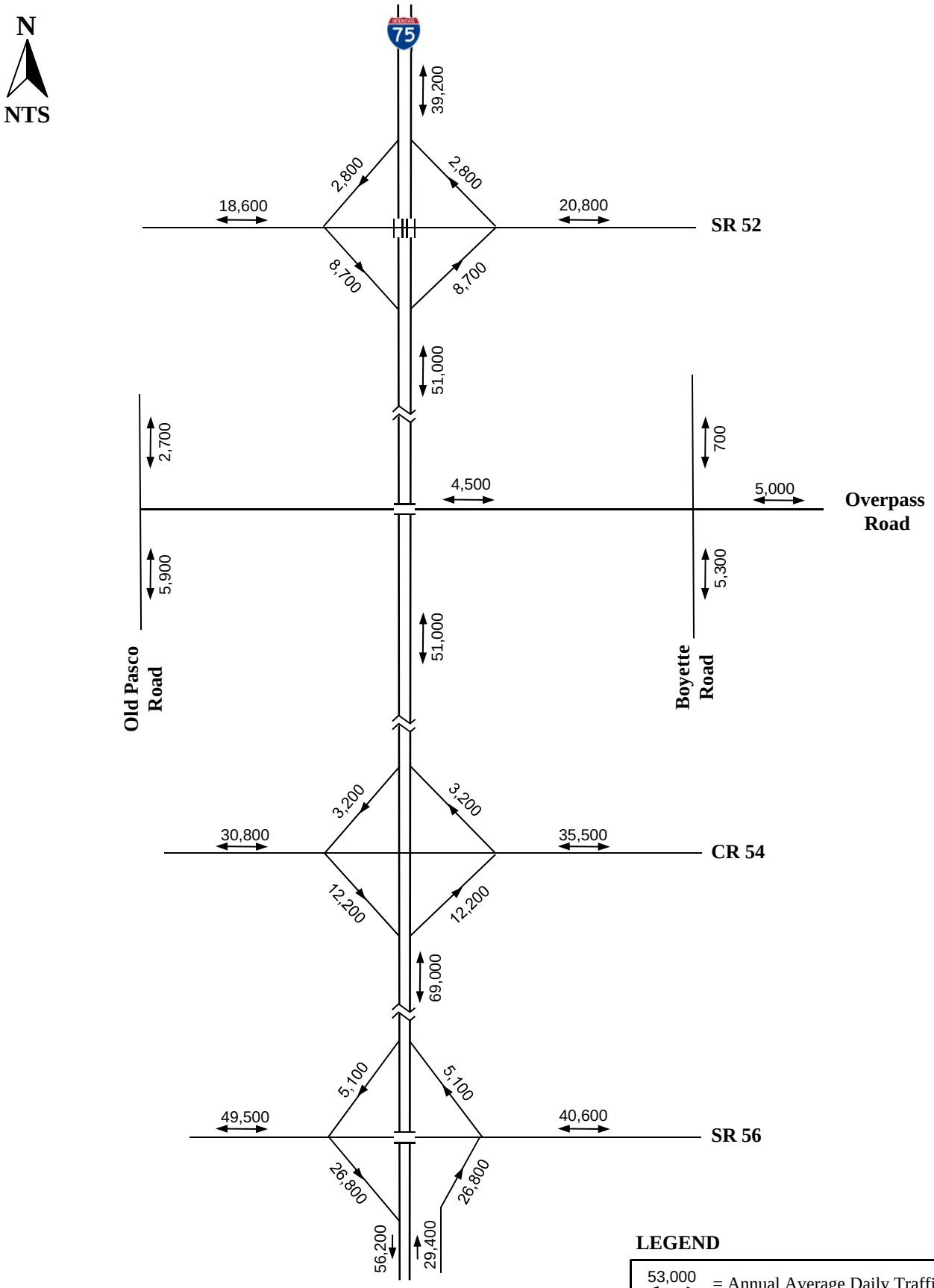
2.6 EXISTING AADT AND DESIGN HOUR TRAFFIC

The existing (2010) AADTs were developed from the 72-hour traffic counts using the Average Daily Traffic (ADT) over three days. The ADTs were adjusted using seasonal adjustment factors, as documented in FDOT's *2008 Florida Traffic Information DVD*. Existing AADT volumes are shown on **Figure 2-5**. All of the AADTs are rounded to the nearest hundred and are balanced along the I-75 mainline through the interchanges. Seasonal factors are provided in Appendix B.

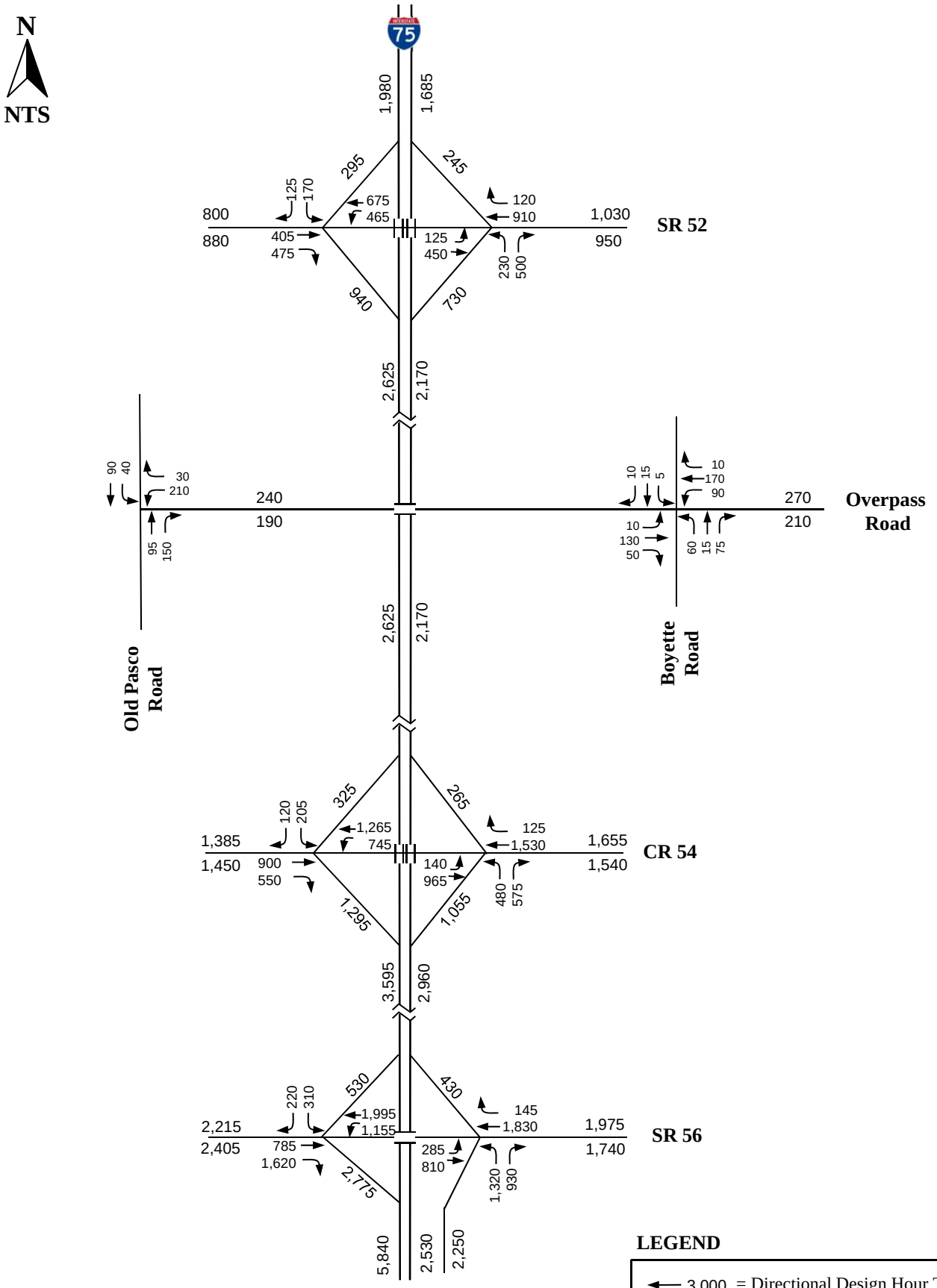
Peak-hour design traffic was derived from the balanced AADTs by applying K_{30} and D_{30} factors. The peak direction of travel was assumed based on the existing counts. At the intersections, design hour turning movements were obtained by applying the existing turning movement percentages to the approach DDHV. The DDHVs were then balanced through the intersections. The K_{30} factor of 9.4 percent and D_{30} factor of 55/45 percent were maintained for all mainline and ramp segments throughout the project study area. Some deviations have occurred in the K_{30} and D_{30} factors for side streets as a result of the volume balancing. However, these factors were maintained within acceptable ranges specified in the 2002 *FDOT Project Traffic Forecasting Handbook.* For the a.m. peak hour, design traffic volumes were obtained by reversing the reciprocal movements from the p.m. peak hour. The existing a.m. and p.m. design hour traffic is shown on **Figures 2-6 and 2-7**, respectively.

2.7 EXISTING CONDITIONS TRAFFIC OPERATIONS

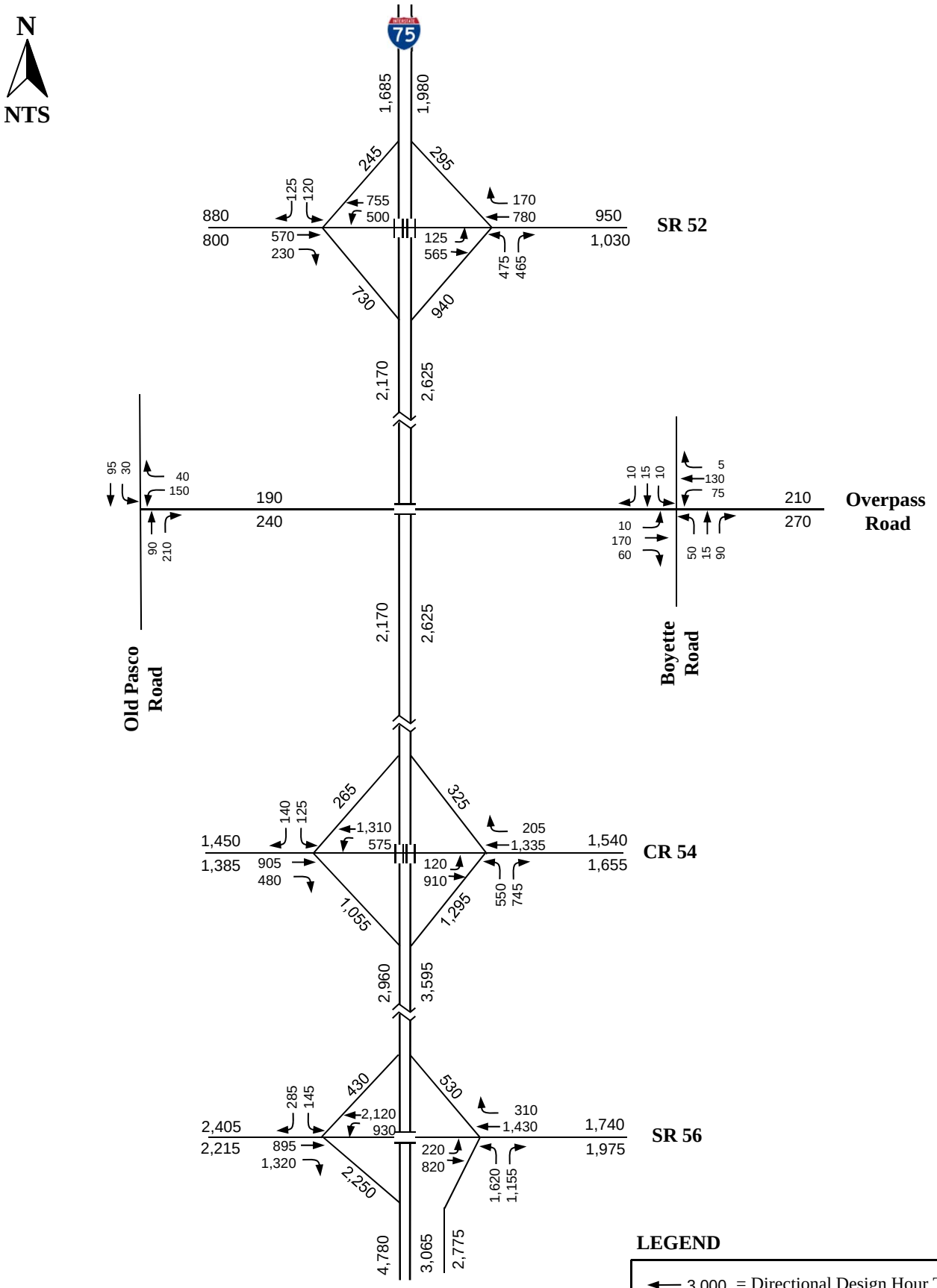
Traffic operations for roadways are measured in terms of LOS by comparing the peak hour traffic demands with the available roadway capacity. To assess existing traffic operating conditions for this study, LOS analyses were conducted for the I-75 mainline segments, the associated ramp diverges and merges, ramp terminal intersections, and signalized and unsignalized intersections in the project study area. This section discusses the capacity analysis results for the existing conditions. LOS is a qualitative measure of the traffic operations. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions.



I-75 and Overpass Road Preliminary Interchange Justification Report	Existing (2010) AADT	Figure 2-5



I-75 and Overpass Road Preliminary Interchange Justification Report	Existing (2010) AM Peak Directional Design Hour Traffic	Figure 2-6



I-75 and Overpass Road Preliminary Interchange Justification Report	Existing (2010) PM Peak Directional Design Hour Traffic	Figure 2-7

Key parameters used in the existing conditions analysis are as follows:

- Peak Hour Factor (PHF): varies based upon counts;
- Population Factor = 0.95 (FDOT Statewide Default);
- Terrain = Level;
- I-75 Free-Flow Speed = 70 mph (mainline) and 45 mph (ramps);
- State and County Arterial Free-Flow Speed = posted speed plus 5 mph; and
- Design hour truck percentages: Half of the Daily Truck Percentage (T_{24})[3].

The free-flow speeds listed previously were used in the analysis of freeway segments, weaving, and ramps merge/diverge analysis. The HCS default values for lane utilization factors were used with the following exceptions:

- The lane utilization factors for the through movement, which operate as pre-storage for the left-turn movement at the downstream ramp terminal intersection, were adjusted using the formula below:

  Lane Utilization = Total Volume of Lane Group / (Highest Volume in One Lane x No. of Lanes in Lane Group)

- The lane utilization factor for all movements that are projected to have volume-to-capacity (v/c) ratios greater than or equal to 0.90 was adjusted to 1.00.

FDOT's FREEPLAN (2009 version) program based on the HCM was utilized to assess the operations of the interstate. The primary measure used to provide an estimate of LOS is density. Basically, as the density of a roadway increases, the LOS declines. I-75 between I-275 and SR 56 was analyzed with four through lanes in the northbound direction since the northbound off-ramp to SR 56 is separated into the C-D system. The results of the I-75 mainline LOS analysis are presented in **Table 2-1**. FREEPLAN worksheets are presented in Appendix C. All freeway segments in the project study area operate at acceptable LOS (LOS D or better) during a.m. and p.m. peak periods under existing plus programmed geometry conditions.

TABLE 2-1
EXISTING (2010) FREEWAY LOS

Freeway Segment	AM Peak Southbound		AM Off-Peak Northbound		PM Peak Northbound		PM Off-Peak Southbound	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 from south of SR 56 to SR 56	14.8	B	10.1	A	12.2	B	12.1	B
I-75 from SR 56 to CR 54	14.7	B	11.8	B	14.4	B	12.1	B
I-75 from CR 54 to SR 52	21.6	C	17.3	B	21.0	C	17.8	B
I-75 from SR 52 to north of SR 52	16.3	B	13.4	B	15.7	B	13.9	B

Notes: Density is expressed in passenger cars per mile per lane. Analysis was conducted using FDOT's FREEPLAN LOS software.

[3] Appropriateness of the application of T_{24} divided by 2 as the truck percentage for use in the study was confirmed in follow-up coordination efforts between Mr. Fawzi Bitar of FDOT and Mr. Domingo Noriega of URS after the MLOU meeting.

The analysis of merge and diverge operations at entrance and exit ramps along I-75 is based on procedures presented in Chapter 25, "Ramps and Ramp Junctions," of the HCM using HCS. The procedure focuses on the interaction between freeway mainline through traffic and traffic merging from or diverging to the ramps. Two-lane ramps resulting in lane addition and lane drop were analyzed as major merges/diverges based on Exhibit 25-7 and 25-14 of the HCM. The single-lane ramps resulting in lane addition and lane drop were analyzed by simple capacity checks based on Exhibit 25-3 of the HCM. Based on this methodology, the northbound off-ramp to CR 54 and the southbound on-ramp from SR 56 were analyzed as major diverge and major merge areas, respectively. The southbound on-ramp from CR 54 was analyzed as a single-lane ramp with lane addition using a simple capacity check. The northbound off-ramp to SR 56 was also analyzed using a capacity check, even though it is a two-lane off-ramp. This was done since this ramp is a C-D system ramp separated from the freeway upstream of the interchange. The results of the ramp analysis are presented in **Table 2-2**. HCS worksheets are provided in Appendix C. All ramps in the project study area operate at acceptable LOS under existing plus programmed geometry. The queuing observed on the SR 56 ramps appear to be the result of the delays from the ramp terminal intersections.

TABLE 2-2
EXISTING (2010) RAMPS LOS

Ramp Location	Analysis Method	AM Peak		PM Peak	
		Density	LOS	Density	LOS
I-75 northbound off-ramp to SR 56[1]	C-D ramp Capacity check	OK (0.63)		OK (0.77)	
I-75 northbound on-ramp from SR 56	Merge	13.6	B	16.4	B
I-75 southbound off-ramp to SR 56	Diverge	17.2	B	13.9	B
I-75 southbound on-ramp from SR 56[1]	Major Merge	OK (0.77)		OK (0.63)	
I-75 northbound off-ramp to CR 54[1]	Major Diverge	OK (0.30)		OK (0.36)	
I-75 northbound on-ramp from CR 54	Merge	20.3	C	24.4	C
I-75 southbound off-ramp to CR 54	Diverge	26.8	C	22.3	C
I-75 southbound on-ramp from CR 54[1]	Major Merge	OK (0.70)		OK (0.57)	
I-75 northbound off-ramp to SR 52	Diverge	22.3	C	26.8	C
I-75 northbound on-ramp from SR 52	Merge	16.2	B	18.8	B
I-75 southbound off-ramp to SR 52	Diverge	20.6	C	17.6	B
I-75 southbound on-ramp from SR 52	Merge	24.4	C	20.4	C

[1] Two-lane on- and off-ramps resulting in lane addition/lane drop were analyzed as major merge/diverge based on Exhibits 25-7 and 25-14 of HCM. The HCS software is not used in this case.

Notes: Volume is expressed in terms of vehicles per hour; Density is expressed in terms of passenger cars per mile per lane.
OK (x.xx) = The value in parenthesis provides the v/c ratio for the major merge/diverge areas.

Intersection capacity analyses were conducted to assess the quality of flow at intersections in the study area using the existing traffic volumes and existing plus programmed geometry. The methodologies used to evaluate intersections are based on Chapter 16, "Signalized Intersections," and Chapter 17, "Unsignalized Intersections," of the HCM. For signalized intersections, the analysis considers the operation of each lane or lane group entering the intersection and the LOS designation is for the overall conditions at the intersection. For two-way stop controlled (TWSC) intersections, the LOS is only determined for left turns from the

main street onto the minor/side street and all movements from the minor/side street. The overall LOS designation is for the most critical movement, which is most often the left-turn out of the minor/side street.

Table 2-3 shows the results of the existing intersection analysis. HCS worksheets are provided in Appendix C. The results indicate that the northbound ramp terminal intersections at SR 56 operate at a deficient LOS during the p.m. peak period. The southbound ramp intersection at SR 52 operates below acceptable LOS during both the peak periods. All other signalized and unsignalized intersections operate acceptably during both peak hours. Existing conditions LOS results for freeways, ramps, and intersections are shown in **Figure 2-8**.

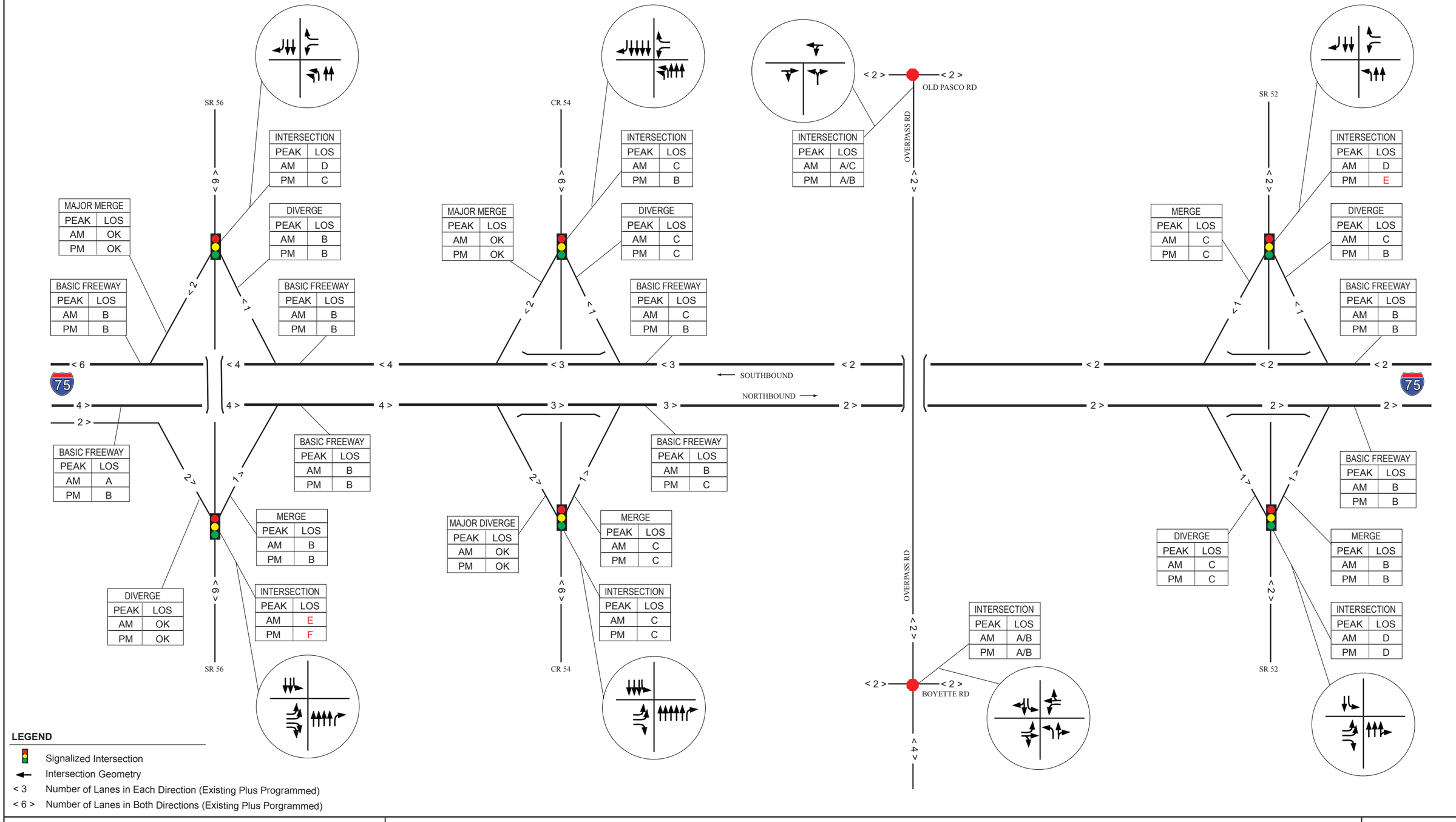
TABLE 2-3
EXISTING (2010) INTERSECTION LOS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at SR 56	Signalized	79.2	**E**	125.9	**F**
I-75 southbound ramps at SR 56	Signalized	46.8	D	29.8	C
I-75 northbound ramps at CR 54	Signalized	21.2	C	19.3	B
I-75 southbound ramps at CR 54	Signalized	20.3	C	16.6	B
I-75 northbound ramps at SR 52	Signalized	52.1	D	50.4	D
I-75 southbound ramps at SR 52	Signalized	52.4	D	64.2	**E**
Overpass Road at Boyette Road	Unsignalized	8.0 / 13.3	A / B	7.9 / 12.2	A / B
Overpass Road at Old Pasco Road	Unsignalized	8.0 / 17.3	A / C	8.0 / 13.7	A / B

Note: Unsignalized delay and LOS are for major street left-turn movement/minor street approach; Delay reported is in seconds per vehicle (sec/veh).

Queue lengths for the turning movements at the study intersections were determined from the intersection analysis using HCS software. Total turn lane length was determined as the total of the 95th percentile queue and deceleration length based on the design speed for the approach.

They were compared with available storage lengths to determine if they exceed the available storage. Existing turn lane lengths and available storage lengths are provided in **Table 2-4**. Queue lengths for through movements were also estimated to evaluate the spill back conditions for exclusive turn lanes.



I-75 and Overpass Road Preliminary Interchange Justification Report	Existing Conditions Analysis Summary (with Existing Plus Programmed Geometry)	Figure 2-8

TABLE 2-4
EXISTING (2010) QUEUE LENGTHS

Intersection	Lane Group	Lanes	Storage (feet)	Queue		Deceleration	Turn Lane Length Needed	Exceeds Storage?
				AM	PM			
I-75 northbound ramps at SR 56	EBL	1	650	775	500	405	1,180	Yes
	EBT	2	Continuous	525	525	405	930	n/a
	WBT	4	Continuous	1,150	850	405	1,555	n/a
	NBL	2	1100	1,825	2,725	240	2,965	Yes
I-75 southbound ramps at SR 56	EBT	2	Continuous	725	850	405	1,255	n/a
	WBL	2	1500	1,300	900	405	1,705	Yes
	WBT	2	Continuous	1,250	1,425	405	1,830	n/a
	SBL	1	700	950	325	240	1,190	Yes
I-75 northbound ramps at CR 54	EBL	1	1000	225	175	240	465	No
	EBT	3	Continuous	300	275	240	540	n/a
	WBT	5	Continuous	425	325	240	665	n/a
	WBR	1	500	50	100	240	340	No
	NBL	2	1100	275	325	240	565	No
I-75 southbound ramps at CR 54	EBT	4	Continuous	275	275	240	515	n/a
	EBR	1	700	525	425	240	765	Yes
	WBL	2	900	550	375	240	790	No
	WBT	3	Continuous	275	300	240	540	n/a
	SBL	1	350	325	175	240	565	Yes
	SBR	1	1000	175	200	240	440	No
I-75 northbound ramps at SR 52	EBL	1	500	225	250	290	540	Yes
	EBT	1	Continuous	400	575	290	865	n/a
	WBTR	3	Continuous	700	950	290	1,240	n/a
	NBL	2	500	150	325	240	565	Yes
	NBR	1	500	1,150	1,025	240	1,390	Yes
I-75 southbound ramps at SR 52	EBT	2	Continuous	325	575	290	865	n/a
	WBL	1	600	1,125	1,425	290	1,715	Yes
	WBT	2	Continuous	200	250	290	540	n/a
	SBL	1	800	325	200	240	565	Yes
	SBR	1	100	200	225	240	465	Yes
Overpass Road at Boyette Road	EBL	1	200	25	25	290	315	Yes
	WBL	1	Continuous	25	25	240	265	n/a
	NBL	1	200	25	25	290	315	Yes
	NBTR	1	Continuous	25	25	290	315	n/a
	SBL	1	200	25	25	290	315	Yes
	SBTR	1	Continuous	25	25	290	315	n/a
Overpass Road at Old Pasco Road	WBLR	1	Continuous	75	50	290	365	n/a
	SBLT	1	Continuous	25	25	290	315	n/a

Notes: 1. Queue lengths are per lane based on 95th percentile back of queue reported in HCS. Free-flow movements are excluded.
2. Deceleration length is based design speeds and FDOT index 301 and turn lane length is based on maximum of a.m. and p.m. peak queue.
3. For rural conditions with lower than 45 mph posted speeds, a minimum deceleration length of 290 feet was used.
n/a: Storage length limits are not applicable to through movements.

Existing queue lengths indicate that the turn lanes for the following lane groups do not have sufficient length to provide for deceleration and queue storage:

I-75 and SR 56 Interchange:

- Eastbound to northbound left,
- Northbound to westbound left,
- Westbound to southbound left, and
- Southbound to eastbound left.

I-75 and CR 54 Interchange:

- Eastbound to southbound right and
- Southbound to eastbound left.

I-75 and SR 52 Interchange:

- Eastbound to northbound left,
- Northbound to westbound left,
- Northbound to eastbound right,
- Westbound to southbound left,
- Southbound to eastbound left, and
- Southbound to westbound right.

Overpass Road at Boyette Road:

- Northbound to westbound left and
- Southbound to eastbound left,

2.8 CRASH DATA ANALYSIS

Crash data for the most recent three (3) years of data available (as of February 2013) for I-75, SR 56, SR 54/CR 54, SR 52, and the Overpass Road corridors in the project study area were obtained from the FDOT and Pasco County. The corridors include I-75 from south of the SR 56 interchange to north of the SR 52 interchange (including the interchanges) and Overpass Road from Old Pasco Road to Boyette Road. Crash data analysis for each of these study corridors is described in this section and is provided in Appendix D. The crash data obtained from FDOT and Pasco County were compared to ensure that no double counting of crash records occurred.

2.8.1 I-75 CORRIDOR

The I-75 corridor in the project study area includes the segment from south of SR 56 to north of SR 52, covering a total length of 10.52 miles inclusive of the interchanges. For the purpose of this analysis, the I-75 corridor has been divided into three segments: 1) I-75 between SR 56 and SR 54/CR 54, 2) I-75 between SR 54/CR 54 and Overpass Road, and 3) I-75 between Overpass Road and SR 52. The corridor crash summary for I-75 in terms of crash frequency by type, crash frequency by severity, and a comparison of the corridor crash rate with the statewide average for similar facilities is shown in **Table 2-5**. For the purpose of this analysis, the crash rates for transitioning segments were compared to the statewide urban crash rates since data for transitioning interstates is not available.

For the three-year period (2009-2011), there were 433 crashes reported, with an average of 144.3 crashes per year. Rear-end type crashes were the most common crash type recorded for the corridor with 32.1 percent of total crashes followed by collision crashes with 24.5 percent of the total crashes. The collision crashes include a single-vehicle collision with objects other than moving vehicles such as a tree, guard rail, etc. Out of 433 total crashes, 223 crashes (or 51.5 percent) involved injuries and there were five fatalities. The crash rate for the I-75 corridor was 0.633 crashes per million vehicle miles traveled (MVMT). The FDOT statewide average rate for similar facilities is 0.691 crashes per MVMT. Therefore, the crash rate for this corridor is lower than the statewide average.

2.8.2 SIDE STREETS

Crash summaries for the side streets in terms of crash frequency by type, crash frequency by severity and a comparison of the corridor crash rate with the statewide average for similar facilities is shown in **Table 2-6**. The side streets include the SR 56, SR 54/CR 54, and SR 52 interchanges with I-75 and the Overpass Road segment between Old Pasco Road and Boyette Road. For the SR 56, SR 54/CR 54, and SR 52 interchanges, crashes occurring within 500 feet of the ramp terminal intersections were included. Given the short distance of the segments, the crash rate calculations for the SR 56, SR 54/CR 54, and SR 52 interchanges were performed per million entering vehicles (MEV), treating the interchange as an intersection (spot). When calculating the number of entering vehicles, the total number of vehicles entering both the ramp terminal intersections was included.

For the SR 56 interchange with I-75, 101 crashes were reported for the three-year period analyzed with an average of 33.7 crashes per year. Rear-end and angle type crashes were the most common crash types recorded, accounting for approximately 56.4 percent of the total crashes. Approximately 60 percent of the total crashes involved an injury and there were no fatalities. The crash rate for the interchange was 1.211 crashes per MEV. The FDOT statewide average rate for similar facilities was 0.576 crashes per MEV. Therefore, the crash rate for this location is higher than the statewide average.

TABLE 2-5
CRASH SUMMARY BY FREQUENCY
(JANUARY 2009 THROUGH DECEMBER 2011)

I-75 - FROM SOUTH OF SR 56 TO NORTH OF SR 52

Segment			Frequency by Crash Type									Frequency by Crash Severity			Corridor Crash Rates	
Description	Functional Class	Length (Miles)		Total	Angle[1]	Rear End	Side swipe	Head-On	Over-turned	Pedestrian/ Bicycle	Single-Vehicle Collision[2]	All Other[3]	Fatality	Injury	Property Damage	Project Crash Rate (crashes/ MVMT)	Statewide Average Rate[4] (crashes/ MVMT)
I-75: SR 56 to SR 54/CR 54	Urban Interstate	3.769	3-Year	256	23	105	20	0	9	1	46	52	2	129	125	0.802	0.691
			Average	85.3	9.0	41.0	7.8	0.0	3.5	>1.0	18.0	20.3	>1.0	50.4	48.8		
I-75: SR 54/CR 54 to Overpass Road	Transitioning	3.043	3-Year	82	9	14	5	1	6	0	26	21	0	42	40	0.483	0.691
			Average	27.3	11.0	17.1	6.1	1.2	7.3	0.0	31.7	25.6	0.0	51.2	48.8		
I-75: Overpass Road to SR 52	Transitioning	3.708	3-Year	95	5	20	1	0	7	0	34	28	3	52	40	0.469	0.691
			Average	31.7	5.3	21.0	1.0	0.0	7.4	0.0	35.8	29.5	3.2	54.7	42.1		
I-75 Corridor Summary		**10.52**	**3-Year**	**433**	**37**	**139**	**26**	**1**	**22**	**1**	**106**	**101**	**5**	**223**	**205**	**0.633**	**0.691**
			Average	**144.3**	**8.5**	**32.1**	**6.0**	**>1.0**	**5.1**	**>1.0**	**24.5**	**23.3**	**1.1**	**51.5**	**47.3**		

Source: FDOT Unified Basemap Repository (2009-2011).
[1] Includes angle, left-, and right-turn type crashes.
[2] Includes all collisions involving a single vehicle with objects other than a vehicle (occasionally more than one vehicle reported – i.e., hit a guardrail).
[3] Includes all other crash types not listed.
[4] Statewide average crash rates are based on the 5-year data (2006-2010).

TABLE 2-6
CRASH SUMMARY BY FREQUENCY
(JANUARY 2009 THROUGH DECEMBER 2011)

SR 56, SR 54/CR 54, SR 52, AND OVERPASS ROAD NEAR I-75

Segment			Frequency by Crash Type									Frequency by Crash Severity			Corridor Crash Rates	
Description	Functional Class	Length (Miles)		Total	Angle[1]	Rear End	Side swipe	Head-On	Over-turned	Pedestrian/ Bicycle	Single-Vehicle Collision[2]	All Other[3]	Fatality	Injury	Property Damage	Project Crash Rate (crashes/ MVMT)	Statewide Average Rate[4] (crashes/ MVMT)
SR 56 at I-75	Urban Interstate	--	3-Year	101	23	57	3	0	2	0	8	8	0	60	41	1.211	0.576
			Average	33.7	22.8	56.4	3.0	0.0	2.0	0.0	7.9	7.9	0.0	59.4	40.6		
SR 54/CR 54 at I-75	Transitioning	--	3-Year	63	17	28	8	1	1	1	5	2	0	37	26	1.206	0.576
			Average	21.0	27.0	44.4	12.7	1.6	1.6	1.6	7.9	3.2	0.0	58.7	41.3		
SR 52 at I-75	Transitioning	--	3-Year	75	27	33	3	1	0	1	3	7	0	35	40	2.194	0.517
			Average	25.0	36.0	44.0	4.0	1.3	0.0	1.3	4.0	9.3	0.0	46.7	53.3		
Overpass Road from Old Pasco Road to Boyette Road	Transitioning	1.7	3-Year	17	9	2	0	0	0	0	3	3	0	13	4	2.029	0.917
			Average	5.7	52.9	11.8	0.0	0.0	0.0	0.0	17.6	17.6	0.0	76.5	23.5		

Source: FDOT Unified Basemap Repository (2009-2011).
[1] Includes angle, left-, and right-turn type crashes.
[2] Includes all collisions involving a single vehicle with objects other than a vehicle (occasionally more than one vehicle reported – i.e., hit a guardrail).
[3] Includes all other crash types not listed.
[4] Statewide average crash rates are based on the 5-year data (2006-2010).
Note: For the interchanges of SR 56, SR 54/CR 54, and SR 52 at I-75, the crash rates calculated per MEV treating them as spots (intersections) instead of segments. This assumption is due to the short length of these segments. Ramp crashes within the influence of the intersection are included in the spot crash analysis, therefore, excluded from the I-75 corridor segment analysis.
For Overpass Road, the crash rate shown is in crashes per MVMT.

For the SR 54/CR 54 interchange with I-75, 63 crashes were reported for the three-year period analyzed with an average of 21.0 crashes per year. Rear-end and angle type crashes were the most predominant crash types, accounting for approximately 71.4 percent of the total crashes. Approximately 60 percent of the total crashes involved an injury and there were no fatalities. The crash rate for the interchange was 1.206 crashes per MEV. The FDOT statewide average rate for similar facilities was 0.576 crashes per MEV. Therefore, the crash rate for this location is higher than the statewide average.

For the SR 52 interchange with I-75, 75 crashes were reported for the three-year period analyzed with an average of 25.0 crashes per year. Rear-end and angle type crashes were the most predominant crash types accounting for approximately 80 percent of the total crashes. Approximately 47 percent of the total crashes involved an injury and there were no fatalities. The crash rate for the interchange was 2.194 crashes per MEV. The FDOT statewide average rate for similar facilities was 0.517 crashes per MEV. Therefore, the crash rate for this location is higher than the statewide average.

For Overpass Road in the project study area, 17 crashes were reported for the three-year period analyzed, with an average of 5.7 crashes per year. Angle type crashes were the most predominant, accounting for approximately 53 percent of the total crashes. Approximately 76 percent of the total crashes involved an injury and there were no fatalities. The majority of the crashes for Overpass Road have occurred at the intersections of Overpass Road with Old Pasco Road and Boyette Road. The crash rate for the Overpass Road segment was 2.029 crashes per MVMT. The FDOT statewide average for similar facilities is 0.917 crashes per MVMT. Therefore, the crash rate for this location is higher than the statewide average.

2.9 EXISTING STRUCTURES REVIEW

Bridge Number 140052, which carries Overpass Road over I-75 in Pasco County, Florida, is located approximately 3.0 miles north of the CR 54/I-75 interchange, and approximately 3.6 miles south of the SR 52/I-75 interchange. **Figures 2-9 and 2-10** show an aerial and an elevation view, respectively, of this structure. This bridge is the only interstate crossing between these two interchanges. Overpass Road is currently designated as a rural minor collector with two lanes of traffic and a posted speed limit of 30 mph. I-75 is a four-lane, divided highway with a 64-foot median at the Overpass Road bridge location.

The four-span bridge was built in 1964. The superstructure consists of AASHTO Type II and III prestressed concrete beams with a composite concrete deck measuring 7 inches in thickness. The four-span lengths measure 41 feet, 72.5 feet, 72.5 feet, and 38 feet, with an overall bridge length of 224 feet. The structure crosses I-75 at an angle of 71.81 degrees (skewed 18.19 degrees from normal). The intermediate piers are multi-column founded on 14-inch square prestressed concrete piling (PCP). Similarly, the end bents are founded on 18-inch square PCP.

FIGURE 2-9
AERIAL VIEW OF OVERPASS ROAD BRIDGE OVER I-75

FIGURE 2-10
ELEVATION (LOOKING SOUTH) OF OVERPASS ROAD BRIDGE OVER I-75

Despite the bridge having an age of 46 years, it still is in good shape. The most recent Bridge Inspection Report with an inspection date for the Overpass Road bridge of January 2, 2013, gives the structure a Health Index of 89.18 and a Sufficiency Rating of 63.0. Additionally, the National Bridge Inventory (NBI) reports the following bridge condition ratings: Deck - 8 (Very Good), Superstructure - 7 (Good), and Substructure - 8 (Very Good).

While the bridge is structurally in good shape, and the latest Bridge Inspection Report lists the bridge as being neither functionally obsolete nor structurally deficient, it is noted that the structure is designated as a rural minor collector. As such, the substandard barriers, 2-foot shoulder widths, and less than 16-foot vertical clearance over I-75, do not flag the structure as being deficient or obsolete. However, if the structure designation is changed from rural minor collector then these noted deficiencies (substandard barriers, shoulder widths, and vertical clearance) would most certainly flag this structure as either functionally obsolete or structurally deficient, or both.

2.10 EXISTING CONDITIONS SUMMARY

Key findings of the existing conditions analysis are summarized below:

- With the existing plus programmed improvements geometry, all freeway segments in the project study area operate at acceptable LOS.
- All the ramp merge/diverge areas in the project study area operate at acceptable LOS with existing plus programmed improvements geometry.
- The northbound ramp terminal intersection at the SR 56 interchange operates below acceptable LOS during both peak hours. The intersection of the I-75 southbound ramp at SR 52 operates below acceptable LOS during the p.m. peak hour. All other intersections in the project study area operate at acceptable LOS with existing plus programmed improvement geometry.
- Crash data analysis for the recent 3 years shows that the I-75 mainline segments in the project study area experienced crash rates below the statewide average for similar facilities. Rear-end crashes were the most predominant crash type for the I-75 segments. For SR 56, CR 54, and SR 52 interchanges with I-75, the crash rates were higher than FDOT average crash rates for similar facilities. Rear-end and angle type crashes were predominant for the side streets.

Section 3.0
TRAVEL DEMAND FORECASTING

This section describes the methodology used to develop traffic projections for the Opening Year (2022), Interim Year (2030), and Design Year (2040).

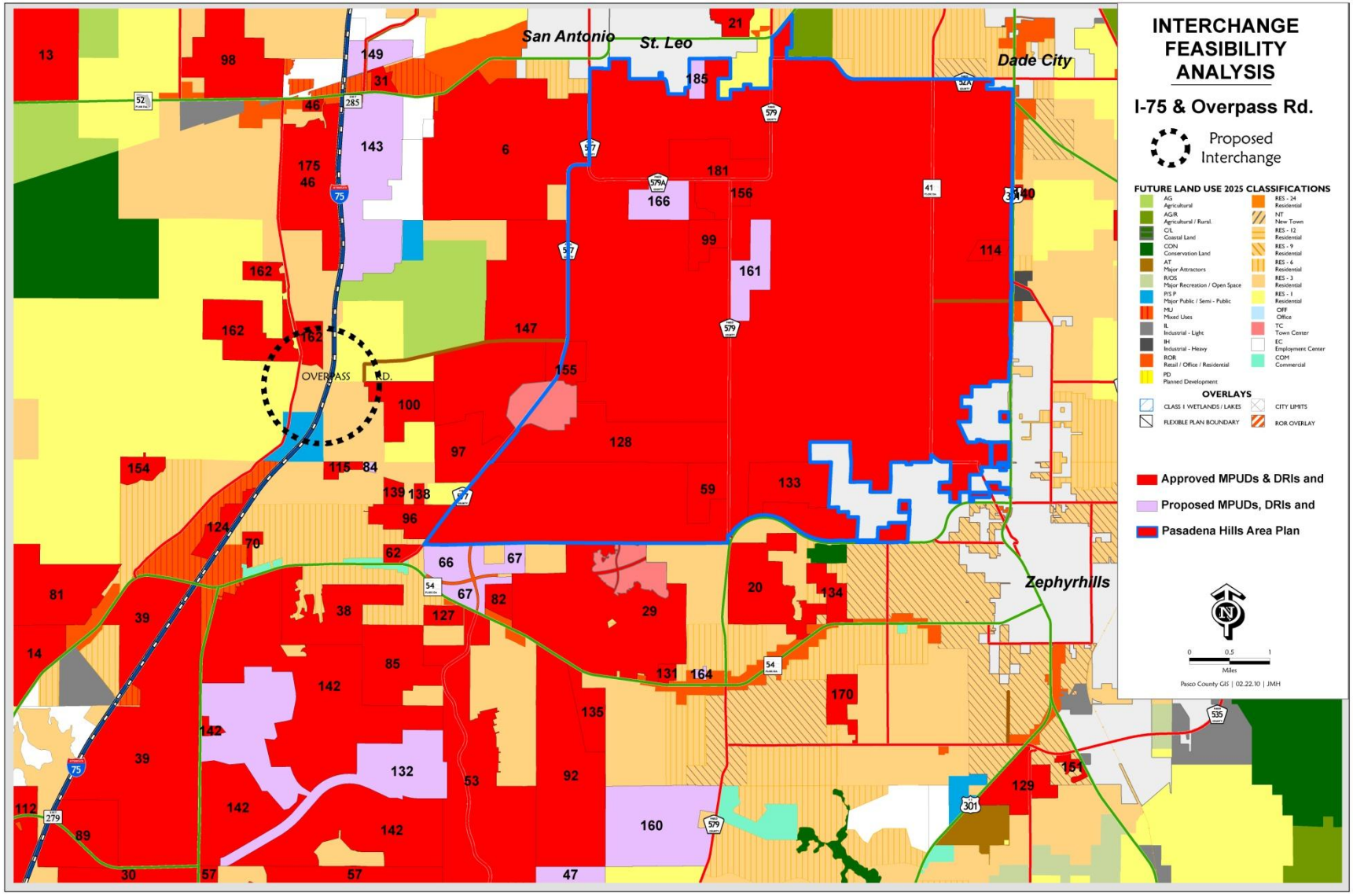
3.1 OVERVIEW OF TRAVEL DEMAND MODEL

Travel demand forecasting for this project was performed using the most recent version (Version 7.0) of the TBRPM. The TBRPM is based on the Florida Standard Urban Transportation Modeling Structure (FSUTMS) and is recognized by both FDOT District Seven, as well as the Tampa Bay Area MPOs as the accepted travel demand forecasting tool. The TBRPM was validated to the year 2006 and also includes Cost Feasible network and socioeconomic (SE) data for the years 2025 and 2035. The ultimate roadway network reflects the *Pasco County MPO 2035 Cost-Affordable LRTP* for all counties in the District.

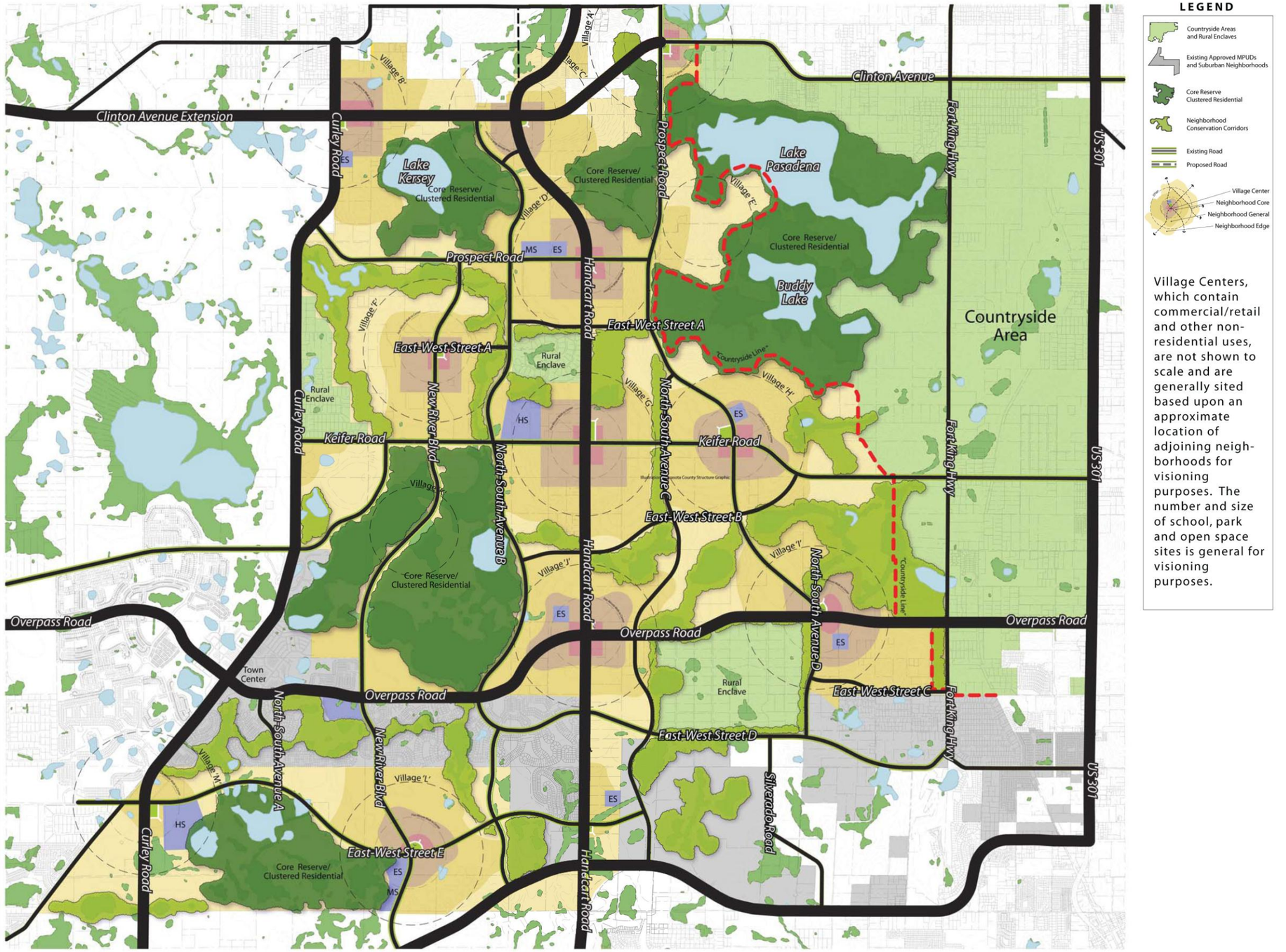
The TBRPM was reviewed and the land use data, roadway network, and TAZs were updated to reflect recent approved developments in the project study area. In addition, appropriate development levels for the Pasadena Hills Area Plan are represented in the SE data. This area plan (approved by Pasco County) encompasses the eastern portion of the county located north of SR 54, south of SR 52, east of CR 577/Curley Road, and west of Handcart Road. **Figure 3-1** provides a graphical depiction of the proposed developments in the project study area and **Figure 3-2** depicts the Pasadena Hills Area Plan. Land use data from the recently proposed Pasco County Comprehensive Plan Amendments for Gateway Hub, Wildcat Groves, and Cracchiolo developments located in the project study area were also verified in the SE data. Development levels for various DRIs and MPUDs in the project study area vicinity are summarized in Appendix E. Based on the updated SE data used in this analysis, the project study area is projected to have 80,200 dwelling units and 51,450 employees by 2025 and 105,000 dwelling units and 75,600 employees by 2035.

Comments have been received from the review agencies (FDOT and FHWA) on previously submitted drafts of the PIJR regarding the economic recession and its potential effects on traffic projections in the study area. In an attempt to address the recession and stimulate the economy, the State has passed growth management legislation which includes build-out date extensions, development incentives and local government control over concurrency provisions in their jurisdictions. As such, Pasco County is one of only a handful of local governments that has rescinded transportation concurrency county-wide and now implements a "Mobility Fee" structure where the County has agreed to subsidize development fees for preferred land uses. Although it is understood that short-term delays in development have occurred, the long-term vision of Pasco County (as reflected in their Comprehensive Plan) includes a significant increase in residential, commercial, industrial and employment land uses.

FIGURE 3-1
PROPOSED DEVELOPMENTS IN THE STUDY AREA



Note: Numbers provided on figure represent specific developments. Please refer to Appendix E for a table of the corresponding development names.



LEGEND

- Countryside Areas and Rural Enclaves
- Existing Approved MPUDs and Suburban Neighborhoods
- Core Reserve Clustered Residential
- Neighborhood Conservation Corridors
- Existing Road
- Proposed Road
- Village Center
- Neighborhood Core
- Neighborhood General
- Neighborhood Edge

Village Centers, which contain commercial/retail and other non-residential uses, are not shown to scale and are generally sited based upon an approximate location of adjoining neighborhoods for visioning purposes. The number and size of school, park and open space sites is general for visioning purposes.

FIGURE 3-2
PASADENA HILLS AREA PLAN

In addition, the growth rates and AADT projections presented in the PIJR have been based on the approved regional model used for planning and project development in the Tampa Bay Region. As stated above, all land uses included have been based on the Pasco County MPO 2035 LRTP and other approved developments in the area, the majority of which are still active and plan to develop in the future. Pasco County population growth has historically exceeded the Bureau of Economic and Business Research (BEBR) projections. Thus, the Pasco County MPO has determined that the BEBR "High" projections will be used for the update of the LRTP to year 2040, providing even higher traffic growth for this area.

3.2 FUTURE SE DATA AND ROADWAY NETWORK

The SE data for the Opening Year (2022) was developed from the linear interpolation of the SE data sets for 2006 and 2025. The 2022 roadway network used in the model was derived from the TBRPM 2025 Cost Affordable model network and includes the existing network plus any roadway improvements that are expected to be under construction by the year 2022 as identified in the *Pasco County MPO 2035 Cost-Affordable LRTP*. The major roadway improvements assumed for the Opening Year (2022) are:

- Six lanes on I-75 between SR 56 and the Hernando County line,
- Eight lanes on I-75 between I-275 and SR 56,
- Two-lane ramps to/from the south at the CR 54/I-75 Interchange,
- Four lanes on Overpass Road from Old Pasco Road to Curley Road,
- Four lanes on Old Pasco Road from CR 54 to Overpass Road,
- Four lanes on CR 54 from Old Pasco Road to SR 56, and
- Four lanes on the Zephyrhills Bypass from SR 54 to Handcart Road.

Similarly, the SE data for the Interim Year (2030) was developed from the linear interpolation of the SE data sets for 2025 and 2035. The 2030 roadway network used in the model was derived from the TBRPM 2025 Cost Affordable model network and represents all the improvements for the Opening Year (2022) plus roadway improvements that are expected to be under construction by the year 2030, as identified in the *Pasco County MPO 2035 Cost-Affordable LRTP*. For the Design Year (2040), the model was run using the 2035 network and SE data and the traffic projections were obtained by applying a one percent per year growth rate to the 2035 volumes. Note that the majority of future development in the study area is already reflected in the 2035 land use data; therefore, growth beyond 2035 is assumed to be limited. Relevant socioeconomic data and growth factor calculations are documented in Appendix C of the approved MLOU contained in Appendix A of this report.

For the purpose of travel demand modeling, four different alternatives were considered. Each of the alternatives is described in the following sections.

3.2.1 NO-BUILD ALTERNATIVE

The No-Build Alternative includes the Cost Affordable roadway network without the proposed interchange at I-75 and Overpass Road. For this alternative, model runs were performed for each of the analysis years using the appropriate SE data and network, as described previously in Section 3.2.

3.2.2 BUILD ALTERNATIVE

Several interchange configurations [Diamond Interchange, Single Point Urban Interchange (SPUI), Diverging Diamond Interchange (DDI), Flyover Ramp and Loop Ramp] were evaluated as part of the Build Alternative. However, for travel demand forecasting purposes, a conventional Diamond Interchange was coded into the TBRPM model network. For the Build Alternative, model runs were performed for each of the analysis years using the appropriate SE data and network, as described previously in Section 3.2.

3.2.3 NORTH-SOUTH ROAD BUILD ALTERNATIVE

This alternative includes a Diamond Interchange at I-75 and Overpass Road and a four-lane north-south parallel roadway, which originates at SR 54 east of I-75, traverses over I-75 and ultimately connects to Old Pasco Road west of I-75. The exact location and alignment of this north-south road has not yet been determined. However, it is envisioned that the southern terminus will be near or align with the proposed intersection of the realigned SR 581 and SR 54, located east of the existing CR 54/SR 54 at SR 581 intersection, as reflected in the Wiregrass DRI Master Roadway Plan. A conceptual map depicting the SR 581 realignment and the North-South Parallel Road is included in Appendix E. For this alternative, the model was run for each of the analysis years using the appropriate SE data and network, as described previously in Section 3.2.

Note that the North-South Road alignment has not been studied in detail, is not included in the *Pasco County MPO 2035 Cost-Affordable LRTP* and is conceptual only at this time. During the initial development of future traffic volumes, a sensitivity analysis was conducted at the request of Pasco County using the travel demand model in order to assess the potential positive impact that the addition of a north-south roadway may have on the roadway network. The roadway was not conceptualized to occur without the proposed interchange; rather, it was intended to provide an additional north-south facility serving mainly local trips. Therefore, although the North-South Road Build Alternative is anticipated to divert approximately 10,000 vehicles per day in the Design Year (2040) from the I-75 mainline between CR 54 and Overpass Road, it has no significant impact in terms of diverting traffic from the proposed I-75/Overpass Road Interchange. Hence, it was determined that no detailed operational analysis of this alternative would be performed in the PIJR. It should additionally be noted that the need in the study area for additional north-south capacity to relieve mainline I-75 (including the conceptual North-South Road) will be further evaluated in the update of the Pasco County MPO LRTP to the year 2040.

3.2.4 BUILD ALTERNATIVE WITH TOLL

This alternative includes a Diamond Interchange at I-75 and Overpass Road and a $0.25 toll for movements to/from Overpass Road. During the initial development of future traffic volumes, a sensitivity analysis which modeled tolls on the ramps to and from the proposed interchange was conducted at the request of Pasco County in order to provide a preliminary assessment only of the travel demand at the proposed interchange if tolls were to be introduced. The $0.25 toll was selected for illustrative purposes only. For this alternative, the model was run for the Design Year (2040) using the appropriate SE data and network, as described previously in Section 3.2.

As the toll scenario was modeled for informational purposes only at this time, it was determined that no detailed operational analysis of this alternative would be performed in the PIJR. It should also be noted that Pasco County is not proposing a toll facility for Overpass Road as the recommended alternative for the interchange. However, they are not discarding further exploration of this option as a potential funding source for the construction of the interchange and/or the Overpass Road extension in the future. Pasco County is also aware that the Build Alternative with Toll is provided for illustrative purposes only and the actual feasibility of such alternative would need to be coordinated with FDOT and FHWA, as well as validated by a separate toll revenue feasibility study outside the scope of this PIJR.

3.3 FUTURE YEAR AADT

Future year AADTs for Opening Year (2022), Interim Year (2030), and Design Year (2040) were developed from the TBRPM. The model was run for each of these years for each alternative after applicable adjustments were made to roadway network and SE data. The Peak Season Weekday Average Daily Traffic (PSWADT) volumes were obtained from the model output. The PSWADT was converted to AADT by applying the Model Output Conversion Factor (MOCF) of 0.95. This calculation is shown in the following formula:

$$AADT = PSWADT \times MOCF$$

Where: AADT = Average Annual Daily Traffic Volume
PSWADT = Peak Season Weekday Average Daily Traffic Volume
MOCF = Model Output Conversion Factor (0.95)

Model plots showing the future year AADTs are included in Appendix E. The raw traffic forecast model volumes for the Build and No-Build scenarios on the mainline, ramps, and interchange crossroads were reviewed and manual adjustments were made where the model assignment was not logical. For instance, in the No-Build Opening Year (2022) model output, there was a large directional imbalance for the volume on I-75 between SR 56 and CR 54 (86,200 northbound and 63,600 southbound). There was also a large imbalance in the model AADT for the northbound off-ramp to CR 54 (31,900) and southbound on-ramp from CR 54 (15,900). Manual adjustments were made to model volumes in such instances. The AADTs were refined to develop a balanced mainline and ramp assignment and are rounded to the nearest

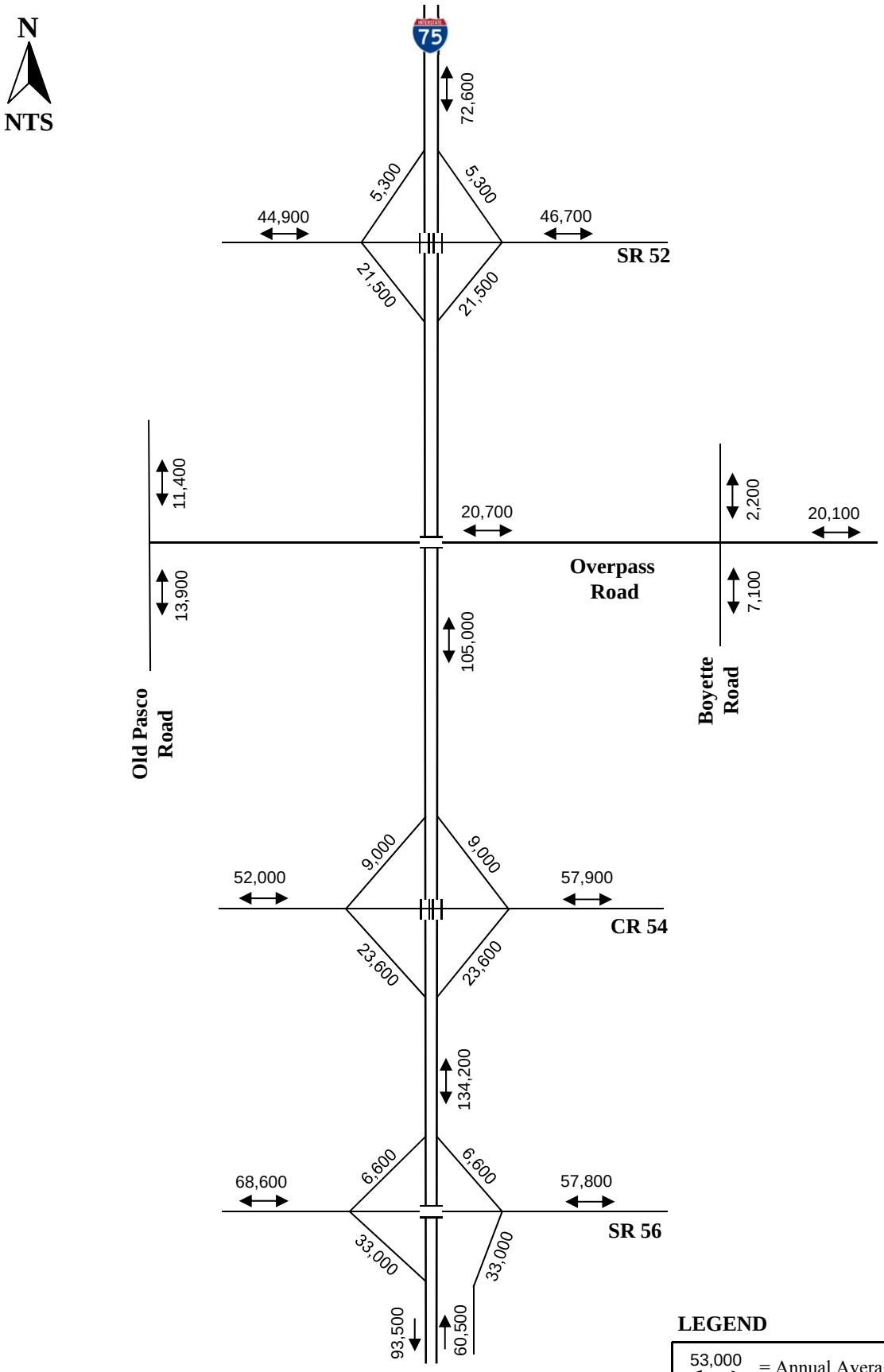
one hundred. The adjusted forecasts were compared to Existing Year and Interim Year forecasts to ensure that the traffic volumes increased from earlier years.

The Opening Year (2022), Interim Year (2030), and Design Year (2040) AADTs are shown in **Figures 3-3, 3-4,** and **3-5** for the No-Build Alternative, in **Figures 3-6, 3-7,** and **3-8** for the Build Alternative with Diamond Interchange, and in **Figures 3-9, 3-10,** and **3-11** for the North-South Road Build Alternative, respectively.

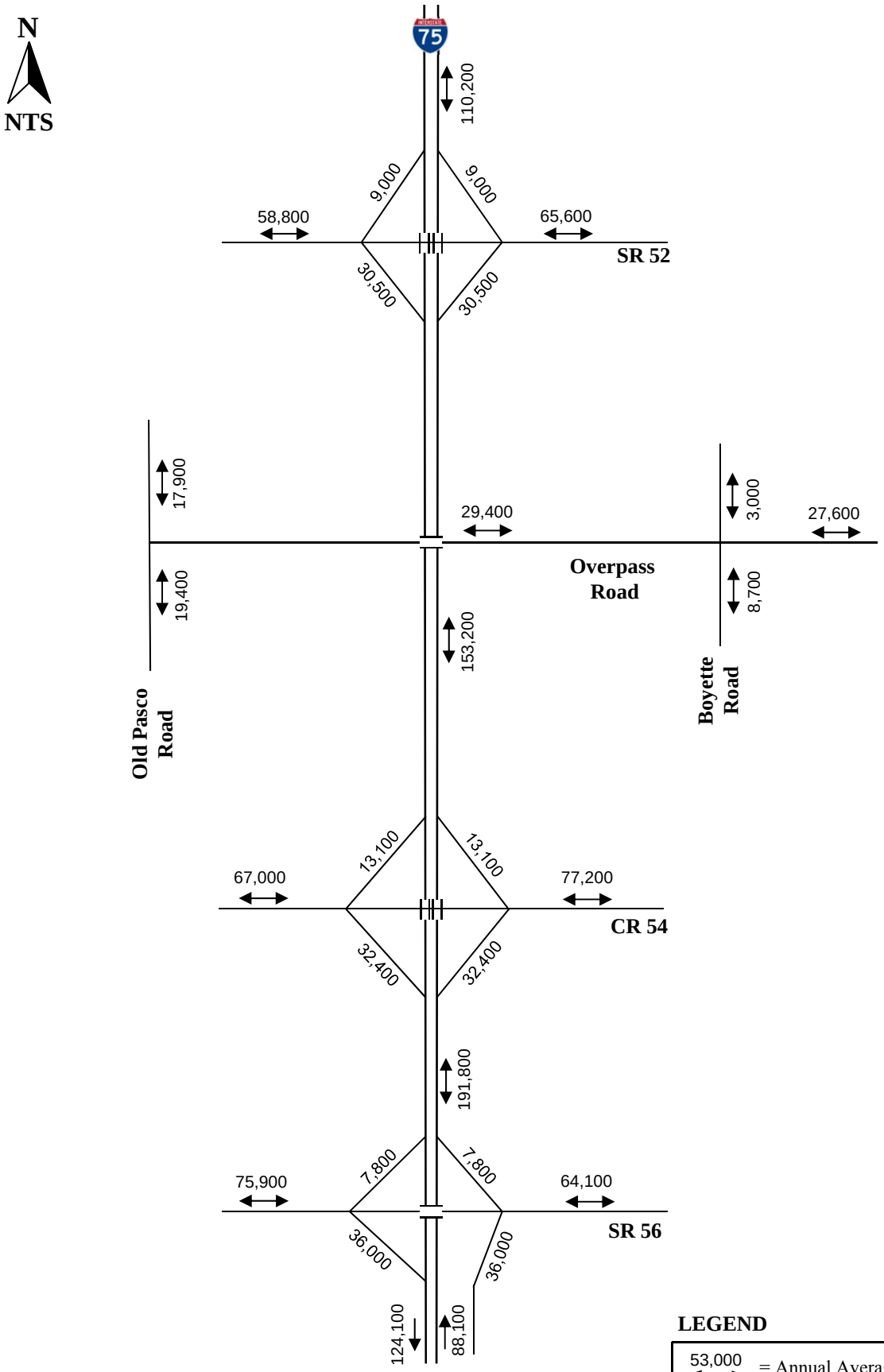
3.4 SUMMARY OF PROJECTED VOLUMES

The adjusted and balanced AADT volumes for the Design Year are summarized in **Table 3-1**. Key traffic projections for the Build and No-Build Alternatives are described below:

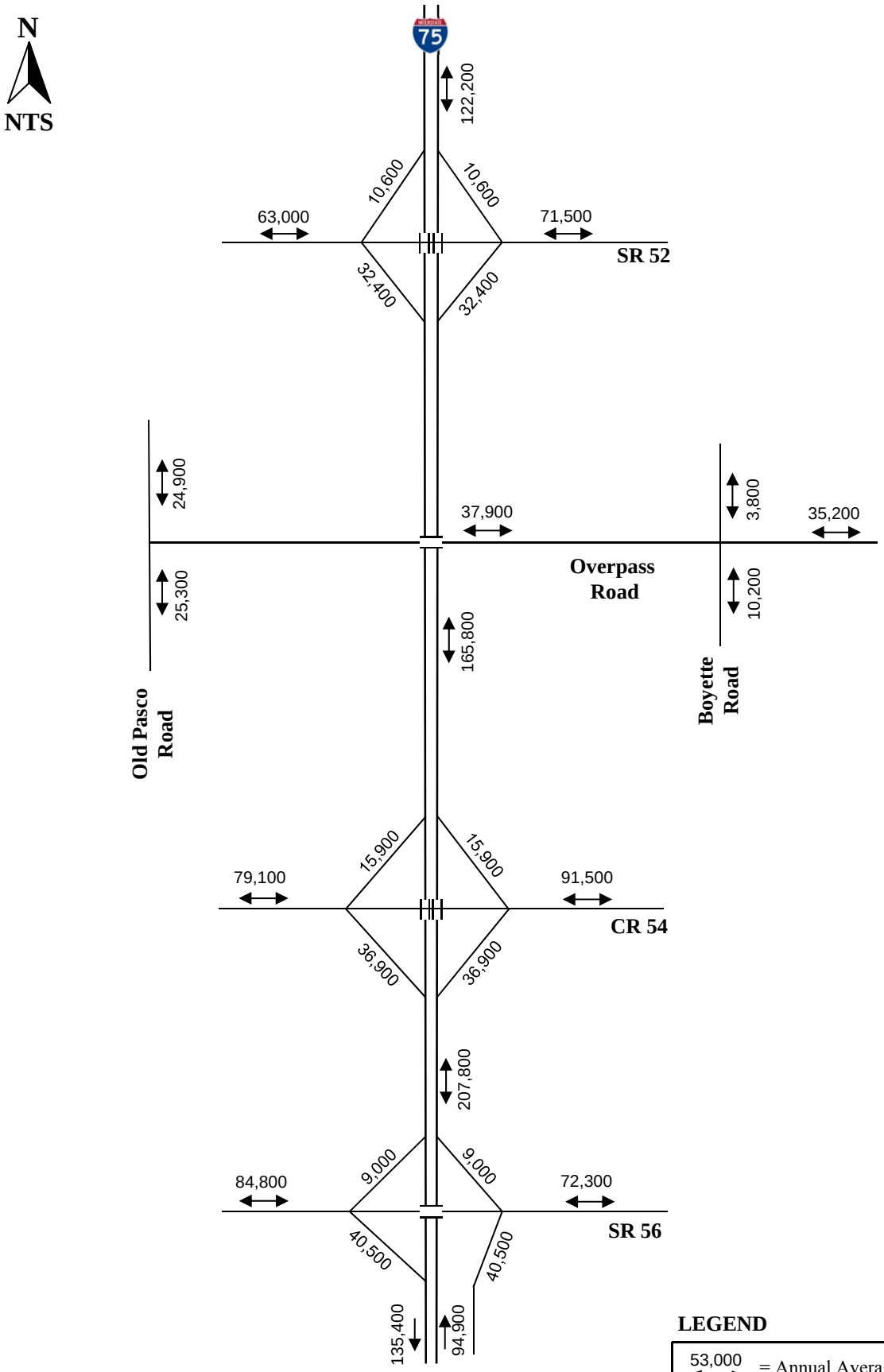
- The 2040 AADT for the I-75 segment between SR 56 and CR 54 with the Build Alternative is 214,800 vpd.
- The 2040 AADT on Overpass Road is as high as 73,100 vpd with the Build Alternative.
- The 2040 AADT for the Build Alternative at the Overpass Road interchange (sum of all ramps to/from Overpass Road) is 76,200 vpd.
- With the introduction of the Overpass Road interchange, the 2040 Build Alternative AADT at the I-75/CR 54 interchange (sum of all CR 54 ramps to/from I-75) is reduced by 13,200 vpd and the AADT at I-75/SR 52 interchange (sum of all SR 52 ramps to/from I-75) is reduced by 13,600 vpd. No significant reduction was observed at the I-75/SR 56 interchange.
- The North-South Road Alternative diverts approximately 10,000 vpd from the I-75 segment between CR 54 and Overpass Road. Additional volume attracted to this alignment appears to be attributed to latent demand and traffic redistribution based on the model. Also, this alternative loads more traffic to/from the north (northbound on-ramp and southbound off-ramps) at Overpass Road. The North-South Road Alternative has no significant impact in terms of diverting traffic from the proposed Overpass Road interchange. Therefore, after initial investigations, it was determined that no detailed analysis of this alternative will be performed.
- Introduction of a toll ($0.25) at the proposed Overpass Road interchange reduces the year 2040 Build Alternative demand at the interchange (sum of all Overpass Road ramps to/from I-75) from 76,200 to 42,800 vpd. Detailed traffic operational analysis was not performed with the Toll Alternative. A separate Toll Feasibility and Revenue Study will be conducted if the County considers such alternative at a future date.



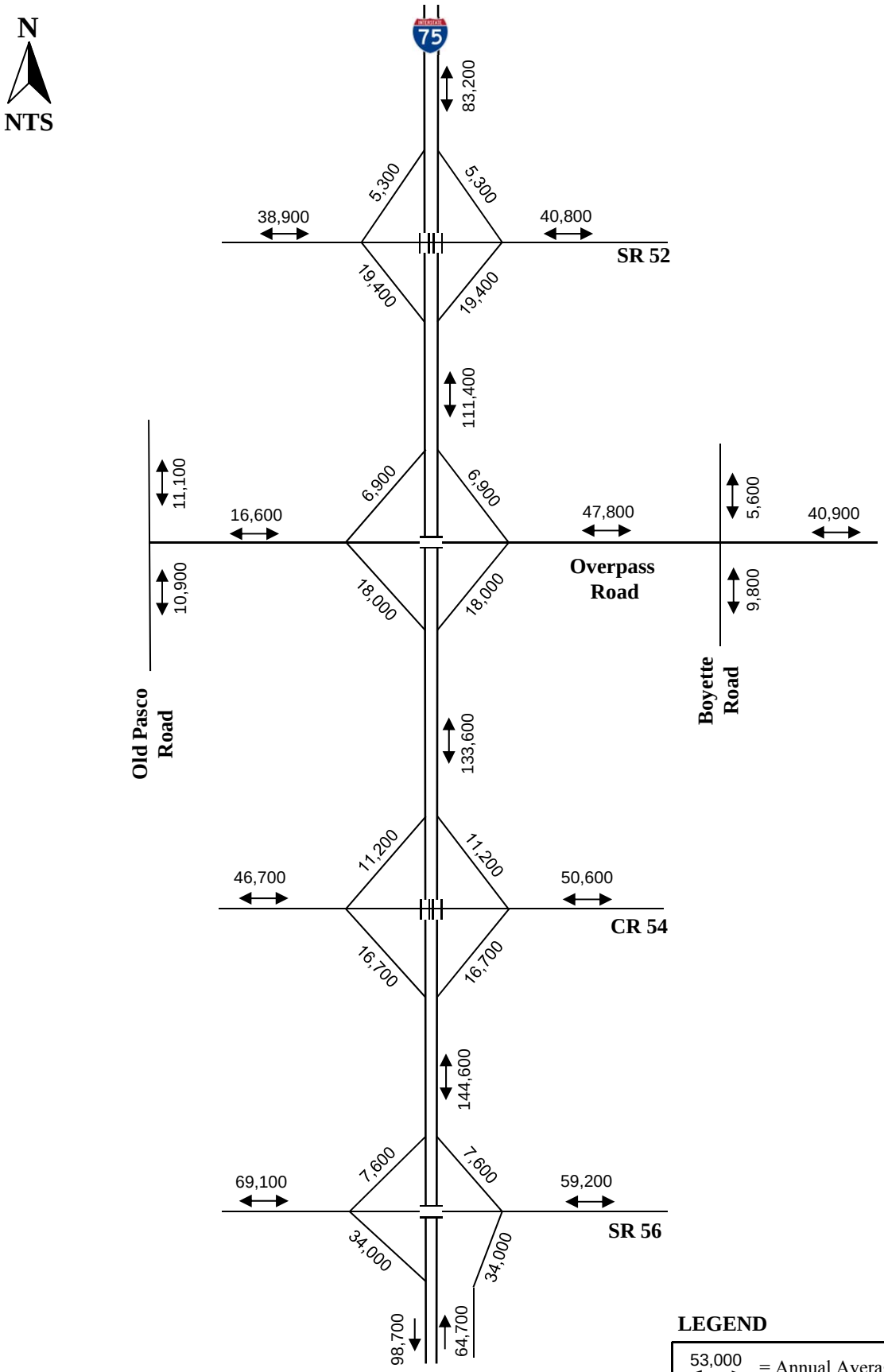
I-75 and Overpass Road Preliminary Interchange Justification Report	No-Build Alternative Opening Year (2022) AADT	Figure 3-3



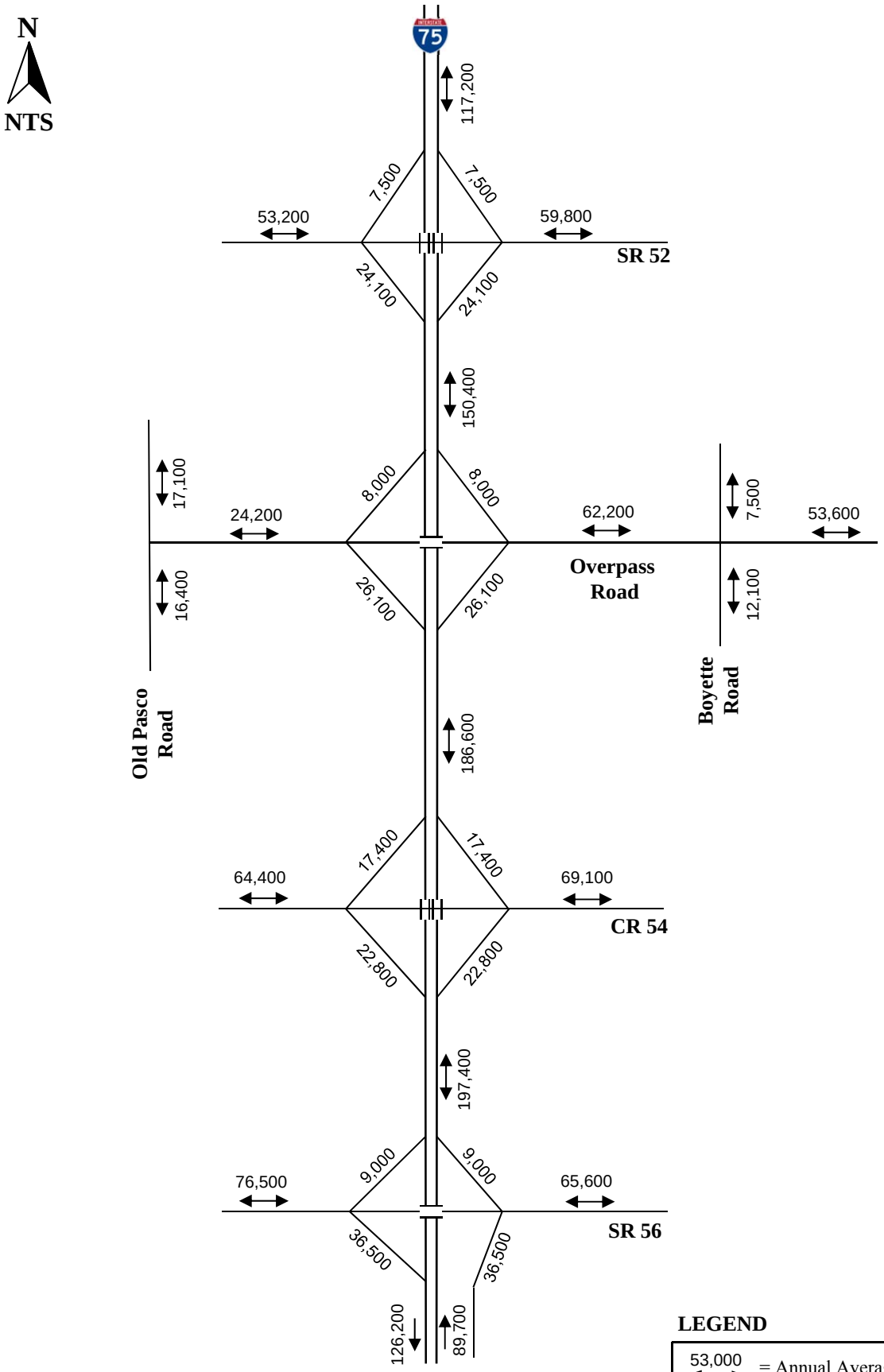
I-75 and Overpass Road Preliminary Interchange Justification Report	No-Build Alternative Interim Year (2030) AADT	Figure 3-4



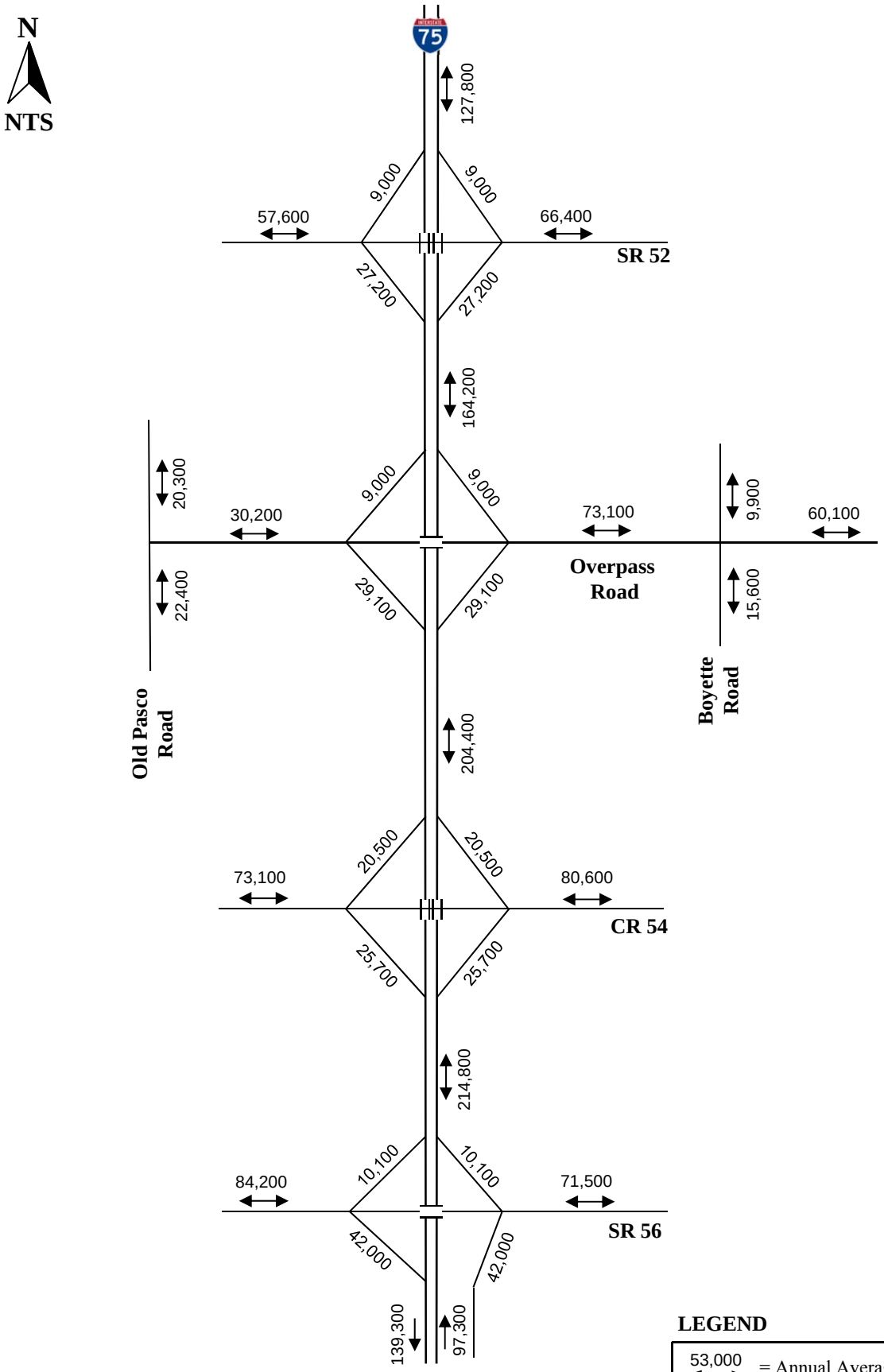
I-75 and Overpass Road Preliminary Interchange Justification Report	No-Build Alternative Design Year (2040) AADT	Figure 3-5



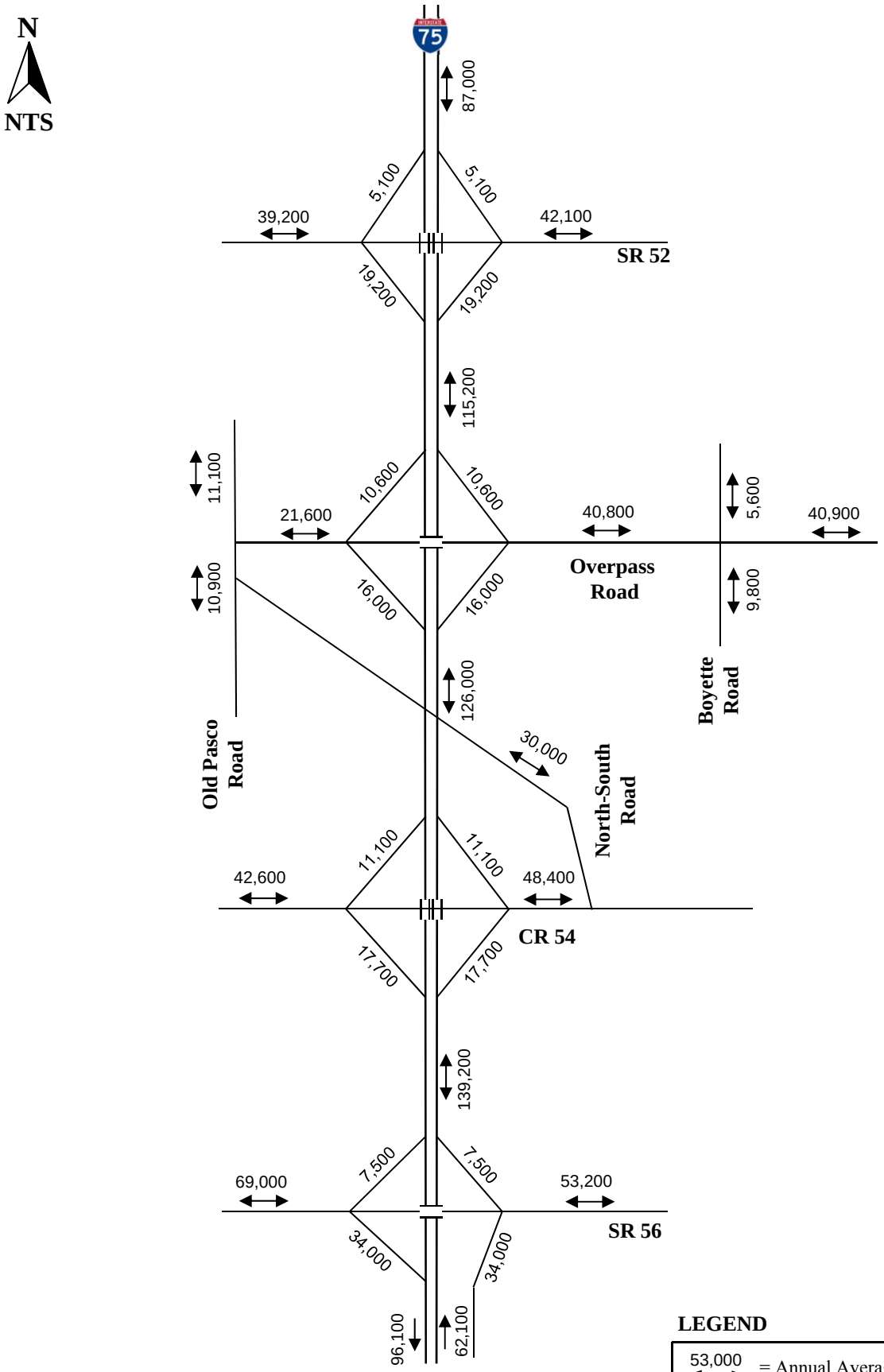
I-75 and Overpass Road Preliminary Interchange Justification Report	Build Alternative Opening Year (2022) AADT	Figure 3-6



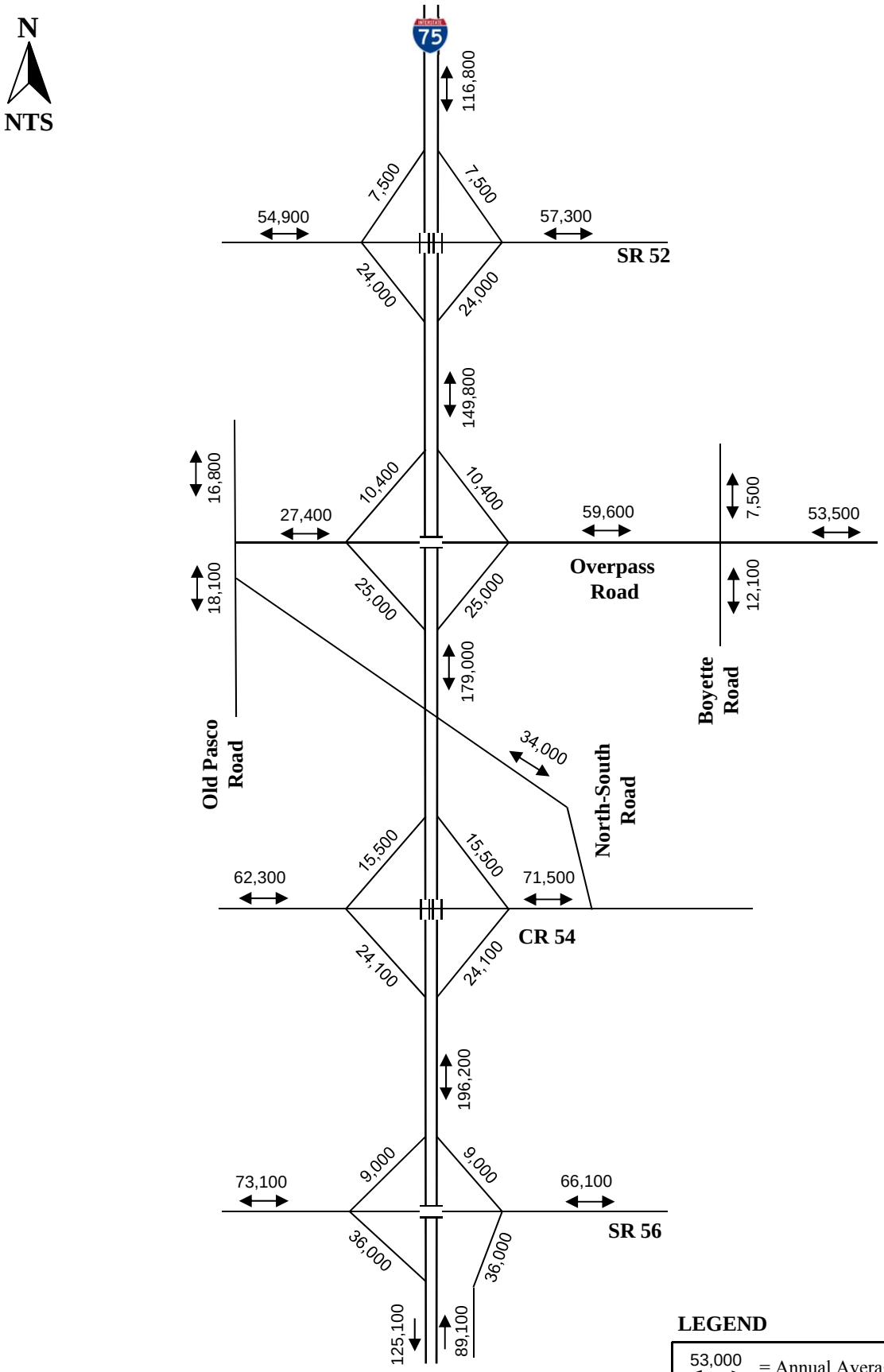
I-75 and Overpass Road Preliminary Interchange Justification Report	Build Alternative Interim Year (2030) AADT	Figure 3-7



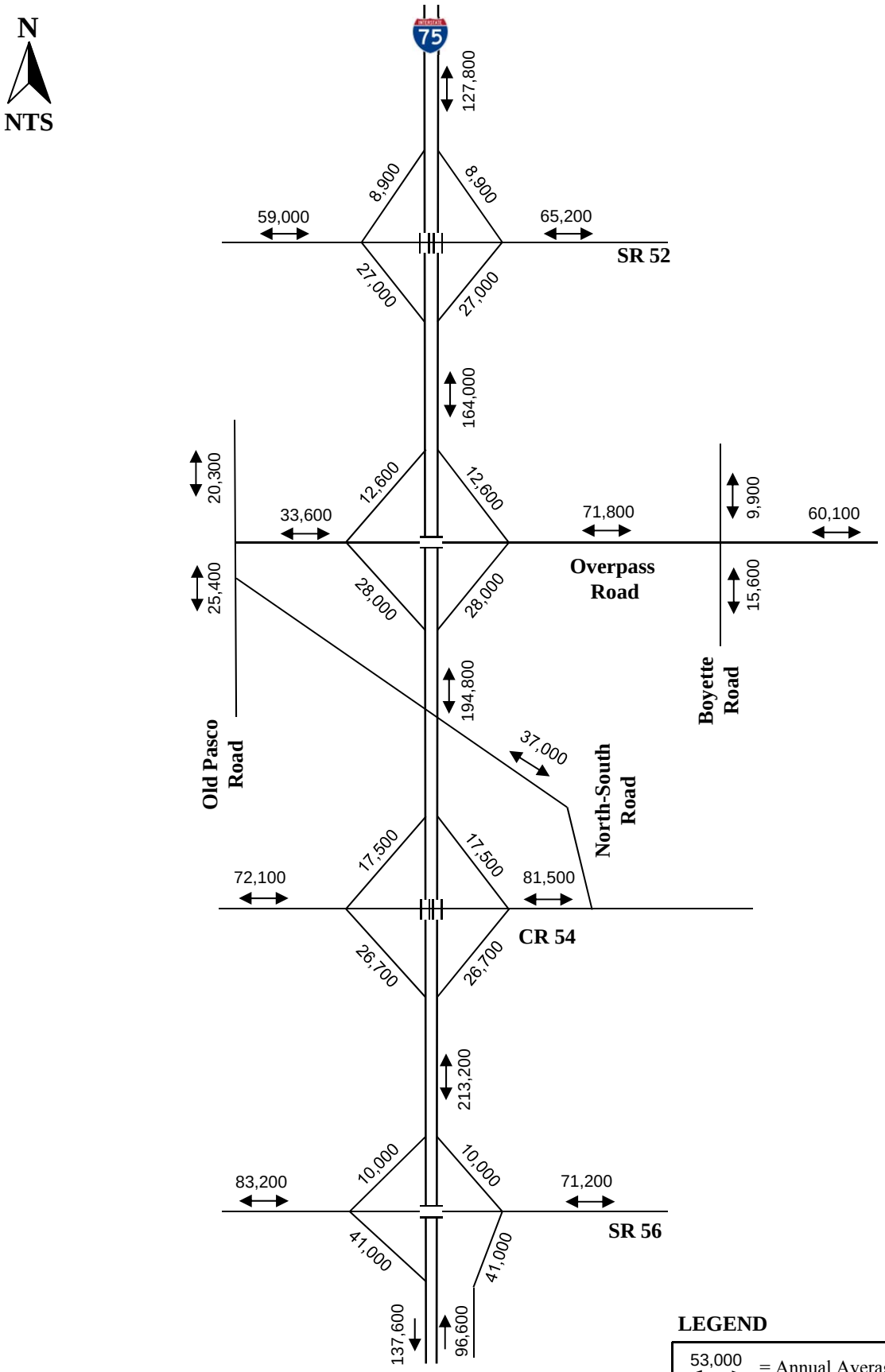
I-75 and Overpass Road Preliminary Interchange Justification Report	Build Alternative Design Year (2040) AADT	Figure 3-8



I-75 and Overpass Road Preliminary Interchange Justification Report	Build North-South Road Alternative Opening Year (2022) AADT	Figure 3-9



I-75 and Overpass Road Preliminary Interchange Justification Report	Build North-South Road Alternative Interim Year (2030) AADT	Figure 3-10



I-75 and Overpass Road Preliminary Interchange Justification Report	Build North-South Road Alternative Design Year (2040) AADT	Figure 3-11

TABLE 3-1
DESIGN YEAR (2040) AADTS

Roadway	Segment	Design Year (2040)			
		No-Build[1]	Build[2]	Build with N-S Road[3]	Build with $0.25 Toll
I-75	SR 56 to CR 54	207,800	214,800	213,200	207,500
	CR 54 to Overpass Road	165,800	204,400	194,800	189,900
	Overpass Road to SR 52	165,800	164,200	164,000	160,400
	North of SR 52	122,200	127,800	127,800	123,400
Overpass Road	Old Pasco Road to I-75	37,900	30,200	33,600	27,000
	I-75 to Boyette Road	37,900	73,100	71,800	30,700
I-75/SR 56 Interchange	NB off-ramp	40,500	42,000	41,000	41,400
	SB on-ramp	40,500	42,000	41,000	41,400
	NB on-ramp	9,000	10,100	10,000	8,200
	SB off-ramp	9,000	10,100	10,000	8,200
I-75/CR 54 Interchange	NB off-ramp	36,900	25,700	26,700	30,100
	SB on-ramp	36,900	25,700	26,700	30,100
	NB on-ramp	15,900	20,500	17,500	16,900
	SB off-ramp	15,900	20,500	17,500	16,900
I-75/Overpass Road Interchange	NB off-ramp	-	29,100	28,000	17,700
	SB on-ramp	-	29,100	28,000	17,700
	NB on-ramp	-	9,000	12,600	3,700
	SB off-ramp	-	9,000	12,600	3,700
I-75/SR 52 Interchange	NB off-ramp	32,400	27,200	27,000	28,000
	SB on-ramp	32,400	27,200	27,000	28,000
	NB on-ramp	10,600	9,000	8,900	9,900
	SB off-ramp	10,600	9,000	8,900	9,900
SR 56	West of I-75	84,800	84,200	83,200	85,000
	East of I-75	72,300	71,500	71,200	72,100
CR 54	West of I-75	79,100	73,100	72,100	78,200
	East of I-75	91,500	80,600	81,500	85,600
SR 52	West of I-75	63,000	57,600	59,000	60,700
	East of I-75	71,500	66,400	65,200	68,200

[1] No-Build Alternative does not include the I-75/Overpass Road Interchange.
[2] Build Alternative includes the I-75/Overpass Road Interchange.
[3] Build Alternative with North-South Parallel Road as four-lane arterial connecting SR 54 with Old Pasco Road.

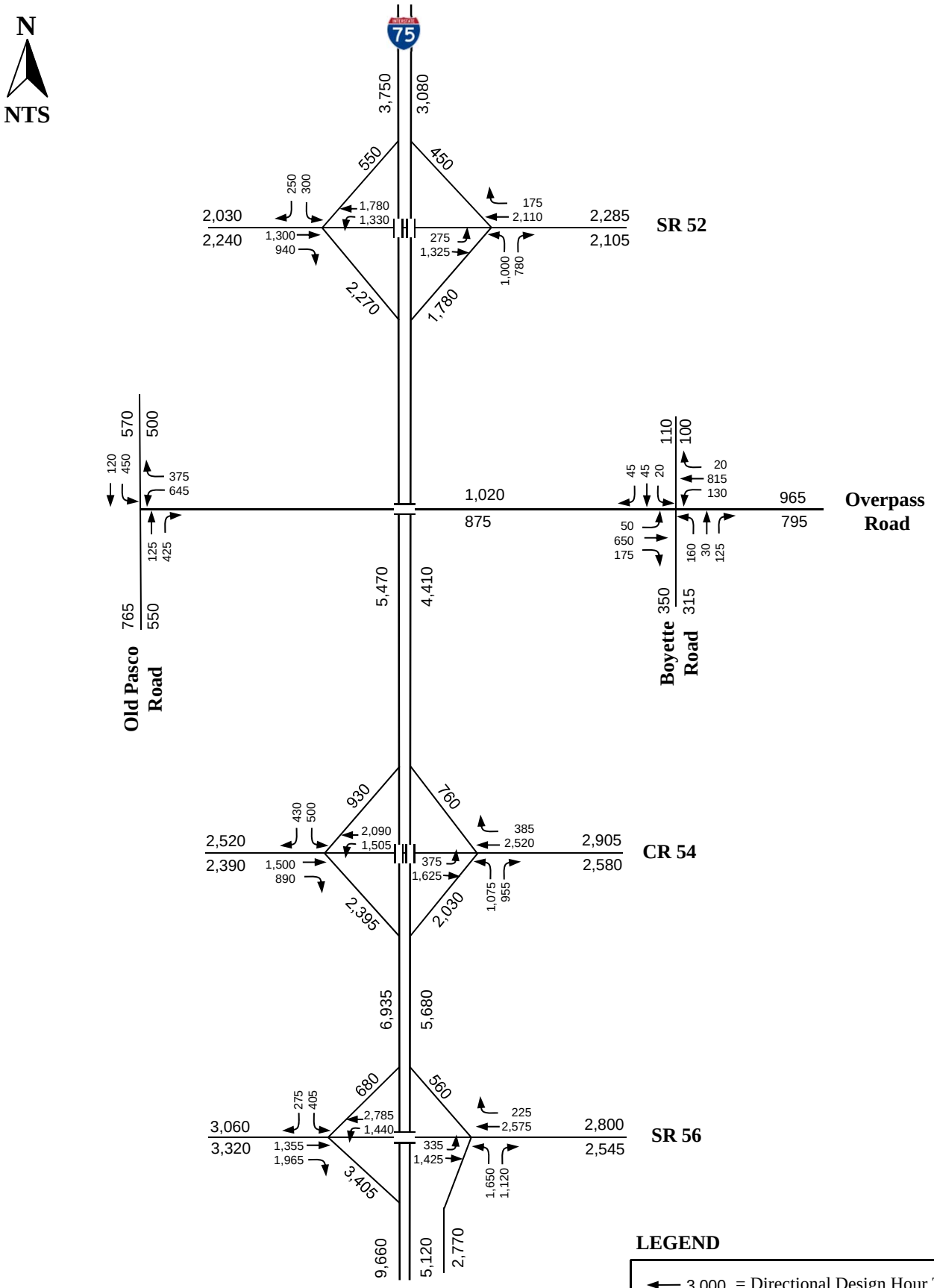
3.5 FUTURE YEAR DDHVS

The DDHVs for the Opening Year (2022), Interim Year (2030), and Design Year (2040) were developed by multiplying the AADT volumes by the recommended design traffic factors (K_{30} and D_{30} factors), as previously described in Section 2.5. This procedure is based on FDOT's *Project Traffic Forecasting Handbook*. The DDHVs were developed for both the Build and No-Build Alternatives. Turning movements for future years were developed from existing turning percentages and the forecasted DDHV for each approach link. Manual adjustments were made to turning percentages and DDHVs to balance the approach and departure volumes. Future turning movement volumes were balanced through the interchanges.

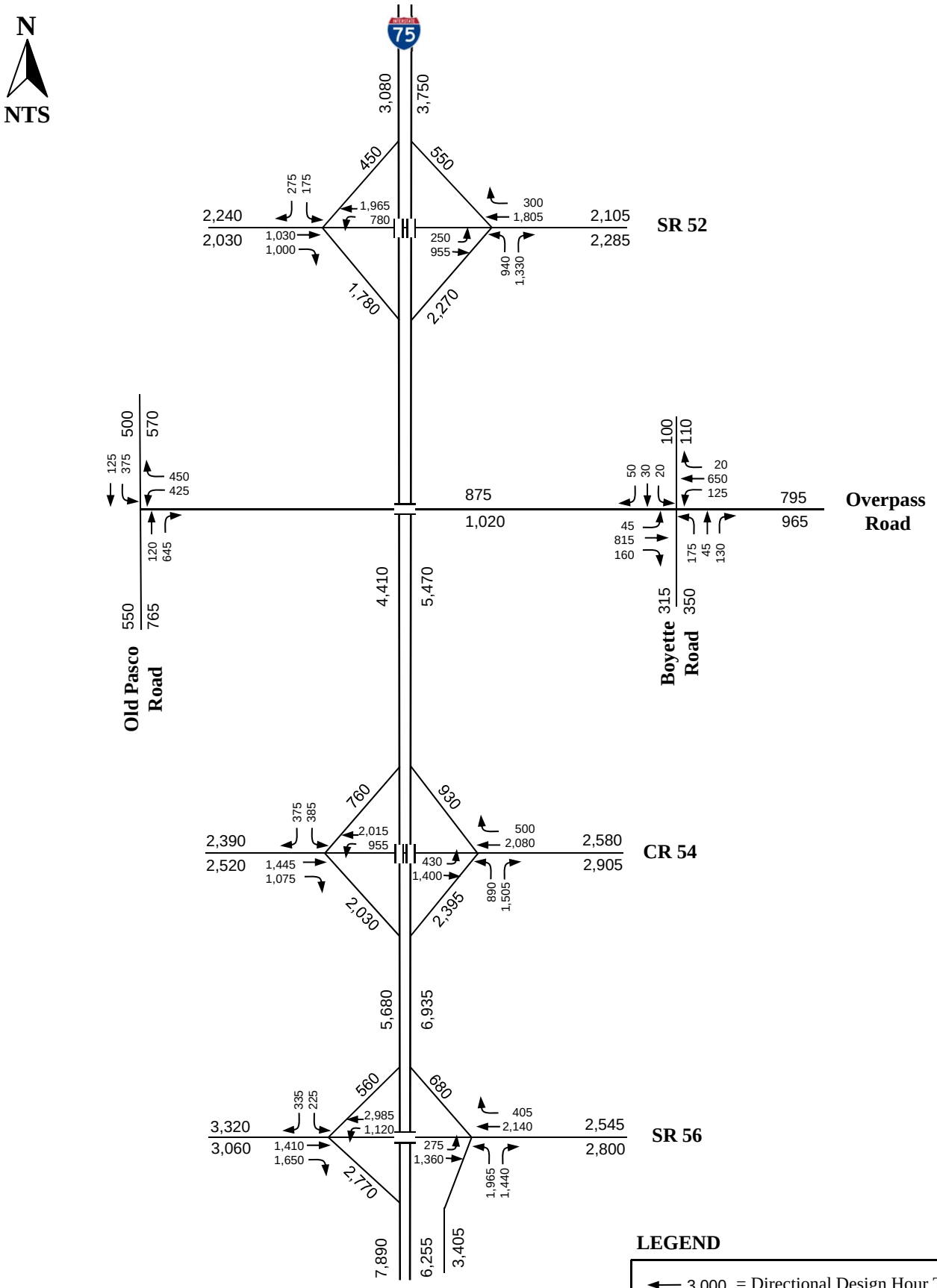
In some instances, future volumes deviate from the approved design hour factors (mostly on the side streets) as a result of manual adjustments and balancing at the intersections; however, the factors were maintained within the range of the acceptable values from FDOT's *Project Traffic Forecasting Handbook* for all study segments. The K_{30}-factor was maintained between 9.3 and 9.6 percent and the D_{30}-factor was maintained between 52.5 and 56.5 percent, limiting the deviation from approved factors to less than 5.0 percent. Also, reasonable checks were performed to ensure all future volumes are higher than the Existing Year (2010) volumes.

Once the DDHVs for the p.m. peak hour were developed, the DDHVs for the a.m. peak hour were obtained from the reciprocal movement of the p.m. peak hour DDHVs. Peak hour intersection turning movement volumes were derived from the directional volumes using the existing turning percentages as a starting point and then refined to match the downstream DDHVs. For the a.m. peak hour, the turning movements were obtained by reversing the reciprocal movement from the p.m. peak hour.

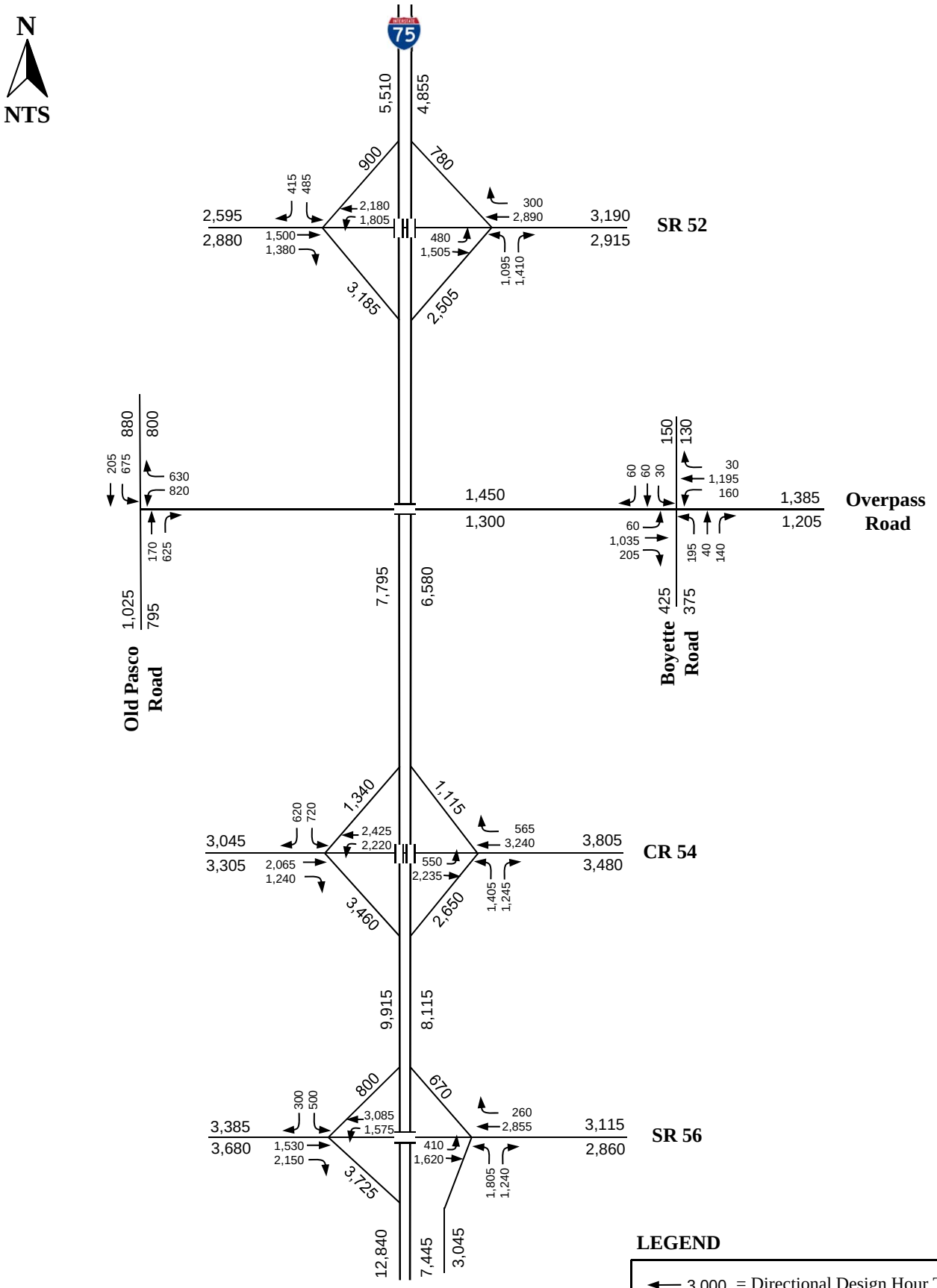
The Opening Year (2022), Interim Year (2030), and Design Year (2040) DDHVs and intersection turning movements are shown in **Figures 3-12 through 3-17** for the No-Build Alternative. Similarly, the DDHVs for the Build Alternative are shown in **Figures 3-18 through 3-23**.



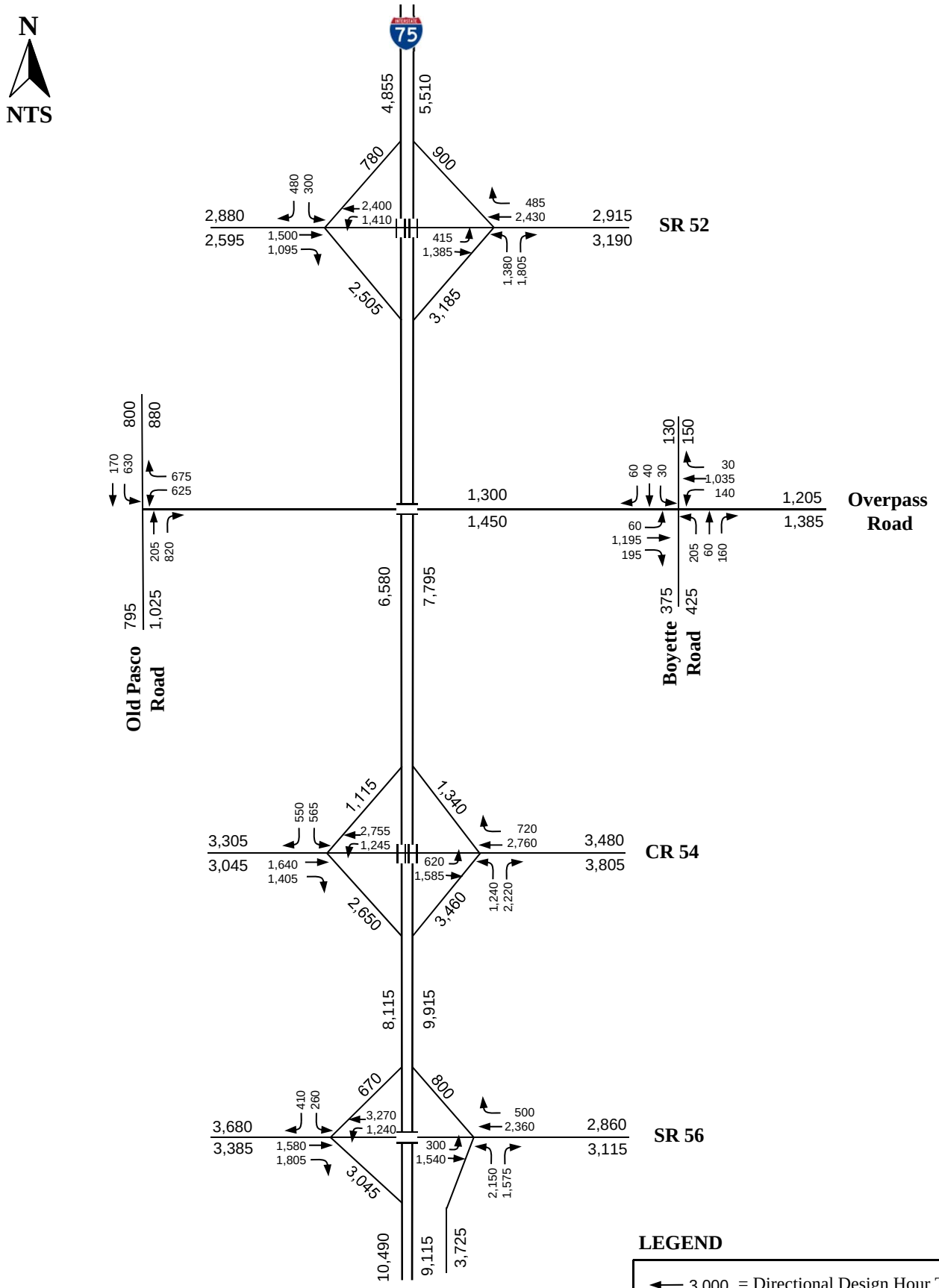
I-75 and Overpass Road Preliminary Interchange Justification Report	No-Build Alternative Opening Year (2022) AM Peak Design Hour Traffic	Figure 3-12



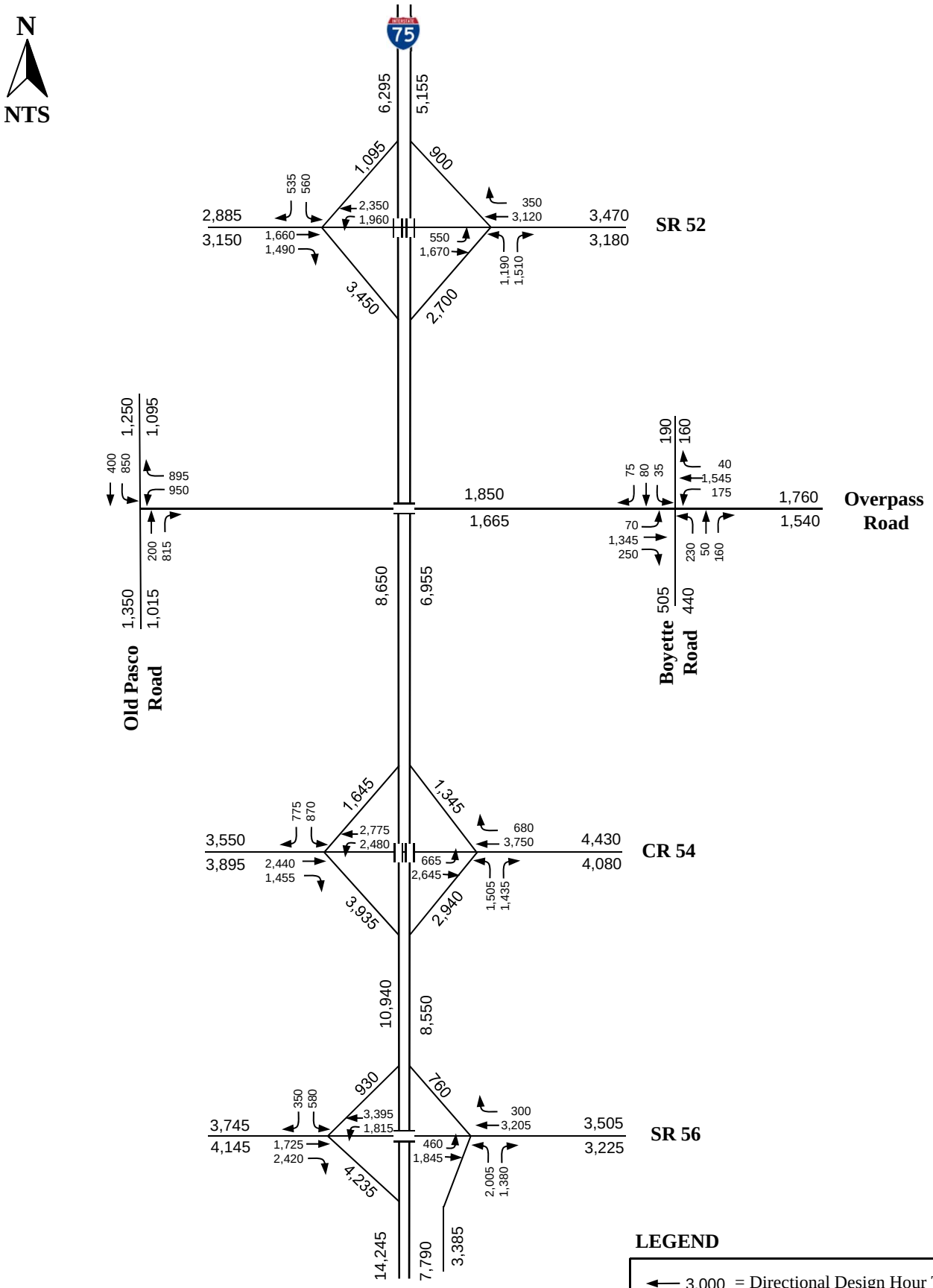
I-75 and Overpass Road Preliminary Interchange Justification Report	No-Build Alternative Opening Year (2022) PM Peak Design Hour Traffic	Figure 3-13



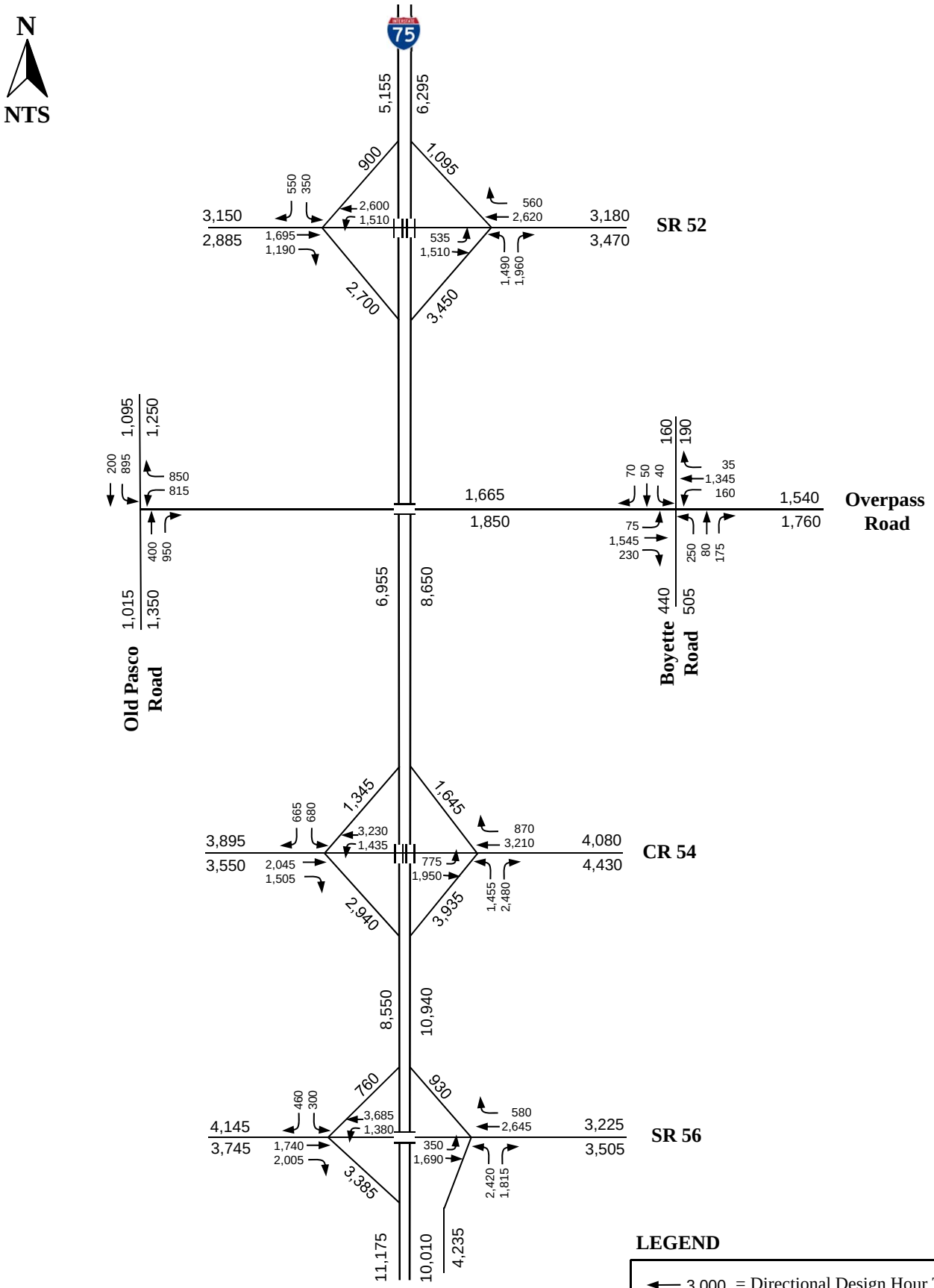
I-75 and Overpass Road Preliminary Interchange Justification Report	No-Build Alternative Interim Year (2030) AM Peak Design Hour Traffic	Figure 3-14



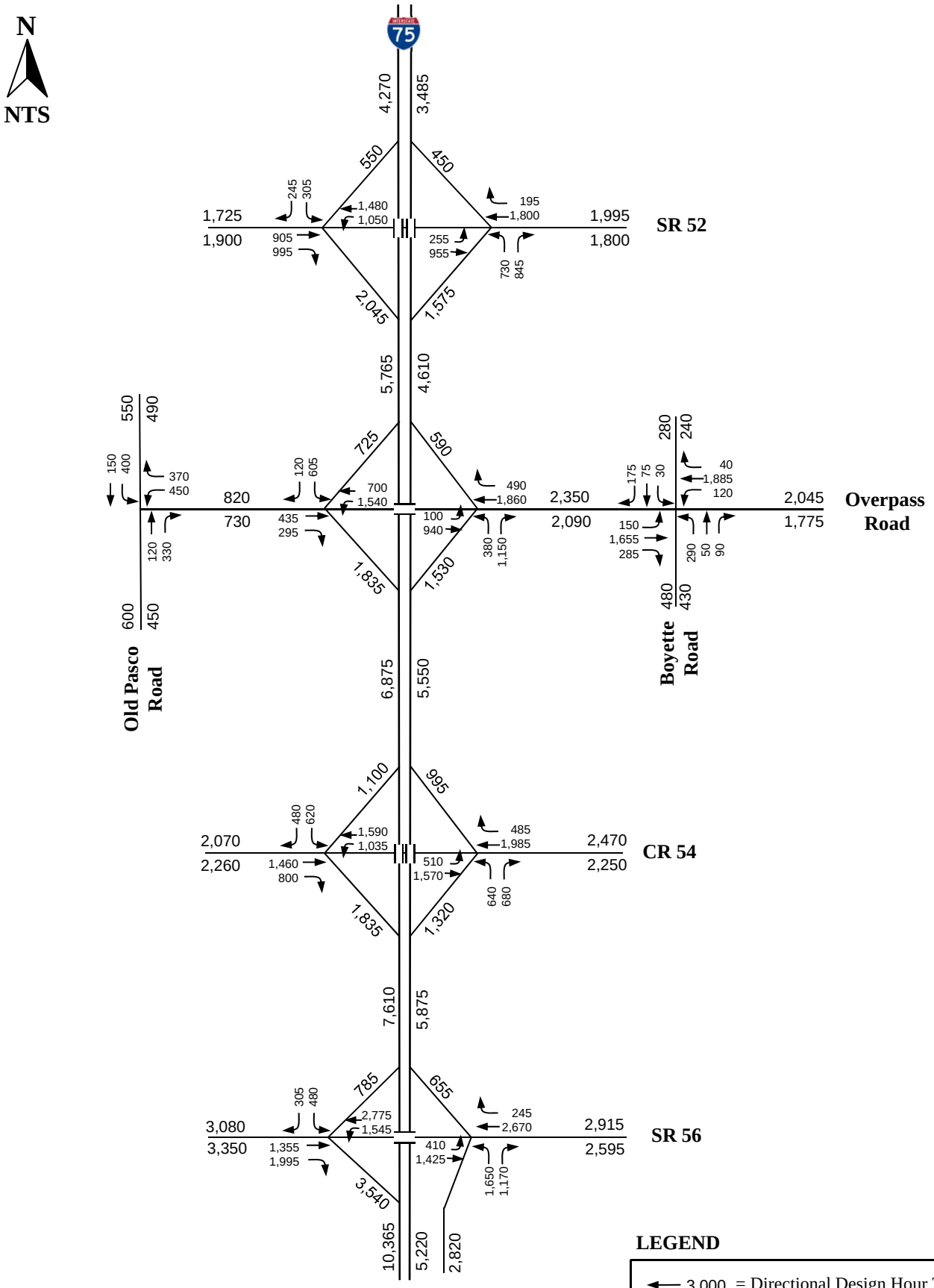
I-75 and Overpass Road Preliminary Interchange Justification Report	No-Build Alternative Interim Year (2030) PM Peak Design Hour Traffic	Figure 3-15



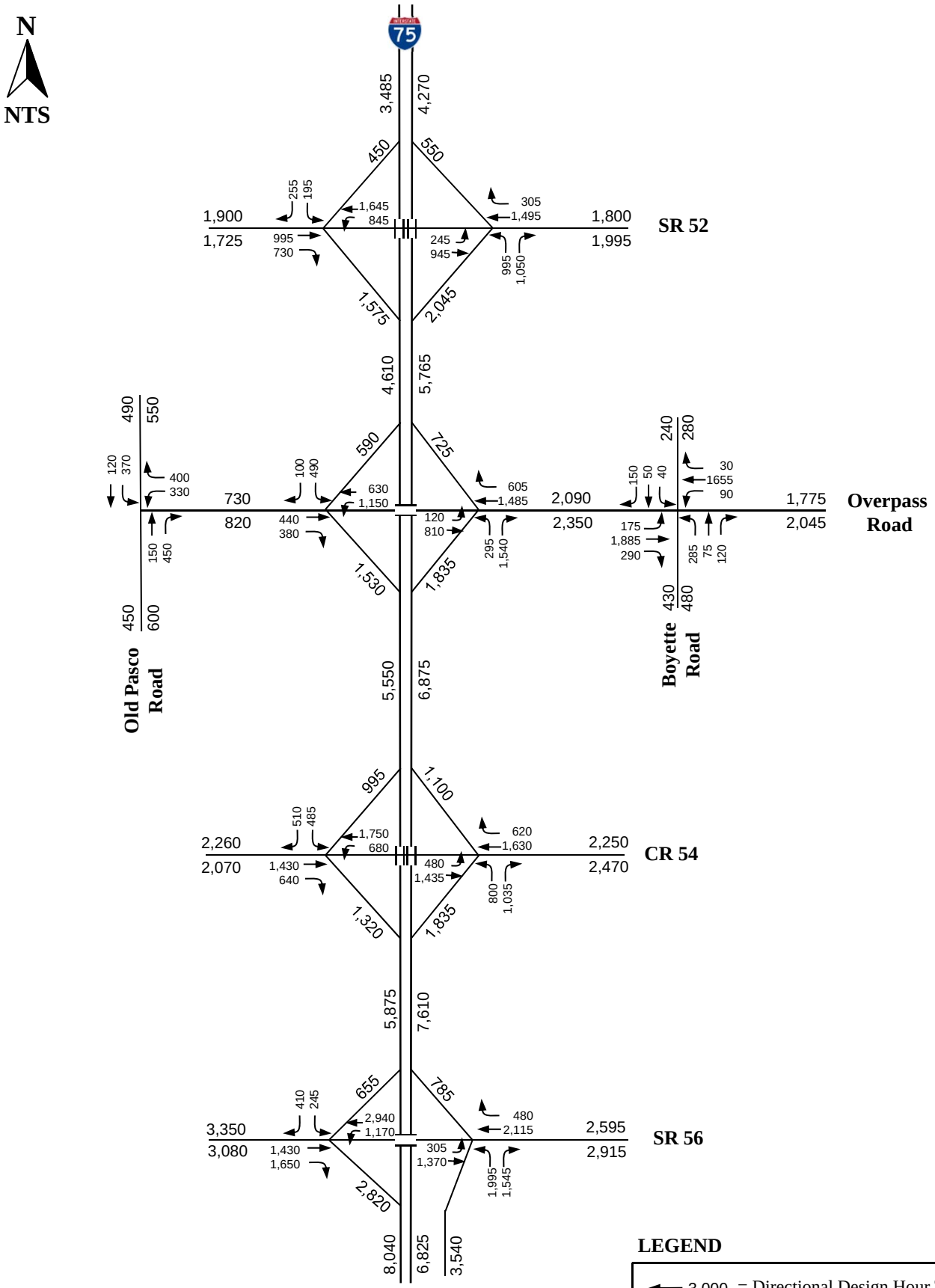
I-75 and Overpass Road Preliminary Interchange Justification Report	No-Build Alternative Design Year (2040) AM Peak Design Hour Traffic	Figure 3-16



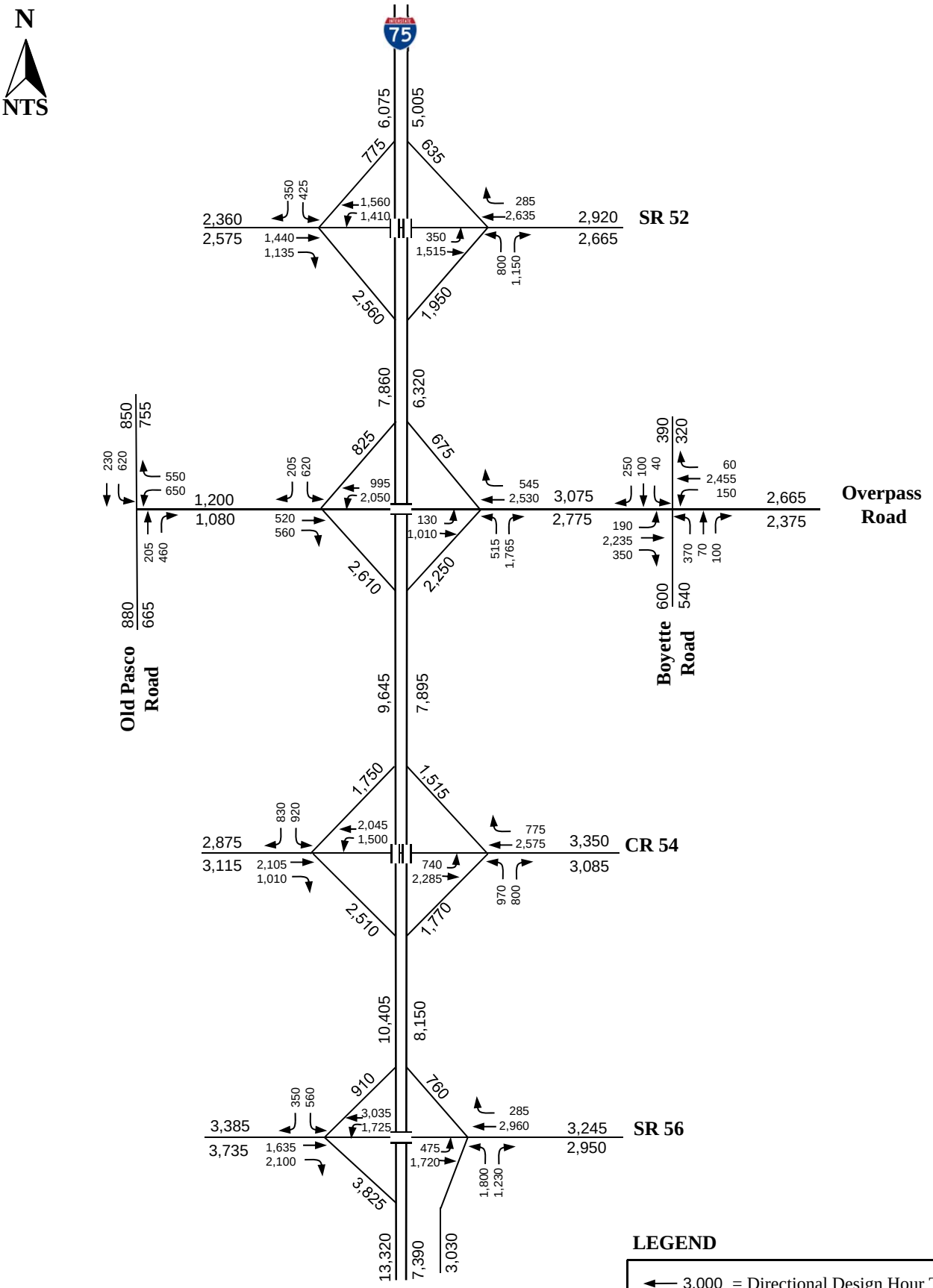
I-75 and Overpass Road Preliminary Interchange Justification Report	No-Build Alternative Design Year (2040) PM Peak Design Hour Traffic	Figure 3-17



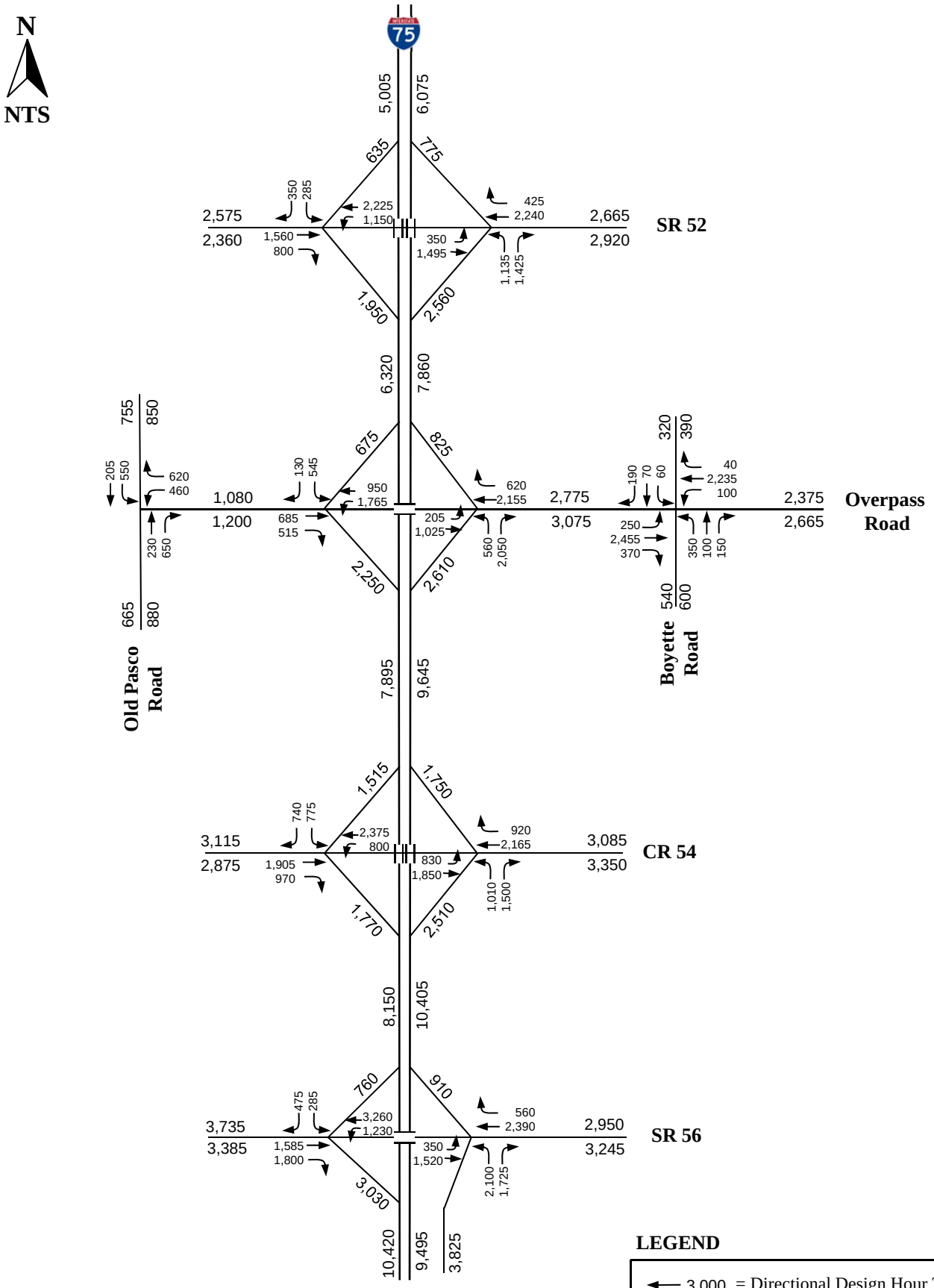
I-75 and Overpass Road Preliminary Interchange Justification Report	Build Alternative Opening Year (2022) AM Peak Design Hour Traffic	Figure 3-18



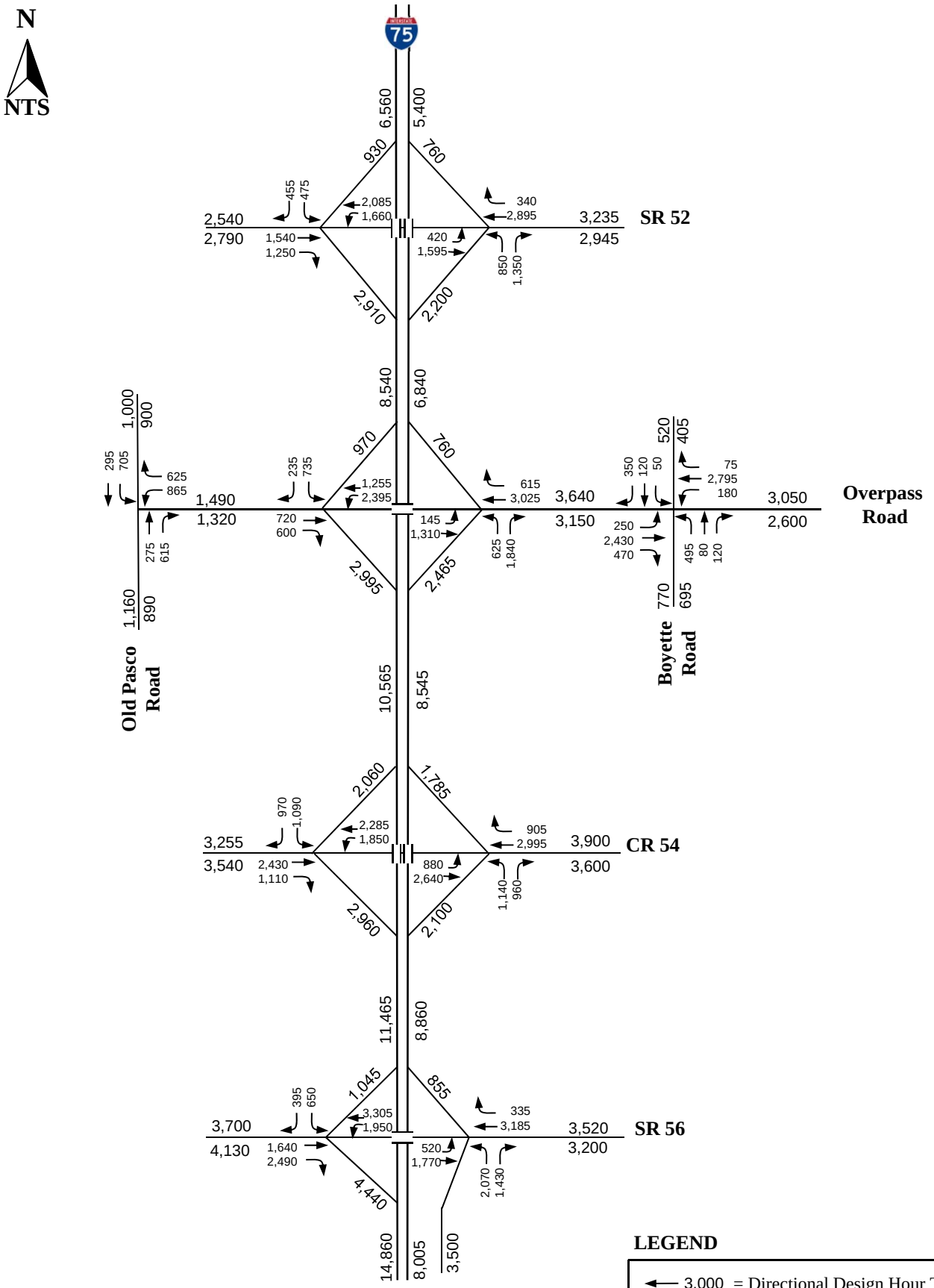
I-75 and Overpass Road Preliminary Interchange Justification Report	Build Alternative Opening Year (2022) PM Peak Design Hour Traffic	Figure 3-19



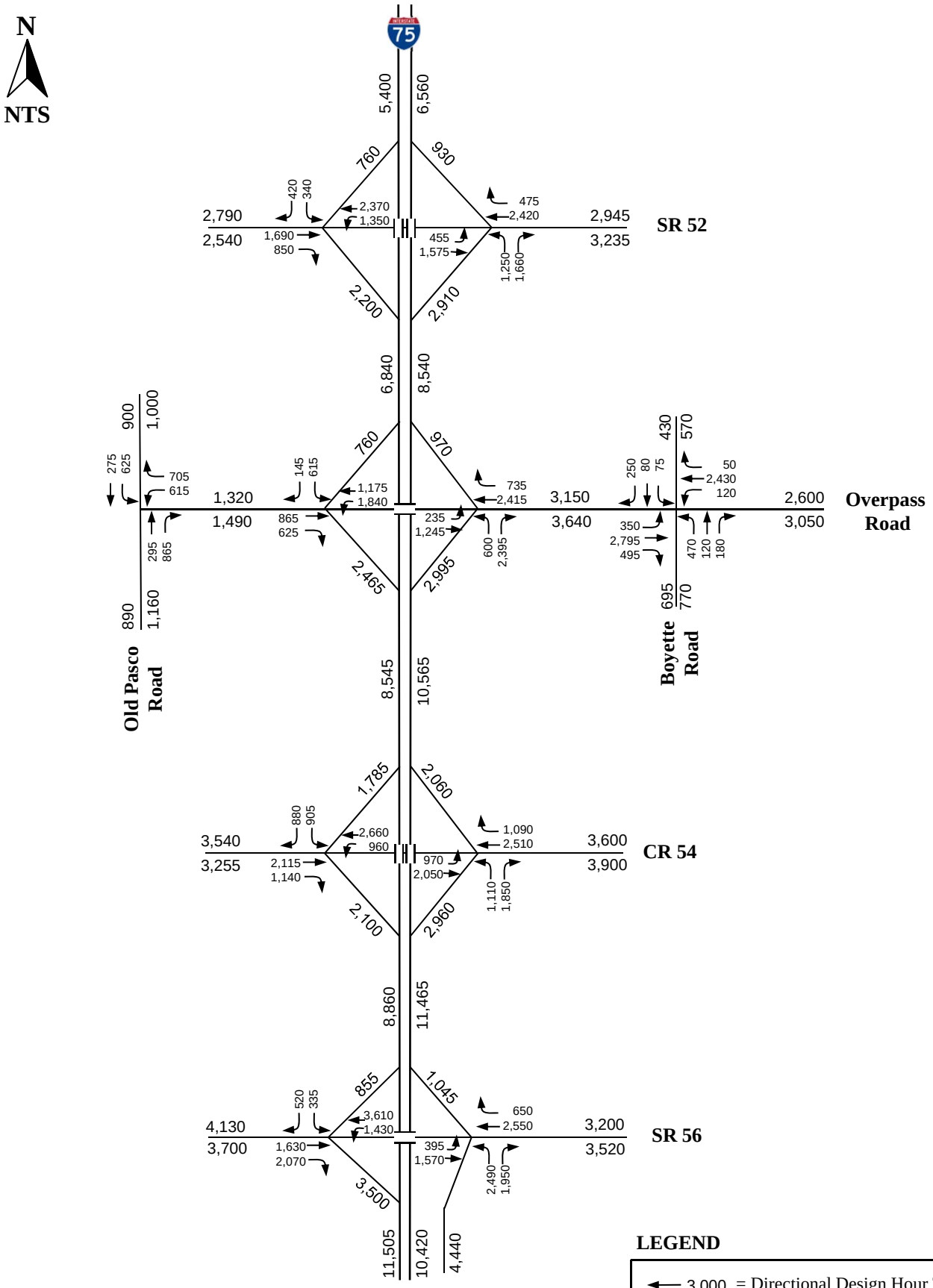
I-75 and Overpass Road Preliminary Interchange Justification Report	Build Alternative Interim Year (2030) AM Peak Design Hour Traffic	Figure 3-20



I-75 and Overpass Road Preliminary Interchange Justification Report	Build Alternative Interim Year (2030) PM Peak Design Hour Traffic	Figure 3-21



I-75 and Overpass Road Preliminary Interchange Justification Report	Build Alternative Design Year (2040) AM Peak Design Hour Traffic	Figure 3-22



I-75 and Overpass Road Preliminary Interchange Justification Report	Build Alternative Design Year (2040) PM Peak Design Hour Traffic	Figure 3-23

Section 4.0
ALTERNATIVES DESCRIPTION

Two alternatives are considered in this PIJR, a No-Build Alternative and a Build Alternative. For the Build Alternative, five different potential geometric interchange configurations were evaluated for the proposed interchange at I-75 and Overpass Road. These alternatives and interchange configurations are described in this section.

4.1 NO-BUILD ALTERNATIVE

The No-Build Alternative assumes that the proposed interchange at I-75 and Overpass Road is not constructed and no improvements other than those currently programmed in the *Pasco County MPO 2035 Cost-Affordable LRTP* or *FDOT Five-Year Work Program* will be implemented.

4.2 BUILD ALTERNATIVE

In addition to the No-Build geometry, the Build Alternative assumes that the proposed interchange at I-75 and Overpass Road will be constructed. The Build Alternative also provides adequate geometry and signalization on Overpass Road between Old Pasco Road and Boyette Road to attain acceptable LOS through the Design Year (2040).

4.3 I-75 AND OVERPASS ROAD INTERCHANGE CONFIGURATIONS

The following five interchange configurations are being evaluated for the Build Alternative as part of this PIJR:

- Diamond Interchange,
- Single Point Urban Interchange (SPUI),
- Diverging Diamond Interchange (DDI),
- Flyover Ramp (Westbound to Southbound) with a Diamond Interchange, and
- Loop Ramp (Westbound to Southbound) with a Diamond Interchange.

Preliminary concept plans were developed for each of the five interchange configurations under consideration for the proposed Overpass Road interchange. Note that all configurations assume that McKendree Road will no longer exist within the interchange footprint, as Pasco County plans to realign the roadway to connect to Overpass Road at a location east of Boyette Road. In addition, note that the concepts do not provide existing limited access (L/A) ROW lines on

Overpass Road, as it is not a limited-access facility under existing conditions. However, future (L/A) ROW lines are provided on all configurations.

All of the potential configurations are full interchanges with ramps to and from the north, as well as to and from the south. The specifics of each configuration are further described below.

4.3.1 DIAMOND INTERCHANGE

A diamond interchange is the most basic interchange form with a four-ramp configuration connecting the freeway to the surface road. This alternative provides two-lane on-/off-ramps to/from the south and single-lane on-/off-ramps to/from the north. **Figure 4-1** shows the proposed geometry for the Diamond Interchange configuration, along with existing and future ROW lines.

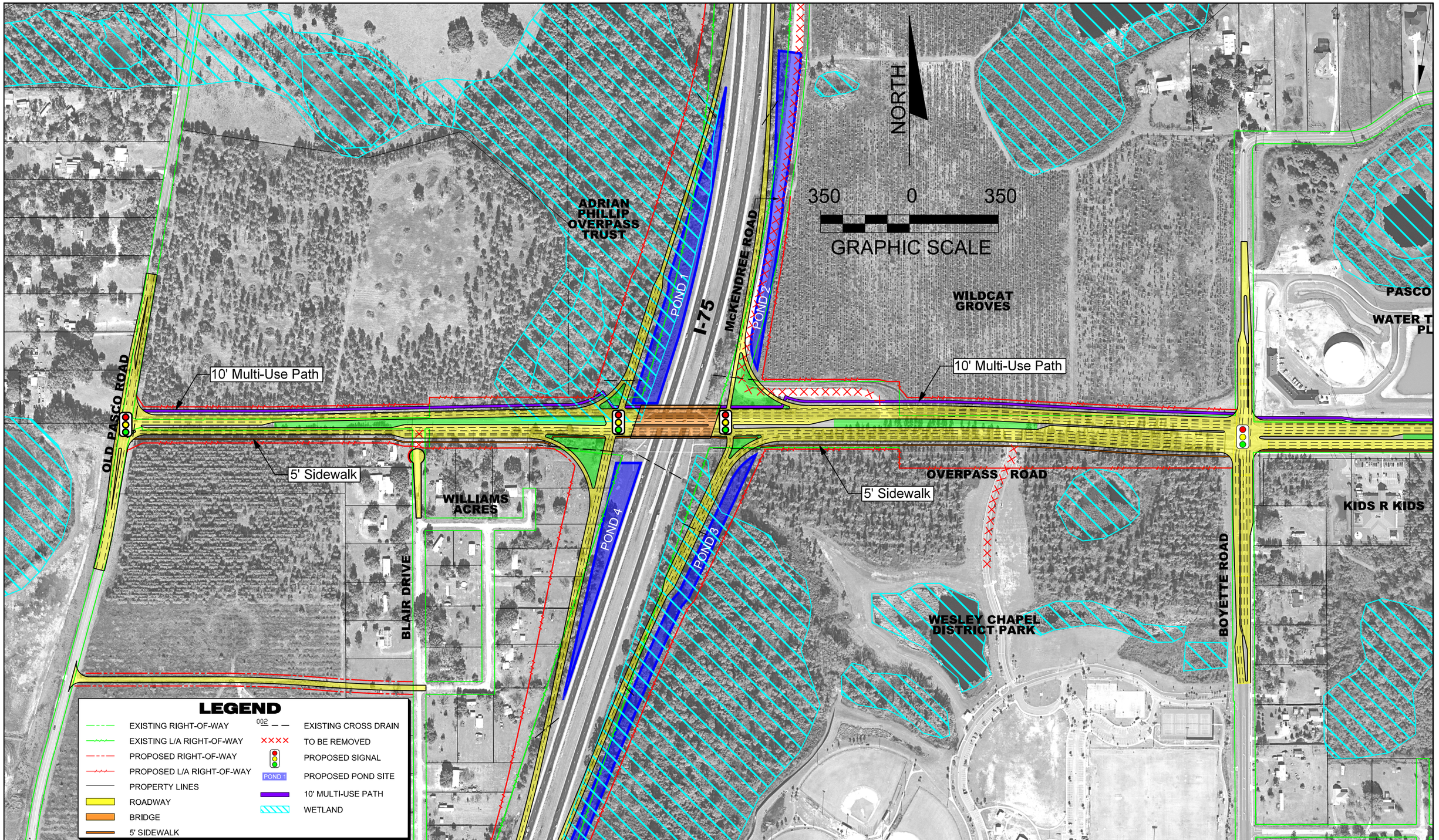
4.3.2 SINGLE POINT URBAN INTERCHANGE (SPUI)

This alternative provides two-lane on-/off-ramps to/from the south and single-lane on-/off-ramps to/from the north. **Figure 4-2** shows the proposed geometry for the SPUI alternative, along with existing and future ROW lines. A SPUI is similar to a diamond interchange except the two ramp terminal intersections are combined into a single intersection. While the SPUI ROW requirements are similar to a diamond interchange, the footprint of the interchange is considerably wider. Therefore, two bridge options were evaluated for the SPUI configuration:

- A conventional rectangular bridge and
- A bow-tie shape bridge mirroring the turning movements.

The conventional rectangular bridge would employ typical construction with parallel girders spanning between parallel substructure elements. The beams would generally be of the same type, design, and construction. Likewise, standard details could be used for the superstructure slab, barriers, and substructure elements. The relative uniformity of the bridge elements means this bridge option would likely have lower construction costs. This bridge option does require the construction of more bridge deck than is required for the movements, but the reduction in construction cost would likely offset the addition of material costs. The additional space has the potential to be fitted with landscaping and/or hardscaping.

The bow-tie bridge would employ flared concrete girders or curved steel girders with stringers. This option would reduce the plan area of concrete deck required for the rectangular bridge, as it would mimic the movements of the intersection. It is also likely to be a more aesthetically pleasing structure, when compared to the rectangular bridge. However, the design and construction costs of this option would likely be higher than the more conventional rectangular bridge due to the relatively complex girder arrangement, atypical superstructure slab, and irregular substructure elements. This option may be appropriate if aesthetics are a high priority at this intersection.



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DIAMOND INTERCHANGE ALTERNATIVE

FIGURE 4-1

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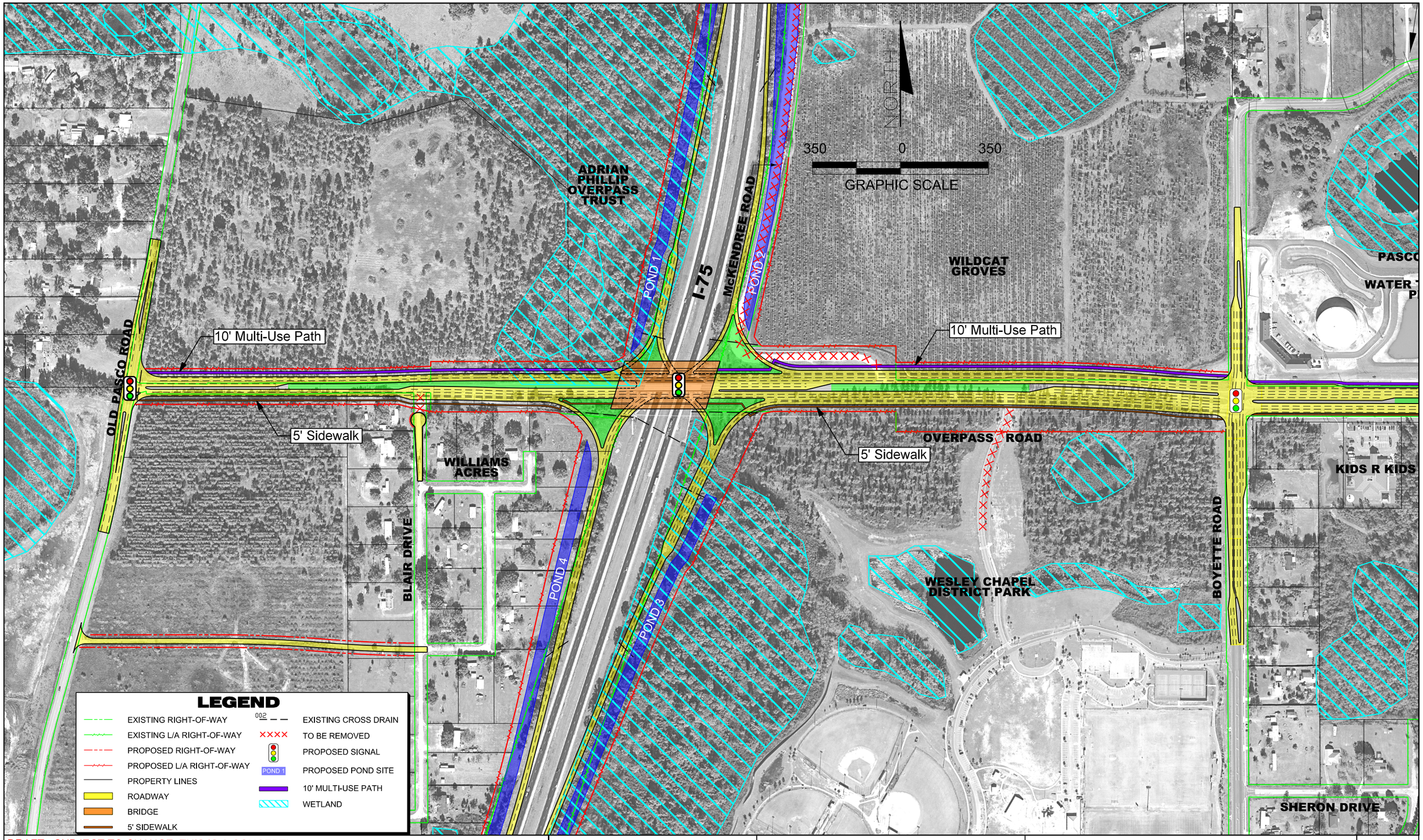

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SINGLE POINT URBAN INTERCHANGE (SPUI) ALTERNATIVE

FIGURE 4-2

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4.3.3 DIVERGING DIAMOND INTERCHANGE (DDI)

A DDI was developed for this area due to the high number of vehicles turning left from westbound Overpass Road to southbound I-75. **Figure 4-3** shows the proposed geometry for the DDI configuration along with existing and future ROW lines. A DDI has a higher capacity for left-turn movements when compared to the conventional diamond interchange. While the ramp configuration is similar to a traditional diamond interchange, traffic on the crossroad moves to the left side of the roadway for the segment between signalized ramp intersections. By moving traffic to the left, left-turning vehicles can enter the limited access highway without the need for a left-turn signal phase at the signalized ramp intersections. In addition, left-turning vehicles on the crossroad do not conflict with opposing through traffic and may turn without stopping. All signalized ramp terminal intersections operate in a highly efficient manner because there are only two phases. Traffic signals do not control the entry of vehicles onto I-75; therefore, vehicle platoons generated by an up-stream traffic signal would be dissipated in the DDI configuration.

Even though the sidewalk is provided on the south side of Overpass Road, other alternative treatments such as pedestrian crossings at the DDI's signalized eye brows in combination with traffic control devices are possible for pedestrian movements. This treatment would force pedestrian movements to the median where a traffic barrier can be constructed to guard pedestrians. Such alternative treatments can be further evaluated during the design phase of the project.

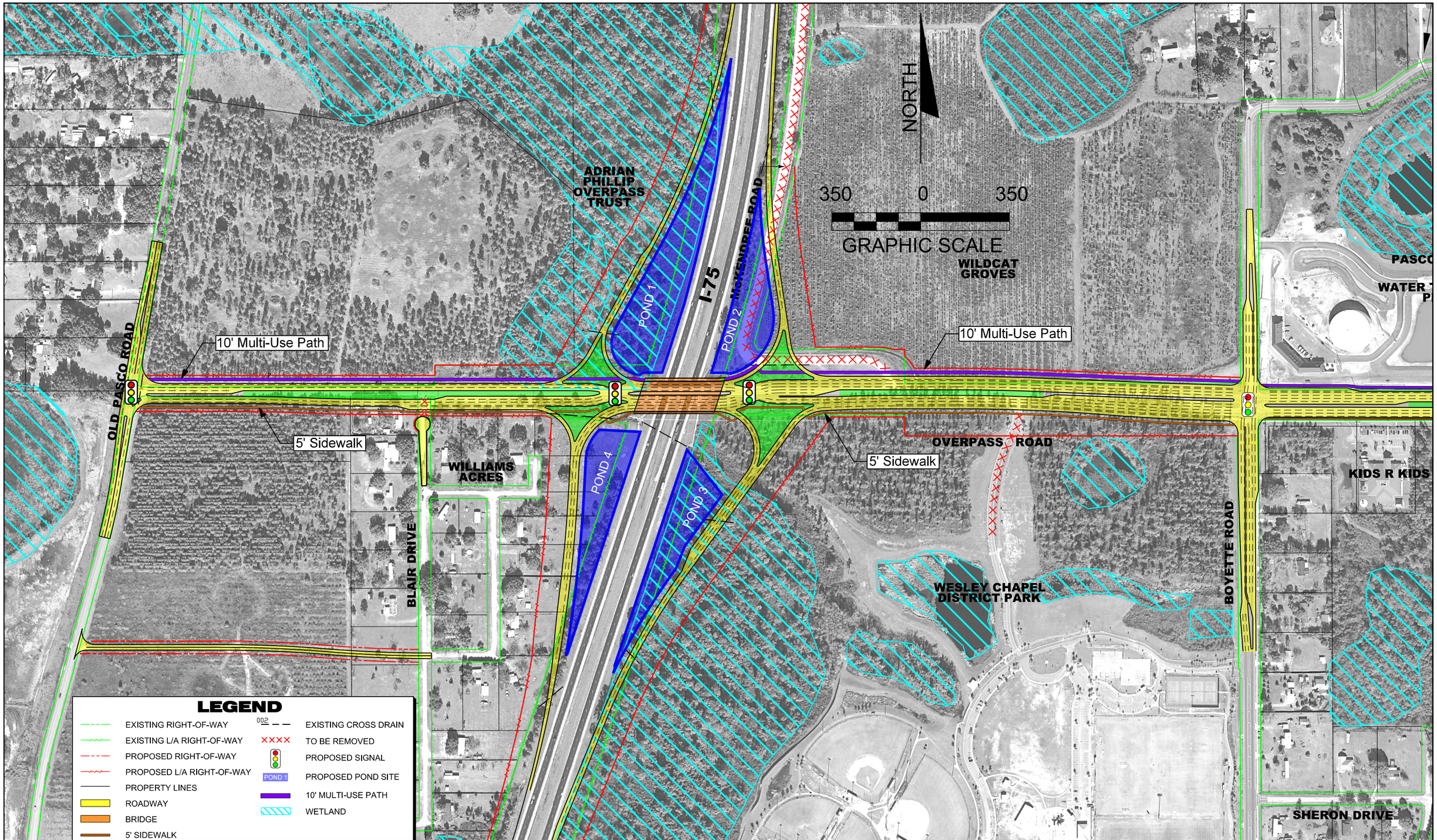
4.3.4 FLYOVER RAMP (WESTBOUND TO SOUTHBOUND)

The Flyover Ramp configuration provides a two-lane westbound-to-southbound flyover grade-separated free-flow movement in lieu of the triple left-turn lanes for the predominant movement. This improves the signal operations at both ramp terminal intersections by removing a large volume of traffic. This alternative reduces the number of lanes through the interchange in the westbound direction. However, this alternative adds a third level to the interchange resulting in increased costs for the bridge, retaining walls, and earthwork. **Figure 4-4** shows the proposed geometry for the Flyover Ramp configuration along with existing and future ROW lines.

4.3.5 LOOP RAMP (WESTBOUND TO SOUTHBOUND)

The Loop Ramp configuration provides a two-lane westbound-to-southbound loop ramp in the northwest quadrant of the interchange in lieu of an at-grade triple-left movement. This alternative replaces the left-turn movement with a right-turn movement and eliminates some conflict points. Although it improves the operation for the westbound to southbound movement, this alternative requires the largest amount of ROW of all the configurations and there is also an additional cost associated with the construction of the Loop Ramp. **Figure 4-5** shows the proposed geometry for the Loop Ramp configuration along with existing and future ROW lines.

Detailed plan sheets showing the concepts for each interchange alternative are included in Appendix F. Detailed traffic operational analysis and an evaluation of each of these interchange configurations are provided in Sections 5.0 and 7.0, respectively, of this report.



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DIVERGING DIAMOND INTERCHANGE ALTERNATIVE

FIGURE 4-3

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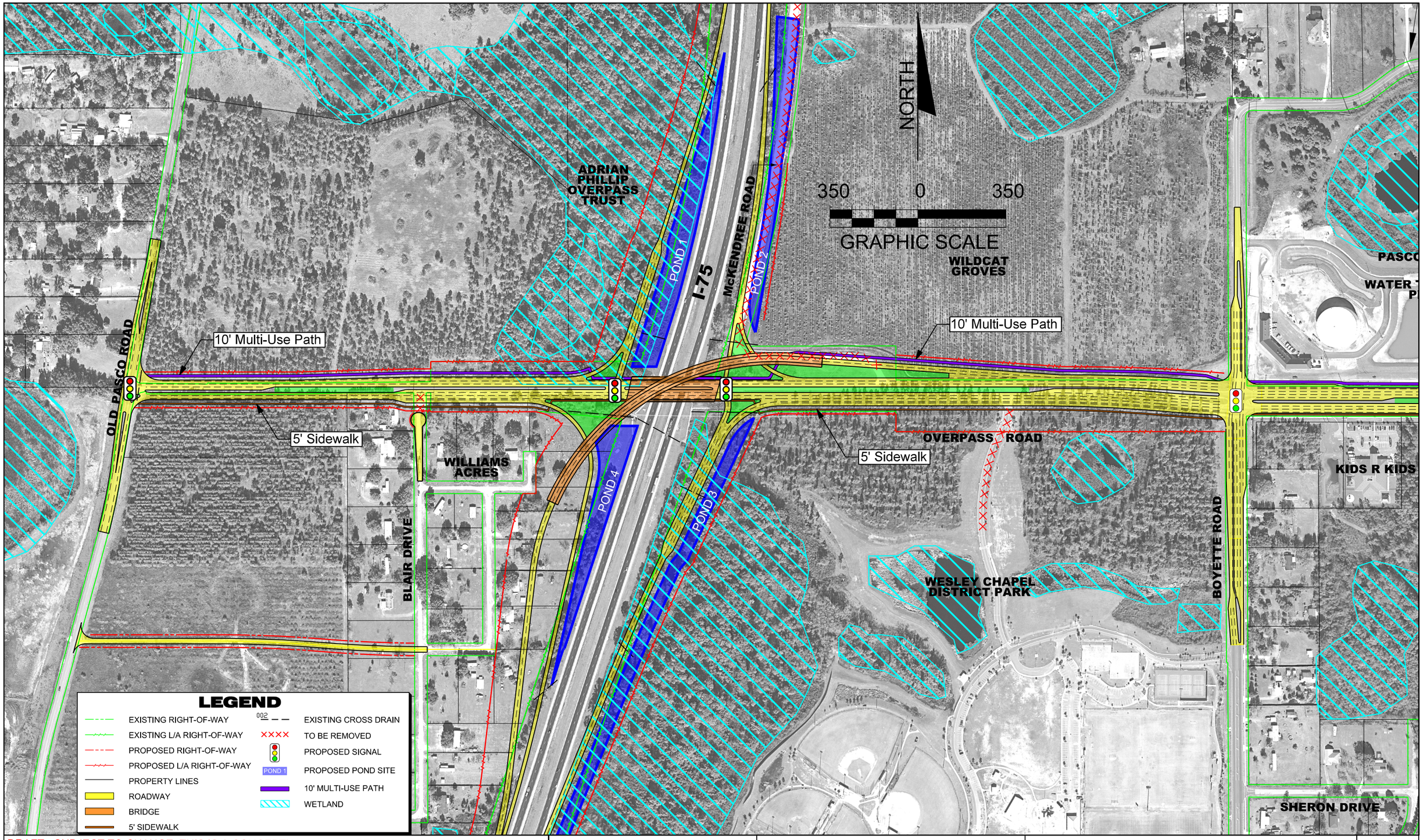

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FLYOVER RAMP ALTERNATIVE

FIGURE 4-4

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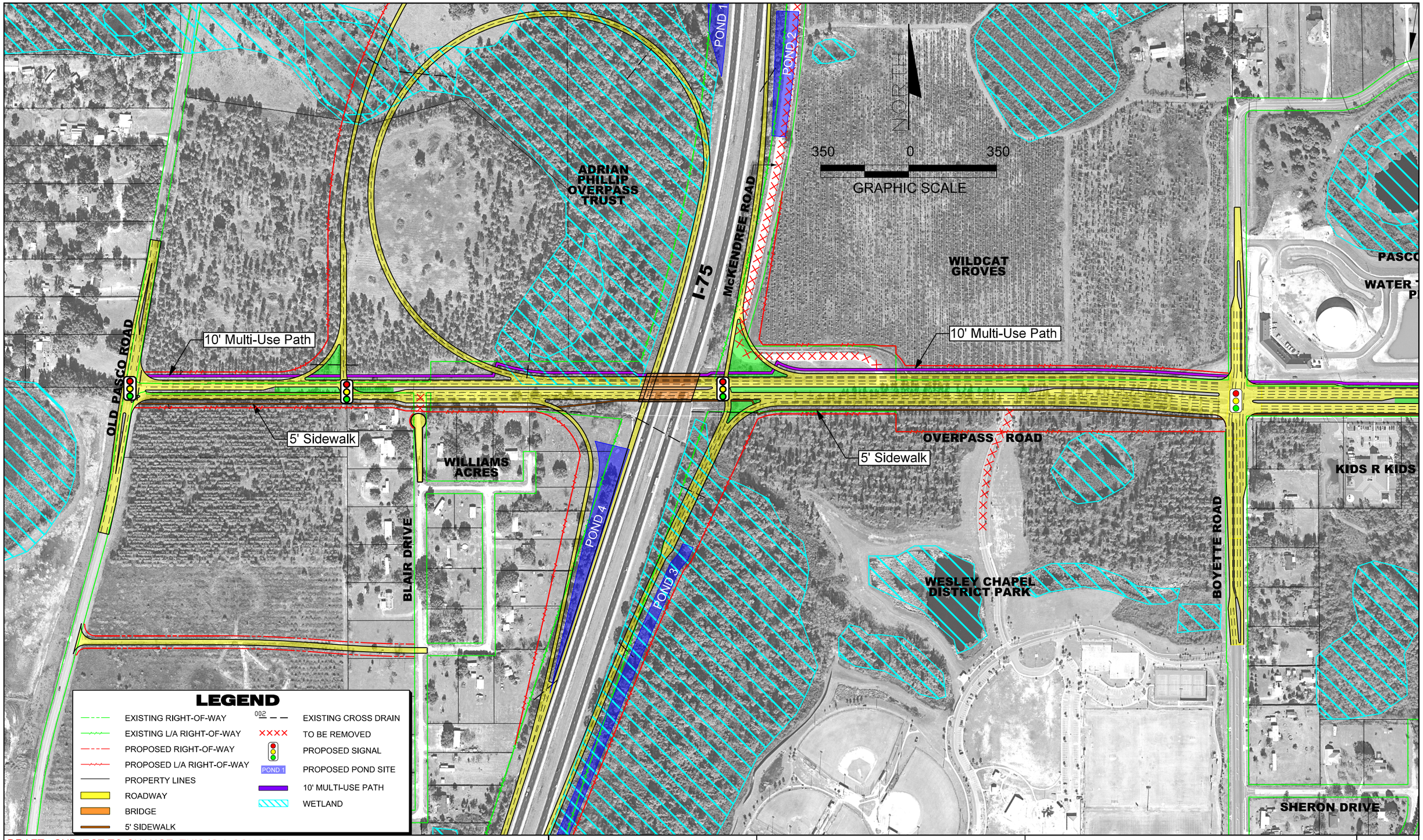

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LOOP RAMP ALTERNATIVE

FIGURE 4-5

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4.4 PROPOSED TYPICAL SECTIONS

Proposed typical sections for the PIJR improvements are shown in Appendix F and described in this section. These typical sections were developed using the Pasco County adopted standard typical sections for arterial roadways (adopted 06/29/2004). **Figure 4-6** shows the proposed typical section description for Overpass Road from Old Pasco Road to Boyette Road.

4.4.1 OVERPASS ROAD FROM OLD PASCO ROAD TO I-75 FOUR-LANE DIVIDED URBAN TYPICAL SECTION

For Overpass Road between Old Pasco Road and I-75, a four-lane urban typical section is proposed. The proposed four-lane urban typical section includes four 12-foot travel lanes (two in each direction), 4-foot bike lanes on the northern and southern sides of the roadway, a 22-foot raised and landscaped median, a 32-foot landscaped utility accommodation on the south side that includes a 5-foot sidewalk, and a 32-foot landscaped utility accommodation on the north side that includes a 10-foot multi-use path. The total ROW width for this typical section is 142 feet. The proposed design speed for this typical section is 45 mph. See Appendix F for the proposed four-lane divided urban typical section for Overpass Road from Old Pasco Road to I-75.

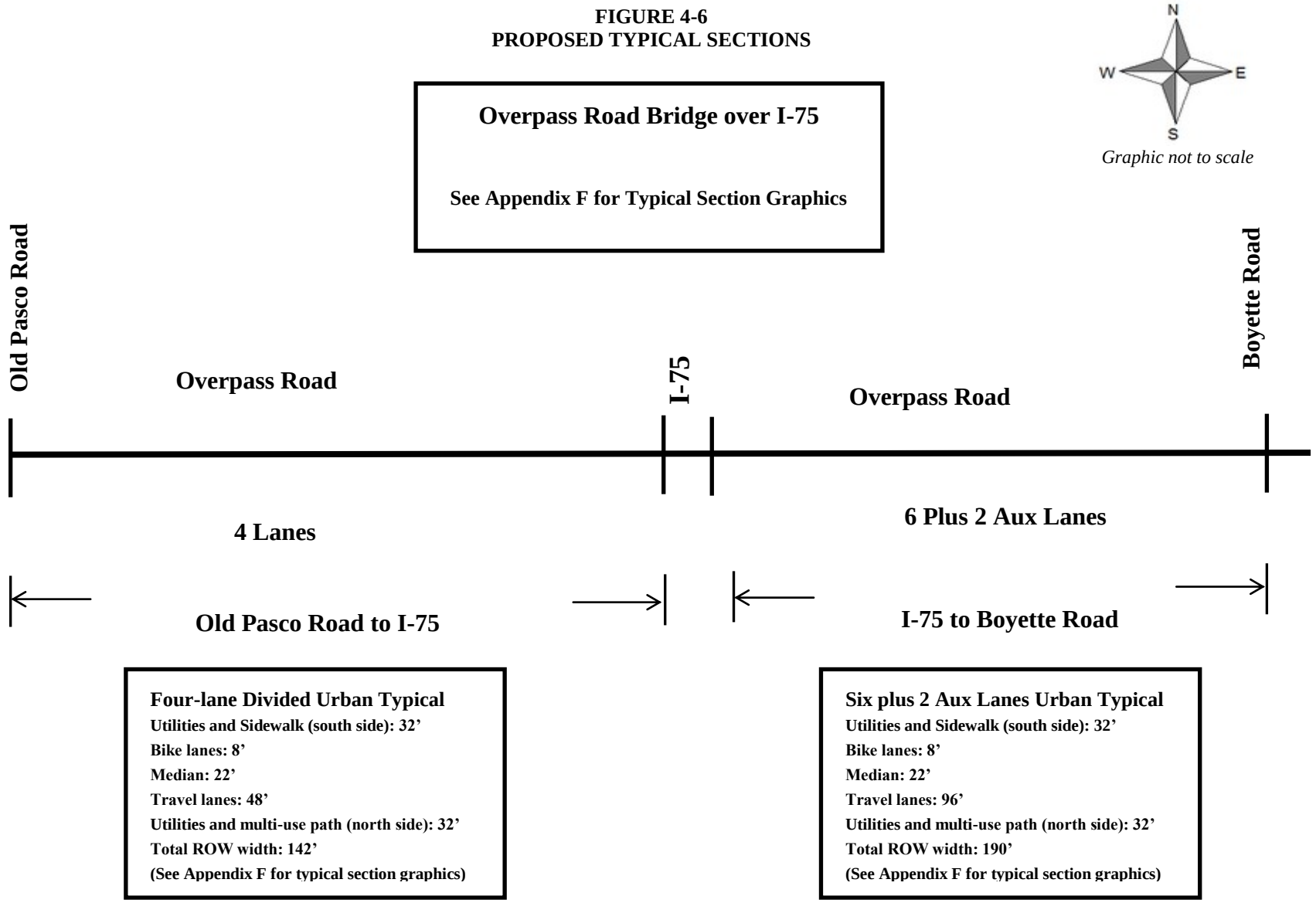
4.4.2 OVERPASS ROAD AT I-75 FOUR-LANE DIVIDED URBAN TYPICAL SECTION

For the proposed bridge over I-75, a four-lane urban section (as described above) is proposed with 24 feet of additional ROW to accommodate turn lanes. See Appendix F for the proposed typical section for the Overpass Road bridge structure. Note that the bridge typical section varies depending on the interchange configuration.

4.4.3 OVERPASS ROAD FROM I-75 TO BOYETTE ROAD SIX-LANE DIVIDED PLUS TWO AUXILIARY LANES URBAN TYPICAL SECTION

For Overpass Road between I-75 and Boyette Road, a six-lane divided plus two auxiliary lanes urban typical section is proposed. This includes six 12-foot travel lanes (three in each direction), 4-foot bike lanes on the northern and southern sides of the roadway, a 22-foot raised and landscaped median, a 32-foot landscaped utility accommodation on the south side that includes a 5-foot sidewalk, and a 32-foot landscaped utility accommodation on the north side that includes a 10-foot multi-use path. In addition, two auxiliary lanes (one in each direction) with additional ROW of 24 feet are also included for this segment. The total ROW width for this typical section is 190 feet. The proposed design speed for this typical section is 45 mph. See Appendix F for the proposed six-lane divided urban typical section for Overpass Road from I-75 to Boyette Road.

FIGURE 4-6
PROPOSED TYPICAL SECTIONS



Note: Typical sections were developed using the Pasco County adopted standard typical sections for arterial roadways (adopted 06/29/2004)

It should be noted that the traffic study shows the need for eight lanes for several of these segments. However, Pasco County MPO policy allows only a maximum of six through lanes on arterials, beyond which alternative routes and/or transit alternatives would be evaluated. Therefore, a maximum of six through lanes are provided along Overpass Road, with auxiliary lanes where needed.

Section 5.0
FUTURE CONDITIONS TRAFFIC OPERATIONS ANALYSIS

The future conditions traffic operations analysis included an analysis of freeway segments, ramps, and intersections under the Build and No-Build Alternatives for each analysis year. These alternatives are described in further detail in Section 4.0 of the PIJR. FDOT's FREEPLAN (version 2009) was used for the analysis of freeway segments and HCS, which is based on HCM methodologies, was used for the ramps and cross street intersections. For the Overpass Road interchange alternatives, the HCS analysis was also supplemented with Synchro/Simtraffic to achieve optimal signal timings and to evaluate the effect of traffic on adjacent intersections. Traffic operations for roadways were evaluated in terms of LOS which is a qualitative measure of the traffic operations. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions.

The future conditions traffic operations analysis used global input values consistent with existing conditions and the approved MLOU for the PIJR, as listed below:

- Population Factor = 0.95 (FDOT Statewide Default);
- Terrain = Level;
- I-75 Free-Flow Speed = 70 mph (mainline) and 45 mph (ramps);
- State and County Arterial Free-Flow Speed = posted speed plus 5 mph; and
- Design hour truck percentages: Half of the Daily Truck Percentage (T_{24}).

For future conditions, a uniform peak hour factor of 0.95 was used. All other input values, including traffic volumes and number of lanes, are specific to the location, alternative, and analysis year. Future traffic volumes, described previously in Section 3.0 of the PIJR, were used in the future analysis. For signalized intersections, signal timings were optimized for all future year No-Build and Build Alternatives.

For the proposed Overpass Road interchange, the ramp terminal intersections were analyzed for all five interchange configurations proposed under the Build Alternative, which includes the Diamond Interchange, SPUI, DDI, Flyover Ramp (Westbound to Southbound), and the Loop Ramp (Westbound to Southbound) for each analysis year.

5.1 OPENING YEAR (2022) NO-BUILD ANALYSIS

The Opening Year (2022) No-Build analysis represents the resulting traffic operations if the proposed interchange is not constructed and no improvements other than those currently programmed in the *Pasco County MPO 2035 Cost-Affordable LRTP* or *FDOT Five-Year Work Program* will be implemented. The existing plus programmed improvements in the project study area include:

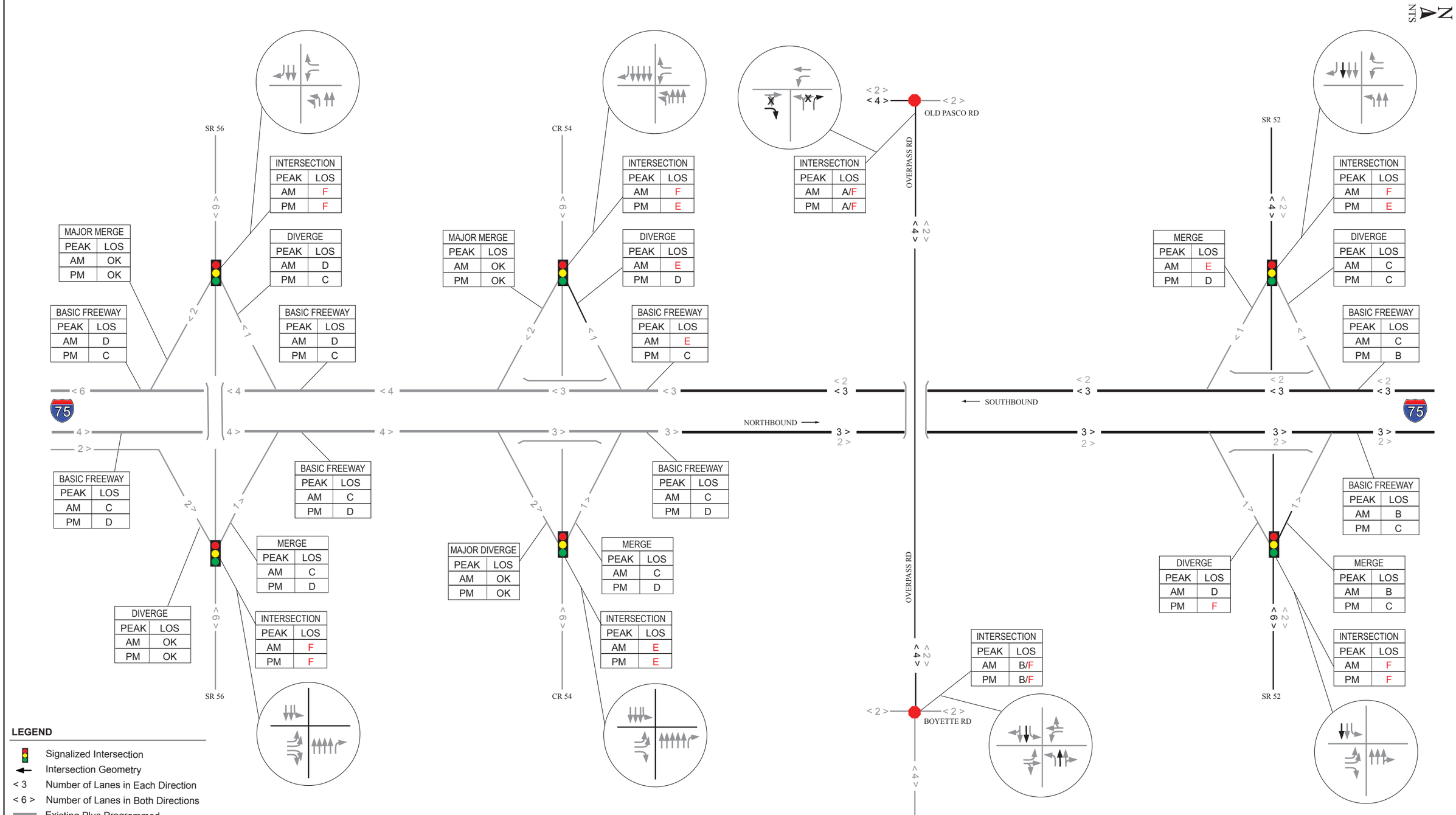
- The C-D system northbound I-75 exit ramps to SR 56,
- I-75 between SR 56 and the I-75/I-275 junction widening to six southbound lanes and five northbound lanes,
- I-75 between SR 56 and SR 54 widening to four lanes in each direction, and
- CR 54/SR 54 widening to six lanes through the I-75 interchange.

In addition to existing plus programmed improvements, the Opening Year (2022) No-Build roadway network also includes the following improvements, which are included in the *Pasco County MPO 2035 Cost-Affordable LRTP*:

- I-75 north of SR 54 widening to three lanes in each direction,
- SR 52 widening to six lanes east of the I-75 interchange and four lanes west of the interchange,
- Overpass Road widening to four lanes between Old Pasco Road and Boyette Road, and
- Old Pasco Road widening to four lanes south of Overpass Road.

The Opening Year (2022) No-Build Alternative geometry and LOS results are shown on **Figure 5-1**. The LOS results for the a.m. and p.m. peak hour 2022 No-Build Alternative are shown in **Table 5-1** (freeway segments), **Table 5-2** (ramp junctions), and **Table 5-3** (intersections). FREEPLAN and HCS worksheets for the analysis are provided in Appendix G.

The analysis indicates that the I-75 freeway segment between CR 54 and SR 52 would operate below acceptable LOS in the Opening Year (2022) No-Build condition. The southbound off-ramp to CR 54 and the northbound off-ramp and southbound on-ramp at the SR 52 interchange also operate below acceptable LOS. However, these ramp junction failures mainly result from the mainline deficiencies that occur upstream/downstream of the ramp. The traffic demand on the northbound off-ramp and southbound on-ramp at SR 52 exceeds the capacity of a single-lane ramp. The intersection analysis indicates that all of the I-75 ramp terminal intersections and Overpass Road intersections would operate below acceptable LOS by year 2022 under the No-Build conditions.



I-75 and Overpass Road Preliminary Interchange Justification Report	Opening Year (2022) No-Build Alternative Analysis Summary	Figure 5-1

TABLE 5-1
OPENING YEAR (2022) NO-BUILD ALTERNATIVE FREEWAY LOS

Freeway Segment	AM Peak Southbound		AM Off-Peak Northbound		PM Peak Northbound		PM Off-Peak Southbound	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 from south of SR 56 to SR 56	28.8	D	21.2	C	27.2	D	22.3	C
I-75 from SR 56 to CR 54	32.3	D	24.0	C	31.7	D	24.7	C
I-75 from CR 54 to SR 52	35.3	E	25.0	C	34.4	D	26.0	C
I-75 from SR 52 to north of SR 52	21.6	C	16.8	B	21.0	C	17.5	B

Notes: Density is expressed in passenger cars per mile per lane. Analysis was conducted using FDOT's FREEPLAN LOS software.

TABLE 5-2
OPENING YEAR (2022) NO-BUILD ALTERNATIVE RAMP JUNCTION LOS

Ramp Location	Analysis Method	AM Peak		PM Peak	
		Density	LOS	Density	LOS
I-75 northbound off-ramp to SR 56[1]	C-D ramp Capacity check	OK (0.78)		OK (0.96)	
I-75 northbound on-ramp from SR 56	Merge	24.1	C	29.2	D
I-75 southbound off-ramp to SR 56	Diverge	32.8	D	26.6	C
I-75 southbound on-ramp from SR 56[1]	Major Merge	OK (0.96)		OK (0.78)	
I-75 northbound off-ramp to CR 54[1]	Major Diverge	OK (0.56)		OK (0.67)	
I-75 northbound on-ramp from CR 54	Merge	27.2	C	33.4	D
I-75 southbound off-ramp to CR 54	Diverge	35.1	E	29.9	D
I-75 southbound on-ramp from CR 54[1]	Major Merge	OK (0.67)		OK (0.56)	
I-75 northbound off-ramp to SR 52	Diverge	32.6	D	38.8	F
I-75 northbound on-ramp from SR 52	Merge	19.3	B	23.2	C
I-75 southbound off-ramp to SR 52	Diverge	26.4	C	22.5	C
I-75 southbound on-ramp from SR 52	Merge	38.0	E	30.7	D

[1] Two-lane on- and off-ramps resulting in lane addition/lane drop were analyzed as major merge/diverge based on Exhibits 25-7 and 25-14 of the HCM. The HCS software is not used in this case.

Notes: Volume is expressed in terms of vehicles per hour; Density is expressed in terms of passenger cars per mile per lane.
OK (x.xx) = The value in parenthesis provides the volume-to-capacity ratio for the major merge/diverge areas.

TABLE 5-3
OPENING YEAR (2022) NO-BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at SR 56	Signalized	156.7	F	192.3	F
I-75 southbound ramps at SR 56	Signalized	122.8	F	103.1	F
I-75 northbound ramps at CR 54	Signalized	71.7	E	76.0	E
I-75 southbound ramps at CR 54	Signalized	144.3	F	77.9	E
I-75 northbound ramps at SR 52	Signalized	152.3	F	191.2	F
I-75 southbound ramps at SR 52	Signalized	182.2	F	66.5	E
Overpass Road at Boyette Road	Unsignalized	10.7/170.3	B/F	11.6/171.1	B/F
Overpass Road at Old Pasco Road	Unsignalized	8.7/>500	A/F	8.4/217.8	A/F

Notes: Unsignalized delay and LOS reported are for major street left movement/minor street approach; Delay reported is in sec/veh. Delays over 500 sec/veh have been reported as >500.

5.2 OPENING YEAR (2022) BUILD ANALYSIS

The Opening Year (2022) Build Analysis represents the year that the proposed interchange would be open to traffic. The 2022 Build geometry used in this analysis includes the 2022 No-Build Alternative geometry plus the proposed interchange at I-75 and Overpass Road. The following improvements are assumed for the Opening Year (2022) Build Alternative:

- New interchange at I-75 and Overpass Road with single-lane ramps on all four movements,
- Overpass Road widening to six lanes between I-75 and Boyette Road,
- Adequate geometry to provide LOS D or better was assumed at the ramp terminal intersections of I-75 and Overpass Road interchange under each of the Build Alternatives, and
- Signalization and adequate geometry to obtain LOS D or better was assumed at the intersections of Overpass Road with Old Pasco Road and Boyette Road.

For the proposed interchange at I-75 and Overpass Road, five different interchange configurations were analyzed. The configurations include a Diamond Interchange, SPUI, DDI, Flyover Ramp and Loop Ramp. It should be noted that the future traffic volumes are the same for all three interchange configurations; therefore, the LOS for freeway segments, ramp junctions, and intersections at the adjacent interchanges in the project study area (SR 56, CR 54, and SR 52) are identical across these three interchange configurations and are reported in tabular format only once in this section. The LOS results for the I-75 and Overpass Road interchange ramp terminal intersections and adjacent intersections at Old Pasco Road and Boyette Road are reported in tabular format separately for each of the interchange configurations.

The Opening Year (2022) Build Alternative geometry and LOS results are shown on **Figures 5-2 and 5-2A through 5-2E**. Figure 5-2A shows the geometry and LOS results for all of the freeway segments, ramp junctions, and the Diamond Interchange configuration. Figure 5-2B shows the LOS results with the SPUI configuration at the proposed interchange and adjacent intersections on Overpass Road, while Figure 5-2C, 5-2D, and 5-2E show the LOS results for the DDI, Flyover Ramp, and Loop Ramp configurations, respectively. The LOS results for the a.m. and p.m. peak hours for the 2022 Build Alternative are shown in **Table 5-4** (freeway segments), **Table 5-5** (ramp junctions), **Table 5-6** (intersections excluding those along Overpass Road), and **Table 5-7** (intersections along Overpass Road). FREEPLAN and HCS worksheets for the analysis are provided in Appendix G.

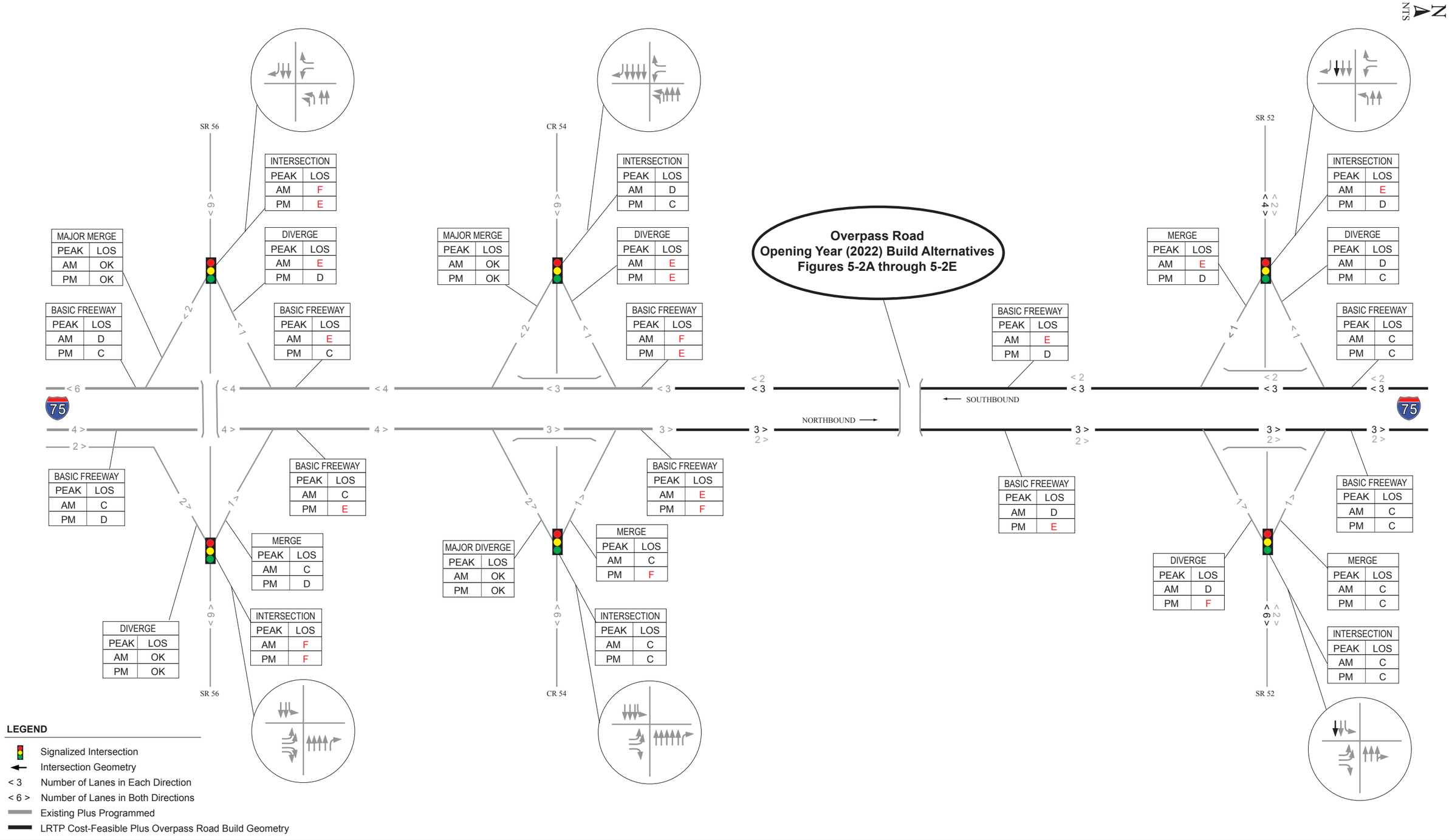
TABLE 5-4
OPENING YEAR (2022) BUILD ALTERNATIVE FREEWAY LOS

Freeway Segment	AM Peak Southbound		AM Off-Peak Northbound		PM Peak Northbound		PM Off-Peak Southbound	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 from south of SR 56 to SR 56	32.3	D	21.7	C	30.9	D	22.8	C
I-75 from SR 56 to CR 54	38.5	E	25.1	C	37.1	E	25.7	C
I-75 from CR 54 to Overpass Road	>45.0	F	35.3	E	>45.0	F	36.6	E
I-75 from Overpass Road to SR 52	40.0	E	26.8	D	38.1	E	27.7	D
I-75 from SR 52 to north of SR 52	25.2	C	19.2	C	24.2	C	19.9	C

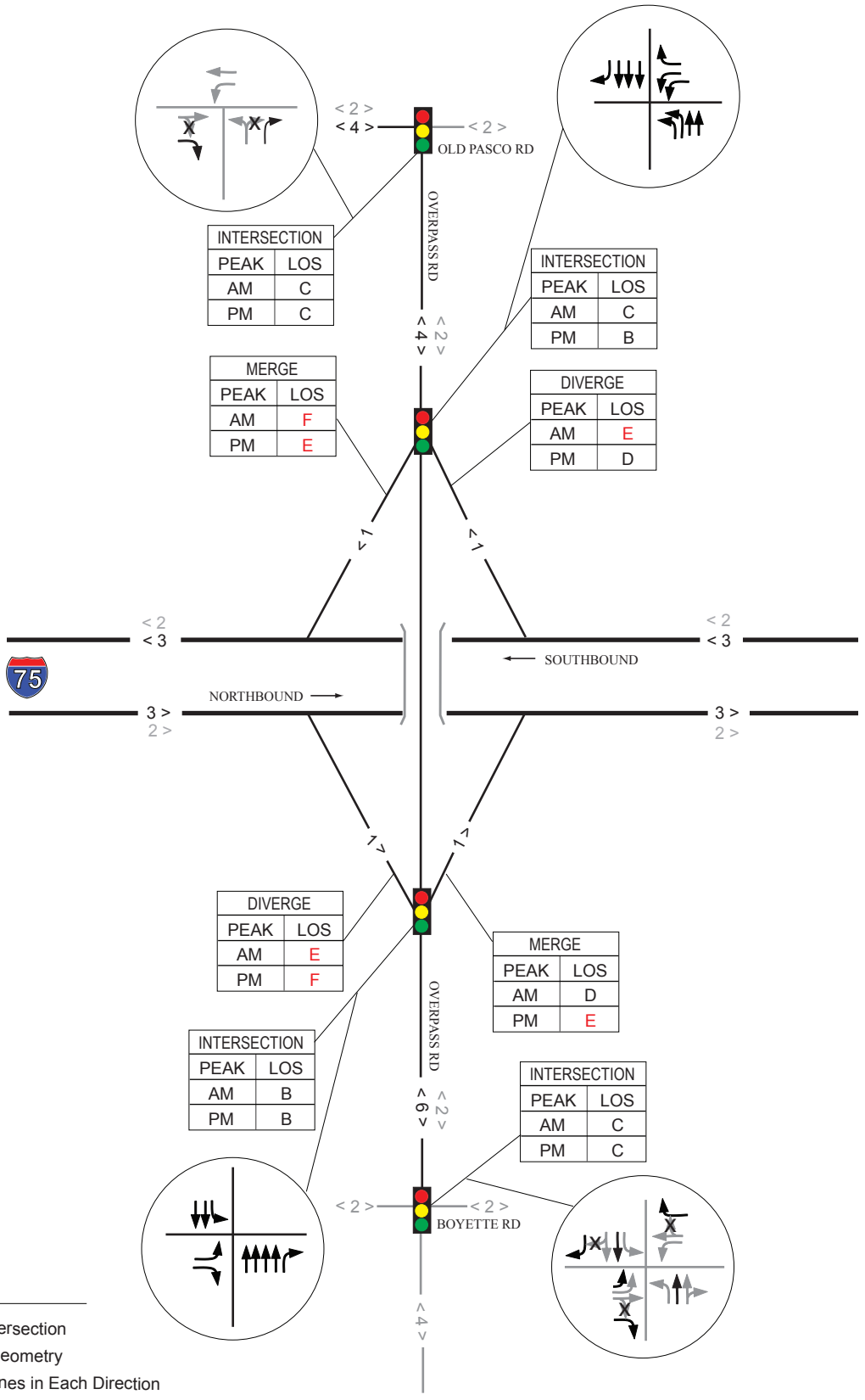
Notes: Density is expressed in passenger cars per mile per lane. Analysis was conducted using FDOT's FREEPLAN LOS software.

The geometry for the freeway segments and ramps at SR 56, CR 54, and SR 52 is identical between the Build and No-Build conditions. Therefore, the LOS failures resulting from the mainline deficiencies would continue to exist under the Build condition. At the ramp junctions, the SR 56 southbound off-ramp, CR 54 northbound on-ramp and southbound off-ramp, all four ramps at Overpass Road, and the SR 52 northbound off-ramp and southbound on-ramp operate below acceptable LOS. The northbound off-ramp and southbound on-ramp traffic demand at SR 52 exceeds the capacity of a single-lane ramp. While no improvements were programmed specifically for these ramps at the time of MLOU approval, reconstruction of the interchange has recently been included in the I-75 Design-Build project for *I-75 from North of SR 54/CR 54 to North of SR 52 (FDOT Financial Project Number 258736-2)*. The ramps shall include four single-lane diamond interchange ramps and one single-lane loop ramp for the westbound SR 52 to southbound I-75 movement.

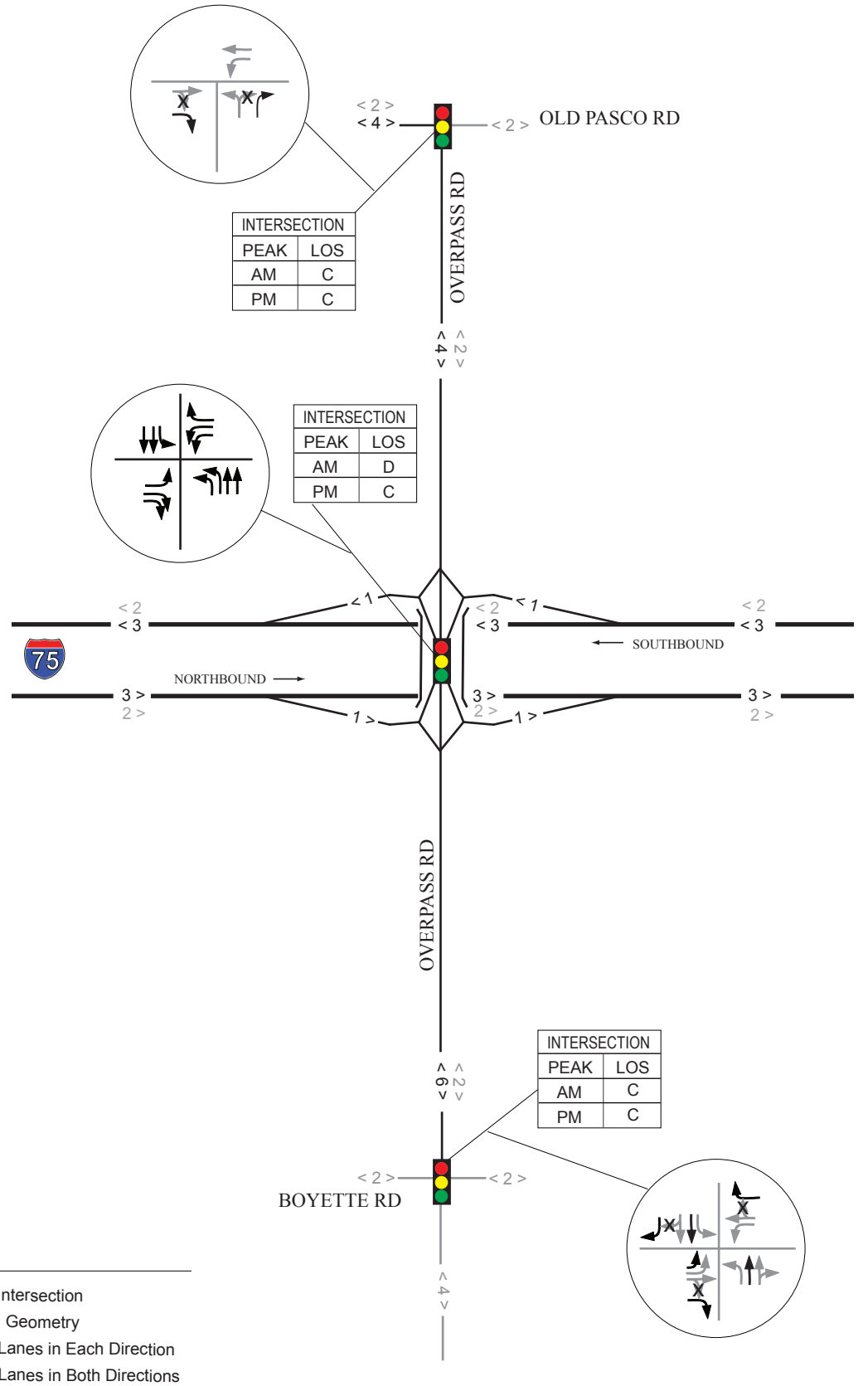
For the Opening Year (2022) Build condition, the I-75 freeway segment between CR 54 and SR 52 would operate below acceptable LOS. While there will be slightly higher traffic on the mainline in the Opening Year (2022), it should be noted that the FDOT SIS Plan indicates that additional lanes (beyond the six-lane widening) will be needed in the future. As such, FDOT District Seven will be further evaluating improvements to address the mainline deficiencies outside of the PIJR.



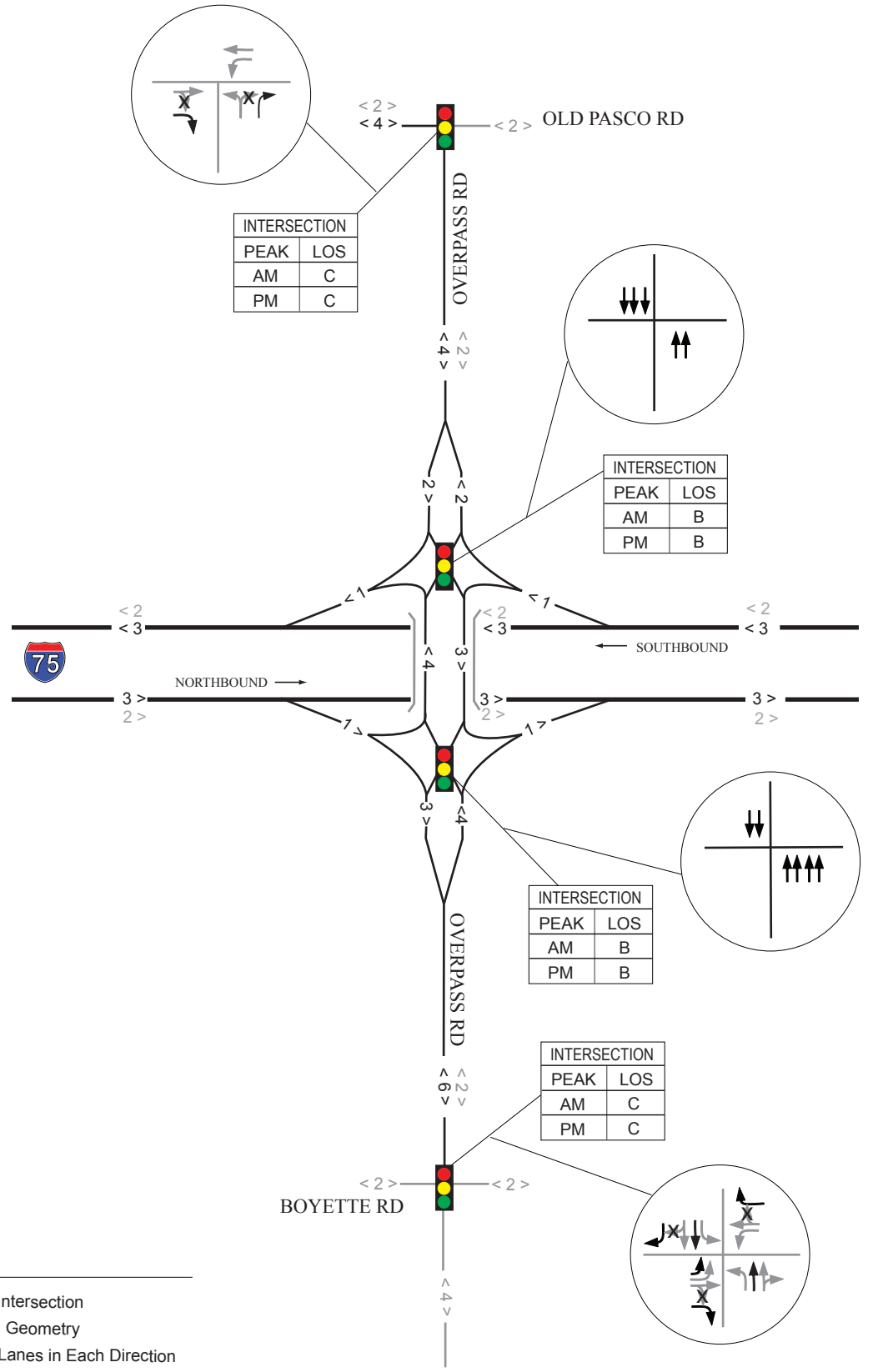
I-75 and Overpass Road Preliminary Interchange Justification Report	Opening Year (2022) Build Alternative Analysis Summary	Figure 5-2



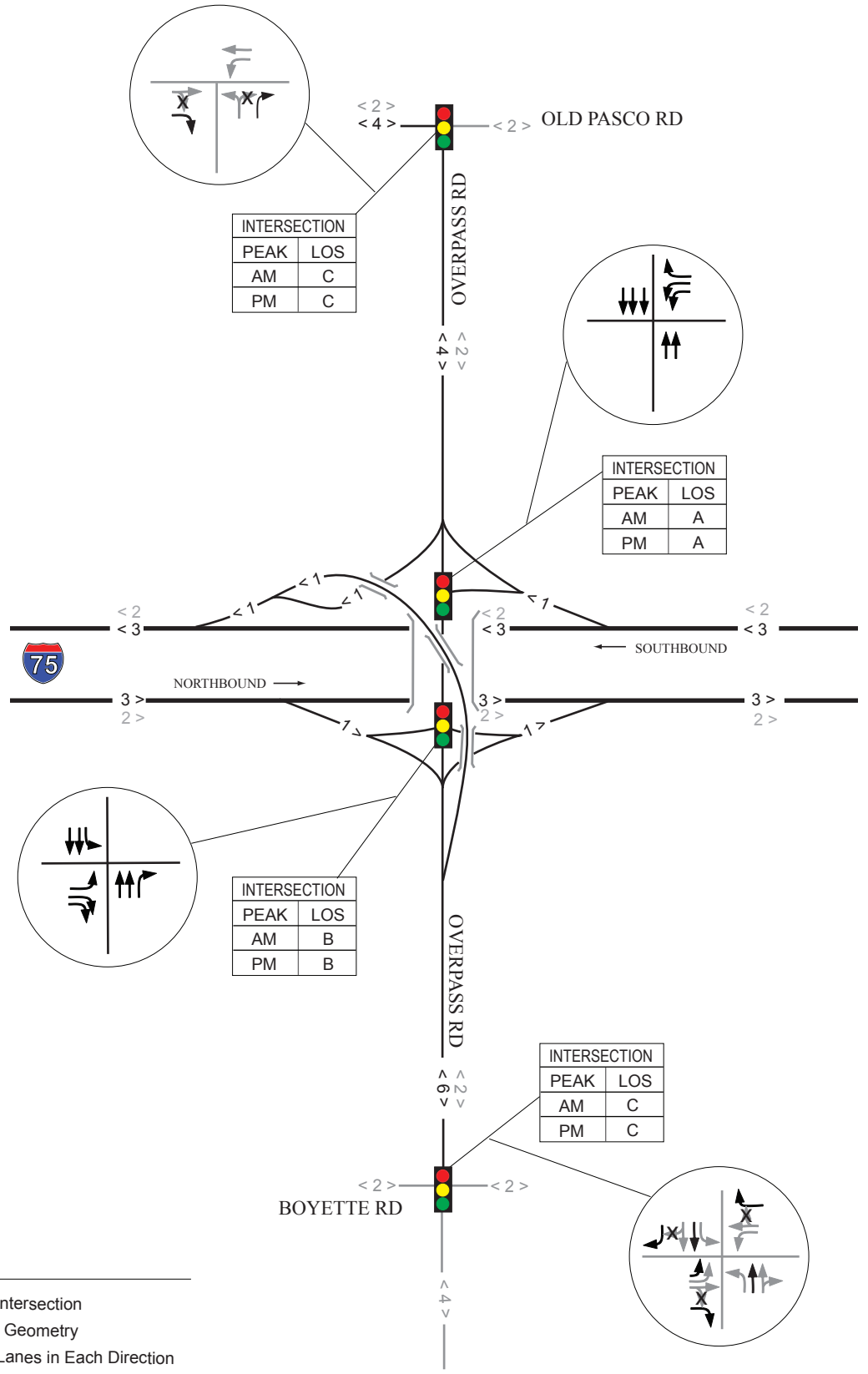
I-75 and Overpass Road Preliminary Interchange Justification Report	Opening Year (2022) Build Alternative Diamond Analysis Summary	Figure 5-2A



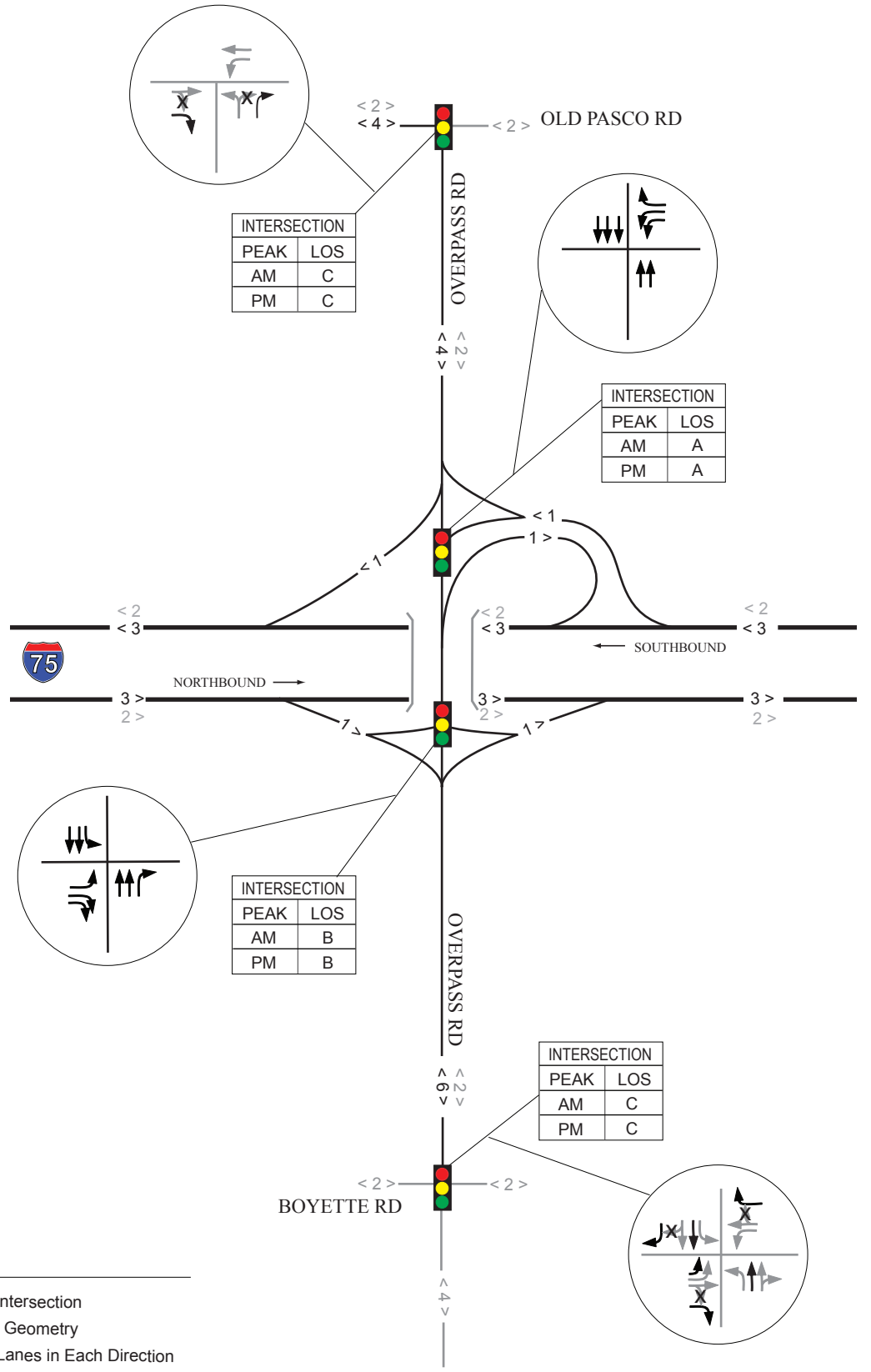
I-75 and Overpass Road Preliminary Interchange Justification Report	Opening Year (2022) Build Alternative SPUI Analysis Summary	Figure 5-2B



I-75 and Overpass Road Preliminary Interchange Justification Report	Opening Year (2022) Build Alternative DDI Analysis Summary	Figure 5-2C



I-75 and Overpass Road Preliminary Interchange Justification Report	Opening Year (2022) Build Alternative Flyover Analysis Summary	Figure 5-2D



I-75 and Overpass Road Preliminary Interchange Justification Report	Opening Year (2022) Build Alternative Loop Analysis Summary	Figure 5-2E

TABLE 5-5
OPENING YEAR (2022) BUILD ALTERNATIVE RAMP JUNCTION LOS

Ramp Location	Analysis Method	AM Peak		PM Peak	
		Density	LOS	Density	LOS
I-75 northbound off-ramp to SR 56	C-D ramp Capacity check	OK (0.79)		OK (0.99)	
I-75 northbound on-ramp from SR 56	Merge	25.3	C	32.1	D
I-75 southbound off-ramp to SR 56	Diverge	36.3	E	28.0	D
I-75 southbound on-ramp from SR 56[1]	Major Merge	OK (0.99)		OK (0.79)	
I-75 northbound off-ramp to CR 54[1]	Major Diverge	OK (0.37)		OK (0.52)	
I-75 northbound on-ramp from CR 54	Merge	26.0	C	41.5	F
I-75 southbound off-ramp to CR 54	Diverge	37.0	E	35.6	E
I-75 southbound on-ramp from CR 54[1]	Major Merge	OK (0.52)		OK (0.37)	
I-75 northbound off-ramp to Overpass Road	Diverge	35.9	E	46.0	F
I-75 northbound on-ramp from Overpass Road	Merge	29.0	D	35.6	E
I-75 southbound off-ramp to Overpass Road	Diverge	35.1	E	29.7	D
I-75 southbound on-ramp from Overpass Road	Merge	44.7	F	36.7	E
I-75 northbound off-ramp to SR 52	Diverge	32.9	D	39.1	F
I-75 northbound on-ramp from SR 52	Merge	21.5	C	26.1	C
I-75 southbound off-ramp to SR 52	Diverge	29.1	D	24.8	C
I-75 southbound on-ramp from SR 52	Merge	39.0	E	31.2	D

[1] Two-lane on- and off-ramps resulting in lane addition/lane drop were analyzed as major merge/diverge based on Exhibits 25-7 and 25-14 of HCM. The HCS software is not used in this case.

Notes: Volume is expressed in terms of vehicles per hour; Density is expressed in terms of passenger cars per mile per lane.
OK (x.xx) = The value in parenthesis provides the v/c ratio for the major merge/diverge areas.

TABLE 5-6
OPENING YEAR (2022) BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at SR 56	Signalized	110.2	F	147.2	F
I-75 southbound ramps at SR 56	Signalized	97.8	F	58.3	E
I-75 northbound ramps at CR 54	Signalized	24.5	C	26.5	C
I-75 southbound ramps at CR 54	Signalized	42.0	D	26.2	C
I-75 northbound ramps at SR 52	Signalized	30.8	C	28.3	C
I-75 southbound ramps at SR 52	Signalized	63.8	E	46.7	D

Notes: Delay reported is in sec/veh.

TABLE 5-7
OPENING YEAR (2022) BUILD ALTERNATIVE INTERSECTION LOS FOR OVERPASS ROAD INTERCHANGE CONFIGURATIONS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
DIAMOND INTERCHANGE					
I-75 northbound ramps at Overpass Road	Signalized	17.8	B	12.6	B
I-75 southbound ramps at Overpass Road	Signalized	25.3	C	16.7	B
Overpass Road at Boyette Road	Signalized	33.9	C	34.9	C
Overpass Road at Old Pasco Road	Signalized	20.7	C	21.5	C
SPUI CONFIGURATION					
I-75 northbound/southbound ramps at Overpass Road	Signalized	41.9	D	24.3	C
Overpass Road at Boyette Road	Signalized	33.9	C	34.9	C
Overpass Road at Old Pasco Road	Signalized	20.7	C	21.5	C
DDI CONFIGURATION					
I-75 northbound ramps at Overpass Road	Signalized	14.2	B	12.9	B
I-75 southbound ramps at Overpass Road	Signalized	11.7	B	11.5	B
Overpass Road at Boyette Road	Signalized	33.9	C	34.9	C
Overpass Road at Old Pasco Road	Signalized	20.7	C	21.5	C
FLYOVER RAMP CONFIGURATION (WESTBOUND TO SOUTHBOUND)					
I-75 northbound ramps at Overpass Road	Signalized	16.3	B	12.9	B
I-75 southbound ramps at Overpass Road	Signalized	9.8	A	8.6	A
Overpass Road at Boyette Road	Signalized	33.9	C	34.9	C
Overpass Road at Old Pasco Road	Signalized	20.7	C	21.5	C
LOOP RAMP CONFIGURATION (WESTBOUND TO SOUTHBOUND)					
I-75 northbound ramps at Overpass Road	Signalized	17.9	B	13.6	B
I-75 southbound ramps at Overpass Road	Signalized	9.8	A	8.6	A
Overpass Road at Boyette Road	Signalized	33.9	C	34.9	C
Overpass Road at Old Pasco Road	Signalized	20.7	C	21.5	C

Notes: Delay reported is in sec/veh.

The intersection analysis for the Opening Year (2022) Build condition indicates that the ramp terminal intersections at SR 56 would continue to operate below acceptable LOS. The ramp terminal intersections at CR 54 would operate at acceptable LOS and show significant reductions in delay in comparison to the No-Build conditions. The ramp terminal intersections at SR 52 would also operate acceptably, except for the southbound ramps intersection in the a.m. peak hour which operates at LOS E. This results from the addition of the proposed interchange at Overpass Road, which shifts traffic patterns from the CR 54 and SR 52 interchanges. For the intersections along Overpass Road, adequate geometry and signalization to achieve an acceptable LOS were provided under all five interchange configurations (Diamond Interchange, SPUI, DDI, Flyover Ramp and Loop Ramp).

5.3 INTERIM YEAR (2030) NO-BUILD ANALYSIS

The Interim Year (2030) No-Build Analysis was conducted using the 2030 No-Build design hour traffic and the 2030 No-Build geometry, as shown on **Figure 5-3**. The only additional improvement between the 2022 and 2030 No-Build geometry is the four-laning of Old Pasco Road between Overpass Road and SR 52. The Interim Year (2030) No-Build Alternative geometry and LOS results are shown on Figure 5-3. The LOS results for the a.m. and p.m. peak hours for the Interim Year (2030) No-Build Analysis are shown in **Table 5-8** (freeway segments), **Table 5-9** (ramp junctions), and **Table 5-10** (intersections). FREEPLAN and HCS worksheets for the analysis are provided in Appendix H.

TABLE 5-8
INTERIM YEAR (2030) NO-BUILD ALTERNATIVE FREEWAY LOS

Freeway Segment	AM Peak Southbound		AM Off-Peak Northbound		PM Peak Northbound		PM Off-Peak Southbound	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 from south of SR 56 to SR 56	>45.0	F	35.7	E	>45.0	F	33.2	D
I-75 from SR 56 to CR 54	>45.0	F	42.1	E	>45.0	F	44.4	E
I-75 from CR 54 to SR 52	>45.0	F	>45.0	F	>45.0	F	>45.0	F
I-75 from SR 52 to north of SR 52	37.3	E	28.4	D	34.6	D	30.2	D

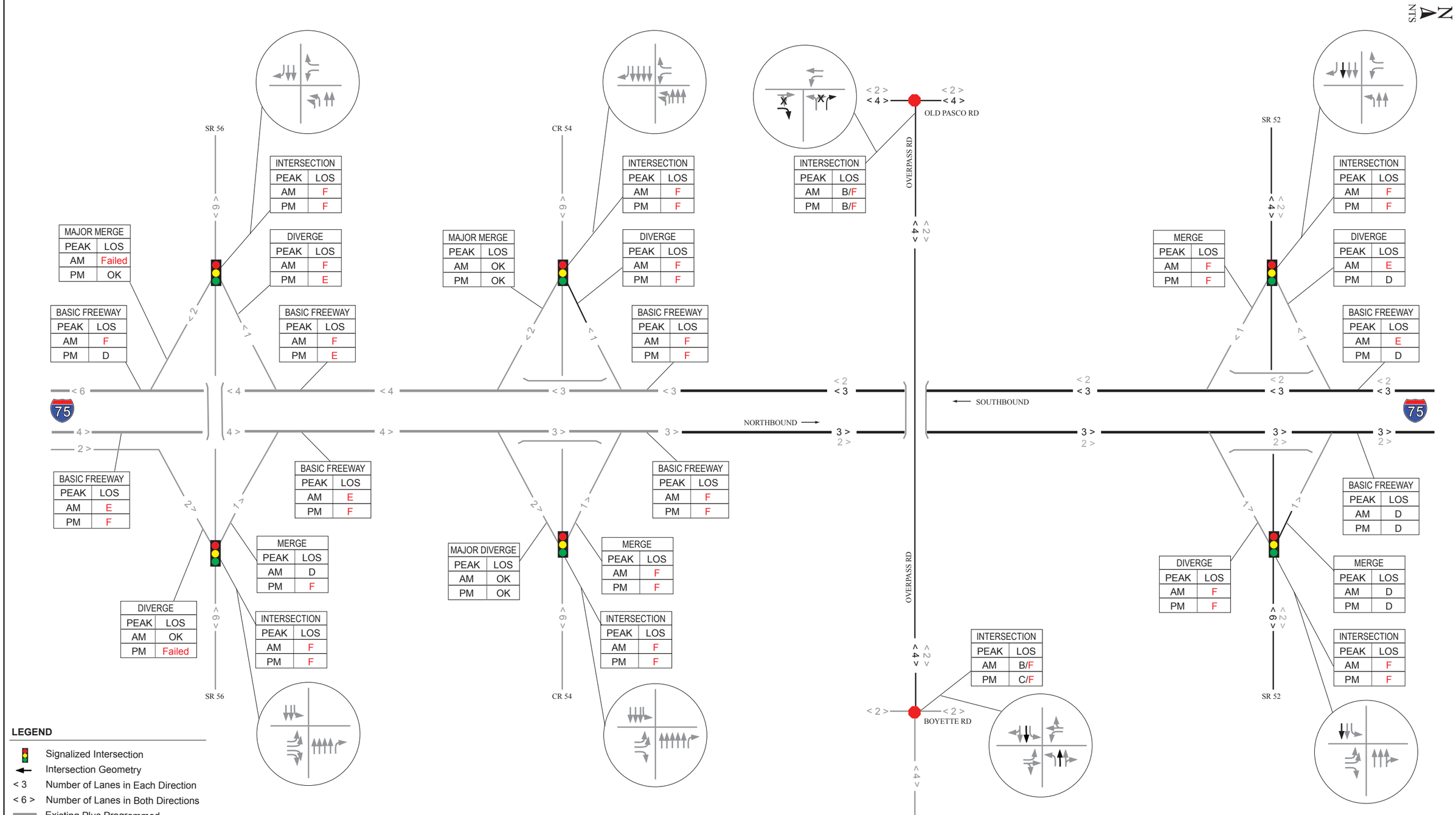
Notes: Density is expressed in passenger cars per mile per lane. Analysis was conducted using FDOT's FREEPLAN LOS software.

TABLE 5-9
INTERIM YEAR (2030) NO-BUILD ALTERNATIVE RAMP JUNCTION LOS

Ramp Location	Analysis Method	AM Peak		PM Peak	
		Density	LOS	Density	LOS
I-75 northbound off-ramp to SR 56[1]	C-D ramp Capacity check	OK (0.86)		Over Capacity (1.05)	
I-75 northbound on-ramp from SR 56	Merge	33.4	D	40.5	F
I-75 southbound off-ramp to SR 56	Diverge	51.1	F	37.8	E
I-75 southbound on-ramp from SR 56[1]	Major Merge	Over Capacity (1.05)		OK (0.86)	
I-75 northbound off-ramp to CR 54[1]	Major Diverge	OK (0.75)		OK (0.97)	
I-75 northbound on-ramp from CR 54	Merge	40.0	F	49.7	F
I-75 southbound off-ramp to CR 54	Diverge	56.1	F	43.8	F
I-75 southbound on-ramp from CR 54[1]	Major Merge	OK (0.47)		OK (0.75)	
I-75 northbound off-ramp to SR 52	Diverge	43.8	F	56.1	F
I-75 northbound on-ramp from SR 52	Merge	30.0	D	33.9	D
I-75 southbound off-ramp to SR 52	Diverge	35.5	E	32.4	D
I-75 southbound on-ramp from SR 52	Merge	53.0	F	44.9	F

[1] Two-lane on- and off-ramps resulting in lane addition/lane drop were analyzed as major merge/diverge based on Exhibits 25-7 and 25-14 of HCM. The HCS software is not used in this case.

Notes: Volume is expressed in terms of vehicles per hour; Density is expressed in terms of passenger cars per mile per lane.
OK (x.xx) = The value in parenthesis provides the v/c ratio for the major merge/diverge areas.



I-75 and Overpass Road Preliminary Interchange Justification Report	Interim Year (2030) No-Build Alternative Analysis Summary	Figure 5-3

TABLE 5-10
INTERIM YEAR (2030) NO-BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at SR 56	Signalized	216.2	F	212.5	F
I-75 southbound ramps at SR 56	Signalized	175.8	F	111.0	F
I-75 northbound ramps at CR 54	Signalized	133.4	F	101.4	F
I-75 southbound ramps at CR 54	Signalized	241.3	F	120.4	F
I-75 northbound ramps at SR 52	Signalized	310.8	F	417.2	F
I-75 southbound ramps at SR 52	Signalized	332.9	F	257.2	F
Overpass Road at Boyette Road	Unsignalized	15.0/>500	B/F	16.5/357.1	C/F
Overpass Road at Old Pasco Road	Unsignalized	10.2/>500	B/F	10.2/>500	B/F

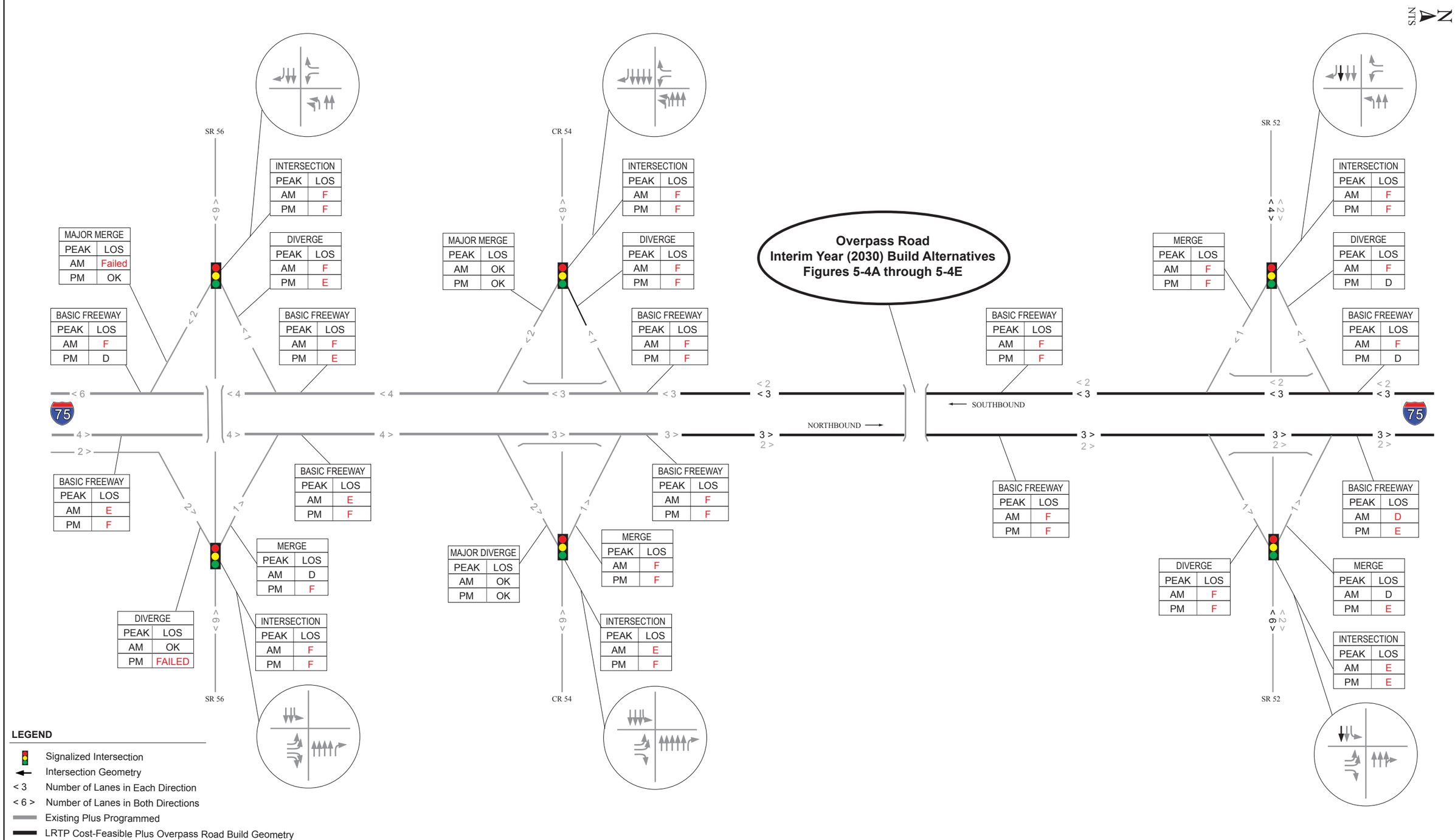
Notes: Unsignalized delay and LOS are for major street left movement/minor street approach; Delay reported is in sec/veh. Delays over 500 sec/veh have been reported as >500.

The analysis indicates that all of the freeway segments and ramp junctions in the project study area operate below acceptable LOS under the 2030 No-Build Alternative. The densities increase significantly when compared to the Opening Year, as the traffic volumes increase. It should also be noted that most of the ramp junction failures result from the mainline deficiencies that occur upstream/downstream of the junction. Two-lane on-/off-ramps exist for the SR 56 northbound off and southbound on movements and the CR 54 northbound off and southbound on movements. Based on the traffic demand, two-lane ramps are needed for the northbound off and southbound on movements at the SR 52 interchange. While no improvements were programmed specifically for these ramps at the time of MLOU approval, reconstruction of the interchange has recently been included in the I-75 Design-Build project for *I-75 from North of SR 54/CR 54 to North of SR 52 (FDOT Financial Project Number 258736-2)*. The ramps shall include four single-lane diamond interchange ramps and one single-lane loop ramp for the westbound SR 52 to southbound I-75 movement.

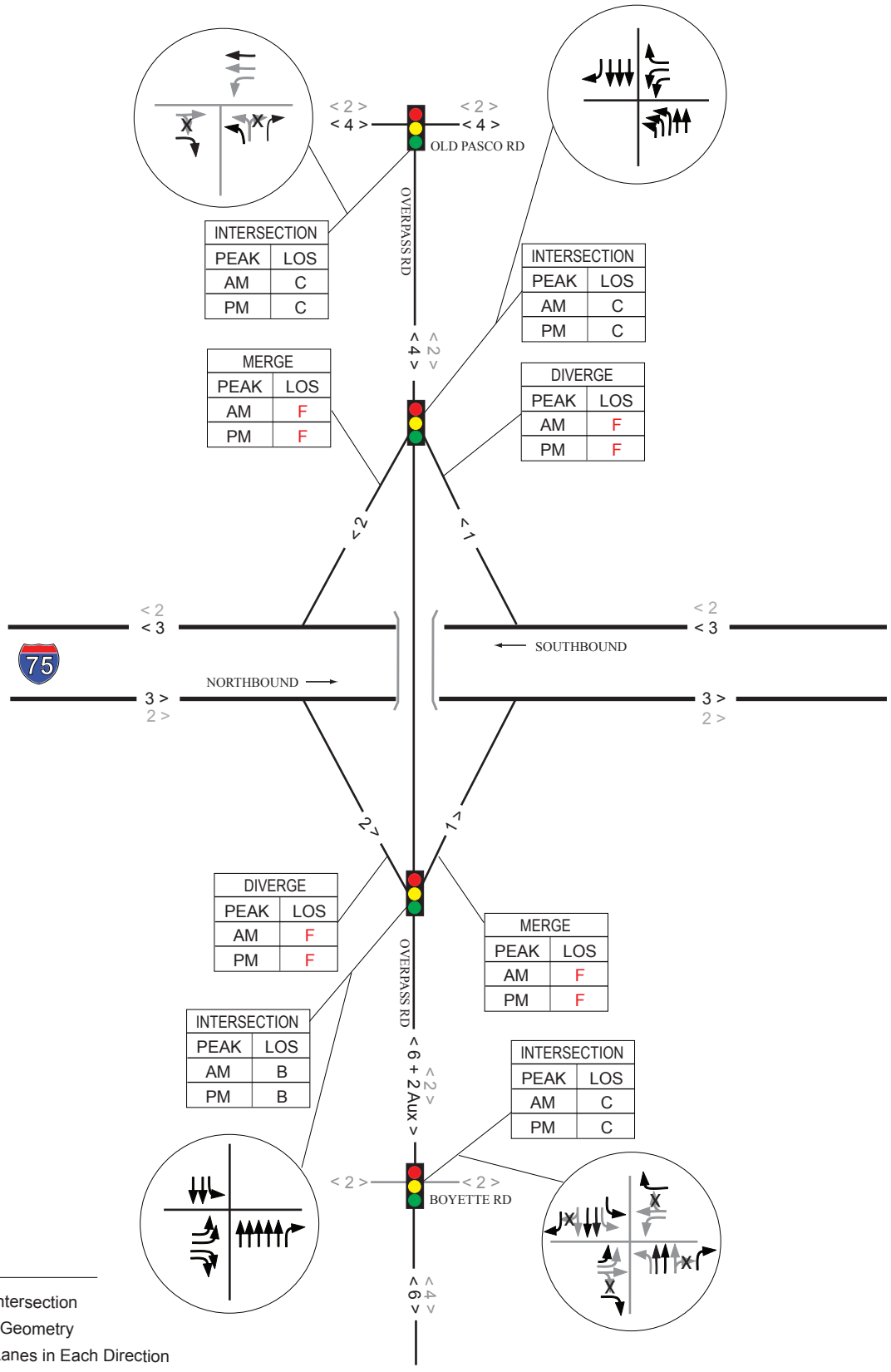
The intersection analysis indicates that all of the ramp terminal intersections and Overpass Road intersections would continue to operate below acceptable LOS by the year 2030 under the No-Build conditions, experiencing much higher delays in comparison to the Opening Year (2022).

5.4 INTERIM YEAR (2030) BUILD ANALYSIS

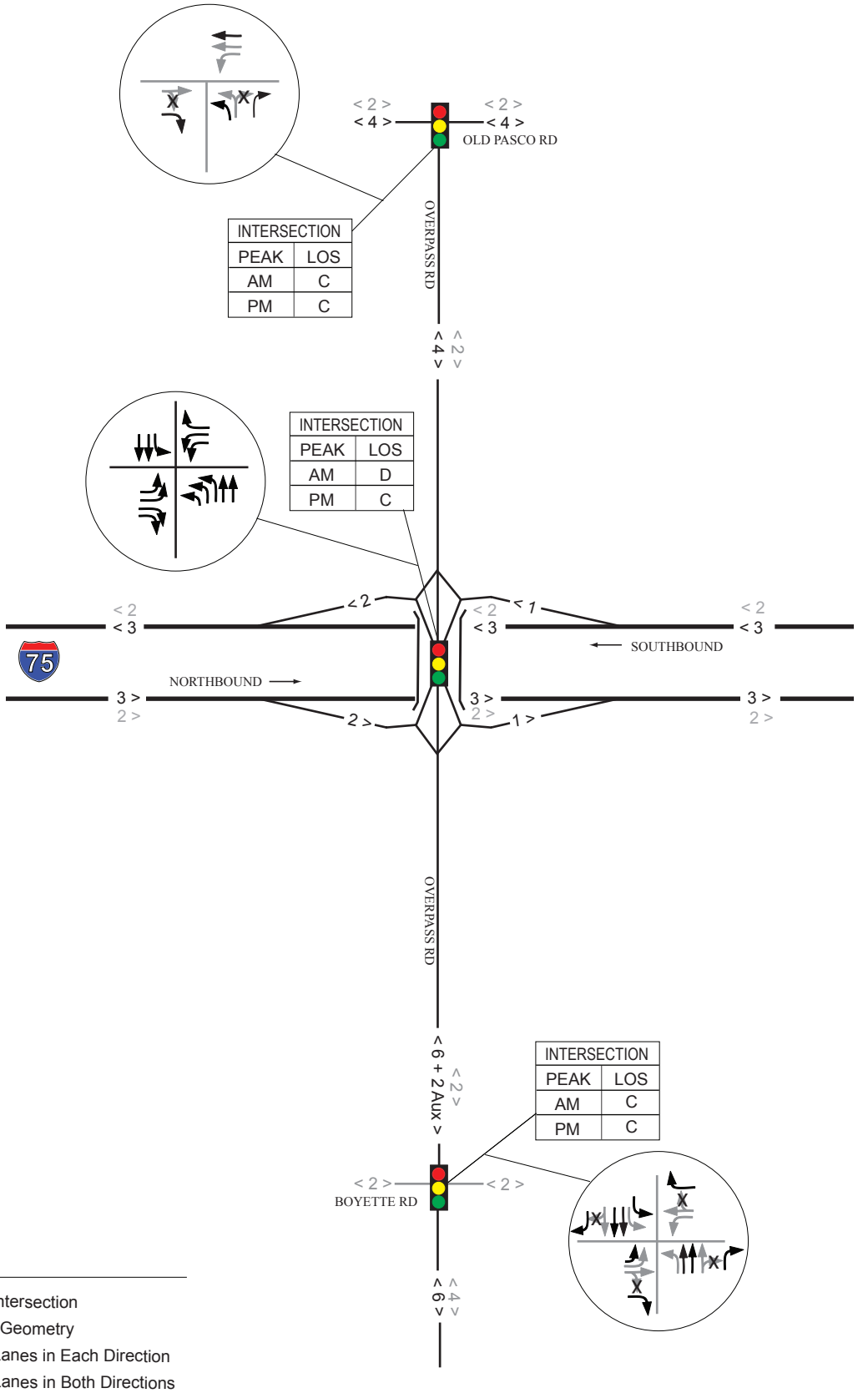
The Interim Year (2030) Build Analysis was conducted using the 2030 Build design hour traffic and the 2030 Build geometry shown on **Figures 5-4 and 5-4A through 5-4E**. Figure 5-4A shows the geometry and LOS results for all of the freeway segments, ramp junctions, and the Diamond Interchange configuration. Figure 5-4B shows the LOS results with the SPUI configuration at the proposed interchange and adjacent intersections on Overpass Road, while Figure 5-4C, 5-4D, and 5-4E show the LOS results for the DDI, Flyover Ramp, and Loop Ramp configurations, respectively. The LOS results for the a.m. and p.m. peak hour Interim Year (2030) Build Analysis are shown in **Table 5-11** (freeway segments), **Table 5-12** (ramp junctions), **Table 5-13** (intersections excluding those along Overpass Road), and **Table 5-14** (intersections along Overpass Road). FREEPLAN and HCS worksheets for the analysis are provided in Appendix H.



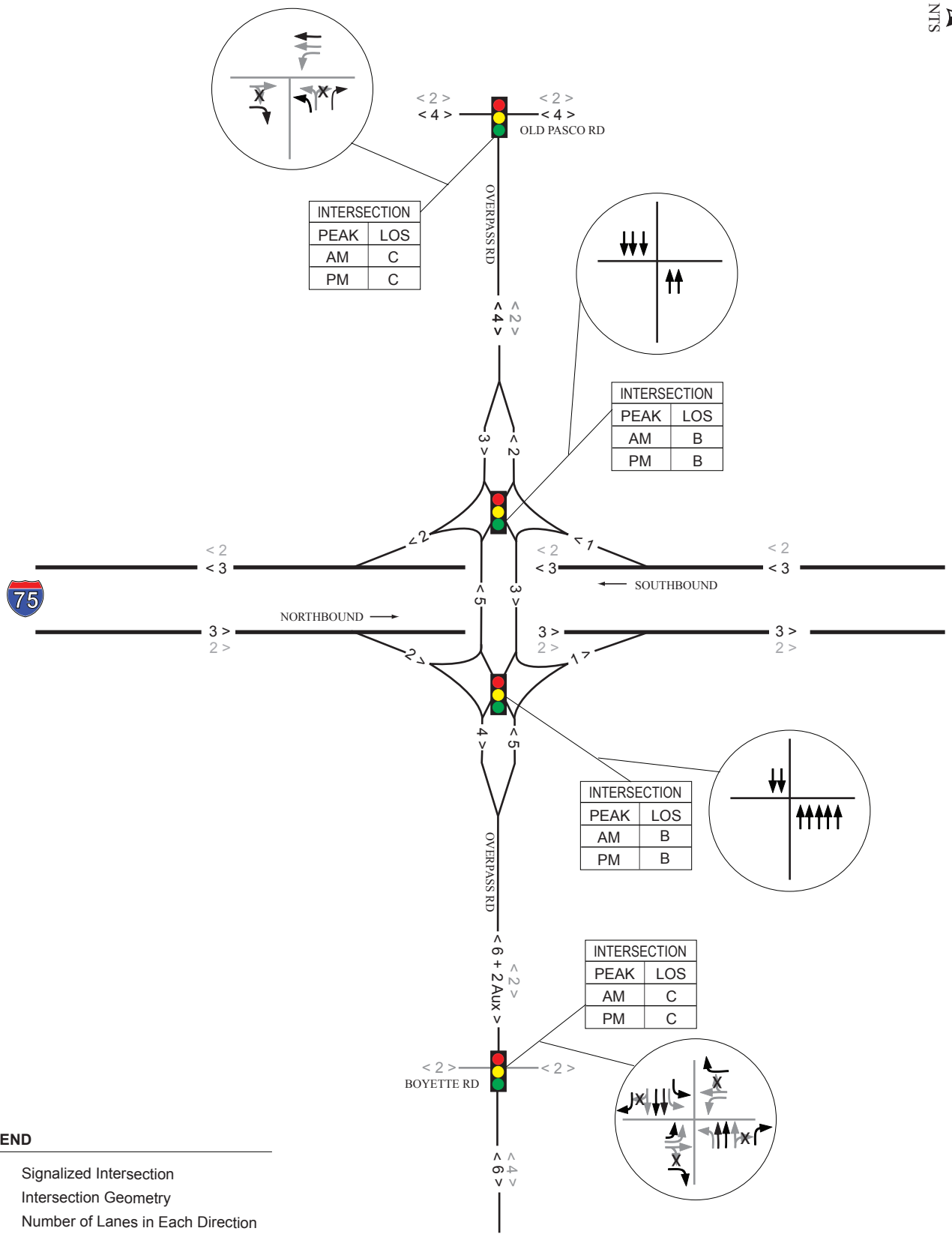
I-75 and Overpass Road Preliminary Interchange Justification Report	Interim Year (2030) Build Alternative Analysis Summary	Figure 5-4



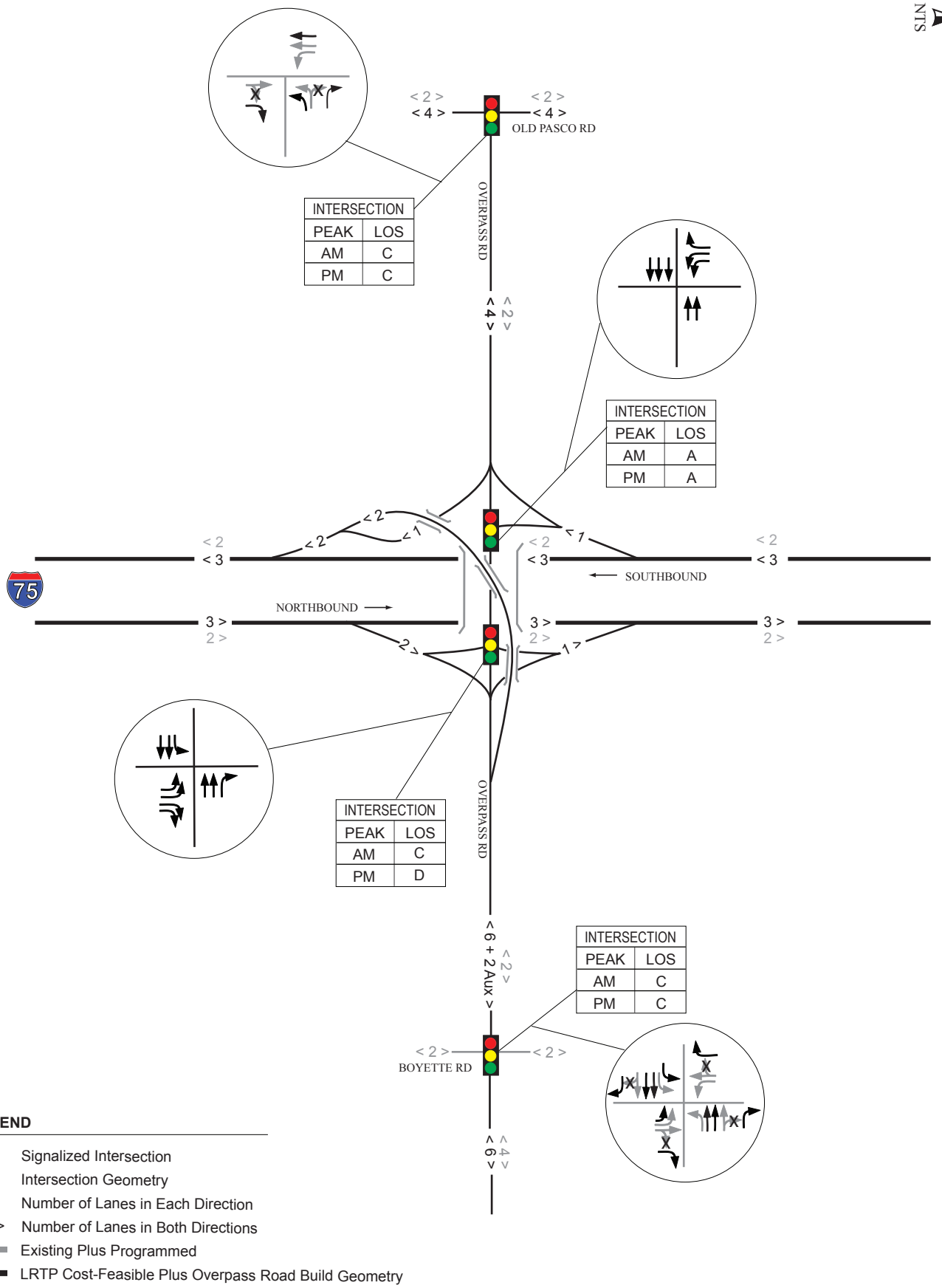
I-75 and Overpass Road Preliminary Interchange Justification Report	Interim Year (2030) Build Alternative Diamond Analysis Summary	Figure 5-4A



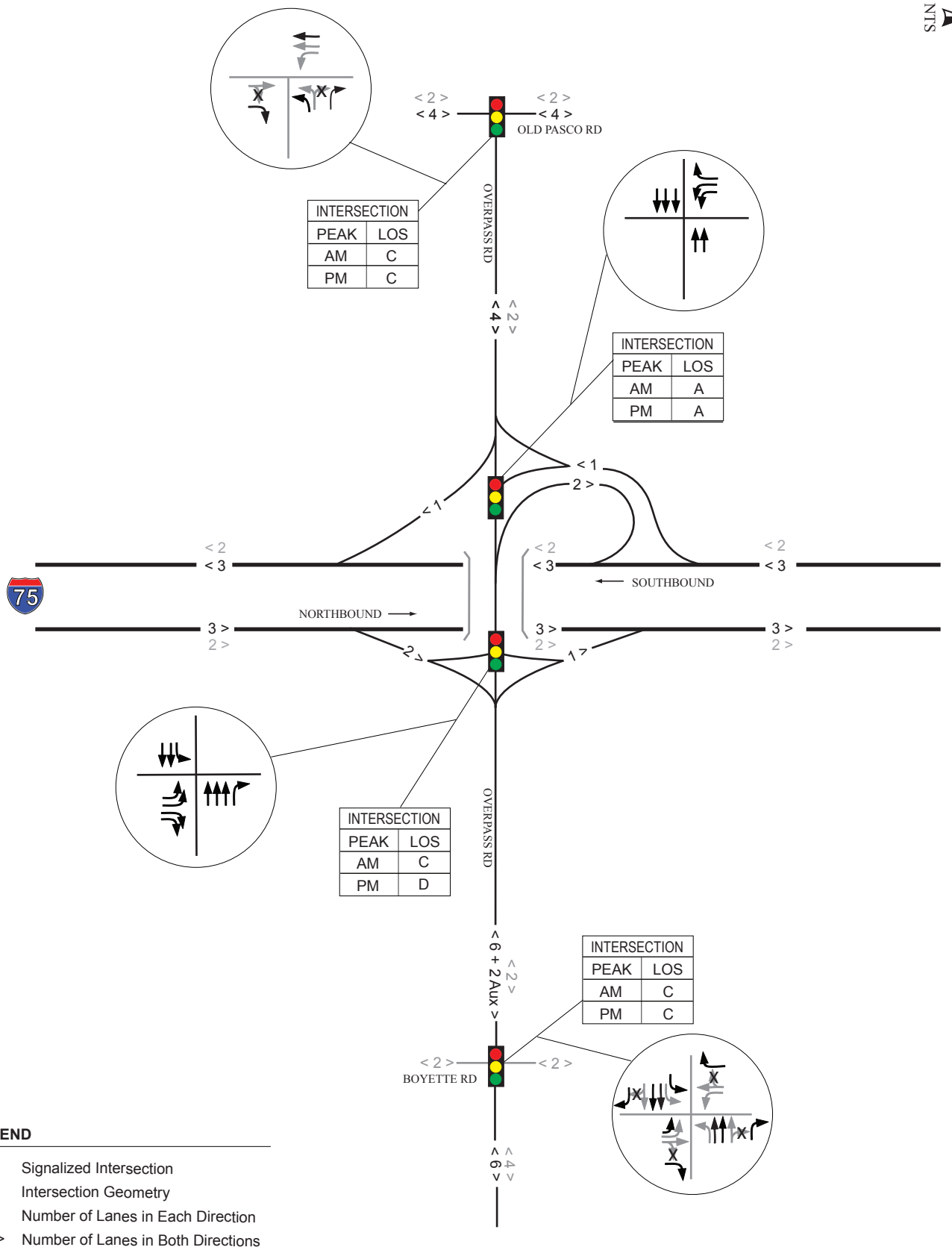
I-75 and Overpass Road Preliminary Interchange Justification Report	Interim Year (2030) Build Alternative SPUI Analysis Summary	Figure 5-4B



I-75 and Overpass Road Preliminary Interchange Justification Report	Interim Year (2030) Build Alternative DDI Analysis Summary	Figure 5-4C



I-75 and Overpass Road Preliminary Interchange Justification Report	Interim Year (2030) Build Alternative Flyover Analysis Summary	Figure 5-4D



I-75 and Overpass Road Preliminary Interchange Justification Report	Interim Year (2030) Build Alternative Loop Analysis Summary	Figure 5-4E

TABLE 5-11
INTERIM YEAR (2030) BUILD ALTERNATIVE FREEWAY LOS

Freeway Segment	AM Peak Southbound		AM Off-Peak Northbound		PM Peak Northbound		PM Off-Peak Southbound	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 from south of SR 56 to SR 56	>45.0	F	35.2	E	>45.0	F	32.6	D
I-75 from SR 56 to CR 54	>45.0	F	42.5	E	>45.0	F	44.3	E
I-75 from CR 54 to Overpass Road	>45.0	F	>45.0	F	>45.0	F	>45.0	F
I-75 from Overpass Road to SR 52	>45.0	F	>45.0	F	>45.0	F	>45.0	F
I-75 from SR 52 to north of SR 52	>45.0	F	30.2	D	42.4	E	31.6	D

Notes: Density is expressed in passenger cars per mile per lane. Analysis was conducted using FDOT's FREEPLAN LOS software.

TABLE 5-12
INTERIM YEAR (2030) BUILD ALTERNATIVE RAMP JUNCTION LOS

Ramp Location	Analysis Method	AM Peak		PM Peak	
		Density	LOS	Density	LOS
I-75 northbound off-ramp to SR 56	C-D ramp Capacity check	OK (0.85)		Over Capacity (1.07)	
I-75 northbound on-ramp from SR 56	Merge	34.0	D	42.8	F
I-75 southbound off-ramp to SR 56	Diverge	56.0	F	38.5	E
I-75 southbound on-ramp from SR 56[1]	Major Merge	Over Capacity (1.07)		OK (0.85)	
I-75 northbound off-ramp to CR 54[1]	Major Diverge	OK (0.50)		OK (0.71)	
I-75 northbound on-ramp from CR 54	Merge	50.5	F	66.1	F
I-75 southbound off-ramp to CR 54	Diverge	74.8	F	57.1	F
I-75 southbound on-ramp from CR 54[1]	Major Merge	OK (0.71)		OK (0.50)	
I-75 northbound off-ramp to Overpass Road	Diverge	41.0	F	58.7	F
I-75 northbound on-ramp from Overpass Road	Merge	38.5	F	52.5	F
I-75 southbound off-ramp to Overpass Road	Diverge	55.9	F	40.4	F
I-75 southbound on-ramp from Overpass Road	Merge	56.5	F	39.7	F
I-75 northbound off-ramp to SR 52	Diverge	41.2	F	56.7	F
I-75 northbound on-ramp from SR 52	Merge	30.4	D	36.6	E
I-75 southbound off-ramp to SR 52	Diverge	39.6	F	32.8	D
I-75 southbound on-ramp from SR 52	Merge	51.4	F	41.8	F

[1] Two-lane on- and off-ramps resulting in lane addition/lane drop were analyzed as major merge/diverge based on Exhibits 25-7 and 25-14 of HCM. The HCS software is not used in this case.

Notes: Volume is expressed in terms of vehicles per hour; Density is expressed in terms of passenger cars per mile per lane.
OK (x.xx) = The value in parenthesis provides the v/c ratio for the major merge/diverge areas.

TABLE 5-13
INTERIM YEAR (2030) BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at SR 56	Signalized	147.1	F	184.7	F
I-75 southbound ramps at SR 56	Signalized	163.1	F	121.5	F
I-75 northbound ramps at CR 54	Signalized	74.7	E	99.9	F
I-75 southbound ramps at CR 54	Signalized	136.0	F	123.4	F
I-75 northbound ramps at SR 52	Signalized	58.2	E	70.9	E
I-75 southbound ramps at SR 52	Signalized	183.7	F	168.1	F

Notes: Delay reported is in sec/veh.

TABLE 5-14
INTERIM YEAR (2030) BUILD ALTERNATIVE INTERSECTION LOS FOR OVERPASS ROAD INTERCHANGE CONFIGURATIONS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
DIAMOND INTERCHANGE					
I-75 northbound ramps at Overpass Road	Signalized	14.1	B	18.8	B
I-75 southbound ramps at Overpass Road	Signalized	25.8	C	20.9	C
Overpass Road at Boyette Road	Signalized	32.5	C	35.0	C
Overpass Road at Old Pasco Road	Signalized	27.9	C	25.6	C
SPUI CONFIGURATION					
I-75 northbound/southbound ramps at Overpass Road	Signalized	36.8	D	29.1	C
Overpass Road at Boyette Road	Signalized	32.5	C	35.0	C
Overpass Road at Old Pasco Road	Signalized	27.9	C	25.6	C
DDI CONFIGURATION					
I-75 northbound ramps at Overpass Road	Signalized	14.9	B	14.1	B
I-75 southbound ramps at Overpass Road	Signalized	10.9	B	11.9	B
Overpass Road at Boyette Road	Signalized	32.5	C	35.0	C
Overpass Road at Old Pasco Road	Signalized	27.9	C	25.6	C
FLYOVER RAMP CONFIGURATION (WESTBOUND TO SOUTHBOUND)					
I-75 northbound ramps at Overpass Road	Signalized	26.9	C	42.7	D
I-75 southbound ramps at Overpass Road	Signalized	9.4	A	8.5	A
Overpass Road at Boyette Road	Signalized	32.5	C	35.0	C
Overpass Road at Old Pasco Road	Signalized	27.9	C	25.6	C
LOOP RAMP CONFIGURATION (WESTBOUND TO SOUTHBOUND)					
I-75 northbound ramps at Overpass Road	Signalized	25.3	C	23.4	C
I-75 southbound ramps at Overpass Road	Signalized	9.4	A	8.5	A
Overpass Road at Boyette Road	Signalized	32.5	C	35.0	C
Overpass Road at Old Pasco Road	Signalized	27.9	C	25.6	C

Notes: Delay reported is in sec/veh.

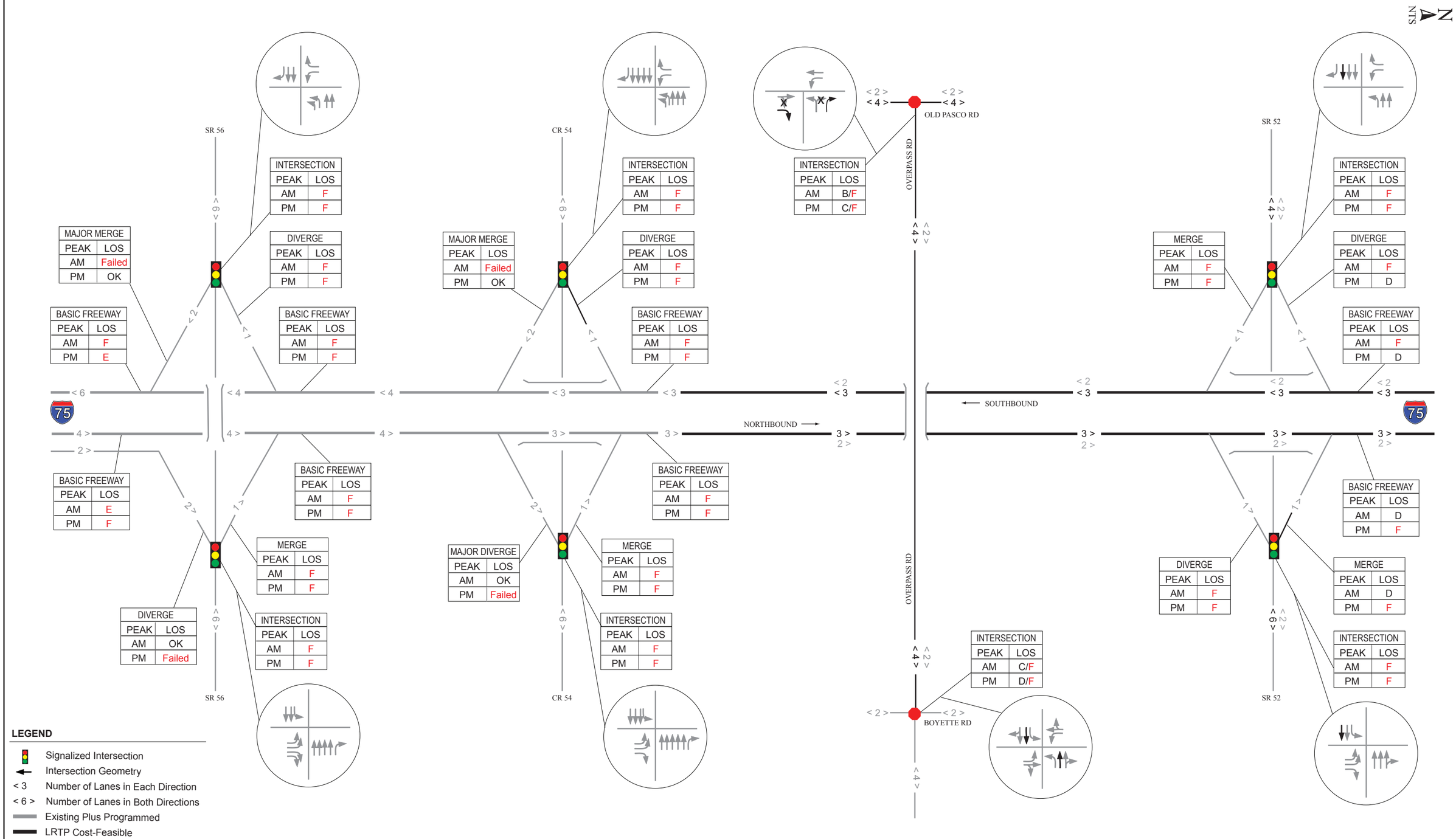
The analysis indicates that all the freeway segments and ramp junctions in the project study area operate below acceptable LOS under the Interim Year (2030) Build Alternative. It should be noted that most of the ramp junction failures result from the mainline deficiencies that occur upstream/downstream of the junction. Two-lane on-/off-ramps exist for the SR 56 northbound off and southbound on, and CR 54 northbound off and southbound on movements. Based on the traffic demand, two-lane ramps are needed for the northbound off and southbound on movements at the SR 52 interchange. While no improvements were programmed specifically for these ramps at the time of MLOU approval, reconstruction of the interchange has recently been included in the I-75 Design-Build project for *I-75 from North of SR 54/CR 54 to North of SR 52 (FDOT Financial Project Number 258736-2).* The ramps shall include four single-lane diamond interchange ramps and one single-lane loop ramp for the westbound SR 52 to southbound I-75 movement.

The intersection analysis indicates that all of the ramp terminal intersections at SR 56, CR 54, and SR 52 continue to operate below acceptable LOS under the 2030 Build condition. However, significant reductions in delay (up to 100 sec/veh) occur at the ramp terminal intersections at CR 54 and SR 52 compared to the No-Build condition. This is a result of traffic shifting to the proposed new interchange at Overpass Road from the interchanges at CR 54 and SR 52. For the Interim Year (2030), the Overpass Road segment between I-75 and Boyette Road would require six lanes plus two auxiliary lanes under all Build Alternatives. For intersections along Overpass Road, adequate geometry and signalization to achieve an acceptable LOS were provided under all five interchange configurations (Diamond Interchange, SPUI, DDI, Flyover Ramp and Loop Ramp).

Note that several of the proposed interchange configurations in the Interim Year (2030) require a two-lane southbound on-ramp from Overpass Road to merge into a six-lane section of I-75. While it is understood that the addition of an auxiliary lane between the Overpass Road on-ramp and the CR 54 off-ramp in the southbound direction may help achieve lane balance and merge area operations, this geometry could also potentially degrade the mainline by 1) introducing weaving issues and 2) encouraging local traffic use of the interstate between CR 54 and Overpass Road. As such, the precise tie-ins and/or need for auxiliary lanes at the referenced location will be evaluated further during the Design phase of the project, in coordination with the I-75 Design-Build team.

5.5 DESIGN YEAR (2040) NO-BUILD ANALYSIS

The Design Year (2040) No-Build Analysis was conducted using the 2040 No-Build design hour traffic and the 2040 No-Build geometry, shown on **Figure 5-5**. Design Year (2040) No-Build Alternative geometry and LOS results are shown on Figure 5-5. The LOS results for the a.m. and p.m. peak hours for the 2040 No-Build Alternative are shown in **Table 5-15** (freeway segments), **Table 5-16** (ramp junctions), and **Table 5-17** (intersections). FREEPLAN and HCS worksheets for the analysis are provided in Appendix I.



I-75 and Overpass Road
Preliminary Interchange Justification Report

Design Year (2040) No-Build Alternative Analysis Summary

Figure 5-5

TABLE 5-15
DESIGN YEAR (2040) NO-BUILD ALTERNATIVE FREEWAY LOS

Freeway Segment	AM Peak Southbound		AM Off-Peak Northbound		PM Peak Northbound		PM Off-Peak Southbound	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 from south of SR 56 to SR 56	>45.0	F	38.8	E	>45.0	F	37.0	E
I-75 from SR 56 to CR 54	>45.0	F	>45.0	F	>45.0	F	>45.0	F
I-75 from CR 54 to SR 52	>45.0	F	>45.0	F	>45.0	F	>45.0	F
I-75 from SR 52 to north of SR 52	>45.0	F	31.1	D	>45.0	F	33.2	D

Notes: Density is expressed in passenger cars per mile per lane. Analysis was conducted using FDOT's FREEPLAN LOS software.

TABLE 5-16
DESIGN YEAR (2040) NO-BUILD ALTERNATIVE RAMP JUNCTION LOS

Ramp Location	Analysis Method	AM Peak		PM Peak	
		Density	LOS	Density	LOS
I-75 northbound off-ramp to SR 56[1]	C-D ramp Capacity check	OK (0.95)		Over Capacity (1.19)	
I-75 northbound on-ramp from SR 56	Merge	35.4	F	44.8	F
I-75 southbound off-ramp to SR 56	Diverge	61.3	F	40.2	F
I-75 southbound on-ramp from SR 56[1]	Major Merge	Over Capacity (1.19)		OK (0.91)	
I-75 northbound off-ramp to CR 54[1]	Major Diverge	OK (0.83)		Over Capacity (1.10)	
I-75 northbound on-ramp from CR 54	Merge	42.7	F	57.2	F
I-75 southbound off-ramp to CR 54	Diverge	64.7	F	47.6	F
I-75 southbound on-ramp from CR 54[1]	Major Merge	Over Capacity (1.10)		OK (0.83)	
I-75 northbound off-ramp to SR 52	Diverge	47.6	F	64.7	F
I-75 northbound on-ramp from SR 52	Merge	32.0	D	38.8	F
I-75 southbound off-ramp to SR 52	Diverge	41.8	F	34.0	D
I-75 southbound on-ramp from SR 52	Merge	57.9	F	47.5	F

[1] Two-lane on- and off-ramps resulting in lane addition/lane drop were analyzed as major merge/diverge based on Exhibits 25-7 and 25-14 of HCM. The HCS software is not used in this case.

Notes: Volume is expressed in terms of vehicles per hour; Density is expressed in terms of passenger cars per mile per lane.
OK (x.xx) = The value in parenthesis provides the v/c ratio for the major merge/diverge areas.

TABLE 5-17
DESIGN YEAR (2040) NO-BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at SR 56	Signalized	270.6	F	281.4	F
I-75 southbound ramps at SR 56	Signalized	257.3	F	169.8	F
I-75 northbound ramps at CR 54	Signalized	173.7	F	154.9	F
I-75 southbound ramps at CR 54	Signalized	344.8	F	182.4	F
I-75 northbound ramps at SR 52	Signalized	373.0	F	491.4	F
I-75 southbound ramps at SR 52	Signalized	408.1	F	317.4	F
Overpass Road at Boyette Road	Unsignalized	23.2/>500	C/F	28.2/>500	D/F
Overpass Road at Old Pasco Road	Unsignalized	12.6/>500	B/F	21.2/>500	C/F

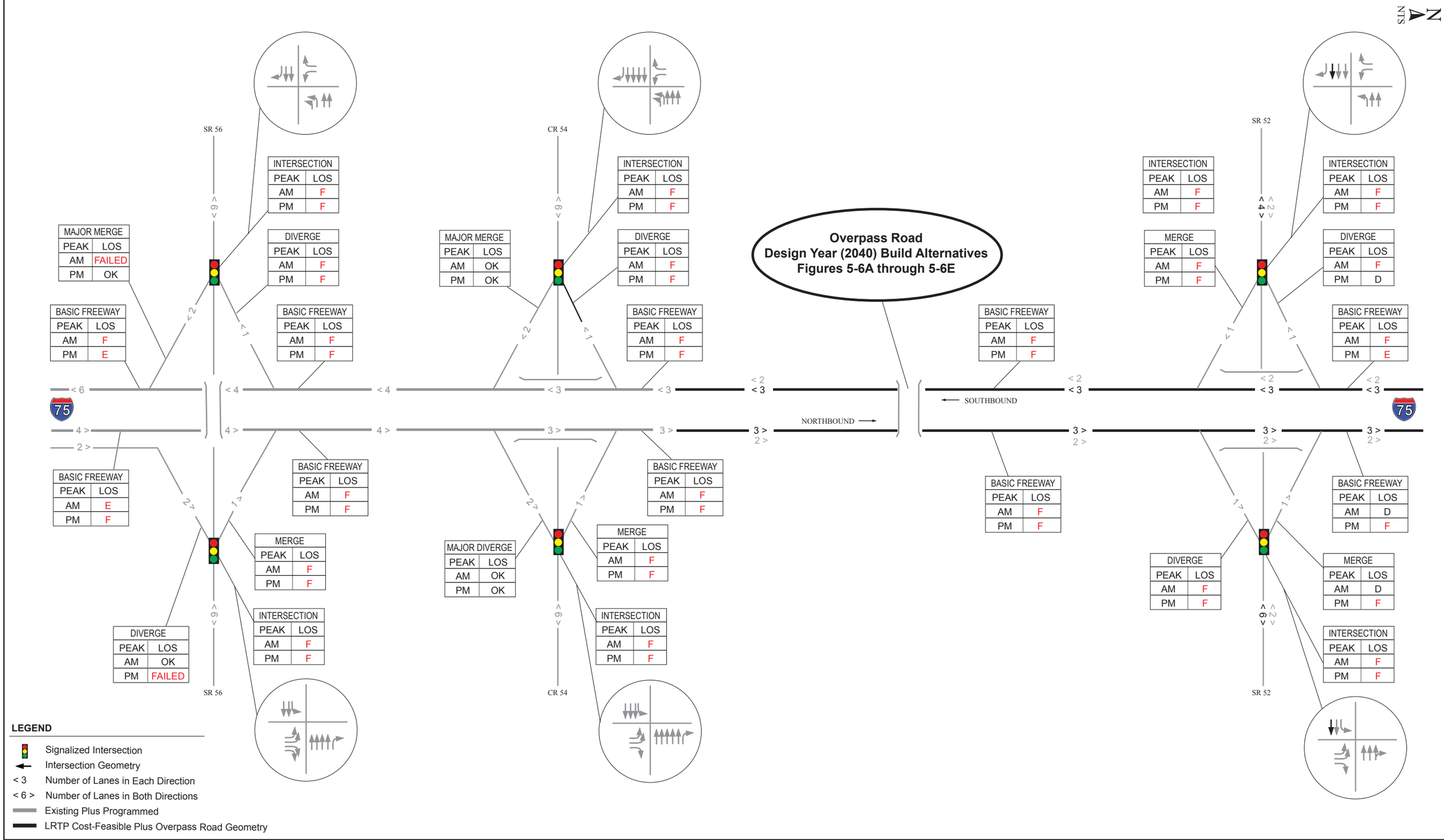
Note: Unsignalized delay and LOS are for major street left movement/minor street approach. Delay reported is in sec/veh. Delays over 500 sec/veh have been reported as >500.

The analysis indicates that all of the freeway segments and ramp junctions in the project study area operate below acceptable LOS under the 2040 No-Build Alternative. The densities increase significantly when compared to both the Opening Year (2022) and Interim Year (2030) operations, as the traffic volumes increase. It should also be noted that most of the ramp junction failures result from the mainline deficiencies that occur upstream/downstream of the junction. Two-lane on-/off-ramps exist for the SR 56 northbound off and southbound on and CR 54 northbound off and southbound on movements. Based on the traffic demand, two-lane ramps are needed for the northbound off and southbound on movements at the SR 52 interchange. While no improvements were programmed specifically for these ramps at the time of MLOU approval, reconstruction of the interchange has recently been included in the I-75 Design-Build project for *I-75 from North of SR 54/CR 54 to North of SR 52 (FDOT Financial Project Number 258736-2).* The ramps shall include four single-lane diamond interchange ramps and one single-lane loop ramp for the westbound SR 52 to southbound I-75 movement.

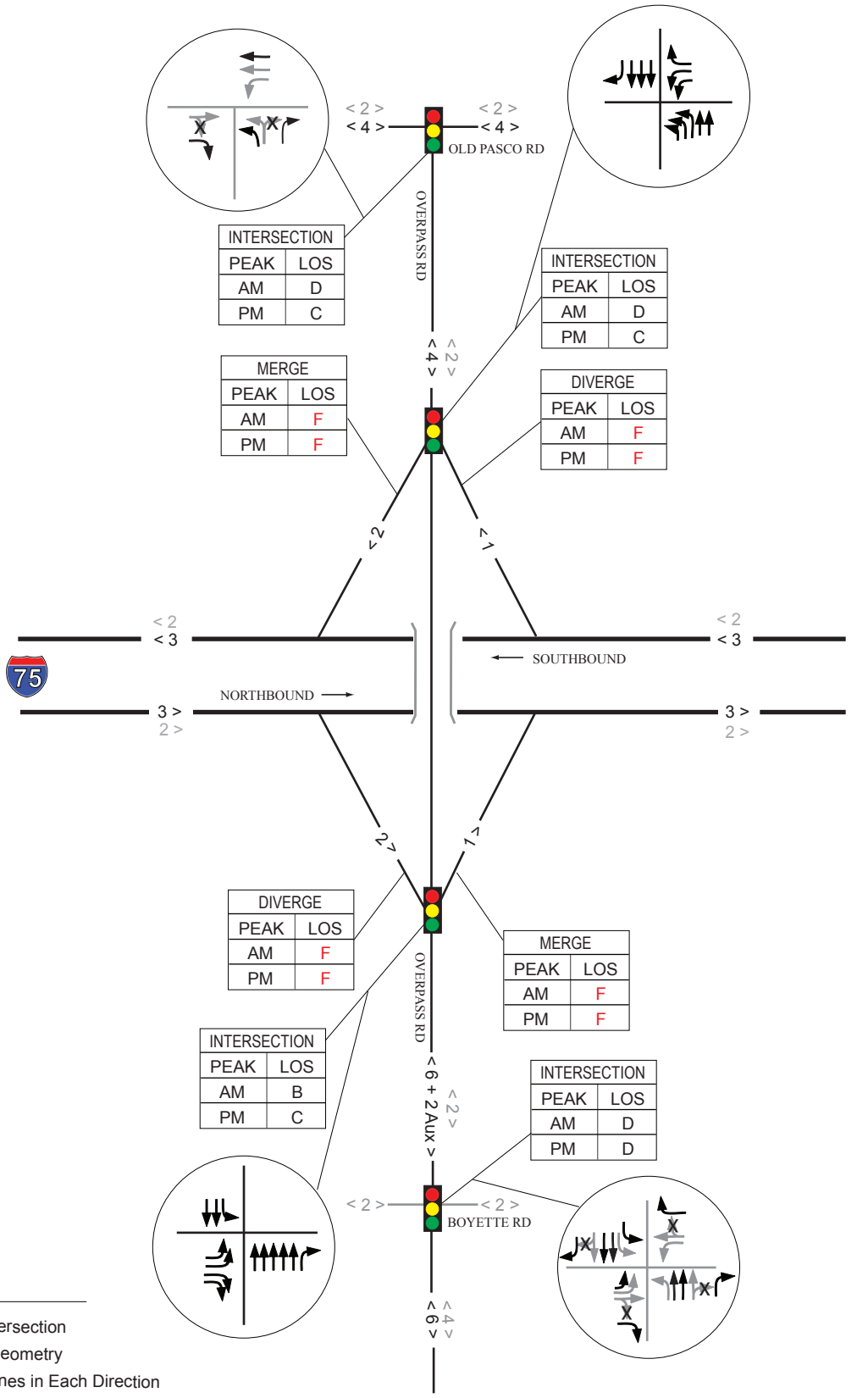
The intersection analysis indicates that all of the ramp terminal intersections and Overpass Road intersections would operate below acceptable LOS by the year 2040 under the No-Build conditions, experiencing significantly higher delays in comparison to the Opening Year (2022) and Interim Year (2030) operations.

5.6 DESIGN YEAR (2040) BUILD ANALYSIS

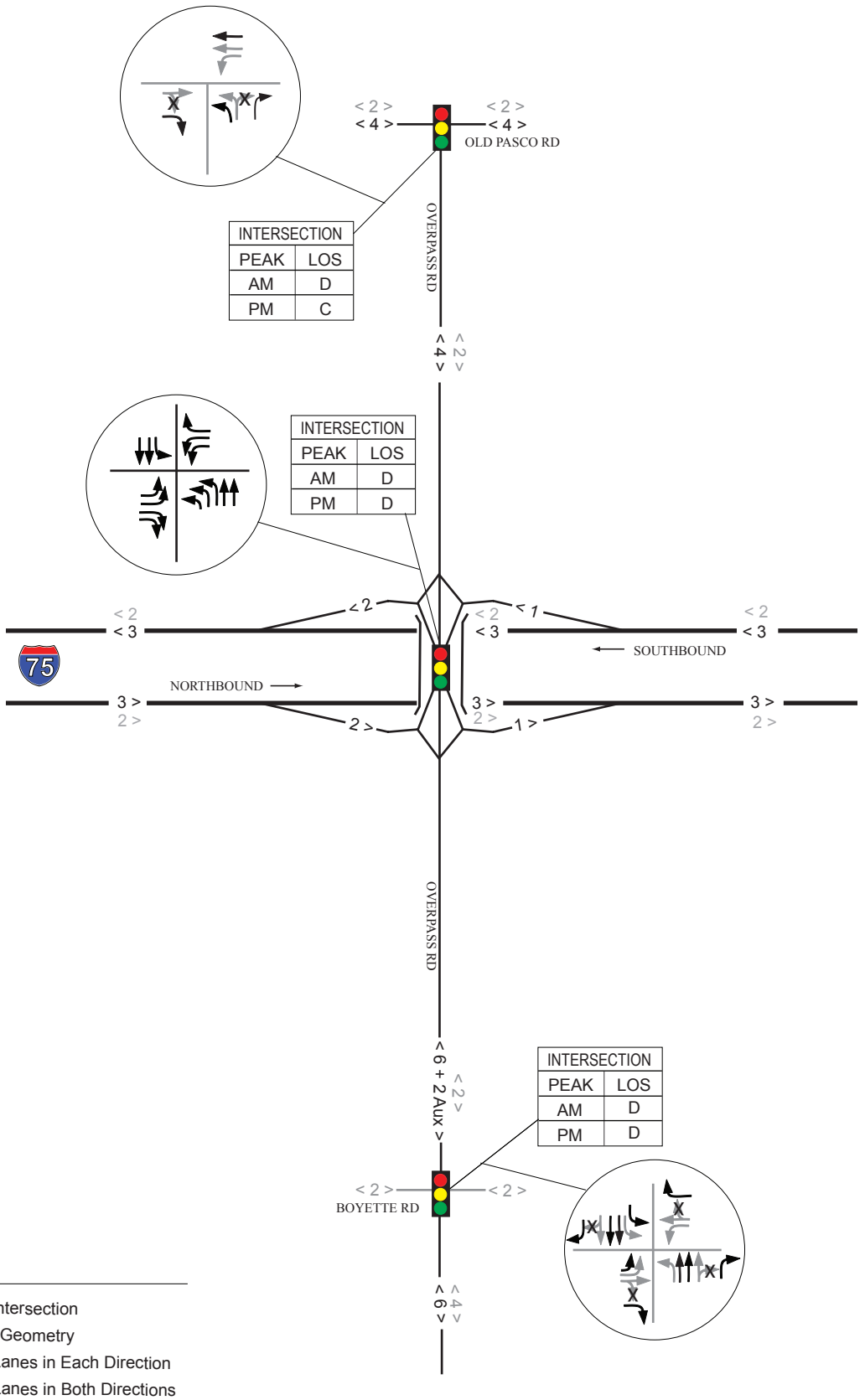
The Design Year (2040) Build Analysis was conducted using the 2040 Build design hour traffic and the 2040 Build geometry shown on **Figure 5-6**. The 2040 Build geometry includes all of the geometry from the 2040 No-Build Alternative and provides the proposed new interchange at I-75 and Overpass Road. Adequate geometry and signalization were provided for intersections along Overpass Road to obtain acceptable LOS. Design Year (2040) Build Alternative geometry and LOS results are shown on **Figures 5-6 and 5-6A through 5-6E**. Figure 5-6A shows the geometry and LOS results for all of the freeway segments, ramp junctions, and the Diamond Interchange configuration. Figure 5-6B shows the LOS results with the SPUI configuration at the proposed interchange and adjacent intersections on Overpass Road, while Figure 5-6C, 5-6D, and 5-6E show the LOS results for the DDI, Flyover Ramp, and Loop Ramp configurations, respectively. The LOS results for the a.m. and p.m. peak hours for the 2040 Build Alternative are shown in **Table 5-18** (freeway segments), **Table 5-19** (ramp junctions), **Table 5-20** (intersections excluding those along Overpass Road), and **Table 5-21** (intersections along Overpass Road). FREEPLAN and HCS worksheets for the analysis are provided in Appendix I.



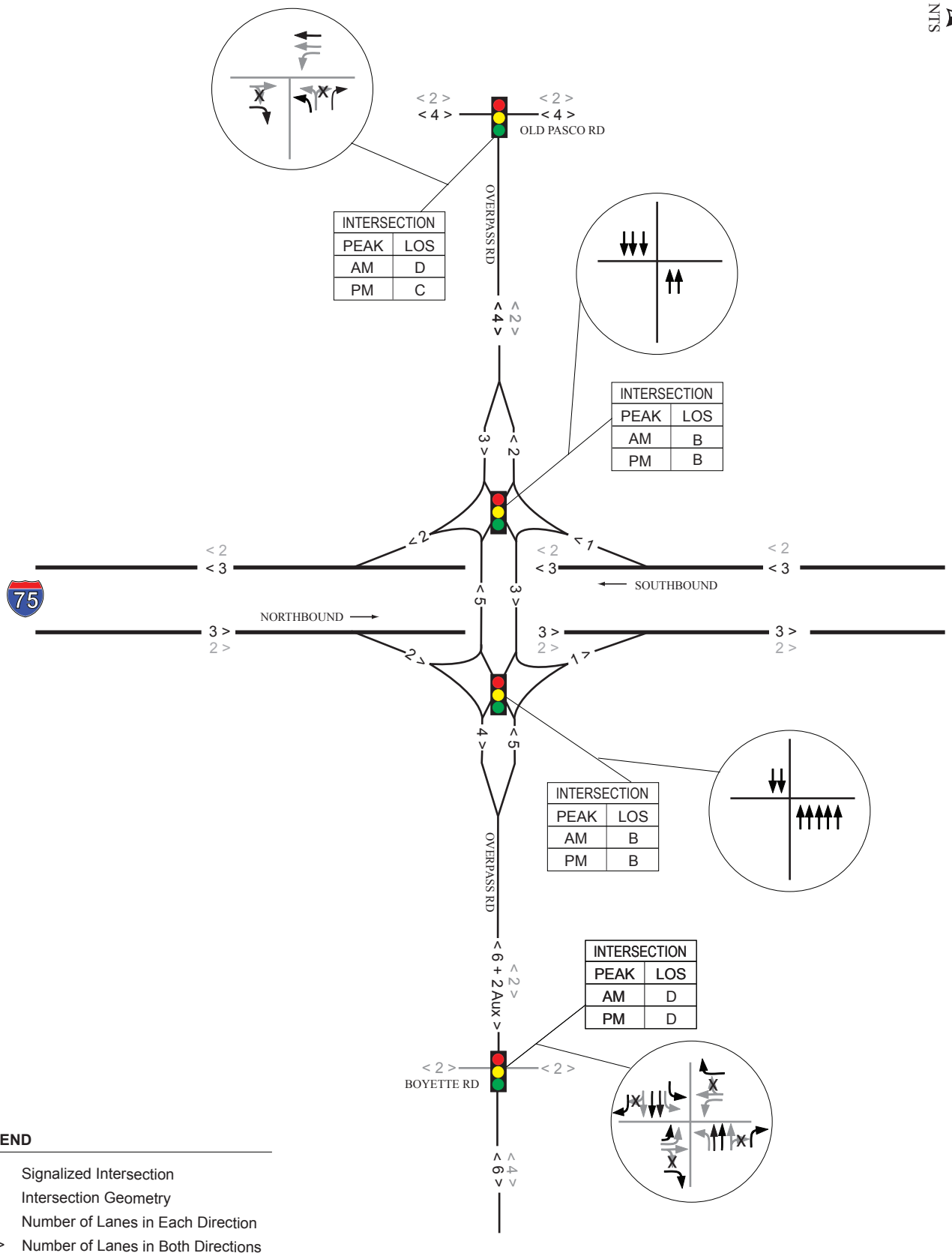
I-75 and Overpass Road Preliminary Interchange Justification Report	Design Year (2040) Build Alternative Analysis Summary	Figure 5-6



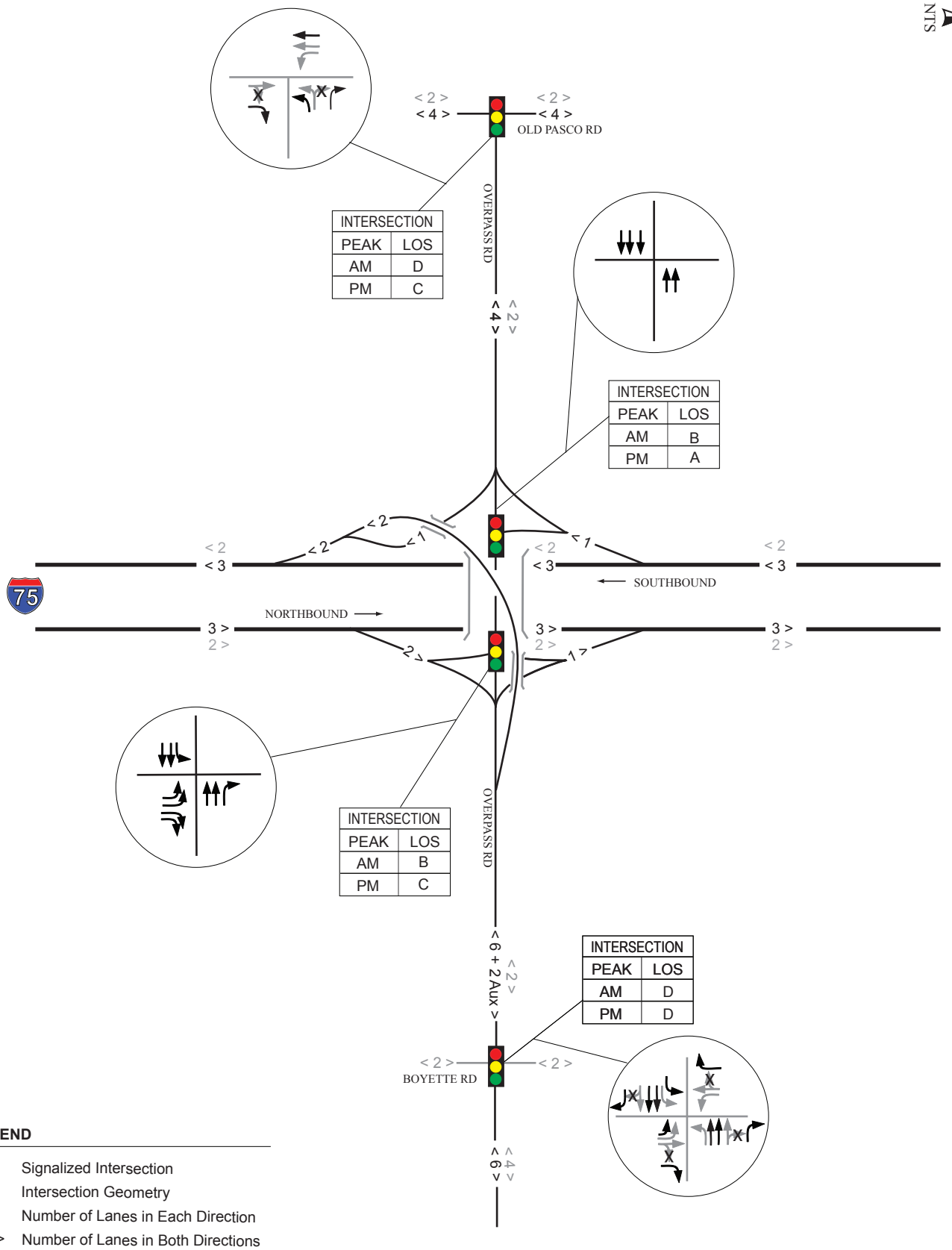
I-75 and Overpass Road Preliminary Interchange Justification Report	Design Year (2040) Build Alternative Diamond Analysis Summary	Figure 5-6A



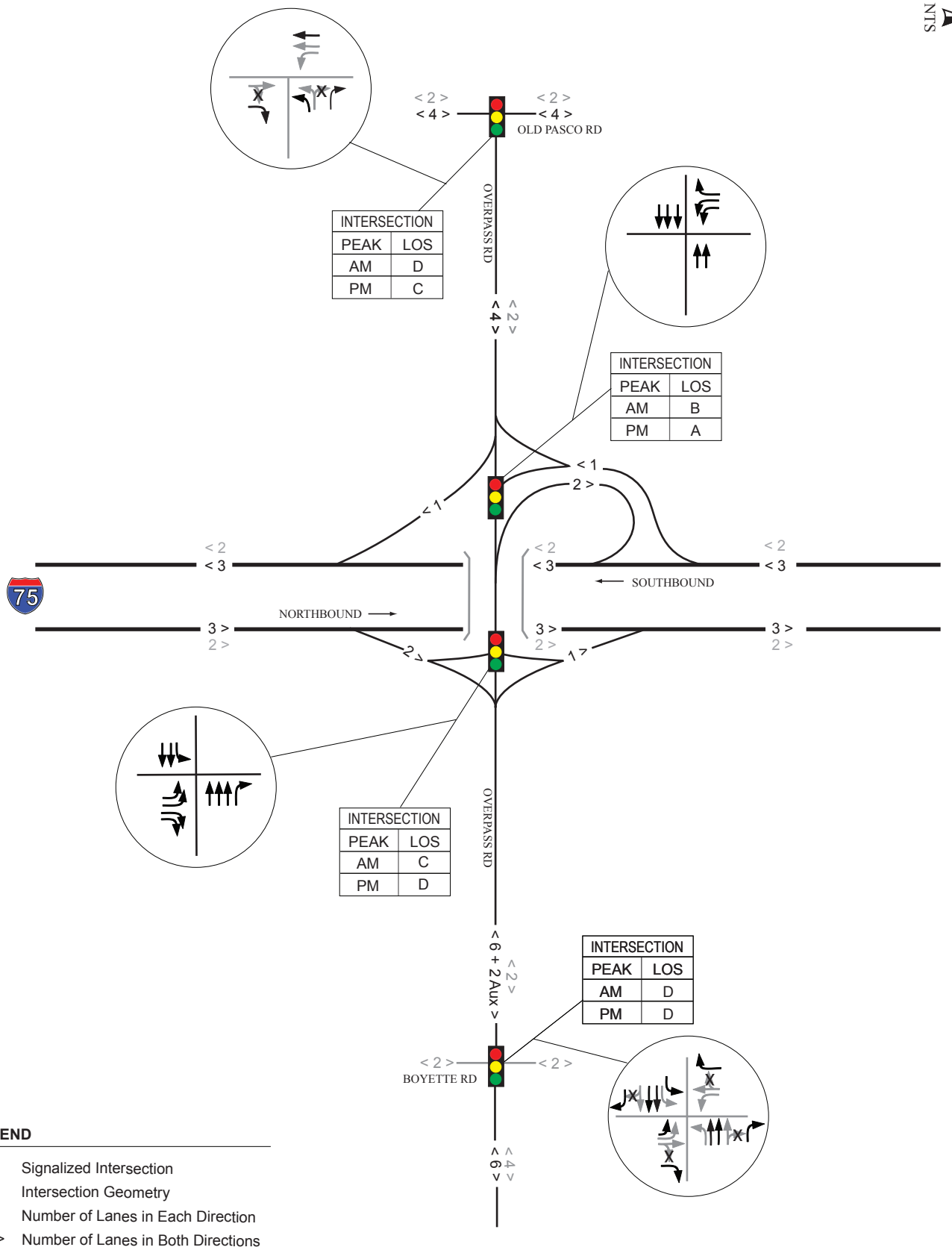
I-75 and Overpass Road Preliminary Interchange Justification Report	Design Year (2040) Build Alternative SPUI Analysis Summary	Figure 5-6B



I-75 and Overpass Road Preliminary Interchange Justification Report	Design Year (2040) Build Alternative DDI Analysis Summary	Figure 5-6C



I-75 and Overpass Road Preliminary Interchange Justification Report	Design Year (2040) Build Alternative Flyover Analysis Summary	Figure 5-6D



I-75 and Overpass Road Preliminary Interchange Justification Report	Design Year (2040) Build Alternative Loop Analysis Summary	Figure 5-6E

TABLE 5-18
DESIGN YEAR (2040) BUILD ALTERNATIVE FREEWAY LOS

Freeway Segment	AM Peak Southbound		AM Off-Peak Northbound		PM Peak Northbound		PM Off-Peak Southbound	
	Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 from south of SR 56 to SR 56	>45.0	F	40.9	E	>45.0	F	38.8	E
I-75 from SR 56 to CR 54	>45.0	F	>45.0	F	>45.0	F	>45.0	F
I-75 from CR 54 to Overpass Road	>45.0	F	>45.0	F	>45.0	F	>45.0	F
I-75 from Overpass Road to SR 52	>45.0	F	>45.0	F	>45.0	F	>45.0	F
I-75 from SR 52 to north of SR 52	>45.0	F	34.0	D	>45.0	F	35.9	E

Notes: Density is expressed in passenger cars per mile per lane. Analysis was conducted using FDOT's FREEPLAN LOS software.

TABLE 5-19
DESIGN YEAR (2040) BUILD ALTERNATIVE RAMP JUNCTION LOS

Ramp Location	Analysis Method	AM Peak		PM Peak	
		Density	LOS	Density	LOS
I-75 northbound off-ramp to SR 56	C-D ramp Capacity check	OK (0.98)		Over Capacity (1.24)	
I-75 northbound on-ramp from SR 56	Merge	37.0	F	47.2	F
I-75 southbound off-ramp to SR 56	Diverge	66.6	F	42.1	F
I-75 southbound on-ramp from SR 56[1]	Major Merge	Over Capacity (1.24)		OK (0.98)	
I-75 northbound off-ramp to CR 54[1]	Major Diverge	OK (0.59)		OK (0.83)	
I-75 northbound on-ramp from CR 54	Merge	56.2	F	74.3	F
I-75 southbound off-ramp to CR 54	Diverge	84.1	F	63.7	F
I-75 southbound on-ramp from CR 54[1]	Major Merge	OK (0.83)		OK (0.59)	
I-75 northbound off-ramp to Overpass Road	Diverge	53.8	F	74.2	F
I-75 northbound on-ramp from Overpass Road	Merge	43.2	F	57.6	F
I-75 southbound off-ramp to Overpass Road	Diverge	62.8	F	45.6	F
I-75 southbound on-ramp from Overpass Road	Merge	69.0	F	51.0	F
I-75 northbound off-ramp to SR 52	Diverge	46.4	F	63.6	F
I-75 northbound on-ramp from SR 52	Merge	32.9	D	39.8	F
I-75 southbound off-ramp to SR 52	Diverge	44.5	F	34.8	D
I-75 southbound on-ramp from SR 52	Merge	56.9	F	45.4	F

[1] Two-lane on- and off-ramps resulting in lane addition/lane drop were analyzed as major merge/diverge based on Exhibits 25-7 and 25-14 of HCM. The HCS software is not used in this case.

Notes: Volume is expressed in terms of vehicles per hour; Density is expressed in terms of passenger cars per mile per lane.
OK (x.xx) = The value in parenthesis provides the v/c ratio for the major merge/diverge areas.

TABLE 5-20
DESIGN YEAR (2040) BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at SR 56	Signalized	198.2	F	262.1	F
I-75 southbound ramps at SR 56	Signalized	217.7	F	145.9	F
I-75 northbound ramps at CR 54	Signalized	114.0	F	120.2	F
I-75 southbound ramps at CR 54	Signalized	210.3	F	171.5	F
I-75 northbound ramps at SR 52	Signalized	102.5	F	140.4	F
I-75 southbound ramps at SR 52	Signalized	244.1	F	235.4	F

Notes: Delay reported is in sec/veh.

TABLE 5-21
DESIGN YEAR (2040) BUILD ALTERNATIVE INTERSECTION LOS FOR OVERPASS ROAD INTERCHANGE CONFIGURATIONS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
DIAMOND INTERCHANGE					
I-75 northbound ramps at Overpass Road	Signalized	17.2	B	25.2	C
I-75 southbound ramps at Overpass Road	Signalized	47.6	D	28.4	C
Overpass Road at Boyette Road	Signalized	44.8	D	47.6	D
Overpass Road at Old Pasco Road	Signalized	47.7	D	31.8	C
SPUI CONFIGURATION					
I-75 northbound/southbound ramps at Overpass Road	Signalized	54.0	D	37.2	D
Overpass Road at Boyette Road	Signalized	44.8	D	47.6	D
Overpass Road at Old Pasco Road	Signalized	47.7	D	31.8	C
DDI CONFIGURATION					
I-75 northbound ramps at Overpass Road	Signalized	19.5	B	16.2	B
I-75 southbound ramps at Overpass Road	Signalized	12.4	B	13.2	B
Overpass Road at Boyette Road	Signalized	44.8	D	47.6	D
Overpass Road at Old Pasco Road	Signalized	47.7	D	31.8	C
FLYOVER RAMP CONFIGURATION (WESTBOUND TO SOUTHBOUND)					
I-75 northbound ramps at Overpass Road	Signalized	18.3	B	27.6	C
I-75 southbound ramps at Overpass Road	Signalized	10.6	B	9.1	A
Overpass Road at Boyette Road	Signalized	44.8	D	47.6	D
Overpass Road at Old Pasco Road	Signalized	47.7	D	31.8	C
LOOP RAMP CONFIGURATION (WESTBOUND TO SOUTHBOUND)					
I-75 northbound ramps at Overpass Road	Signalized	43.3	D	41.4	D
I-75 southbound ramps at Overpass Road	Signalized	10.6	B	9.1	A
Overpass Road at Boyette Road	Signalized	44.8	D	47.6	D
Overpass Road at Old Pasco Road	Signalized	47.7	D	31.8	C

Notes: Delay reported is in sec/veh.

The analysis indicates that all of the freeway segments and ramp junctions in the project study area operate below acceptable LOS under the Design Year (2040) Build Alternative. It should be noted that most of the ramp junction failures result from the mainline deficiencies on I-75 that occur upstream/downstream of the junction. Two-lane on-/off-ramps exist for the SR 56 northbound off and southbound on movements and CR 54 northbound off and southbound on movements. Based on the traffic demand, two-lane ramps are needed for the northbound off and southbound on movements at the SR 52 interchange. While no improvements were programmed specifically for these ramps at the time of MLOU approval, reconstruction of the interchange has recently been included in the I-75 Design-Build project for *I-75 from North of SR 54/CR 54 to North of SR 52 (FDOT Financial Project Number 258736-2)*. The ramps shall include four single-lane diamond interchange ramps and one single-lane loop ramp for the westbound SR 52 to southbound I-75 movement.

Significant reductions in delay occur at the ramp terminal intersections at CR 54 and SR 52, compared to the No-Build condition. This is a result of traffic shifting to the proposed new interchange at Overpass Road from the interchanges at CR 54 and SR 52.

For the Design Year (2040) Build condition, the I-75 freeway segments will continue to operate below acceptable LOS standards. It should be noted that the FDOT SIS Plan indicates that additional lanes (beyond the six-lane widening) will be needed in the future. As such, FDOT District Seven will be further evaluating improvements to address the mainline deficiencies outside of the PIJR.

Overpass Road between I-75 and Boyette Road is projected to need six lanes plus two auxiliary lanes under all Build Alternatives in the Design Year (2040). For the intersections along Overpass Road, adequate geometry and signalization to achieve an acceptable LOS was provided under all five interchange configurations (Diamond Interchange, SPUI, DDI, Flyover Ramp and Loop Ramp).

Note that several of the proposed interchange configurations in the Design Year (2040) require a two-lane southbound on-ramp from Overpass Road merging onto a six-lane section of I-75. While it is understood that the addition of an auxiliary lane between the Overpass Road on-ramp and the CR 54 off-ramp in the southbound direction may help achieve lane balance and merge area operations, this geometry could also potentially degrade the mainline by 1) introducing weaving issues and 2) encouraging local traffic use of the interstate between CR 54 and Overpass Road. As such, the precise tie-ins and/or need for auxiliary lanes at the referenced location will be evaluated further during the Design phase of the project, in coordination with the I-75 Design-Build team.

5.7 COMPARISON OF BUILD VERSUS NO-BUILD TRAFFIC OPERATIONS

To demonstrate the potential effects that the proposed interchange at I-75 and Overpass Road would have on the project study area roadway network, Design Year (2040) traffic projections and traffic operations were compared at representative locations for the Build and No-Build Alternatives.

5.7.1 TRAFFIC VOLUME COMPARISON

Traffic volumes are forecast to slightly increase along the I-75 mainline segments in the project study corridor for the Build Alternative compared to the No-Build Alternative in the Design Year (2040). The largest increase is projected for the I-75 segment between CR 54 and Overpass Road with marginal or no increases at other segments. This demonstration highlights the latent travel demand in the corridor for the Build Alternative above that in the No-Build Alternative. Traffic volumes are forecasted to decrease at the I-75 interchanges at CR 54 and SR 52 and along the segments of CR 54 and SR 52 adjacent to I-75 with the introduction of the proposed interchange at Overpass Road. The volume reduction is expected to be significant for the I-75 ramps to/from the south at CR 54 and SR 52. This reduction of traffic at the adjacent interchanges indicates that the proposed interchange is expected to relieve congestion at adjacent interchanges. A summary of the AADT comparison for representative locations is presented in **Table 5-22**.

TABLE 5-22
DESIGN YEAR (2040) AADT VOLUME COMPARISON

Location	Projected 2040 AADT		Difference (Build vs. No-Build)
	No-Build	Build	
I-75 from CR 54 to SR 52	165,800	204,400	+23%
I-75 NB off-ramp to CR 54	36,900	25,700	-31%
I-75 SB on-ramp from CR 54	36,900	25,700	-31%
I-75 NB on-ramp from CR 54	15,900	20,500	+28%
I-75 SB off-ramp to CR 54	15,900	20,500	+28%
I-75 NB off-ramp to SR 52	32,400	27,200	-16%
I-75 SB on-ramp from SR 52	32,400	27,200	-16%
I-75 NB on-ramp from SR 52	10,600	9,000	-15%
I-75 SB off-ramp to SR 52	10,600	9,000	-15%
CR 54 east of I-75	91,500	80,600	-12%
CR 54 east of I-75	79,100	73,100	-8%
SR 52 east of I-75	71,500	66,400	-7%
SR 52 east of I-75	63,000	57,600	-9%

As seen in Table 5-22, the projected daily traffic demand at the CR 54 and SR 52 interchanges would be reduced up to 30 percent under the Build Alternative.

5.7.2 TRAFFIC OPERATIONS COMPARISON

An evaluation of the traffic analysis results indicates that along the I-75 mainline segments, most of the ramp merge/diverge junctions and ramp terminal intersections would experience deficiencies under both the Build and No-Build conditions for the Design Year (2040). Most of the ramp junction failures are due to the mainline deficiencies upstream/downstream of the

junction. The Build Alternative does not provide additional capacity on the I-75 mainline segments, as it is beyond the scope of the PIJR. Therefore, the mainline segments will continue to experience capacity deficiencies, which will take place regardless of whether or not the proposed interchange at I-75 and Overpass Road is built. Additionally, it should be noted that the FDOT SIS Plan indicates that additional lanes (beyond the six-lane widening) will be needed in the future. As such, FDOT District Seven will be further evaluating improvements to address the mainline deficiencies outside of the PIJR.

The Build Alternative will result in significant delay reductions for ramp terminal intersections at the CR 54 and SR 52 interchanges. A comparison of Opening Year (2022) and Design Year (2040) traffic operational analysis for these interchanges under the Build and No-Build Alternatives is summarized in **Tables 5-23** and **5-24**, respectively. For the Build Alternative, the results for the diamond configuration are used for comparison purposes.

TABLE 5-23
OPENING YEAR (2022) TRAFFIC OPERATIONS COMPARISON

Location	No-Build		Build		Difference (Build vs. No-Build)	Congestion Effect
	Delay	LOS	Delay	LOS		
I-75 northbound ramps at CR 54	81.2	F	26.5	C	-68%	Positive
I-75 southbound ramps at CR 54	144.3	F	42.0	D	-71%	Positive
I-75 northbound ramps at SR 52	191.2	F	28.3	C	-85%	Positive
I-75 southbound ramps at SR 52	182.2	F	63.8	E	-36%	Positive

Notes: Delay is expressed in sec/veh. The worst-case among a.m./p.m. hours was compared for each intersection.

TABLE 5-24
DESIGN YEAR (2040) TRAFFIC OPERATIONS COMPARISON

Location	No-Build		Build		Difference (Build vs. No-Build)	Congestion Effect
	Delay	LOS	Delay	LOS		
I-75 northbound ramps at CR 54	178.5	F	120.2	F	-32%	Positive
I-75 southbound ramps at CR 54	344.8	F	210.3	F	-40%	Positive
I-75 northbound ramps at SR 52	491.4	F	140.4	F	-71%	Positive
I-75 southbound ramps at SR 52	408.1	F	244.1	F	-40%	Positive

Notes: Delay is expressed in sec/veh. The worst-case among a.m./p.m. hours was compared for each intersection.

As seen from the Build and No-Build Alternatives comparisons above, the proposed interchange at I-75 and Overpass Road is expected to provide additional regional mobility to the surrounding area and provides relief to the adjacent interchanges of CR 54 and SR 52. Therefore, the interchange is justified to meet the forecasted travel demand needs.

5.8 TRAFFIC OPERATIONAL ANALYSIS FOR OVERPASS ROAD FROM EAST OF BOYETTE ROAD TO US 301

Pasco County is conducting a PD&E Study for the Overpass Road Corridor from Old Pasco Road to US 301 concurrent with the PIJR request to construct a new interchange on I-75 at Overpass Road. Based on formal direction received from FDOT District Seven, the PIJR's eastern limit for Overpass Road was defined as immediately east of Boyette Road. Therefore, it was recommended that the traffic analysis for the Overpass Road extension from east of Boyette Road to US 301 be documented in a separate technical memorandum, referenced as part of the appendix of the PIJR. As such, the traffic analysis for the Overpass Road extension is provided in Appendix J.

Section 6.0
ENVIRONMENTAL CONSIDERATIONS

The widening and extension of the Overpass Road corridor to US 301, including the proposed interchange at I-75, were previously screened through the *Efficient Transportation Decision Making* (ETDM) process in 2008 (ETDM #9871). Results of the screening indicated that there were no fatal flaws determined by any agency's Environmental Technical Advisory Team (ETAT) members. However, as the extension of Overpass Road to US 301 will occur on new alignment, an Environmental Assessment was the approved Class of Action for the environmental/NEPA document by FDOT District Seven and FHWA.

Since completion of the ETDM screening, more recent data has been utilized to further assess potential impacts for each of the five Build Interchange Alternatives. A preliminary environmental evaluation including physical, natural, cultural and social/economic impacts for all proposed Build Interchange Alternatives and Roadway Alternatives has been conducted as part of the *Overpass Road PD&E Study* (which began in February 2012) and an Alternatives Public Workshop was held on November 29, 2012. Based upon results of the preliminary environmental evaluation and public input received at the workshop, the Pasco County Board of County Commissioners has approved a recommended interchange and roadway alternative for further study in the environmental documents, contingent on FHWA determination of engineering and operational acceptability of the proposed access documented in the PIJR.

The purpose of this section is to document a summary of potential environmental issues and preliminary drainage requirements for the five Build Interchange Alternatives, as provided at the Alternatives Public Workshop. Note that any specific environmental impacts identified for the proposed interchange will continue to be fully evaluated and documented during the *Overpass Road PD&E Study*, following all procedures and requirements of the NEPA process.

6.1 DIAMOND INTERCHANGE ALTERNATIVE

The Diamond Interchange Alternative affects a total of 22 parcels (0 business, 10 residential and 12 other), with one potential residential relocation located on the south side of Overpass Road between Old Pasco Road and Blair Drive. This represents the lowest impact to overall parcels and second lowest impact to residential parcels of the proposed Build Interchange Alternatives. There are two potential noise sensitive sites affected for the Diamond Interchange Alternative. No churches or schools are affected by this alternative.

The Diamond Interchange Alternative potentially affects approximately 4.60 acres of one recreational resource, the Wesley Chapel District Park. However, it is important to note that Pasco County designed the park anticipating the widening of the I-75 mainline and/or the addition of an interchange at Overpass Road. Therefore, no park facilities are currently located or planned within the areas that are potentially impacted by the interchange. No National Register eligible or listed cultural resources were identified within or adjacent to this alternative.

Five recorded archaeological sites (8PA463, -464, -465, -623, and -2038) are located within or near the footprint for the Diamond Interchange Alternative. Of these, one archaeological site (8PA465) was determined eligible for listing in the National Register of Historic Places (NRHP) by the State Historic Preservation Office (SHPO). No historic resources that are listed, determined eligible, or considered potentially eligible for the NRHP are associated with the Diamond Interchange Alternative including pond sites. The Diamond Interchange Alternative is ranked medium in terms of its potential for significant archaeological sites and low for potential for significant historic resources.

Potential total impacts to wetlands (including other surface waters) related to the Diamond Interchange Alternative have been estimated at 14.5 acres, representing the second lowest impact to wetland resources. The Diamond Interchange Alternative is not estimated to impact any floodplains.

Several federally and state listed species (including the Eastern Indigo Snake, Wood Stork, Florida Burrowing Owl and Florida Sandhill Crane) were identified as having the potential to occur within the Diamond Interchange Alternative, due to the presence of suitable habitat and/or documented occurrences of the species within the proposed alignment. Effect determinations conducted indicate that this alternative "may affect, is not likely to adversely affect" any listed species.

Out of a total of two potential contamination sites identified in the vicinity of the Diamond Interchange Alternative both are ranked as having a LOW risk for potential contamination impact. In addition, two suspect well locations (located at 7943 Blair Drive and 7826 Dowd Drive) were observed for the Diamond Interchange Alternative.

6.2 DIVERGING DIAMOND INTERCHANGE ALTERNATIVE

The Diverging Diamond Interchange (DDI) Alternative affects a total of 24 parcels (0 business, 12 residential and 12 other), including one potential residential relocation located on the south side of Overpass Road between Old Pasco Road and Blair Drive. There are two potential noise sensitive sites affected for the DDI Alternative. No churches or schools are affected by this alternative.

The DDI Alternative potentially affects approximately 7.10 acres of one recreational resource, the Wesley Chapel District Park. However, it is important to note that Pasco County designed the park anticipating the widening of the I-75 mainline and/or the addition of an interchange at Overpass Road. Therefore, no park facilities are currently located or planned within the areas that are potentially impacted by the interchange. No National Register eligible or listed cultural resources were identified within or adjacent to this alternative.

Five recorded archaeological sites (8PA463, -464, -465, -623, and -2038) are located within or near the footprint for the DDI Alternative. Of these, one archaeological site (8PA465) was determined eligible for listing in the NRHP by the SHPO. No historic resources that are listed,

determined eligible, or considered potentially eligible for the NRHP are associated with the DDI Alternative including pond sites. The DDI Alternative is ranked medium in terms of its potential for significant archaeological site and low for potential for significant historic resources.

Potential total impacts to wetlands (including other surface waters) related to the DDI Alternative have been estimated at 18.2 acres, representing the second highest impact to wetland resources. The DDI Alternative is not estimated to impact any floodplains.

Several federally and state listed species (including the Eastern Indigo Snake, Wood Stork, Florida Burrowing Owl and Florida Sandhill Crane) were identified as having the potential to occur within the DDI Alternative, due to the presence of suitable habitat and/or documented occurrences of the species within the proposed alignment. Effect determinations conducted indicate that this alternative "may affect, is not likely to adversely affect" any listed species.

Out of a total of two potential contamination sites identified in the vicinity of the DDI Alternative both are ranked as having a LOW risk for potential contamination impact. In addition, three suspect well locations (located at 7943 Blair Drive, 7852 Dowd Drive, and 7826 Dowd Drive) were observed for the DDI Alternative.

6.3 FLYOVER RAMP ALTERNATIVE

The Flyover Ramp Alternative affects a total of 24 parcels (0 business, 13 residential and 11 other), including eight potential residential relocations located on the south side of Overpass Road between Old Pasco Road and Blair Drive. There are two potential noise sensitive sites affected for the Flyover Ramp Alternative. No churches or schools are affected by this alternative.

The Flyover Ramp Alternative potentially affects approximately 5.30 acres of one recreational resource, the Wesley Chapel District Park. However, it is important to note that Pasco County designed the park anticipating the widening of the I-75 mainline and/or the addition of an interchange at Overpass Road. Therefore, no park facilities are currently located or planned within the areas that are potentially impacted by the interchange. No National Register eligible or listed cultural resources were identified within or adjacent to this alternative.

Five recorded archaeological sites (8PA463, -464, -465, -623, and -2038) are located within or near the footprint for the Flyover Ramp Alternative. Of these, one archaeological site (8PA465) was determined eligible for listing in the NRHP by the SHPO. No historic resources that are listed, determined eligible, or considered potentially eligible for the NRHP are associated with the Flyover Ramp Alternative including pond sites. The Flyover Ramp Alternative is ranked medium in terms of its potential for significant archaeological site and low for potential for significant historic resources.

Potential total impacts to wetlands (including other surface waters) related to the Flyover Ramp Alternative have been estimated at 15.7 acres, representing the third lowest impact to wetland resources. The Flyover Ramp Alternative is not estimated to impact any floodplains.

Several federally and state listed species (including the Eastern Indigo Snake, Wood Stork, Florida Burrowing Owl and Florida Sandhill Crane) were identified as having the potential to occur within the Flyover Ramp Alternative, due to the presence of suitable habitat and/or documented occurrences of the species within the proposed alignment. Effect determinations conducted indicate that this alternative "may affect, is not likely to adversely affect" any listed species.

Out of a total of two potential contamination sites identified in the vicinity of the Flyover Ramp Alternative both are ranked as having a LOW risk for potential contamination impact. In addition, six suspect well locations (located at 7943 Blair Drive, 7852, 7840, 7826, 7810, and 7752 Dowd Drive) were observed for the Flyover Ramp Alternative.

6.4 LOOP RAMP ALTERNATIVE

The Loop Ramp Alternative affects a total of 22 parcels (0 business, 8 residential and 14 other), including one potential residential relocation located on the south side of Overpass Road between Old Pasco Road and Blair Drive. There are two potential noise sensitive sites affected for the Loop Ramp Alternative. No churches or schools are affected by this alternative.

The Loop Ramp Alternative potentially affects approximately 4.40 acres of one recreational resource, the Wesley Chapel District Park. However, it is important to note that Pasco County designed the park anticipating the widening of the I-75 mainline and/or the addition of an interchange at Overpass Road. Therefore, no park facilities are currently located or planned within the areas that are potentially impacted by the interchange. No National Register eligible or listed cultural resources were identified within or adjacent to this alternative.

Five recorded archaeological sites (8PA463, -464, -465, -623, and -2038) are located within or near the footprint for the Loop Ramp Alternative. Of these, one archaeological site (8PA465) was determined eligible for listing in the NRHP by the SHPO. In addition to the five archaeological sites, a segment of historic Overpass Road (8PA2069) abuts the Loop Ramp Alternative. No other historic resources that are listed, determined eligible, or considered potentially eligible for the NRHP are associated with the Loop Ramp Alternative including pond sites. The Loop Ramp Alternative is ranked medium in terms of its potential for significant archaeological site and low for potential for significant historic resources.

Potential total impacts to wetlands (including other surface waters) related to the Loop Ramp Alternative have been estimated at 43.0 acres. The Loop Ramp Alternative also impacts 2.1 acres of floodplains. This alternative has the largest wetland and floodplain impacts among all proposed Build Interchange Alternatives.

Several federally and state listed species (including the Eastern Indigo Snake, Wood Stork, Florida Burrowing Owl and Florida Sandhill Crane) were identified as having the potential to occur within the Loop Ramp Alternative, due to the presence of suitable habitat and/or documented occurrences of the species within the proposed alignment. Effect determinations

conducted indicate that this alternative "may affect, is not likely to adversely affect" any listed species.

Out of a total of two potential contamination sites identified in the vicinity of the Loop Ramp Alternative both are ranked as having a LOW risk for potential contamination impact. In addition, one suspect well location (located at 7943 Blair Drive) was observed for the Loop Ramp Alternative.

6.5 SINGLE POINT URBAN INTERCHANGE ALTERNATIVE

The Single Point Urban Interchange (SPUI) Alternative affects a total of 23 parcels (0 business, 12 residential and 11 other), with no potential residential or business relocations. There are two potential noise sensitive sites affected for the SPUI Alternative. No churches or schools are affected by this alternative.

The SPUI Alternative potentially affects approximately 4.80 acres of one recreational resource, the Wesley Chapel District Park. However, it is important to note that Pasco County designed the park anticipating the widening of the I-75 mainline and/or the addition of an interchange at Overpass Road. Therefore, no park facilities are currently located or planned within the areas that are potentially impacted by the interchange. No National Register eligible or listed cultural resources were identified within or adjacent to this alternative.

Five recorded archaeological sites (8PA463, -464, -465, -623, and -2038) are located within or near the footprint for the SPUI Alternative. Of these, one archaeological site (8PA465) was determined eligible for listing in the NRHP by the SHPO. No historic resources that are listed, determined eligible, or considered potentially eligible for the NRHP are associated with the SPUI Alternative including pond sites. The SPUI Alternative is ranked medium in terms of its potential for significant archaeological site and low for potential for significant historic resources.

Potential total impacts to wetlands (including other surface waters) related to the SPUI Alternative have been estimated at 13.5 acres, representing the lowest impact to wetland resources. The SPUI Alternative is not estimated to impact any floodplains.

Several federally and state listed species (including the Eastern Indigo Snake, Wood Stork, Florida Burrowing Owl and Florida Sandhill Crane) were identified as having the potential to occur within the SPUI Alternative, due to the presence of suitable habitat and/or documented occurrences of the species within the proposed alignment. Effect determinations conducted indicate that this alternative "may affect, is not likely to adversely affect" any listed species.

Out of a total of two potential contamination sites identified in the vicinity of the SPUI Alternative both are ranked as having a LOW risk for potential contamination impact. In addition, one suspect well location (located at 7943 Blair Drive) was observed for the SPUI Alternative.

6.6 DRAINAGE CONSIDERATIONS

The project study area was evaluated to address preliminary drainage design associated with the five I-75 and Overpass Road interchange configurations for the Build Alternative (Diamond Interchange, SPUI, DDI, Flyover Ramp and Loop Ramp). The collected information presented below is provided to help satisfy preliminary proposed design for pond sizes, existing hydrology, 100-year floodplain impacts, wetland impacts, and water quality for each of the proposed interchange configurations. Note that the *Preliminary Drainage Technical Memorandum* (September 2011) evaluated the extent of coded wetland areas utilizing desktop analysis with data obtained from the National Wetland Inventory (NWI) and did not include other surface waters (ditches, ponds, etc.).

The project study area lies entirely within the Slough drainage basin, as defined by the Florida Department of Environmental Protection (FDEP). The basin has an area of 374 hectares (925 acres) and a U.S. Geological Survey (USGS) Hydrologic Unit Code of 3310020567440000. The basin generally flows from east to west and is part of the Hillsborough River Watershed.

6.6.1 EXISTING ROADWAY DRAINAGE

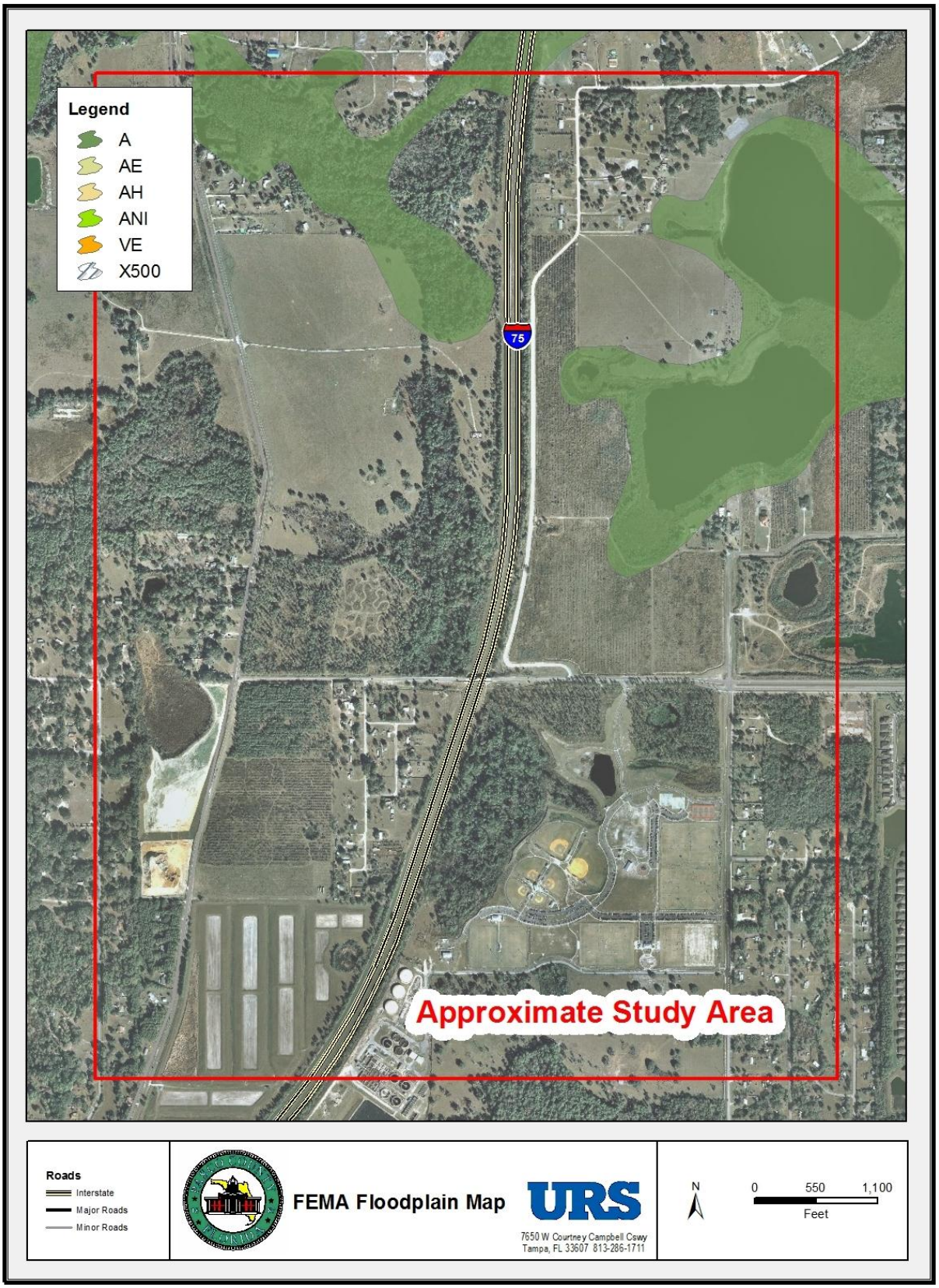
The project limits include Overpass Road from Old Pasco Road to Boyette Road. Stormwater runoff from the existing Overpass Road currently sheet flows off the existing roadway and is collected in roadside ditches. Existing drainage patterns show contributions to wetlands and low-lying areas along I-75 from sheet flow from the roadway. There are existing storm inlets and storm sewers along Overpass Road from Boyette Road to the eastern terminus. There are no existing stormwater management areas for the existing Overpass Road.

Along I-75, runoff drains to roadside ditches along each side of the roadway. There is a large 4-foot by 4-foot box culvert cross drain on the south side of the Overpass Road interchange area. In addition, there are several other smaller cross drains in the project study area which convey flow from east to west across I-75.

6.6.1.1 Floodplains

Figure 6-1 shows that the approximate Overpass Road interchange project study area, which includes all Build Interchange Alternatives, is currently within FEMA flood Zone X. These flood zone areas are determined to be outside the 100- and 500-year floodplain, therefore, there are no floodplain impacts anticipated as a result of the project. Note that FEMA's FIRMs are currently being revised and portion of the interchange area may be in a designated flood hazard area in the updated maps. Accordingly, potential floodplain impacts for each alternative will continue to be fully evaluated and documented during the *Overpass Road PD&E Study*.

FIGURE 6-1
EFFECTIVE FEMA MAP



6.6.1.2 Soils

Pasco County is characterized by discontinuous highlands in the form of ridges separated by broad valleys. The ridges are above the static level of the water in the aquifer, but the valleys are below it. Broad shallow lakes are common in the valley floors and smaller, deep lakes are on the ridges.

Based on physiography, the route study is located in the Brooksville Ridge, which extends from Hernando County to about the area of Zephyrhills between SR 581 on the west and US 301 on the east. The elevations in this area range from 70 to 300 feet above sea level. Most of the surface is covered by a few feet of sand with the thickest deposits located near the western side of the ridge.

The soils within the Overpass Road project study area were reviewed in the U.S. Department of Agriculture Soil Conservation Service (USDA SCS) Soil Survey of Pasco County, Florida, provided on **Figure 6-2**. **Table 6-1** depicts the various types found in the project study area, their hydrologic group, permeability, and high water table depth. The soil type is predominately a variety of fine sands. The soil is gently sloping and poorly drained in most of the project study area.

TABLE 6-1
SOILS DATA

Soil Type Name (Number)	Hydrologic Group	Permeability	High Water Table Depth (ft)
Millhopper Fine Sand; 0 to 5% Slopes	A	Moderately Well Drained	3.5 - 6.0
Sparr Fine Sand, 0 to 5% slopes	C	Somewhat Poorly Drained	1.5 – 3.5
Sellers Mucky Loamy Fine Sand	B/D	Very Poorly Drained	1.5 – 3.5
Zolfo Fine Sand	C	Somewhat Poorly Drained	1.5 – 3.5

Source: USDA SCS Soil Survey of Pasco County.

6.6.1.3 Land Use

Land use and Florida Land Use and Cover Classification System (FLUCCS) codes within the project study area were determined from the latest available Pasco County Geographic Information System (GIS) data. The Land Use Map is presented as **Figure 6-3** and the Land Use Types and their respective FLUCCS codes occurring within the specific project study area are presented in **Table 6-2**. The project is situated within stream and lake swamps and open land land uses.

FIGURE 6-2
SOILS MAP

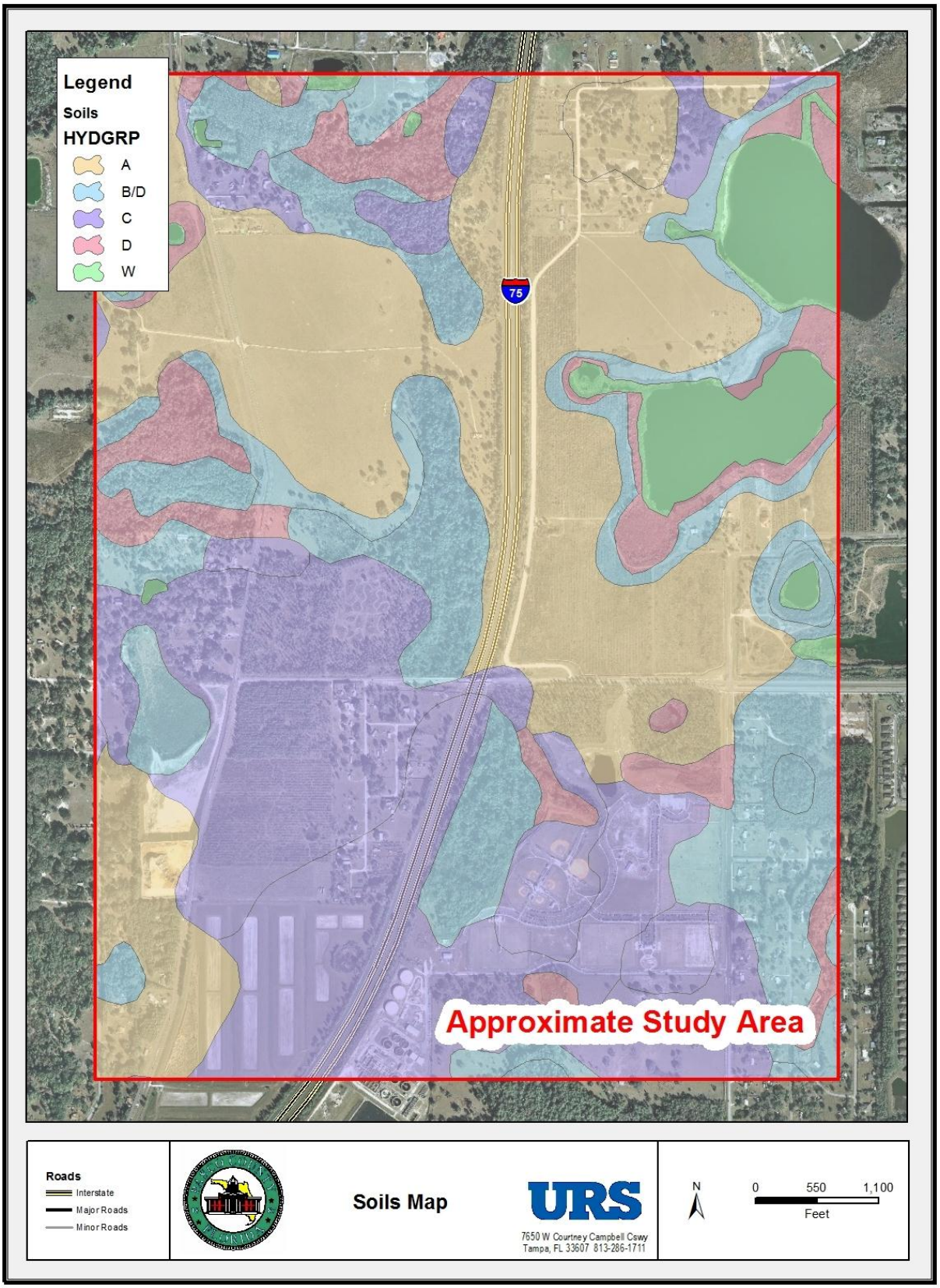


FIGURE 6-3
LAND USE MAP

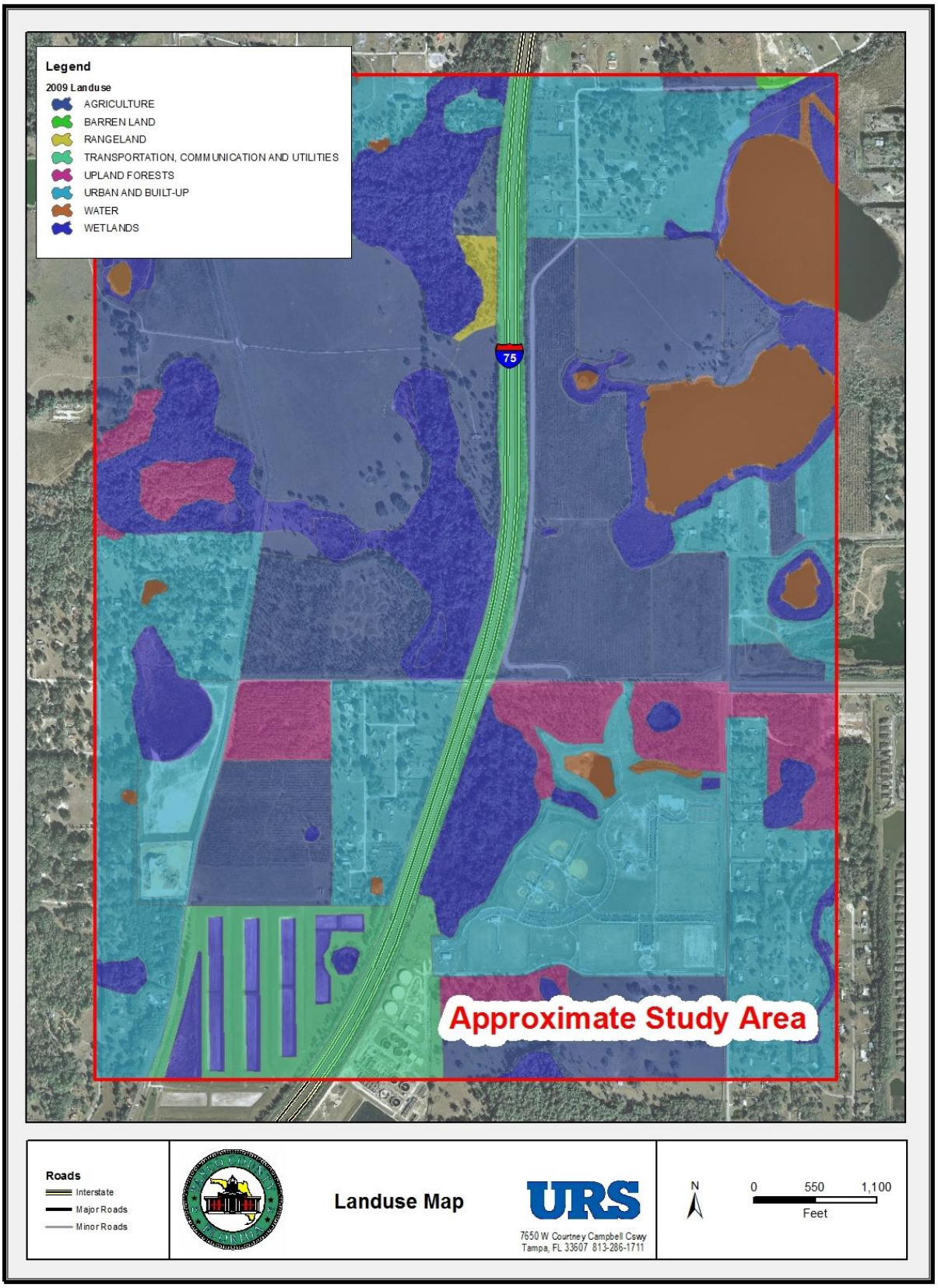


TABLE 6-2
LAND USE DATA

FLUCCS	Permeability
6440	Emergent Aquatic Vegetation
6410	Freshwater Marshes
6530	Intermittent Ponds
1900	Open Land
2600	Other Open Lands
1800	Recreational
5300	Reservoirs
1100	Residential Low Density
1200	Residential Medium Density
6150	Stream and Lake Swamps
8100	Transportation
4400	Tree Plantations

6.6.1.4 Curve Numbers

The major factors that determine curve number are the hydrologic soil group, land use, and antecedent runoff condition. Soil groups and their respective hydrologic soil groups were determined from information in the Soil Survey GIS shapefile. Land use was determined from the GIS shapefile and aerial photography. Curve numbers for each sub-basin were determined from tables in the TR-55 manual based on the hydrologic soil conditions, land use, and an antecedent moisture condition. See **Table 6-3** for curve number summary.

TABLE 6-3
CURVE NUMBER SUMMARY

Existing Conditions					
Basin	**Diamond Alternative**	**DDI Alternative**	**SPUI Alternative**	**Flyover Ramp Alternative**	**Loop Ramp Alternative**
B-1 NW	83	83	80	83	80
B-2 NE	55	54	56	56	60
B-3 SW	83	84	83	84	84
B-4 SE	79	80	84	84	84
Proposed Conditions					
Basin	**Diamond Alternative**	**DDI Alternative**	**SPUI Alternative**	**Flyover Ramp Alternative**	**Loop Ramp Alternative**
B-1 NW	85	88	87	84	81
B-2 NE	67	68	70	67	66
B-3 SW	88	88	89	87	88
B-4 SE	89	90	91	92	92

6.6.1.5 Parcels

The proposed interchange alternatives will potentially require the acquisition of ROW through private property. The boundaries of the proposed ROW easements will be established when final plans are developed. In some cases, a further easement for ingress and egress may be required due to existing fences.

Table 6-4 provides the property owner information available from the Pasco County Property Appraiser website (http://appraiser.pascogov.com) for the parcels potentially impacted in the interchange area and are shown on **Figure 6-4**.

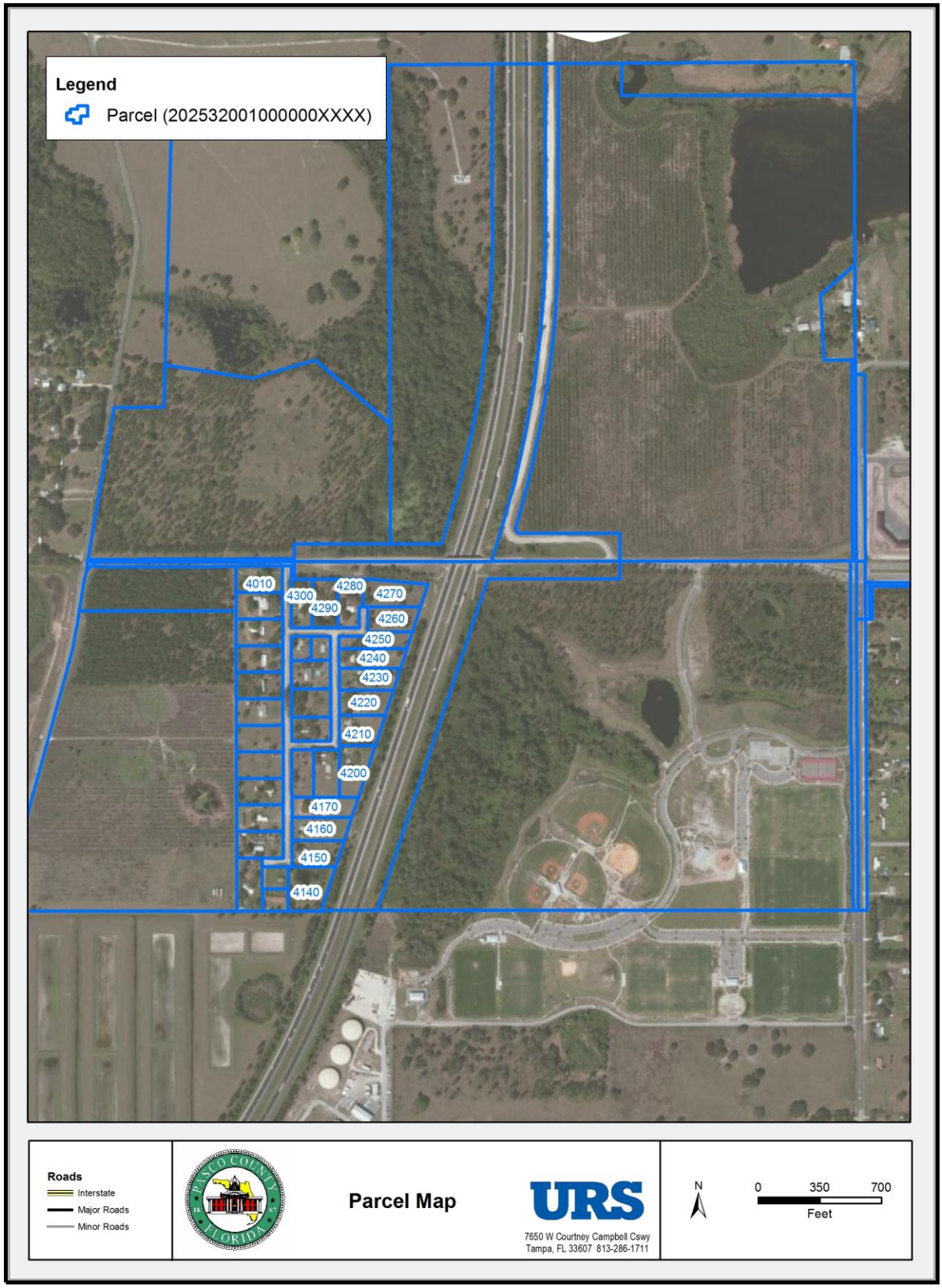
TABLE 6-4
PARCEL SUMMARY

Parcel Number	Name	Address	City	State	Zip
2025320010000004010	Downs Larry H	7943 Blair Drive	Wesley Chapel	FL	33544
2025320010000004140	Ross Connie	7616 Blair Drive	Zephyrhills	FL	33544
2025320010000004150	Kolakoff John L & Cheri	7640 Blair Drive	Zephyrhills	FL	33544
2025320010000004160	Poulin Alfred & Marlene	7627 Blair Drive	Wesley Chapel	FL	33544
2025320010000004170	Chaconas Theore & Cecile	19 Austin Court	Orinda	CA	94563
2025320010000004200	Wilhelmi Randall	5542 Cannonade Drive	Wesley Chapel	FL	33544
2025320010000004210	Jensen Randall	7810 Dowd Drive	Zephyrhills	FL	33544
2025320010000004220	Jensen Melanie	7826 Dowd Drive	Zephyrhills	FL	33544
2025320010000004230	Bradish Stayton & Alice	7840 Dowd Drive	Zephyrhills	FL	33544
2025320010000004240	Rogers Ronald	6051 Boyette Road	Zephyrhills	FL	33545
2025320010000004250					
2025320010000004260	Gordillo Miguel	109 Oak Lee Drive	Lutz	FL	33548
2025320010000004270	Gordillo Miguel	109 Oak Lee Drive	Lutz	FL	33548
2025320010000004280	Poulin Alfred & Marlene	7627 Blair Drive	Wesley Chapel	FL	33544
2025320010000004290					
2025320010000004300	Mhoon Vincent & Desiree	29403 Kelly Drive	Zephyrhills	FL	33544

6.7 PROPOSED DRAINAGE SYSTEM

The proposed interchange alternatives include the widening of Overpass Road and the addition of new directional ramps to/from Overpass Road to I-75. Additional ROW will be required for construction of the Overpass Road improvements and new ramps under all alternative configurations. Additional impervious area will be constructed with all of the alternatives. The proposed stormwater system will collect runoff from the roadways and ramps through a combination of pipes, swales, and/or ponds. Stormwater will be directed from the each end of the Overpass Road and flow towards I-75. Peak attenuation and water quality treatment will be provided in roadside swales and ponds. The discharge from these ponds will meet Southwest Florida Water Management District (SWFWMD) and FDOT guidelines. For this preliminary evaluation, the design storm event for sizing ponds is the 100-year storm event, in which rainfall totals 12.0 inches over 24 hours. In addition to attenuation, water quality treatment requirements must be met. The water quality treatment volume was estimated to be the first one-inch of runoff over the contributing drainage area.

FIGURE 6-4
PARCEL MAP



The estimated treatment volume and attenuation volume were combined to provide a total estimated stormwater volume. The proposed ponds assumed a depth of 2.0-4.0 feet with 4:1 side slopes. **Tables 6-5 through 6-9** summarize the estimated pond storage volumes and areas for each alternative. All elevations shown are estimated from terrain information and will change for final design. The following sections summarize the preliminary requirements of each alternative with additional details provided in Appendix K.

TABLE 6-5
ESTIMATED POND ELEVATIONS – DIAMOND INTERCHANGE ALTERNATIVE

Basins	Pond Area (ac)	Bottom of Pond (ft)	Treatment Elevation (ft)	Volume Attenuation Elevation (ft)	TOB (ft)	Pond Depth (ft)
B-1 NW	2.00	83.0	83.9	84.1	85.0	2
B-2 NE	1.53	94.0	95.8	97.7	98.0	4
B-3 SW	1.03	92.0	93.9	94.8	95.0	3
B-4 SE	1.87	89.0	90.7	92.1	93.0	4

TABLE 6-6
ESTIMATED POND ELEVATIONS – DDI ALTERNATIVE

Basins	Pond Area (ac)	Bottom of Pond (ft)	Treatment Elevation (ft)	Volume Attenuation Elevation (ft)	TOB (ft)	Pond Depth (ft)
B-1 NW	3.44	83.0	83.6	83.9	85.0	2
B-2 NE	1.78	94.0	95.3	97.5	98.0	4
B-3 SW	1.93	92.0	93.1	93.5	95.0	3
B-4 SE	1.85	89.0	90.3	91.7	93.0	4

TABLE 6-7
ESTIMATED POND ELEVATIONS – SPUI ALTERNATIVE

Basins	Pond Area (ac)	Bottom of Pond (ft)	Treatment Elevation (ft)	Volume Attenuation Elevation (ft)	TOB (ft)	Pond Depth (ft)
B-1 NW	1.96	82.0	83.2	83.9	85.0	3
B-2 NE	2.34	95.0	96.0	97.6	98.0	3
B-3 SW	1.68	92.0	93.3	94.0	95.0	3
B-4 SE	1.60	89.0	90.9	91.9	93.0	4

TABLE 6-8
ESTIMATED POND ELEVATIONS – FLYOVER RAMP ALTERNATIVE

Basins	Pond Area (ac)	Bottom of Pond (ft)	Treatment Elevation (ft)	Volume Attenuation Elevation (ft)	TOB (ft)	Pond Depth (ft)
B-1 NW	2.00	83.0	83.9	74.0	85.0	2
B-2 NE	1.53	94.0	95.9	97.9	98.0	4
B-3 SW	1.40	92.0	94.1	94.7	95.0	3
B-4 SE	1.87	89.0	91.1	92.3	93.0	4

TABLE 6-9
ESTIMATED POND ELEVATIONS – LOOP RAMP ALTERNATIVE

Basins	Pond Area (ac)	Bottom of Pond (ft)	Treatment Elevation (ft)	Volume Attenuation Elevation (ft)	TOB (ft)	Pond Depth (ft)
B-1 NW	5.79	82.5	84.3	84.5	85.0	2.5
B-2 NE	0.84	94.0	96.3	97.9	98.0	4
B-3 SW	1.18	92.0	93.9	94.7	95.0	3
B-4 SE	1.82	89.0	91.1	92.5	93.0	4

6.7.1 DIAMOND INTERCHANGE ALTERNATIVE

This alternative provides two-lane on-/off-ramps to/from the south and single-lane on-/off-ramps to/from the north. Figure A-1 in Appendix K shows the proposed geometry for the Diamond Interchange Alternative, along with existing and future ROW lines. This type of interchange minimizes impacts to the adjacent properties more than other types of interchanges and avoids the interweaving traffic flows that occur in interchanges, such as the cloverleaf.

6.7.1.1 Drainage Area

The project study area was divided into four drainage areas, where each roadway crossings acts as the lowest spot in any particular drainage area and thus will serve as the discharge point. **Table 6-10** shows the drainage areas and the relative pervious and impervious areas for each drainage area within the alternative considered.

TABLE 6-10
DRAINAGE AREAS – DIAMOND INTERCHANGE ALTERNATIVE

Basin	Existing			Proposed		
	Impervious (ac)	Pervious (ac)	Total (ac)	Impervious (ac)	Pervious (ac)	Total (ac)
B-1 NW	3.6	12.6	16.2	5.7	10.5	16.2
B-2 NE	3.5	12.0	15.5	5.5	10.0	15.5
B-3 SW	2.4	12.0	14.4	5.2	9.2	14.4
B-4 SE	2.4	12.9	15.3	6.2	9.1	15.3

Required storage volumes and pond area calculations for each drainage area are included in Appendix K. **Table 6-11** below is summary for the Diamond Interchange Alternative. The preliminary proposed pond areas are in the areas adjacent to the new Overpass Road ramps to I-75.

TABLE 6-11
DIAMOND INTERCHANGE ALTERNATIVE POND SUMMARY

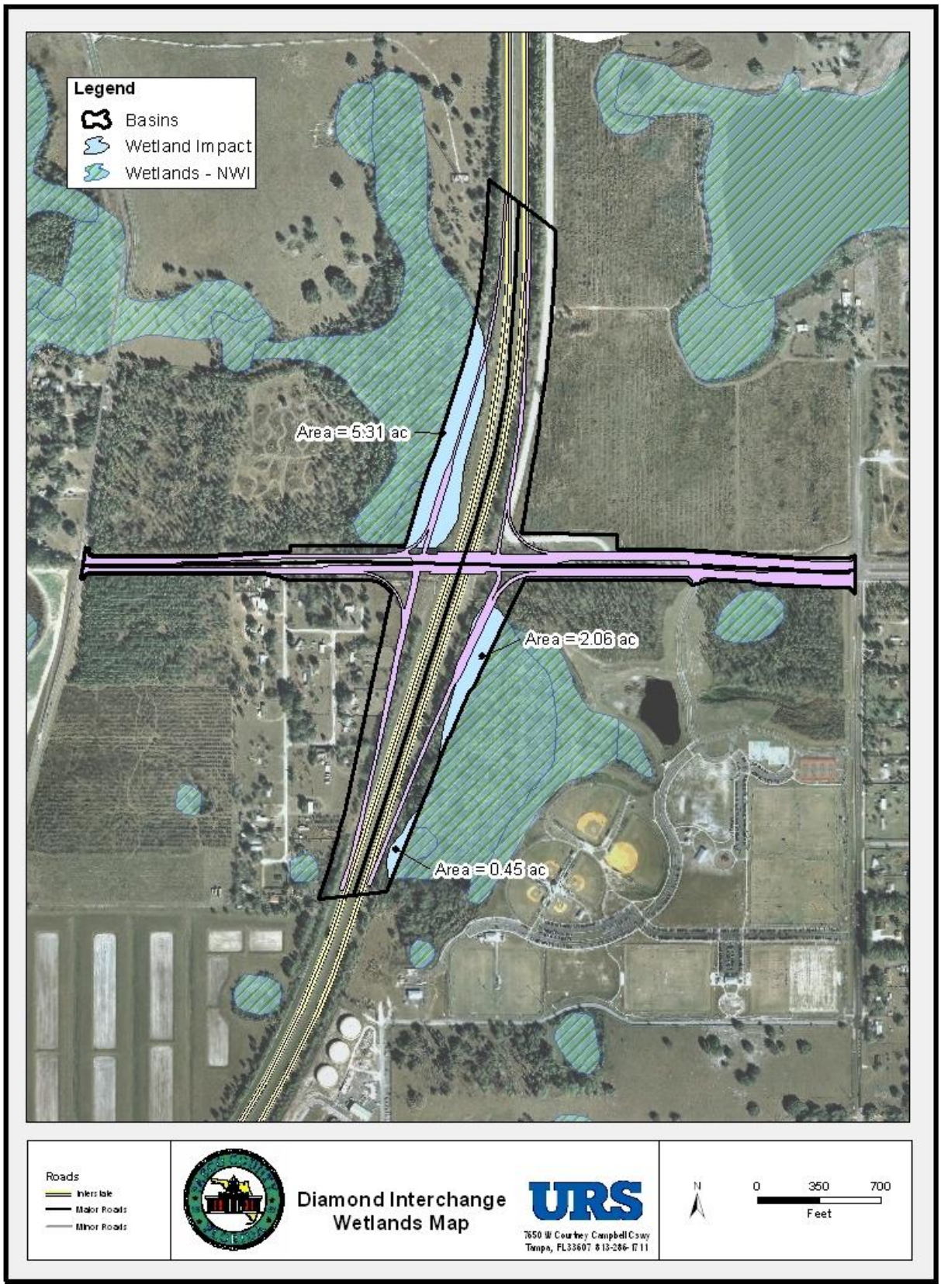
Basin	Drainage Area (ac)	Water Quality Treatment Storage (ac-ft)	Total Required Storage Volume (ac-ft)	Total Storage Volume Provided (ac-ft)	Pond Area (ac)	Wetland Impacts* (ac)	Floodplain Impacts (ac)
B-1 NW	16.2	1.35	1.72	3.51	2.00	5.31	0.00
B-2 NE	15.5	1.30	3.67	4.21	1.53	0.00	0.00
B-3 SW	14.4	1.20	1.97	2.25	1.03	0.00	0.00
B-4 SE	15.3	1.28	2.97	4.65	1.87	2.51	0.00
				Total	**6.43**	**7.82**	**0.00**

*Does not include impacts for other surface waters

6.7.1.2 Wetland Impacts

Wetland areas within the project limits were identified from FLUCCS land use mapping and are shown in **Figure 6-5**. There are several potential wetland impact areas as a result of this alternative. These wetland impacts will have to be addressed during the permitting process. The total estimated wetland impacts for this alternative are 7.82 acres. Note that this estimate is based upon a desktop analysis and does not include other surface waters (ditches, ponds, etc.).

FIGURE 6-5
DIAMOND INTERCHANGE WETLAND IMPACT MAP



6.7.2 DIVERGING DIAMOND INTERCHANGE (DDI) ALTERNATIVE

A DDI was developed for this area due to the high number of vehicles turning left from westbound Overpass Road to southbound I-75. Figure B-1 in Appendix K shows the proposed geometry for the DDI Alternative along with existing future ROW lines. While the ramp configuration is similar to a traditional diamond interchange, traffic on the cross road moves to the left side of the roadway for the segment between signalized ramp intersections.

6.7.2.1 Drainage Area

The project study area was divided into four drainage areas, where each roadway crossings acts as the lowest spot in any particular drainage area and thus will serve as the discharge point. **Table 6-12** shows the drainage areas and the relative pervious and impervious areas for each drainage area within the alternative considered.

TABLE 6-12
DRAINAGE AREAS – DDI ALTERNATIVE

Basin	Existing			Proposed		
	Impervious (ac)	Pervious (ac)	Total (ac)	Impervious (ac)	Pervious (ac)	Total (ac)
B-1 NW	3.6	14.8	18.4	5.1	13.3	18.4
B-2 NE	3.5	15.6	19.1	6.5	12.5	19.1
B-3 SW	2.4	15.7	18.1	6.0	12.1	18.1
B-4 SE	2.4	16.5	18.9	6.8	12.1	18.9

Required storage volumes and pond area calculations for each drainage area are included in Appendix K. **Table 6-13** below is summary for this alternative.

TABLE 6-13
DDI ALTERNATIVE POND SUMMARY

Basin	Drainage Area (ac)	Water Quality Treatment Storage (ac-ft)	Total Required Storage Volume (ac-ft)	Total Storage Volume Provided (ac-ft)	Pond Area (ac)	Wetland Impacts* (ac)	Floodplain Impacts (ac)
B-1 NW	18.4	1.53	2.49	6.37	3.44	6.89	0.00
B-2 NE	19.1	1.59	4.95	5.92	1.78	0.00	0.00
B-3 SW	18.1	1.51	2.30	4.96	1.93	0.00	0.00
B-4 SE	18.9	1.58	3.69	5.95	1.85	3.94	0.00
				Total	**9.00**	**10.83**	**0.00**

*Does not include impacts for other surface waters

6.7.2.2 Wetland Impacts

Wetland areas within the project limits were identified from FLUCCS land use mapping and are shown in **Figure 6-6**. There are several potential wetland impact areas as a result of this alternative. These wetland impacts will have to be addressed during the permitting process. The total estimated wetland impacts for this alternative are 10.83 acres. Note that this estimate is based upon a desktop analysis and does not include other surface waters (ditches, ponds, etc.).

6.7.3 SINGLE POINT URBAN INTERCHANGE (SPUI) ALTERNATIVE

This alternative provides two-lane on-/off-ramps to/from the south and single-lane on-/off-ramps to/from the north. Figure C-1 in Appendix K shows the proposed geometry for the SPUI Alternative, along with existing future ROW lines. The SPUI concept allows free-flow operations on the major roadway by creating a separate, signalized intersection at the arterial roadway with closely spaced ramp terminals. While the SPUI ROW requirements are similar to a diamond interchange, the footprint of the interchange is considerably wider.

6.7.3.1 Drainage Area

The project study area was divided into four drainage areas, where each roadway crossings acts as the lowest spot in any particular drainage area and thus will serve as the discharge point. **Table 6-14** shows the drainage areas and the relative pervious and impervious areas for each drainage area within the alternative considered.

TABLE 6-14
DRAINAGE AREAS – SPUI ALTERNATIVE

	Existing			Proposed		
Basin	**Impervious (ac)**	**Pervious (ac)**	**Total (ac)**	**Impervious (ac)**	**Pervious (ac)**	**Total (ac)**
B-1 NW	3.6	11.2	14.8	6.2	8.6	14.8
B-2 NE	3.5	13.8	17.3	6.8	10.5	17.3
B-3 SW	2.4	11.3	13.7	5.5	8.2	13.7
B-4 SE	2.4	13.1	15.5	6.8	8.7	15.5

Required storage volumes and pond area calculations for each drainage area are included in Appendix K. **Table 6-15** below is summary for this alternative.

FIGURE 6-6
DDI WETLAND IMPACT MAP

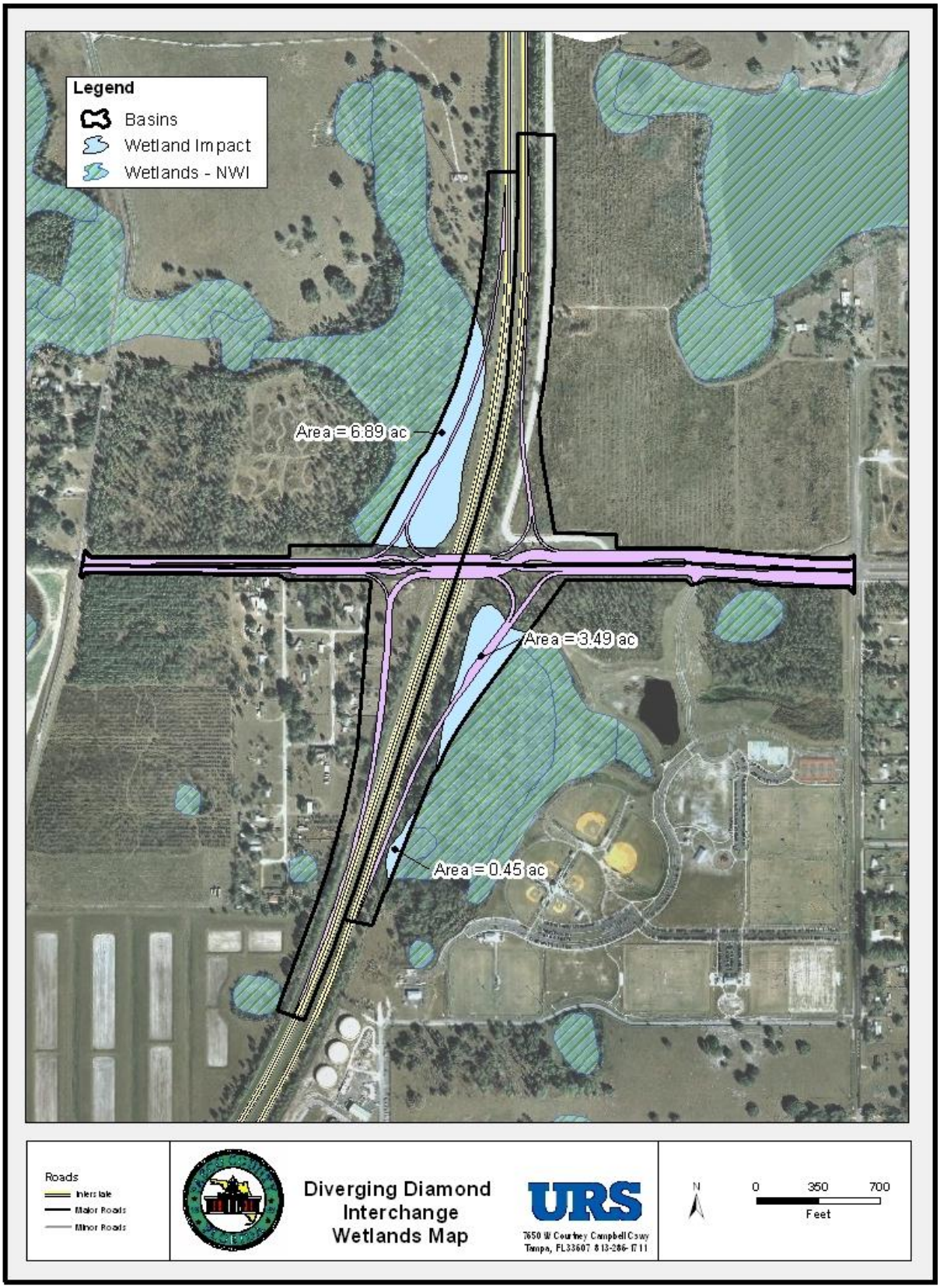


TABLE 6-15
SPUI ALTERNATIVE POND SUMMARY

Basin	Drainage Area (ac)	Water Quality Treatment Storage (ac-ft)	Total Required Storage Volume (ac-ft)	Total Storage Volume Provided (ac-ft)	Pond Area (ac)	Wetland Impacts* (ac)	Floodplain Impacts (ac)
B-1 NW	14.8	1.23	2.33	4.18	1.96	3.75	0.00
B-2 NE	17.3	1.45	4.29	5.61	2.34	0.00	0.00
B-3 SW	13.7	1.14	2.02	3.59	1.68	0.00	0.00
B-4 SE	15.5	1.29	2.49	4.06	1.60	2.51	0.00
				Total	**7.58**	**6.26**	**0.00**

*Does not include impacts for other surface waters

6.7.3.2 Wetland Impacts

Wetland areas within the project limits were identified from FLUCCS land use mapping and are shown in **Figure 6-7**. There are several potential wetland impact areas as a result of this alternative. These wetland impacts will have to be addressed during the permitting process. The total estimated wetland impacts for this alternative are 6.26 acres. Note that this estimate is based upon a desktop analysis and does not include other surface waters (ditches, ponds, etc.).

6.7.4 FLYOVER RAMP ALTERNATIVE

This alternative provides a two-lane flyover ramp for the westbound to southbound movement in lieu of at-grade triple-left movement. This alternative provides uninterrupted movement for the predominant westbound to southbound traffic and improves the ramp terminal signal operation by removing large volume of traffic from the intersection. This alternative also reduces the number of lanes through the interchange in the westbound direction. This alternative provides two-lane on-/off-ramps to/from the south and single-lane on-/off-ramps to/from the south. However, this alternative adds a third level to the interchange resulting in increased cost of the bridge, retaining walls, and earthwork. Figure D-1 in Appendix K shows the proposed geometry for the Flyover Ramp Alternative along with existing future ROW lines.

6.7.4.1 Drainage Area

The project study area was divided into four drainage areas, where each roadway crossings acts as the lowest spot in any particular drainage area and thus will serve as the discharge point. **Table 6-16** shows the drainage areas and the relative pervious and impervious areas for each drainage area within the alternative considered.

FIGURE 6-7
SPUI WETLAND IMPACT MAP

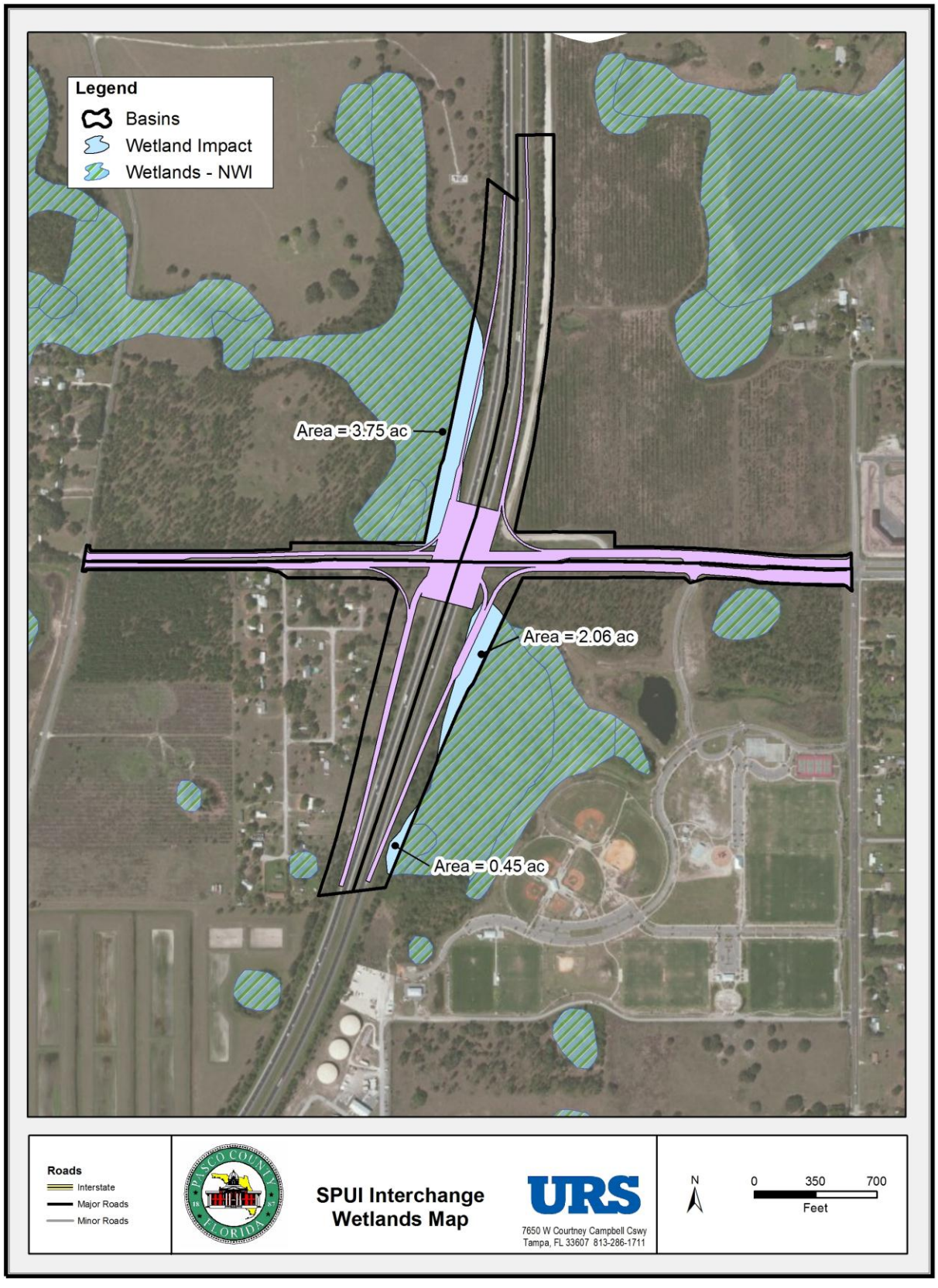


TABLE 6-16
DRAINAGE AREAS – FLYOVER RAMP ALTERNATIVE

Basin	Existing			Proposed		
	Impervious (ac)	Pervious (ac)	Total (ac)	Impervious (ac)	Pervious (ac)	Total (ac)
B-1 NW	3.6	12.5	16.1	5.1	11.0	16.1
B-2 NE	5.3	12.4	17.7	5.9	11.8	17.7
B-3 SW	4.0	21.2	25.2	9.2	16.0	25.2
B-4 SE	3.7	16.7	20.4	8.3	12.1	20.4

Required storage volumes and pond area calculations for each drainage area are included in Appendix K. **Table 6-17** below is summary for this alternative.

TABLE 6-17
FLYOVER RAMP ALTERNATIVE POND SUMMARY

Basin	Drainage Area (ac)	Water Quality Treatment Storage (ac-ft)	Total Required Storage Volume (ac-ft)	Total Storage Volume Provided (ac-ft)	Pond Area (ac)	Wetland Impacts* (ac)	Floodplain Impacts (ac)
B-1 NW	16.1	1.34	1.52	3.51	2.00	5.31	0.00
B-2 NE	17.7	1.48	3.93	4.21	1.53	0.00	0.00
B-3 SW	25.2	2.10	2.93	3.26	1.40	0.00	0.00
B-4 SE	20.4	1.70	3.46	4.65	1.87	2.51	0.00
				Total	**6.80**	**7.82**	**0.00**

*Does not include impacts for other surface waters

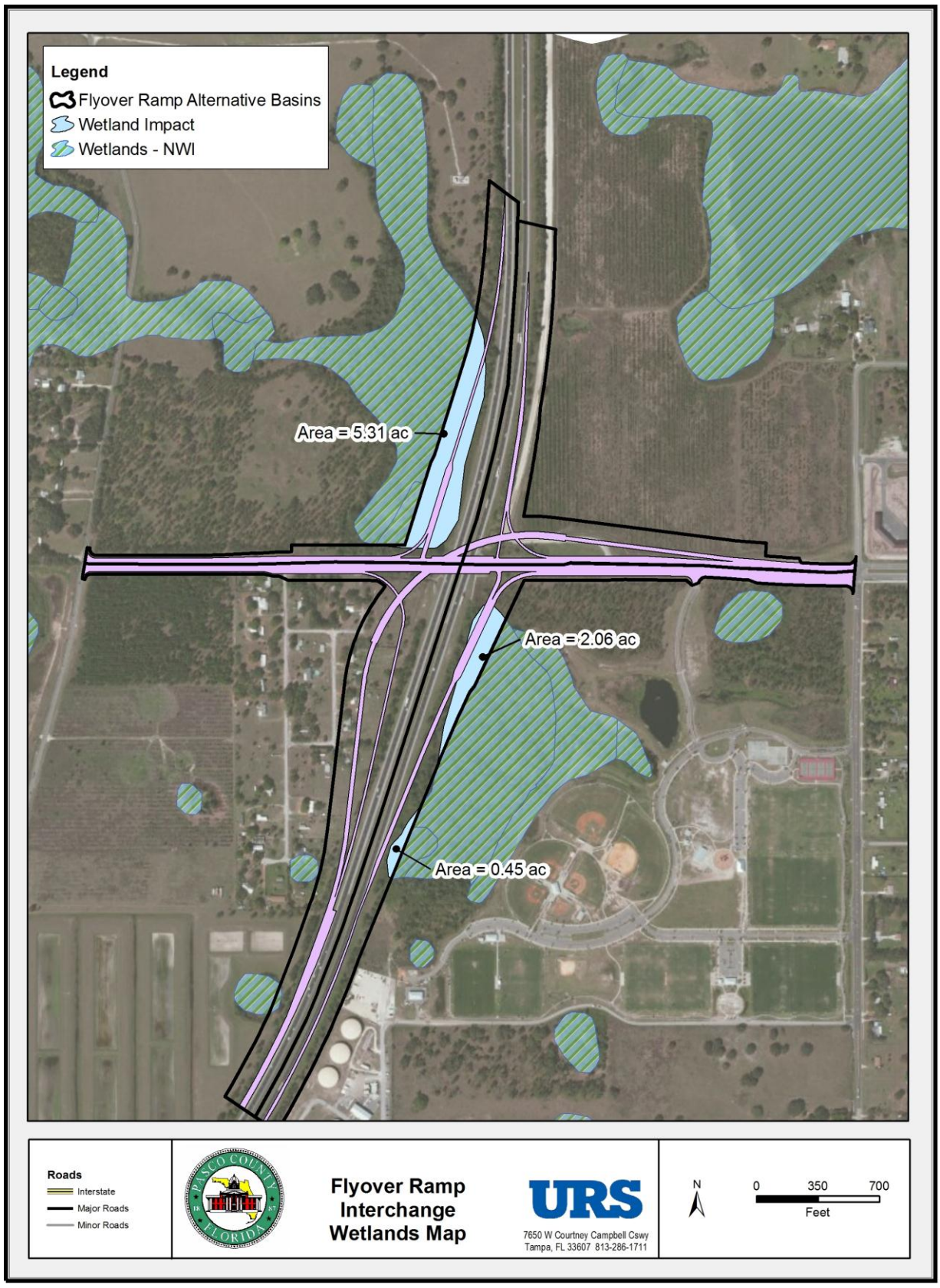
6.7.4.2 Wetland Impacts

Wetland areas within the project limits were identified from FLUCCS land use mapping and are shown in **Figure 6-8**. There are several potential wetland impact areas as a result of this alternative. These wetland impacts will have to be addressed during the permitting process. The total estimated wetland impacts for this alternative are 7.82 acres. Note that this estimate is based upon a desktop analysis and does not include other surface waters (ditches, ponds, etc.).

6.7.5 LOOP RAMP ALTERNATIVE

This alternative provides a two-lane loop ramp in the northwest quadrant of the interchange for the westbound to southbound movement in lieu of at-grade triple-left movement. This alternative replaces the left-turn movement with a right-turn movement and eliminates some conflict points. Although it improves the operation for the westbound to southbound movement, this alternative requires largest amount of ROW of all the alternatives and also additional cost associated with the construction of the loop ramp. Figure E-1 in Appendix K shows the proposed geometry for the Loop Ramp Alternative along with existing future ROW lines.

FIGURE 6-8
FLYOVER RAMP INTERCHANGE WETLAND IMPACT MAP



6.7.5.1 Drainage Area

The project study area was divided into four drainage areas, where each roadway crossings acts as the lowest spot in any particular drainage area and thus will serve as the discharge point. **Table 6-18** shows the drainage areas and the relative pervious and impervious areas for each drainage area within the alternative considered.

TABLE 6-18
DRAINAGE AREAS – LOOP RAMP ALTERNATIVE

Basin	Existing			Proposed		
	Impervious (ac)	Pervious (ac)	Total (ac)	Impervious (ac)	Pervious (ac)	Total (ac)
B-1 NW	7.2	94.1	101.6	11.9	89.7	101.6
B-2 NE	5.3	9.8	15.1	7.4	7.7	15.1
B-3 SW	4.0	14.2	18.2	7.0	11.2	18.2
B-4 SE	3.7	16.7	20.4	8.1	12.3	20.4

Required storage volumes and pond area calculations for each drainage area are included in Appendix K. **Table 6-19** below is summary for this alternative.

TABLE 6-19
LOOP RAMP ALTERNATIVE POND SUMMARY

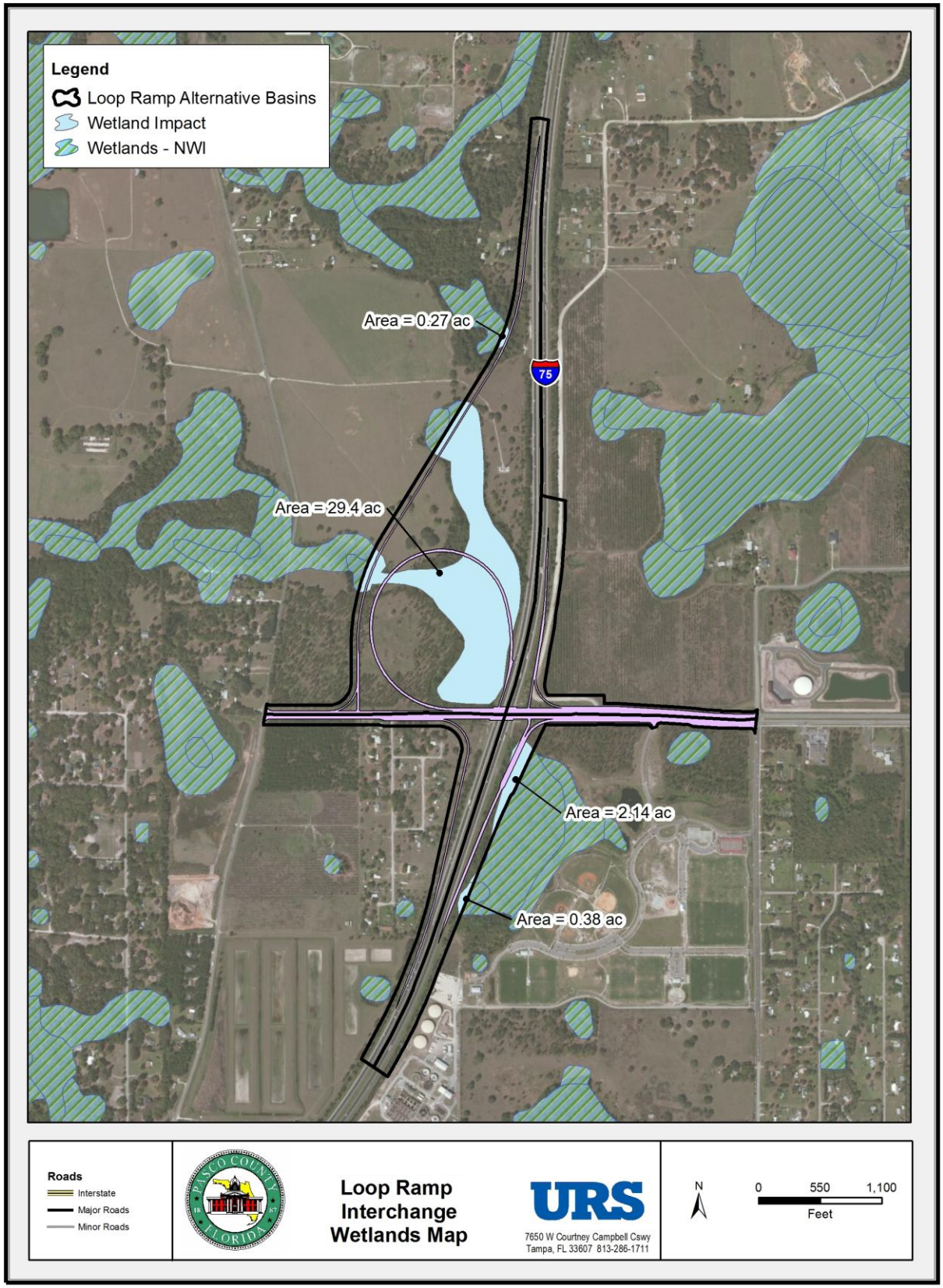
Basin	Drainage Area (ac)	Water Quality Treatment Storage (ac-ft)	Total Required Storage Volume (ac-ft)	Total Storage Volume Provided (ac-ft)	Pond Area (ac)	Wetland Impacts* (ac)	Floodplain Impacts (ac)
B-1 NW	101.6	8.47	9.61	12.75	5.77	5.77	2.57
B-2 NE	15.1	1.26	2.39	2.54	0.84	0.00	0.00
B-3 SW	18.2	1.52	2.31	2.63	1.18	0.00	0.00
B-4 SE	20.4	1.70	3.46	4.52	1.82	2.52	0.00
				Total	**9.61**	**32.19**	**2.1**

*Does not include impacts for other surface waters

6.7.5.2 Wetland Impacts

Wetland areas within the project limits were identified from FLUCCS land use mapping and are shown in **Figure 6-9**. There are several potential wetland impact areas as a result of this alternative. These wetland impacts will have to be addressed during the permitting process. The total estimated wetland impacts for this alternative are 32.19 acres. Note that this estimate is based upon a desktop analysis and does not include other surface waters (ditches, ponds, etc.).

FIGURE 6- 9
LOOP RAMP INTERCHANGE WETLAND IMPACT MAP



Section 7.0
ALTERNATIVES EVALUATION

The evaluation of No-Build and Build Alternatives based on the traffic operations, project costs, and impacts are described in this section.

7.1 NO-BUILD ALTERNATIVE

Traffic operational analysis for the No-Build Alternative indicates that for the Design Year (2040):

- All of the freeway segments in the project study area will operate below acceptable LOS during either the a.m. or p.m. peak hours;
- All of the ramp junctions in the project study area will operate below acceptable LOS during either the a.m. or p.m. peak hours; and
- All of the ramp terminal intersections in the project study area will operate below acceptable LOS during either the a.m. or p.m. peak hours.

7.2 BUILD ALTERNATIVE

- Similar to the No-Build Alternative operations, all of the freeway segments in the project study area will operate below acceptable LOS during either the a.m. or p.m. peak hours, as no capacity improvements for the I-75 mainline are proposed as part of this PIJR;
- All of the ramp junctions in the project study area will operate below acceptable LOS during either the a.m. or p.m. peak hours as a result of mainline capacity deficiencies; and
- All of the ramp terminal intersections at SR 56, CR 54, and SR 52 in the project study area will operate below acceptable LOS during either the a.m. or p.m. peak hours. However, the Build Alternative improves operations at the CR 54 and SR 52 interchange ramp terminal intersections, with delay reductions in the range of 100 sec/vehicle in comparison to the No-Build Alternative. This is primarily a result of the expected traffic shift from the existing adjacent interchanges to the proposed interchange at I-75 and Overpass Road.

As stated in previous sections, it should be noted that the FDOT SIS Plan indicates that additional lanes (beyond the six-lane widening) will be needed in the future. As such, FDOT District Seven will be further evaluating improvements to address the mainline deficiencies outside of the PIJR.

The purpose of the Alternatives Evaluation is to compare the proposed interchange configurations and recommend which of the preliminary interchange concepts should be carried forward into future phases of project development. Each interchange configuration has been developed to meet the future needs of the transportation facility in terms of providing adequate LOS, but also considers other factors such as relocation impacts to residential and commercial properties, safety, environmental impacts, and cost when identifying the most appropriate improvement.

To perform the Alternatives Evaluation, the following steps were taken:

1. Development of preliminary interchange concepts based on the classification and operations of the intersecting roadways;

2. Screening of the preliminary interchange concepts; and

3. Recommendation of those preliminary interchange concepts for refinement and movement forward into Project Development.

Initially, three interchange configurations (Diamond Interchange, SPUI and DDI) were proposed. These alternatives all include triple westbound left-turn lanes from Overpass Road to the I-75 southbound on-ramp. In order to eliminate the need for triple left-turn lanes, two additional interchange configurations, the Flyover Ramp (Westbound to Southbound) and Loop Ramp (Westbound to Southbound), were introduced.

Since the number of freeway and ramp lanes is similar for all five interchange configurations, they do not substantially differ in their impact upon freeway segments or ramp merge and diverge areas. In addition, all five interchange configurations developed are anticipated to operate at acceptable LOS for the interchange ramp terminal intersections and provide adequate geometry on the ramps to handle the future traffic demand. The five interchange configurations for the Build Alternative are evaluated below.

7.2.1 DIAMOND INTERCHANGE CONFIGURATION

This type of interchange minimizes impacts to the adjacent properties more than the other types of interchanges and avoids the interweaving traffic flows that occur in other configurations. In addition, the diamond interchange usually has a lower construction cost than other interchange configurations. The diamond interchange configuration for I-75 at Overpass Road will require a triple-left turn movement from westbound Overpass Road to southbound I-75 and a dual, free-flow movement from northbound I-75 to eastbound Overpass Road. The total ROW acreage required for the Diamond Interchange Alternative is 12.45 acres and the construction cost is approximately $32.3 million. The Design Year (2040) operational analysis results for the Diamond Interchange Alternative are shown in **Table 7-1**. The results show that this alternative provides acceptable LOS for the interchange.

TABLE 7-1
DESIGN YEAR (2040) BUILD DIAMOND INTERCHANGE ALTERNATIVE LOS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at Overpass Road	Signalized	17.2	B	25.2	C
I-75 southbound ramps at Overpass Road	Signalized	47.6	D	28.4	C
Overpass Road at Boyette Road	Signalized	44.8	D	47.6	D
Overpass Road at Old Pasco Road	Signalized	47.7	D	31.8	C

7.2.2 SINGLE POINT URBAN INTERCHANGE (SPUI) CONFIGURATION

The SPUI concept allows free-flow operations on the major roadway by creating a separate, signalized intersection at the arterial roadway with closely spaced ramp terminals. While the SPUI ROW requirements are similar to a diamond interchange, the footprint of the interchange is considerably wider. The total ROW acreage required for the SPUI is 12.80 acres and the construction cost is approximately $42.3 million. The Design Year (2040) operational analysis results for the SPUI alternative are shown in **Table 7-2**. The results show that this alternative provides acceptable LOS for the interchange.

TABLE 7-2
DESIGN YEAR (2040) BUILD SPUI ALTERNATIVE LOS

Intersection	Control Type	A.M. Peak		P.M. Peak	
		Delay	LOS	Delay	LOS
I-75 northbound/southbound ramps at Overpass Road	Signalized	54.8	D	37.2	D
Overpass Road at Boyette Road	Signalized	44.8	D	47.6	D
Overpass Road at Old Pasco Road	Signalized	47.7	D	31.8	C

7.2.3 DIVERGING DIAMOND INTERCHANGE (DDI) CONFIGURATION

A DDI has a higher capacity for left-turn movements when compared to the conventional diamond interchange. While the ramp configuration is similar to a traditional diamond interchange, traffic on the cross road moves to the left side of the roadway for the segment between signalized ramp intersections. By moving traffic to the left, left-turning vehicles can enter the limited access highway without the need for a left-turn signal phase at the signalized ramp intersections. Also, left-turning vehicles on the cross road do not conflict with opposing through traffic and may turn without stopping. Other considerations to be included in the evaluation of a DDI are:

- A DDI works best when there are proportionally fewer vehicles traveling straight through on the cross street;
- A DDI may become inferior to other diamond interchange configurations when ramp movement volumes approach through movement volumes; and

- A DDI may not be able to coordinate all movements effectively as traffic demand is equally distributed.

The total ROW acreage for the DDI is 18.0 acres and the construction cost is approximately $31.1 million. The Design Year (2040) operational analysis results for the DDI Alternative are shown in **Table 7-3**. The results show that this alternative provides acceptable LOS for the interchange.

TABLE 7-3
DESIGN YEAR (2040) BUILD DDI ALTERNATIVE LOS

Intersection	Control Type	A.M. Peak		P.M. Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at Overpass Road	Signalized	19.5	B	16.2	B
I-75 southbound ramps at Overpass Road	Signalized	12.4	B	13.2	B
Overpass Road at Boyette Road	Signalized	44.8	D	47.6	D
Overpass Road at Old Pasco Road	Signalized	47.7	D	31.8	C

7.2.4 FLYOVER RAMP (WESTBOUND TO SOUTHBOUND) CONFIGURATION

The Flyover Ramp Alternative includes a two-lane grade-separated westbound-to-southbound flyover ramp, which provides a free-flow condition in lieu of the triple left-turn lanes for the predominant movement. This improves the signal operations at both ramp terminal intersections by removing a large volume of traffic. However, this alternative adds a third level to the interchange resulting in increased costs for the bridge, retaining walls, and earthwork. The total ROW acreage for the Flyover Ramp Alternative is 23.0 acres and the construction cost is approximately $59.3 million. The Design Year (2040) operational analysis results for the Flyover Ramp Alternative are shown in **Table 7-4**. The results show that this alternative provides acceptable LOS for the interchange.

TABLE 7-4
DESIGN YEAR (2040) BUILD FLYOVER RAMP ALTERNATIVE LOS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at Overpass Road	Signalized	18.3	B	27.6	C
I-75 southbound ramps at Overpass Road	Signalized	10.6	B	9.1	A
Overpass Road at Boyette Road	Signalized	44.8	D	47.6	D
Overpass Road at Old Pasco Road	Signalized	47.7	D	31.8	C

7.2.5 LOOP RAMP (WESTBOUND TO SOUTHBOUND) CONFIGURATION

This alternative provides a two-lane westbound-to-southbound loop ramp in the northwest quadrant of the interchange in lieu of an at-grade triple-left movement. This alternative replaces the left-turn movement with a right-turn movement and eliminates some conflict points. Although it improves the operation for the westbound to southbound movement, this alternative

requires the largest amount of ROW of all the configurations and there is also an additional cost associated with the construction of the loop ramp. The total ROW acreage for the Loop Ramp Alternative is 49.10 acres and the construction cost is approximately $34.1 million. The Design Year (2040) operational analysis results for the Loop Ramp Alternative are shown in **Table 7-5**. The results show that this alternative provides acceptable LOS for the interchange.

TABLE 7-5
DESIGN YEAR (2040) BUILD LOOP RAMP ALTERNATIVE LOS

Intersection	Control Type	AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
I-75 northbound ramps at Overpass Road	Signalized	43.3	D	41.4	D
I-75 southbound ramps at Overpass Road	Signalized	10.6	B	9.1	A
Overpass Road at Boyette Road	Signalized	44.8	D	47.6	D
Overpass Road at Old Pasco Road	Signalized	47.7	D	31.8	C

7.3 PROJECT COST ESTIMATES

Preliminary estimates were developed for the costs associated with the proposed alternative configurations for the interchange at I-75 and Overpass Road. These costs include construction; ROW; Preliminary Engineering (PE); and Construction, Engineering, and Inspection (CEI). The construction amounts include costs associated with maintenance of traffic (MOT), mobilization, and contingencies. For a detailed breakdown of the estimate, refer to Appendix L.

The costs for the required ROW were estimated for each of the proposed interchange configurations. These costs were estimated using unit costs established based on potential future land uses for the impacted parcels and were coordinated with the Pasco County Property Appraiser's Office. The unit costs were agreed upon as follows:

- Northwest Quadrant: $8 per square foot
- Northeast Quadrant: $10 per square foot
- Southwest Quadrant: $8 per square foot
- Southeast Quadrant: $5 per square foot

Approximately 40 acres of ROW will be donated by the developer in the northwest quadrant of the proposed interchange as part of a Comprehensive Plan Amendment. This ROW was assumed to be acquired for the purpose of the cost estimates. Only those impacts to additional parcels in the northwest quadrant were included. A base cost was calculated using the unit cost and the estimated ROW required. The base cost was multiplied by a factor of 2.5 to estimate the total acquisition cost and a 25 percent contingency factor was added to reach the total ROW cost. It should be noted that these figures are preliminary estimates for planning purposes only and do

not reflect a detailed assessment by a certified property appraiser of the potential costs. More information on the estimates of ROW costs are provided in Appendix L.

For CEI, 20 percent of the construction cost was added to obtain the total project costs.

7.4 BENEFITS AND DISADVANTAGES OF PROPOSED INTERCHANGE CONFIGURATIONS

The following summarizes the benefits and disadvantages of the potential interchange configurations evaluated for the Build Alternative:

Benefits:

- The Diamond Interchange has a lower construction cost than the SPUI or DDI.
- The Diamond Interchange and SPUI can be constructed within limited ROW, thereby reducing impacts to the Wesley Chapel District Park.
- The DDI has the least number of conflict points (18). The SPUI has 24 conflict points and the Diamond Interchange has 30 conflict points.
- The Flyover Ramp provides uninterrupted flow for the predominant westbound-to-southbound left-turn movement and improves the LOS of the ramp terminal intersections at the interchange by removing a large volume of traffic.
- The Loop Ramp replaces the westbound-to-southbound left-turn movement with a right-turn movement, thus eliminating conflict points.

Disadvantages:

- The Diamond Interchange has the greatest number of conflict points (30).
- The SPUI has a greater structure length and depth, which increases costs for bridge construction, retaining walls, and earthwork.
- The SPUI requires positive lane markings through the intersection and additional signage.
- The SPUI design makes pedestrian crossing difficult. If additional pedestrian phases are required, this decreases the efficiency and capacity of the intersection.
- The DDI has the largest impact to the Wesley Chapel District Park.
- The DDI doesn't meet driver expectancy (requires driving on the left-hand side of the roadway).

- The Flyover Ramp adds a third level to the interchange, which will increase costs for the bridge, retaining walls, and earthwork.

- The Loop Ramp requires the largest amount of ROW of all the interchange configurations and increases the overall cost of the project.

Table 7-6 provides an evaluation matrix comparing the five interchange configurations for the Build Alternative in terms of social, environmental, cultural and physical impacts. The matrix also includes the costs associated with each of the interchange configurations. Note that this evaluation matrix reflects information conducted during the initial stages of the *Overpass Road PD&E Study* and was presented at the Alternatives Public Workshop held on November 29, 2012.

TABLE 7-6
EVALUATION MATRIX COMPARISON OF BUILD INTERCHANGE ALTERNATIVES

Evaluation Factors	Interchange Alternatives – Old Pasco Road to Boyette Road				
	Diamond	**Diverging Diamond**	**Flyover**	**Loop**	**SPUI**
Business Parcels Affected	0	0	0	0	0
Residential Parcels Affected	10	12	13	8	12
Other Parcels Affected	12	12	11	14	11
Potential Business Relocations	0	0	0	0	0
Potential Residential Relocations	1	1	8	1	0
Churches	0	0	0	0	0
Schools	0	0	0	0	0
Parks/Recreation	1	1	1	1	1
Cultural Resources	Low	Low	Low	Low	Low
Potential Noise-Sensitive Sites	2	2	2	2	2
Wetlands (acres)*	14.5	18.2	15.7	43.0	13.5
Floodplains (acres)**	0.0	0.0	0.0	2.1	0.0
Potential Threatened & Endangered Species	Yes	Yes	Yes	Yes	Yes
Potential Contamination Sites (High/Medium)	0/0	0/0	0/0	0/0	0/0
Estimated Costs (in millions)* **					
Design****	$3.3	$3.2	$6.0	$3.5	$4.3
Right-of-Way	$12.2	$17.7	$24.1	$52.4	$12.4
Construction	$32.8	$31.7	$59.8	$34.7	$42.9
Construction Engineering & Inspection****	$3.3	$3.2	$6.0	$3.5	$4.3
Total Costs (in Millions)	**$51.6**	**$55.8**	**$95.9**	**$94.1**	**$63.9**

Notes: * Wetland impacts based on field review (September 2012); includes impacts to other surface waters
** Floodplain impacts based on currently effective FEMA's FIRMs.
*** Engineering estimates are in present day costs. Costs include improvements on Overpass Road from Old Pasco Road to Boyette Road, plus the interchange.
**** 10% of construction cost.

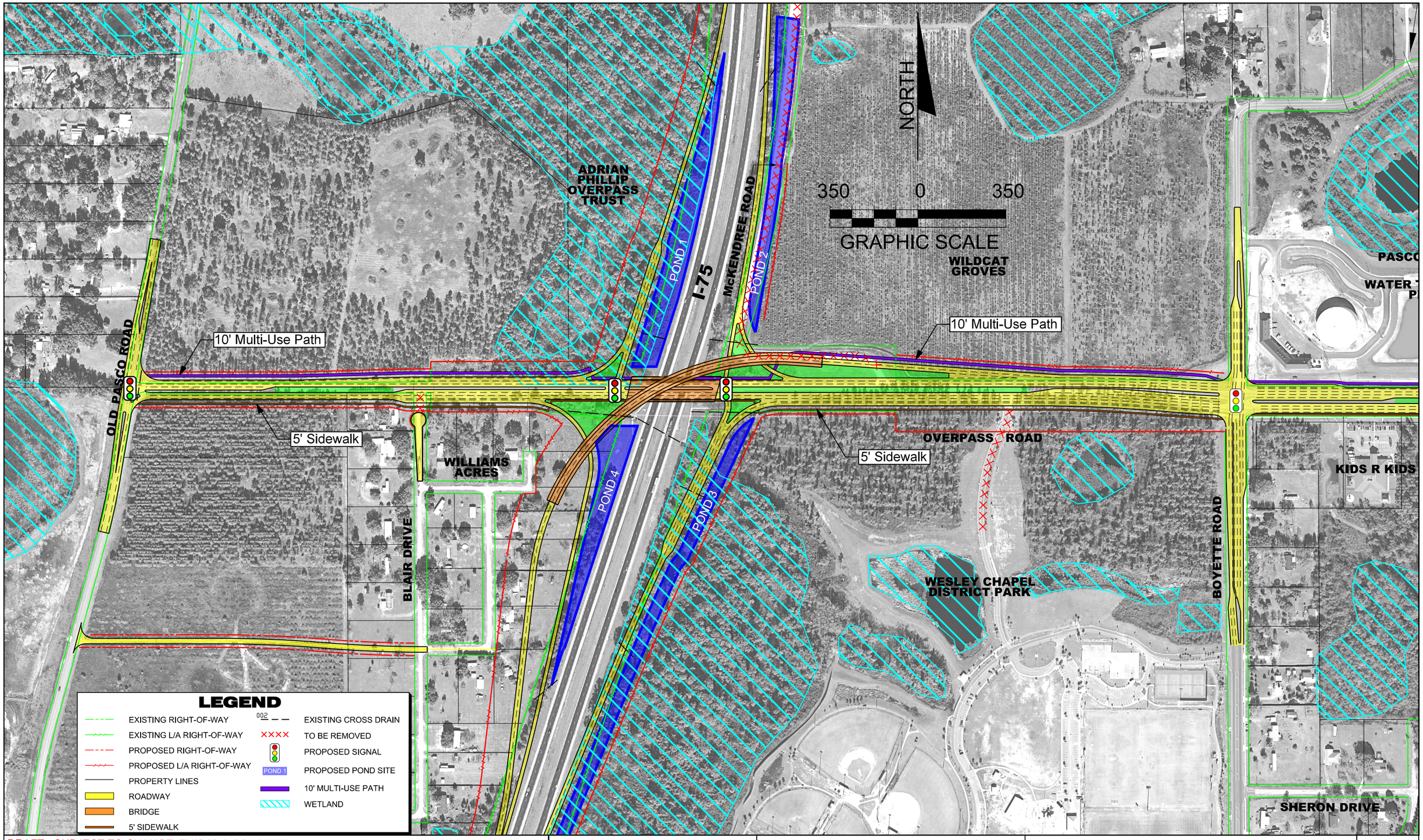
Section 8.0
RECOMMENDATIONS

Roadway planning, design and construction is more than a matter of building the cheapest, shortest, or fastest facility. Other criteria such as safety, residential/business and economic impacts, mobility, and implementation are also taken into consideration. Each of the interchange configurations developed for the Build Alternative provide acceptable LOS at the proposed Overpass Road interchange with proposed geometry for that alternative. However, the Flyover Ramp Alternative is recommended based on the following key justifications:

- It minimizes conflict points and provides better traffic operations at the proposed interchange than all other configurations.
- It addresses safety concerns associated with the heavy westbound-to-southbound traffic by providing grade separation for that movement; trip left-turn lanes would otherwise be required.
- It provides uninterrupted flow for the predominant westbound-to-southbound left-turn movement and improves the LOS at the ramp terminal intersections by removing a large volume of traffic.

The recommended interchange configuration is shown in **Figure 8-1**. As stated in previous sections, it will include varying typical sections between Old Pasco Road and Boyette Road, as shown in **Figures 8-2 through 8-4**. For Overpass Road between Old Pasco Road and I-75, a four-lane urban typical section with a 45 mph design speed is proposed. The bridge structure over I-75 includes an additional westbound lane in order to accommodate the flyover ramp and turn lanes. The westbound-to-southbound Flyover Ramp includes a two-lane bridge section with a 45 mph design speed. For Overpass Road between I-75 and Boyette Road, a six-lane urban typical section plus two auxiliary lanes with a 45 mph design speed is proposed.

Note that the actual construction of the interchange may occur in two phases. The first phase would construct a diamond interchange with dual westbound-to-southbound left-turn lanes in the Opening Year (2022), with the second phase constructing the westbound-to-southbound Flyover Ramp when the LOS for the dual left-turn lanes begins to deteriorate below acceptable standards. All ROW required for the ultimate construction footprint will be obtained prior to the first phase of the project and the interchange will be designed such that the flyover ramp can be constructed with no additional ROW needs and without affecting any other ramp configurations.



DRAFT - SUBJECT TO CHANGE. THIS IS A CONCEPTUAL - LEVEL GRAPHIC CREATED FOR PLANNING AND DISCUSSION PURPOSES ONLY. IT IS NOT INTENDED FOR USE IN DESIGN OR CONSTRUCTION.

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
No. 00000002

I-75 and Overpass Road
Preliminary Interchange Justification Report
Pasco County

RECOMMENDED ALTERNATIVE

FIGURE 8-1

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FIGURE 8-2
RECOMMENDED ALTERNATIVE TYPICAL SECTION FOR OVERPASS ROAD
FROM OLD PASCO ROAD TO I-75

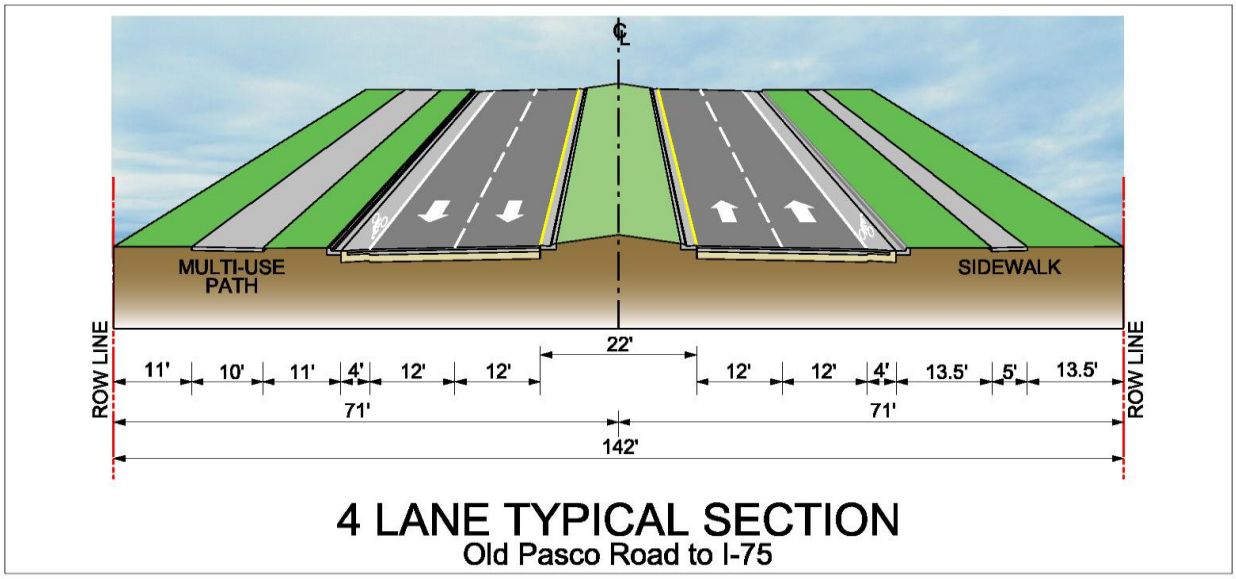


FIGURE 8-3A
RECOMMENDED ALTERNATIVE TYPICAL SECTION FOR OVERPASS ROAD BRIDGE

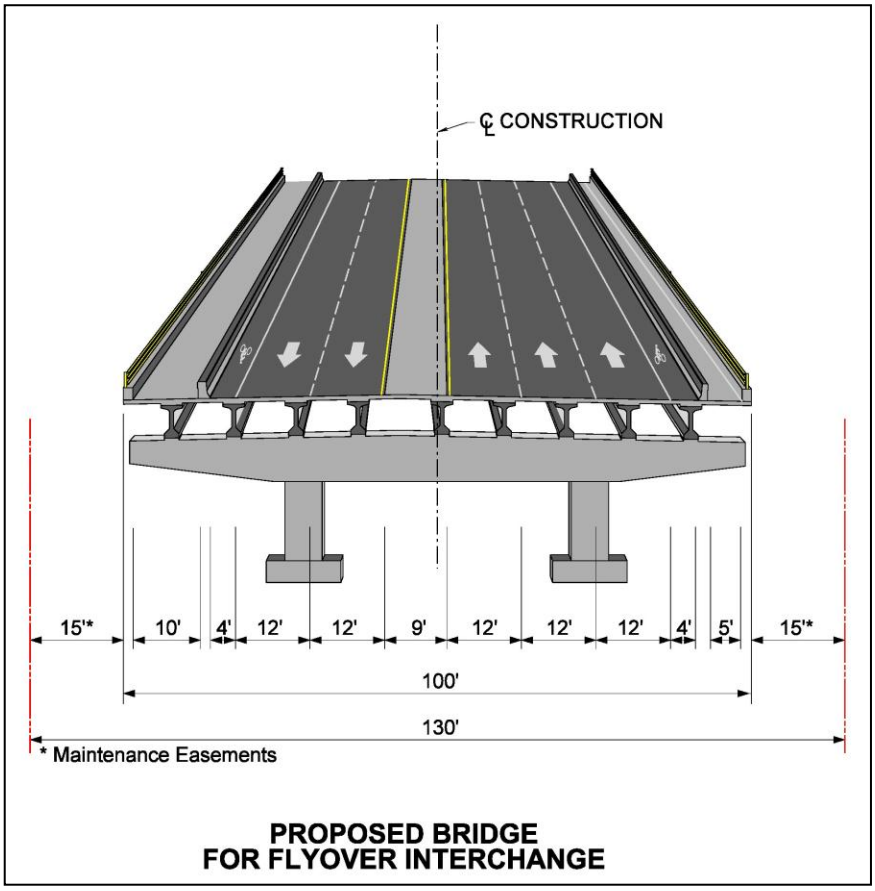


FIGURE 8-3B
RECOMMENDED ALTERNATIVE TYPICAL SECTION FOR FLYOVER RAMP

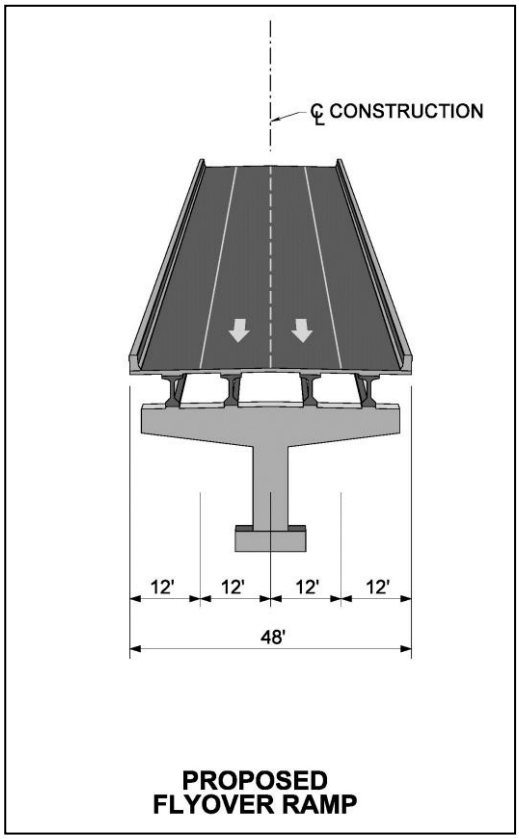
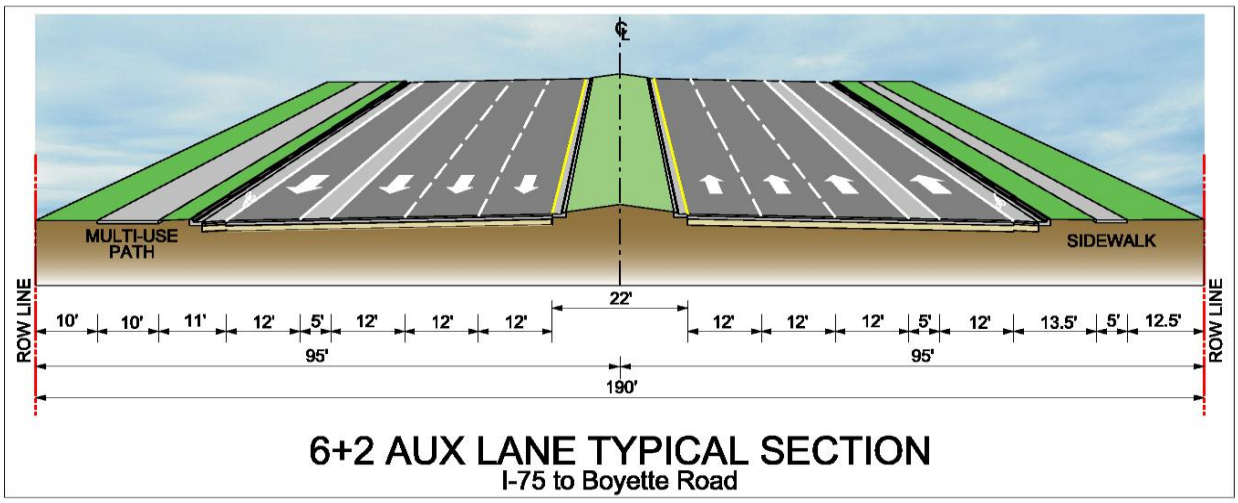


FIGURE 8-4
RECOMMENDED ALTERNATIVE TYPICAL SECTION FOR OVERPASS ROAD
FROM I-75 TO BOYETTE ROAD



8.1 DESIGN YEAR QUEUE ANALYSIS

For the recommended alternative, queue lengths for all the movements at the study intersections were determined from the intersection analysis provided in Appendix M. The queue lengths are calculated based on the 95th percentile queue plus the standard deceleration length. **Table 8-1** summarizes the turn-lane lengths for the recommended alternative.

TABLE 8-1
RECOMMENDED ALTERNATIVE – DESIGN YEAR (2040) QUEUE LENGTHS

Intersection	Lane Group	Number of Lanes	Queue (feet)		Deceleration (feet)	Recommended Turn-Lane Length (feet)
			AM Peak Hour	PM Peak Hour		
Overpass Road at Old Pasco Road	WBL	2	630	280	240	870
	NBT	1	475	230	240	705
	SBL	1	430	245	240	670
	SBT	2	210	85	240	450
I-75 southbound ramps at Overpass Road	EBT	3	85	115	240	355
	EBR	1	90	30	240	330
	WBT	2	395	480	240	720
	SBL	2	295	255	240	535
	SBR	1	150	105	240	390
I-75 northbound ramps at Overpass Road	EBL	1	255	375	240	615
	EBT	2	410	450	240	690
	WBT	2	275	180	240	515
	WBR	1	60	155	240	395
	NBL	2	205	245	240	485
Overpass Road at Boyette Road	EBL	2	255	265	240	505
	EBT	3	690	825	240	1,065
	WBL	1	380	295	240	620
	WBT	3	1,180	950	240	1,420
	WBR	1	45	40	240	285
	NBL	2	445	420	240	685
	NBT	1	135	190	240	430
	NBR	1	60	130	240	370
	SBL	1	85	120	240	360
	SBT	1	235	155	240	475

Notes: Queue lengths are per lane based on 95th percentile queue. Free-flow movements are excluded.
Deceleration length is based on design speeds using FDOT Index 301; turn-lane length is based on the maximum of a.m. and p.m. peak hour queue rounded to nearest 5 feet.
For approaches with lower than 45 mph posted speeds, a minimum deceleration length of 240 feet was used.

8.2 OTHER CONSIDERATIONS

An alternative interchange concept that provides a westbound-to-southbound flyover ramp that exits Overpass Road from the median rather than from the outside lane was evaluated and is provided in Appendix M. The ROW savings with this concept appear to be minimal and limited to the northeast quadrant of the proposed interchange. In addition, this concept violates the normal driver expectancy of right-side exit and also creates MOT issues given the proposed staged implementation of the interchange. Operation of existing movements would be difficult to maintain while constructing a flyover ramp in the median. However, this alternative configuration could be evaluated further during the Design phase, if needed, as ROW for the recommended ultimate construction footprint could accommodate both configurations.

As an alternative to the dual free-flow right-turn lanes proposed for the northbound-to-eastbound movement at the Overpass Road interchange, a triple right-turn lane configuration with signalized operation was also evaluated. This configuration also provides acceptable LOS and better accommodates pedestrian movements through the interchange. Analysis results under this configuration are provided in Appendix M. Further traffic control enhancements and alternative treatments for this movement could be evaluated further during the Design phase of the project, if needed.

Section 9.0
CONCEPTUAL FUNDING PLAN

The I-75 and Overpass Road Interchange project shall be funded using multiple sources of revenue. These sources include the Local Government Infrastructure Surtax (2015 Penny for Pasco), Villages of Pasadena Hills (VOPH) Tax Increment Revenue Bond, Interstate/SIS Mobility Fees collected in the East Mobility Fee Collection/Benefit District, VOPH Tax Increment Revenues, VOPH External Improvement Fees, and other funds to be determined at a later date. A summary of the anticipated revenue (by funding source) is listed in **Table 9-1** below. A detailed description of the funding sources is provided below the table.

TABLE 9-1
CONCEPTUAL FUNDING PLAN

Funding Source	Amount
2015 Penny for Pasco	$15,000,000
VOPH Tax Increment Revenue Bond	$12,720,335
East Pasco SIS Mobility Fees	$5,080,023
VOPH Tax Increment Revenues	$2,665,895
VOPH External Improvement Fees	$1,638,830
Other Funds (to be determined)	$12,894,917
Total	**$50,000,000**

Local Government Infrastructure Surtax (2015 Penny for Pasco)

A referendum for renewal of the current surtax (Ordinance No. 12-16) was approved in the 2012 General Election for an additional 10-year term. The one percent surtax on taxable transactions is used to finance, plan, and construct infrastructure; fund economic development; and acquire land for conservation. The 10-year term spans January 1, 2015 through December 31, 2024, with 40 percent of the proceeds being used for construction of roads and other transportation infrastructure.

Funding for the Design phase ($5 million) and partial funding for the Construction phase ($10 million) of the I-75 and Overpass Road project has been approved by the Pasco County Board of County Commissioners (BOCC) as a new project that will be funded by the 2015 Penny for Pasco, with revenue collection beginning on January 1, 2015. The *FY 15/16 Fifteen-Year Transportation CIP* will include revenue estimates/projections for the new penny and programming of the 2015 Penny for Pasco projects, which will include the $15 million towards future phases of the I-75 and Overpass Road project.

VOPH Tax Increment Revenues
(Multi-Modal Transportation Fund Ordinance No. 11-09)

The portion of the County-wide 33.3 percent home rule tax increment revenues that are generated from the real property in the VOPH Dependent District and earmarked for transportation improvements that benefit the VOPH, including the planned I-75 and Overpass Road interchange. The tax increment revenues are calculated as 97 percent of the ad valorem tax revenues generated by applying the millage rate in effect for the current fiscal year (FY), exclusive of any debt service millage, to 33.33 percent of the difference between the current taxable valuation and the base taxable valuation (the base taxable valuation is presently based on 2012 taxable values). The amount listed in the table above is based on the estimated tax increment collections through the year 2020.

VOPH Tax Increment Revenue Bond
(Multi-Modal Transportation Fund Ordinance No. 11-09)

A revenue bond that is secured by future VOPH tax increment revenues from the year 2020 through the year 2049.

East Pasco SIS Mobility Fees
(Mobility Fee Ordinance No. 11-08)

A transportation system charge to recoup the proportionate cost of transportation demand generated by all new development. This is a form of impact fee, which includes assessments on new development for the capital costs of roadways, transit, and bicycle/pedestrian facilities. The SIS Mobility Fee is the portion of the mobility fee assessed for impacts to interstate/freeway roadway facilities in Pasco County (excluding freeways with tolls), and which has been reserved for transportation capital improvements that benefit the SIS, including I-75. The SIS Mobility Fees collected in the east mobility fee collection/benefit district are reserved for this specific interchange.

VOPH External Improvement Fee
(VOPH Stewardship District Ordinance No. 12-11)

An amount equivalent to 24 percent of the mobility fees and mobility fee surcharges collected on certain properties within the VOPH and earmarked for this specific interchange.

Section 10.0
OTHER CONSIDERATIONS

10.1 ACCESS MANAGEMENT PLAN

The segments of Overpass Road between Old Pasco Road and I-75 and between I-75 and Boyette Road will not have any access points once the interchange is constructed. All properties in these segments will be able to safely and effortlessly enter and exit either via Old Pasco Road or via Boyette Road. This proposed access management plan will serve to 1) allow room to develop an adequate interchange footprint with potential for expansion, if needed and 2) eliminate unnecessary conflict points. In addition, all potential interchange concepts propose to close the existing Overpass Road access to the Wesley Chapel District Park. The main entrance to the park will be located on Boyette Road, south of Overpass Road.

10.2 CONCEPTUAL SIGNING PLAN

All signing to be proposed is in compliance with the FDOT Design Standards and the *2009 Manual on Uniform Traffic Control Devices* (MUTCD). Overhead advance exit and exit direction signs are proposed on the mainline of I-75 in both the north and south directions. Signs are proposed at the 1 mile, 0.5 mile, and exit gore locations. Due to the future widening of I-75, overhead signs are most appropriate for installation in advance of the Overpass Road interchange. On Overpass Road, I-75 trailblazer signing in advance of the interchange is proposed (at a minimum) for motorists approaching I-75. The plan sheets showing conceptual signing are provided in Appendix N.