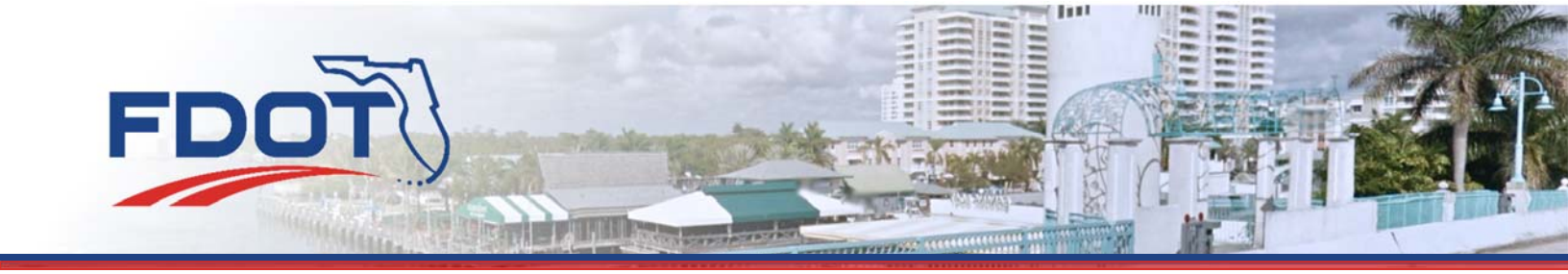

PRELIMINARY ENGINEERING REPORT

PD&E STUDY
SR 9/I-95 at SR 804/Boynton Beach Boulevard Interchange (MP 57)
and
SR-9/I-95 at Gateway Boulevard Interchange (MP 58)
Palm Beach County, Florida

Prepared for
Florida Department of Transportation - District Four
3400 West Commercial Boulevard
Ft. Lauderdale, Florida 33309-3421

Financial Management Number: 435804-1-22-01
Financial Management Number: 231932-1-22-01
ETDM Numbers: 14180 and 14181

June 2017

Preliminary Engineering Report

PD&E STUDY
SR 9/I-95 at SR 804/Boynton Beach Boulevard Interchange (MP 57)
and
SR-9/I-95 at Gateway Boulevard Interchange (MP 58)
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Prepared for
Florida Department of Transportation - District Four
3400 West Commercial Boulevard
Ft. Lauderdale, Florida 33309-3421

Prepared by:

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The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016 and executed by the Federal Highway Administration and FDOT.

Preliminary Engineering Report

Florida Department of Transportation
District 4

Financial Management Number: 435804-1-22-01
Financial Management Number: 231932-1-22-01
ETDM Numbers: 14180 and 14181

This preliminary engineering report contains detailed engineering information that fulfills the purpose and need for project SR 9/I-95 at SR 804/Boynton Beach Boulevard Interchange and Gateway Boulevard Interchange, Palm Beach County, Project Development & Environment Study. The environmental document is a Type 2 Categorical Exclusion (DATE, 2017)

Date __/__/__

_____
Henry W. Deibel, Jr., PE

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LIST OF ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACM	Asbestos-Containing Material
ACS	American Community Survey
AN	Advanced Notification
APE	Area of Potential Effect
B/C	Benefit Cost
CAAA	Clean Air Act Amendments
CD	Concept Development
CDA	Concept Development Alternative
CEQ	Council on Environmental Quality
CFA	Core Foraging Area
CFR	Code of Federal Regulations
CRA	Community Redevelopment Area
CRAS	Cultural Resource Assessment Survey
CSER	Contamination Screening Evaluation Report
dBA	A-Weighted Decibel
DOA	Determination of Applicability
DOE	Degree of Effect
DOS	Department of State
DRI	Development of Regional Impact
EA	Environmental Assessment
EFH	Essential Fish Habitat
ERM	Environmental Resource Management
ESF	Emergency Support Functions
EST	Environmental Screening Tools
ETAT	Environmental Technical Advisory Team
ETDM	Efficient Transportation Decsision Making
FDEO	Florida Department of Economic Opportunity
FDEP	Florida Department of Environmental Protection
FDHR	Flordia Division of Historical Resources
FDOS	Flordia Department of State

FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FPPA	Farmland Protection Policy Act
FFWCC	Florida Fish and Wildlife Conservation Commission
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FLUCFCS	Florida Land Use Cover Forms Classificaiton System
FMSF	Florida Master Site File
FS	Florida Statute
FY	Fiscal Year
GIS	Geographic Information System
HCS	Highway Capacity Software
HSIP	Highway Safety Improvement Plan
IAR	Interchange Access Request
IOAR	Interchange Operational Analysis Report
IMP	Interchange Master Plan
ITS	Intelligent Transportation Systems
LDCA	Location and Design Concept Acceptance
LEP	Limited English Proficiency
LOS	Level of Service
LRTP	Long Range Transportation Plan
LWDD	Lake Worth Drainage District
MLOU	Methodology Letter of Understanding
MOT	Maintenance of Traffic
MPO	Palm Beach Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Serve
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NSA	Noise Study Area
NWI	National Wetland Inventory
PD&E	Project Development and Environment
PLEM	Planning and Environmental Management
ROW	Right-of-Way
SALR	Seaboard Airline Railroad
SERPM	Southeast Regional Planning Model
SFHA	Special Flood Hazard Area
SFRC	South Florida Rail Corridor
SFRTA	South Florida Regional Transportation Authority
SFWMD	South Florida Water Management District
SHPO	State Historic Preservation Officer
SHSP	Strategic Highway Safety Plan
SIS	Strategic Intermodal System
SIMR	System Interchange Modification Report
SLD	Straigh Line Diagram
SPUI	Single Point Urban Interchange
SR	State Road
STIP	State Transportation Improvement Plan
TDM	Transportation Demand Model
TIP	Transportation Improvement Plan
TMC	Turning Movement Count
TUDI	Tight Urban Diamond Interchange
TSM	Transportation System Management
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VE	Value Engineering
WER	Wetlands Evaluation Report

1. Project Summary

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study for interchange improvements located SR-9/I-95 at SR 804/Boynton Beach Boulevard and SR-9/I-95 at Gateway Boulevard in Palm Beach County, Florida. The alternatives developed in this PD&E Study and the associated social, economic, and environmental analyses were evaluated according to the requirements of the National Environmental Policy Act (NEPA) and FDOT's PD&E Manual, Part 1, Chapter 5 to receive Location and Design Concept Acceptance (LDCA). The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016 and executed by the Federal Highway Administration (FHWA) and FDOT.

The federal Fixing America's Surface Transportation Act (FAST Act, 2015) serves as the current regulatory and funding framework for transportation planning. The Palm Beach Metropolitan Planning Organization (MPO) is the government organization that provides both long-range and short-term transportation planning for Palm Beach County. The Palm Beach MPO 2040 Long Range Transportation Plan (LRTP, October 2014), as amended, represents long-term transportation planning for Palm Beach County. Short-term planning is represented by the MPO's Transportation Improvement Program (TIP). The purpose of the LRTP is to identify the transportation needs of the community and establish priorities for funding those improvements in the TIP. The MPO priority projects are listed in the TIP Priority Projects FY 2017-2021 (June 2016).

FDOT lists planned projects with federal participation, including all MPO TIPs, in the State Transportation Improvement Program (STIP) which is submitted to and approved by the FHWA. The PD&E Study for the SR 804/Boynton Beach Boulevard Interchange and Gateway Boulevard Interchange is programmed for PD&E Study under the STIP (February 2017).

The improvements at both interchanges are included in the cost feasible component of the 2040 LRTP. In addition, the Strategic Intermodal System (SIS) implementation of managed lanes on SR-9/I-95 from the Palm Beach County/Broward County Line to Indiantown Road is included in the LRTP needs component. Other projects located near both interchanges and identified in the STIP include:

- PD&E Studies for planned interchange improvements/future capacity for SR-9/I-95 at 10th Avenue (FM# 4127331), Woolbright Avenue (FM#4372791), and Hypoluxo Road (FM# 4132571)
- Preliminary engineering for planned interchange improvements at SR-9/I-95 and Northlake Boulevard (FM# 4358031) and at Southern Boulevard (FM #4355161)
- Right-of-way (ROW) acquisition is underway for SR-9/I-95 at Glades Road/SR 808 (FM#4124204), PGA Boulevard (FM#4132651), 6th Avenue South (FM#4369631), and Atlantic Avenue/SR 806 (FM# 4347221)
- Construction has begun at SR-9/I-95 at Linton Road (FM#4353841).
- Multiple studies to evaluate future capacity needs of the SR 9/I-95 corridor are underway.

1.1 Description of Proposed Action

The project study area (study area) is in eastern Palm Beach County within the City of Boynton Beach between SR-9/I-95 Woolbright Road to the south and SR-9/I-95 at Hypoluxo Road to the north. The SR 804/Boynton Beach Boulevard interchange is located on SR-9/I-95 at milepost 57 between the Gateway Boulevard interchange (1.5 miles to the north) and the Woolbright Road interchange (1.0 mile to the south). At SR 804/Boynton Beach Boulevard, the project area extends from west of Old Boynton Road to east of Seacrest Boulevard. The SR 804/Boynton Beach Boulevard project length is 2.52 miles.

The Gateway Boulevard interchange is located on SR-9/I-95 at milepost 58 between the Hypoluxo Road interchange (1.5 miles to the north) and the SR 804/Boynton Beach Boulevard interchange (1.5 miles to the south). At Gateway Boulevard, the project area extends from west of High Ridge Road to east of Seacrest Boulevard. The Gateway Boulevard project length is 2.95 miles. A project location map is provided in **Figure 1**.

1.2 Purpose and Need for Action

The primary purpose of the proposed action is to enhance overall traffic operations at the existing interchanges of SR-9/I-95 at SR 804/Boynton Beach Boulevard and at Gateway Boulevard by providing improvements to achieve acceptable Levels of Service (LOS) in the future condition (2040 Design Year). The proposed action will support redevelopment efforts in the vicinity of the interchange, meeting the overall vision of the City of Boynton Beach. In addition, goals of the project include improving safety conditions and enhancing emergency evacuation and response times. The proposed action is anticipated to improve traffic operations at the study interchanges through implementation of operational and capacity improvements that will maintain and improve mobility, improve safety, and support existing and future development at the study interchanges.

1.3 Transportation Capacity

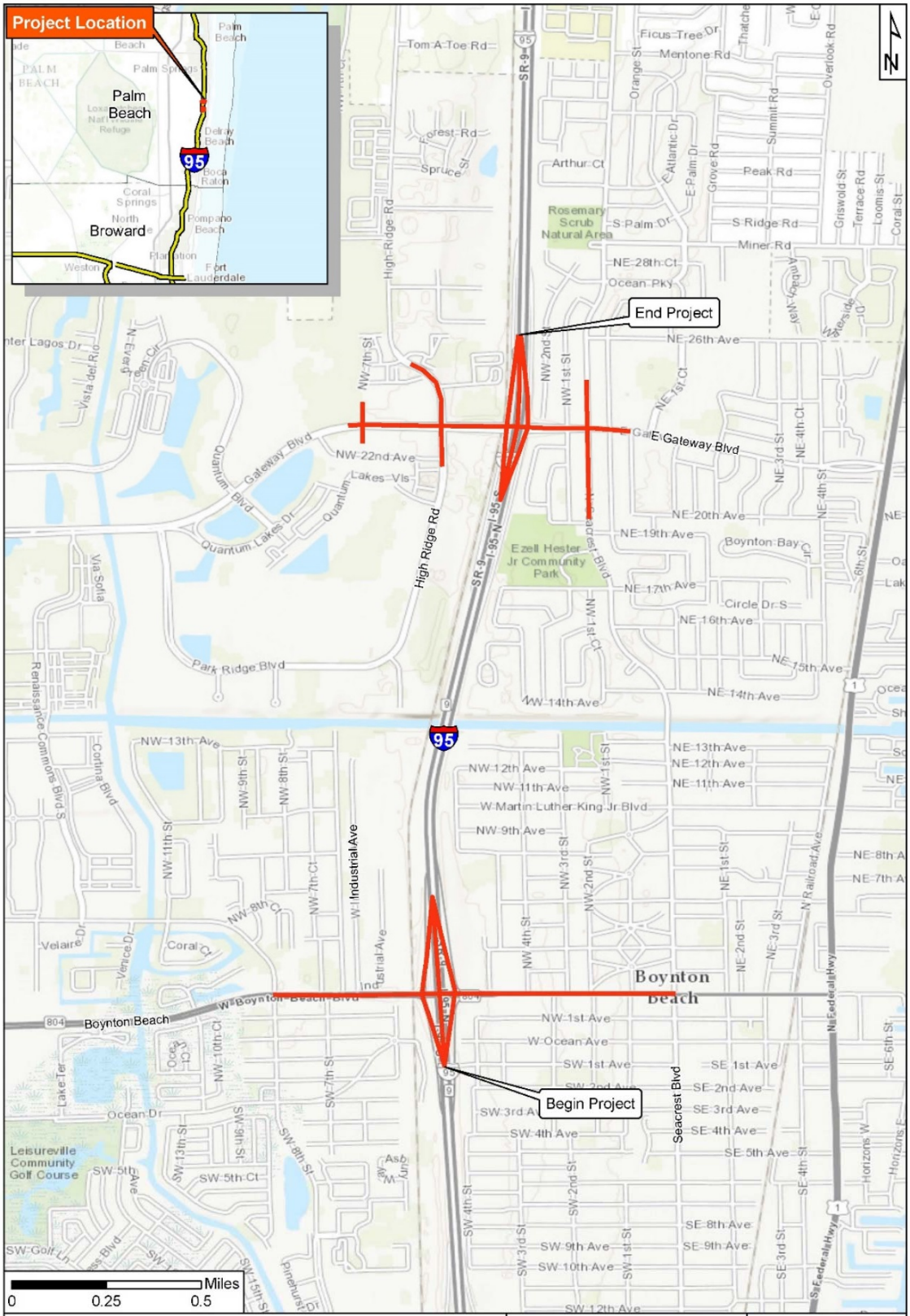
The study area was initially evaluated in the *I-95 (SR-9) Interchange at Boynton Beach Boulevard (SR-804) in Palm Beach County, Interchange Concept Development Report* (June 2014) and the I-95 (SR-9) *Interchange at Gateway Boulevard in Palm Beach County, Interchange Concept Development Report* (June 2014) [CD Reports].

Based upon the traffic operations analysis conducted for the study area interchanges and adjacent signalized intersections and documented in the CD Reports, the existing operational capacity and overall traffic operations (level of service) are deficient. These deficiencies are based on existing and future AM and PM peak hour traffic conditions for intersection delay and safety performance. Level of service is a quality measure describing operational conditions of these facilities. LOS classifications are designated from LOS A to LOS F, with LOS A representing the best operating conditions and LOS F representing the worst. Operational conditions considered in an LOS classification include speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Existing and future AM and PM peak hour conditions for SR 804/Boynton Beach and Gateway Boulevards are shown in **Tables 1** and **2**.

Table 1. SR 804/Boynton Beach Boulevard Existing and Future AM and PM Peak Hour Conditions

SR 804/Boynton Beach Boulevard with	Existing AM Conditions		Existing PM Conditions		Future AM Conditions		Future PM Conditions	
	Level of Service (LOS)	Delay (sec)[1]	Level of Service (LOS)	Delay (sec)[1]	Level of Service (LOS)	Delay (sec)[1]	Level of Service (LOS)	Delay (sec)[1]
Industrial Avenue	B	12.5	C	24.9	C	26.7	E	58.4
SR-9/I-95 Southbound Ramps	E	68.4	B	19.5	F	138.2	D	43.1
SR-9/I-95 Northbound Ramps	C	31.9	D	44.4	F	130.0	F	144.5
Seacrest Boulevard	D	45.0	D	35.6	F	158.7	F	178.6

1. sec: Delay in seconds per vehicle
Source: *I-95 (SR-9) Interchange at Boynton Beach Boulevard in Palm Beach County, Interchange Concept Development Report* (June 2014)



PD&E Study
SR-9/I-95 at SR-804/Boynton Beach Blvd Interchange
SR-9/I-95 at Gateway Blvd Interchange
FM Nos. 435804-1-22-01; 231932-1-22-01
ETDM Nos. 14180 and 14181

PROJECT LOCATION MAP

FIGURE 1

Table 2 . Gateway Boulevard Existing and Future AM and PM Peak Hour Conditions

Gateway Boulevard with	Existing AM Conditions		Existing PM Conditions		Future AM Conditions		Future PM Conditions	
	Level of Service (LOS)	Delay (sec)[1]	Level of Service (LOS)	Delay (sec)[1]	Level of Service (LOS)	Delay (sec)[1]	Level of Service (LOS)	Delay (sec)[1]
High Ridge Road	F	111.4	D	40.9	F	275.2	F	84.7
SR-9/I-95 Southbound Ramps	F	255.7	F	158.0	F	146.8	F	251.1
SR-9/I-95 Northbound Ramps	D	37.5	E	60.4	F	102.2	F	166.9
Seacrest Boulevard	D	43.6	D	38.4	F	195.2	F	204.9

1. sec: Delay in seconds per vehicle
Source: *I-95 (SR-9) Interchange at Gateway Boulevard in Palm Beach County, Interchange Concept Development Report* (June 2014)

Although the intersections operate at LOS E or better under existing conditions at SR 804/Boynton Beach Boulevard many of the individual through and turning movements at the intersections (which include approaches to SR-9/I-95) operate at LOS F during future AM and PM peak periods. Under the existing conditions at Gateway Boulevard, all intersections operate at LOS E or better except at the Gateway Boulevard - High Ridge Road and SR-9/I-95 southbound ramp intersections. Without improvements, the intersections will continue to experience excessive delays and queue lengths, and will continue to operate below acceptable LOS standards and the interchange will have insufficient capacity to accommodate the projected future travel demand.

1.3.1 Economic Development

The area surrounding the SR-9/I-95 at SR 804/Boynton Beach Boulevard interchange is urbanized containing a mixture of commercial, industrial, and residential land uses. According to the City of Boynton Beach Future Land Use Map, the SR- 9/I-95 at SR 804/Boynton Beach Boulevard interchange falls within the designated Community Redevelopment Area (CRA). The residential neighborhoods and business districts of this area are intended to be redeveloped by implementing compact, more intensive urban growth patterns that provide opportunities for more efficient use and development of infrastructure, land, and other resources and services. The area surrounding the SR-9/I-95 at Gateway Boulevard interchange is urbanized containing a mixture of residential and recreational land uses to the east and commercial, office, industrial, and residential activities to the west as part of the Quantum Park Development of Regional Impact (DRI). According to the City of Boynton Beach Future Land Use Map, the area will continue to support the noted land uses.

Population within the vicinity of the SR 804/Boynton Beach Boulevard interchange is anticipated to grow by approximately 10% from 2005 to 2035 primarily in the areas northeast and southwest of the interchange. Anticipated population growth within the vicinity of the Gateway Boulevard interchange is 46% with expected growth primarily east of Seacrest Boulevard and within the Quantum Park DRI. Employment in the vicinity of SR 804/Boynton Beach Boulevard is projected to increase approximately 147% from 2005 to 2035 primarily in the areas northeast, east, and southwest of the interchange. In the vicinity of Gateway Boulevard, employment is expected to increase by approximately 173% primarily in the areas west and southeast of the interchange. These projections are based on data derived from the enhanced Southeast Regional Planning Model (SERPM) version 6.5 Managed Lanes Model (upgraded to include specific subarea improvements for the I-95 Interchange Master Plan).Improving the transportation infrastructure at the study area interchanges and adjacent intersections will support the

redevelopment efforts in the vicinity of these interchanges and the overall vision of the City of Boynton Beach growth and economic development as identified in the Heart of Boynton Community Redevelopment Plan Update (April 2014).

1.3.2 Secondary Criteria

1.3.2.1 Safety

The 2040 LRTP continues the requirement that the MPO carry out a planning process that increases the safety and security of the transportation system for motorized and non-motorized users. The Moving Ahead for Progress in the 21st Century (MAP-21) Act also establishes national performance goals for federal highway programs including:

- Safety - to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- System Reliability – to improve the efficiency of the surface transportation system.

MAP-21 continued the Highway Safety Improvement Program (HSIP) as a core federal program. To receive funding under this Program, states were required to develop a Strategic Highway Safety Plans (SHSP). The SHSP is a data-driven, four to five-year comprehensive plan that establishes statewide goals and objectives to reduce fatalities and serious injuries. In 2006, Florida completed development of a comprehensive SHSP. The overall goal of the SHSP is to reduce the number of fatalities in Florida to zero. Use of a systems approach in engineering is one of the objectives to be used in accomplishing this overall goal; to strike a balance between single unique locations and addressing the safety of the road network.

The CD Reports included a safety analysis of the study area. For the SR 804/Boynton Beach Boulevard interchange, crash data analyzed from 2010 – 2012 indicated 214 crashes occurred with 69% being rear-end type crashes. Predominant crash locations were along SR 804/Boynton Beach Boulevard at the SR-9/I-95 northbound on and off-ramps and the southbound off ramp. For the Gateway Boulevard interchange, crash data indicated 117 crashes occurred with 48% being rear-end type crashes. The segment of SR-9/I-95 in the vicinity of Gateway Boulevard is identified as a high crash segment having a higher crash rate compared with similar state roadways for the time period analyzed.

1.3.2.2 Emergency Evacuation and Response Times

SR-9/I-95 and SR 804/Boynton Beach Boulevard serve as part of the emergency evacuation route network designated by the Florida Division of Emergency Management and Palm Beach County. As designated evacuation facilities, these roadways are critical in facilitating traffic flows during emergency evacuation periods. SR 804/Boynton Beach Boulevard is a major east-west corridor in eastern Palm Beach County providing linkage between SR-9/I-95 and Florida's Turnpike. Both SR 804/Boynton Beach and Gateway Boulevards connect to other major arterials and highways of the state evacuation route network.

1.4 Commitments

1. The FDOT commits to minimize the potential for any that adverse impacts to wetlands and/or surface waters in the vicinity of the project areas and will implement the following:

    - Dewatering will not occur adjacent to wetlands unless measures are implemented to avoid impact (i.e.,draw-down) to these sensitive areas

2. No portion of South Florida Rail Corridor land is required for the proposed project improvements. It is anticipated that no structure will be located within the SFRC ROW but expansion of the aerial easement over the SFRC will be required.

3. It is recommended that a hazardous material survey be completed if construction activities will disturb existing infrastructure, equipment, or utilities that potentially contain asbestos PCBs, or paint with heavy metals.

1.5 Description of Recommended Alternative

Following the July 28, 2016 alternatives public workshop, a meeting was held with FDOT to discuss the comprehensive resources evaluation, transportation and traffic studies, costs, and involvement of the public, local and state officials, and select a recommended alternative for each interchange. The recommended preferred alternatives for the project area was chosen by FDOT on January 26, 2017. Alternative 2, the Streamlined Concept Development Alternative (CDA), was chosen for the SR 804/Boynton Beach Boulevard Interchange and Alternative 3, Single Point Urban Interchange (SPUI), was chosen for the Gateway Boulevard Interchange.

2. Existing Conditions

2.1 Functional Classification

The typical characteristics of the roadway facilities located within the project limits are shown in **Table 3**. The data is based on information gathered from the FDOT's Roadway Characteristics Inventory, Straight Line Diagrams (SLDs), Palm Beach County Comprehensive Plan, and field reviews conducted for the PD&E Study. Four service interchanges are located along SR 9/I-95 within the project limits and include Woolbright Road, SR 804/Boynton Beach Boulevard, Gateway Boulevard, and Hypoluxo Road.

SR 9/I-95 is a limited access highway and a designated SIS facility that provides regional connectivity along the east coast of Florida. The existing SR 9/I-95 typical section consists of four general purpose lanes and one High Occupancy Vehicle (HOV) lane in each travel direction (northbound/southbound). One auxiliary lane is provided along SR 9/I-95 in each travel direction between the SR 804/Boynton Beach Boulevard and Gateway Boulevard interchanges. Two auxiliary lanes in the southbound travel direction and one auxiliary lane in the northbound travel direction is provided between SR 804/Boynton Beach Boulevard and Woolbright Road interchanges. No auxiliary lanes are present along SR 9/I-95 between Gateway Boulevard and Hypoluxo Road in either the southbound or northbound directions.

Table 3 . Existing Roadway Characteristics

Roadway	Facility Type	Functional Classification	Access Class	Typical Section	Posted Speed Limit (mph)
SR 9/I-95	Interstate, Limited Access, SIS Facility	Urban Principal Arterial - Interstate	1	4 NB GP lanes + 1 NB HOV lane + 4 SB GP lanes + 1 SB HOV lane + Barrier wall	65
West of SR 9/I-95					
Woolbright Road	Arterial	Urban Minor Arterial	N/A	3 EB lanes + 3 WB lanes + raised median	40

Roadway	Facility Type	Functional Classification	Access Class	Typical Section	Posted Speed Limit (mph)
SR 804/Boynton Beach Boulevard	Arterial	Urban Principal Arterial - Other	5	3 EB lanes + 3 WB lanes + Raised median	35
Gateway Boulevard	Arterial	Urban Minor Arterial	N/A	3 EB lanes + 3 WB lanes + Raised median	35
Hypoluxo Road	Arterial	Urban Minor Arterial	N/A	3 EB lanes + 3 WB lanes + Raised median	45
East of SR 9/I-95					
Woolbright Road	Arterial	Urban Minor Arterial	N/A	2 EB lanes + 2 WB lanes + 1 TWLTL	35
SR 804/Boynton Beach Boulevard	Arterial	Urban Principal Arterial - Minor	Class 6	2 EB lanes + 2 WB lanes + 1 TWLTL	35
Gateway Boulevard	Arterial	Urban Collector	N/A	2 EB lanes + 2 WB lanes + Raised median	25
Hypoluxo Road	Arterial	Urban Minor Arterial	N/A	2 EB lanes + 2 WB lanes + 1 TWLTL	45

NB – northbound, SB – southbound, EB – eastbound, WB – westbound
GP – general purpose, HOV – High Occupancy Vehicle, TWLTL – Two-way Left Turn Lanes, mph – miles per hour

2.2 Typical Section

The existing typical section for SR 804/Boynton Beach Boulevard includes a 6-lane roadway with a raised median west of SR 9/I-95 and 4-lanes with a raised median east of SR 9/I-95. SR 804/Boynton Beach Boulevard crosses over the South Florida Rail Corridor (SFRC) and SR 9/I-95 on bridge structures. A single dedicated left-turn lane is provided in each direction to access the SR 9/I-95 north and southbound ramps. Sidewalks are provided on the north and south sides of the roadway. Undesignated bicycle lanes exist east of the interchange and no designated bicycle lanes exist on the bridge structure or west of the interchange.

At Gateway Boulevard, the existing roadway is 6-lanes with a raised median west of SR 9/I-95 and 4-lanes with a raised median east of SR 9/I-95. Bridge structures support Gateway Boulevard over the SFRC and SR 9/I-95. Each direction has two left turn lanes to access the ramps for SR 9/I-95. There are sidewalks provided along the north and south side of the roadway with no designated bicycle lanes.

SR 9/I-95 is a 10-lane, divided, limited access roadway facility with one HOV lane in each direction.

Figure 2 shows the existing roadway typical section for SR 804/Boynton Beach Boulevard on the west of SR 9/I-95 approximately 400 feet east of Industrial Avenue. **Figure 3** shows the existing roadway typical section for Gateway Boulevard on the west side of SR 9/I-95 approximately 600 feet east of High Ridge Road.

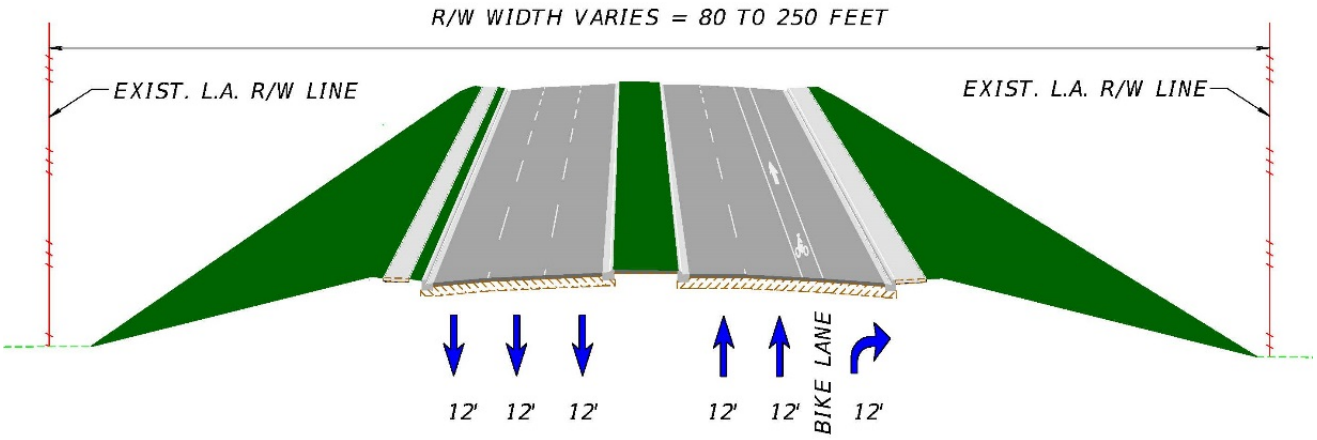


Figure 2. Existing Typical Section – SR 804/Boynton Beach Boulevard

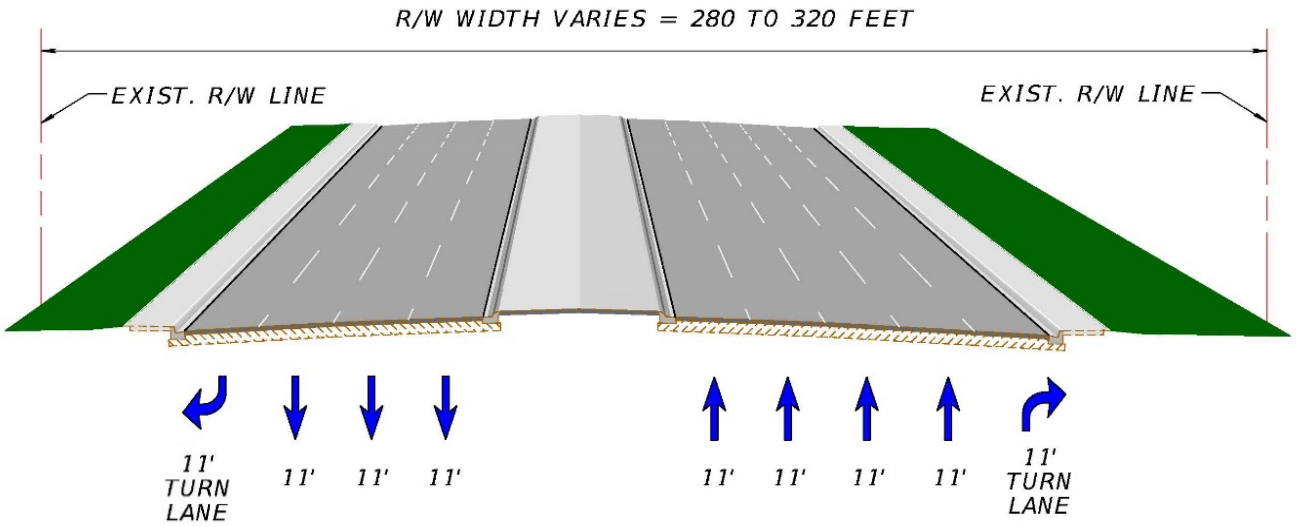


Figure 3. Existing Typical Section - Gateway Boulevard

2.3 Right of Way

The existing limited access ROW for mainline SR 9/I-95 is approximately 315 feet wide from south of Boynton Beach Boulevard to north of Gateway Boulevard. The existing ROW width for SR 9/I-95 at SR 804/Boynton Beach Boulevard varies from approximately 290 feet to 560 feet wide from the SR 9/I-95 north ramp tie-ins to the SR 9/I-95 south ramp tie-ins.

The existing ROW width for SR 804/Boynton Beach Boulevard varies throughout the PD&E Study area and is shown on the Preliminary Alternatives (**Appendix A**). From Old Boynton Road (MP 7.822) to W. Industrial Avenue (MP 8.022) the ROW width varies from 116 to 130 feet. From W. Industrial Avenue to SR 9/I-95, the ROW is limited access

and the minimum width is 235 feet. From SR 9/I-95 (MP 8.211) to Seacrest Boulevard (MP 8.769), the ROW width varies with a minimum width of 80 feet.

The existing ROW width for SR 9/I-95 at Gateway Boulevard varies from approximately 270 feet to 315 feet wide from the SR 9/I-95 north ramp tie-ins to the SR 9/I-95 south ramp tie-ins (**Appendix B**). From the entrance to Quantum Lake Villas on Gateway Boulevard (Station 89+46.79) to High Ridge Road (Station 106+25.01), the ROW width varies from 108 to 220 feet. From High Ridge Road to SR 9/I-95 (Station 112+86.78), the ROW width varies from 280 to 320 feet. From station SR 9/I-95 to Seacrest Boulevard (Station 124+51.92) the ROW width varies from 140 to 292 feet. From Seacrest Boulevard to NE 1st Court (Station 135+52.38) the ROW width varies from 105 to 125 feet.

2.4 Existing Land Uses

The SR-9/I-95 at SR 804/Boynton Beach Boulevard interchange lies within the City of Boynton Beach. The project area is partially located within the City's Community Redevelopment Area and is comprised primarily of transportation land use. The interchange and surrounding area is urbanized consisting of a mix of single and multifamily residential, commercial, office, light industrial, and public school land uses. According to the City of Boynton Beach Future Land Use Map (**Figure 4**), the project area remains urbanized with a mix of low and high density residential and local commercial uses.

The SR-9/I-95 at Gateway Boulevard interchange is located within the City of Boynton Beach. The project area is partially located within the City's CRA and the Quantum DRI. The project area is comprised primarily of transportation land use. The interchange and surrounding area is urbanized consisting of a mix of single and multifamily residential, commercial, light industrial, and transit land uses. According to the City of Boynton Beach Future Land Use Map (**Figure 4**), the project area remains urbanized with a mix of low and high density residential and local commercial uses.

2.5 Horizontal and Vertical Alignment

2.5.1 Horizontal Alignment

The existing horizonal alignments of SR 804/Boynton Beach Boulevard and Gateway Boulevard were evaluated to determine if the existing facility meets current design standards for horizontal curves.
SR 804/Boynton Beach Boulevard west of SR 9/I-95 has some shifts in its alignment. There is a curve at the beginning of the project and two intersection of tangents (PI) prior to SR 9/I-95. There is a station equation along SR 804/Boynton Beach Boulevard where Sta. 438+07.25 = Station 10+00.00. The SR 804/Boynton Beach Boulevard alignment east of SR 9/I-95 is straight to the end of the project. Gateway Boulevard has a curve at the beginning of the project, is straight through the interchange and has a curve at the end of the project. However, there is no curve in the alignment to match the curvature of the roadway. The existing design criteria evaluated is based on a best fit profile and is presented in **Tables 4** and **5**.

Table 4. Existing Horizontal Alignment – SR 804/Boynton Beach Boulevard

Location	Station	Curve Radius (feet)	Curve Length (feet)	Super-elevation (feet/feet)	Deflection Angle	Inspection Date
Beginning of Project	418+51.13	1910.08	598.55	NC	2º 59' 59"	6/1/2017

City of Boynton Beach
Official Future Land Use Map

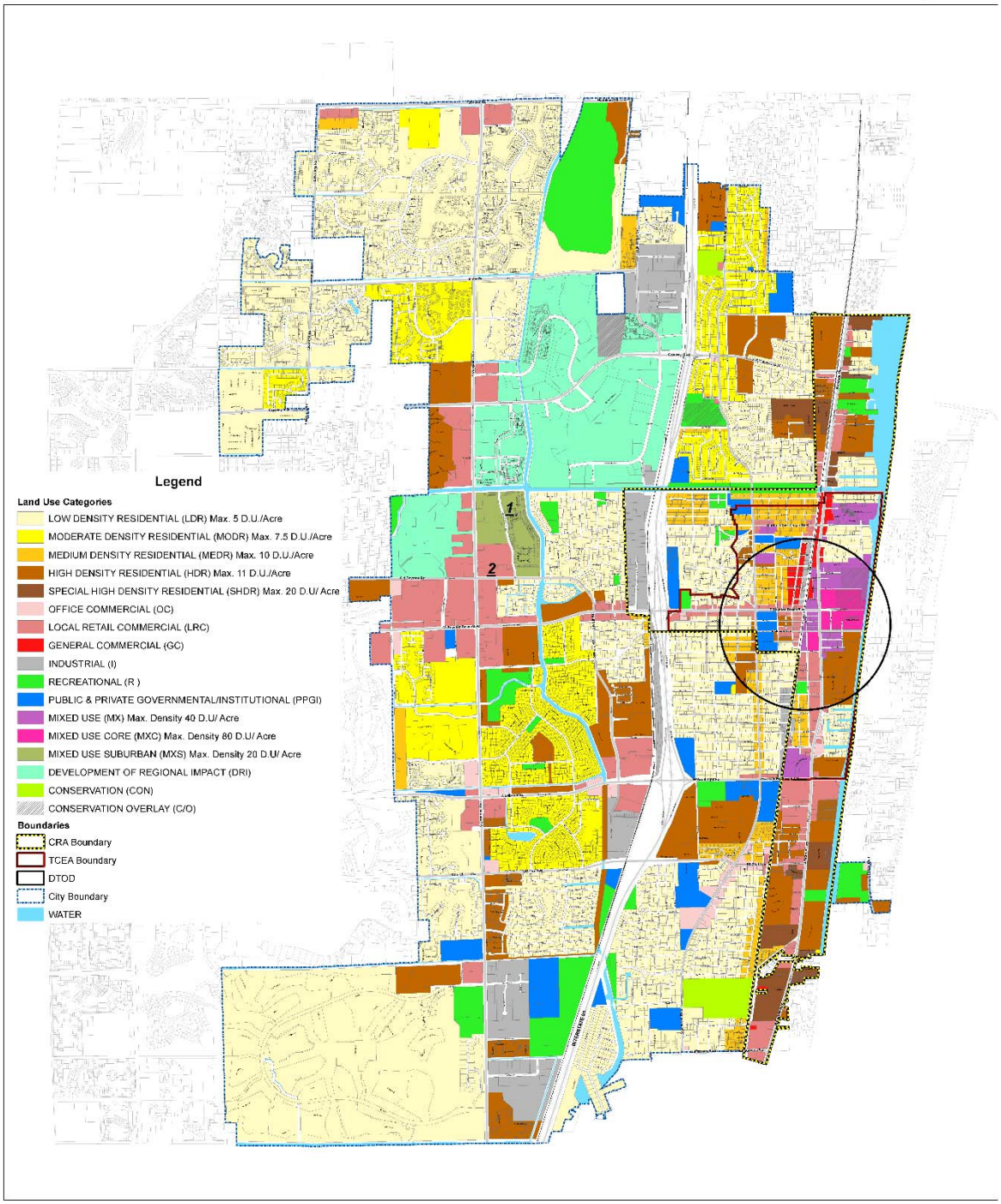


Table 5. Existing Horizontal Alignment – Gateway Boulevard

Location	Station	Curve Radius (feet)	Curve Length (feet)	Super-elevation (feet/feet)	Deflection Angle	Inspection Date
Beginning of Project	90+91.99	1637.02	1285.89	RC	3° 30' 00"	6/1/2017

2.5.1 Vertical Alignment

The existing vertical alignments of SR 804/Boynton Beach Boulevard and Gateway Boulevard were evaluated to determine if the existing facility meets current design standards for vertical curves. The existing vertical design criteria are presented in **Tables 6** and **7.**

Table 6. Existing Vertical Alignment – SR 804/Boynton Beach Boulevard

Location	PVI Station	Type of Curve	Grade Differential (%)	K Value	Curve Length (feet)
Beginning of Project	423+60.12	Crest	1.4 to -1.0	104.17	250
Approaching Bridge(s)	430+72.67	Sag	-1.0 to 5.0	75	450
Bridges over SFRC and SR 9/I-95	10+96.75	Crest	5.0 to -4.0	77.78	700
Departing Bridges	22+19.83	Sag	-4.0 to 2.0	150	900
NW 3rd Street	27+84.77	Crest	2.0 to -2.5	44.44	200
NW 2nd Street	31+38.77	Sag	-2.5 to 3.5	58.33	350
East of NW 2nd Street	34+54.23	Crest	3.5 to -2.5	41.67	250

PVI = Point of Vertical Intersection
K = constant

Table 7. Existing Vertical Alignment – Gateway Boulevard

Location	PVI Station	Type of Curve	Grade Differential (%)	K Value	Curve Length (feet)
Approaching Bridge(s)	102+37.63	Sag	0.59 to 3.97	115	389
Bridges over SFRC and SR 9/I-95	114+24.01	Crest	3.97 to -5.85	98	962
Departing Bridges	122+92.87	Sag	5.82 to 0.23	37	225
NW 1st Street to Seacrest Blvd	122+92.87	Sag	-5.85 to 0.23	37	225

PVI = Point of Vertical Intersection
K = constant

2.6 Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities exist within the project area. Along SR 804/Boynton Beach Boulevard, buffered bicycle lanes and sidewalks are located on the north and south side of the roadway and extend within the project limits from Seacrest Boulevard east to Industrial Avenue.

Along Gateway Boulevard, sidewalks are located on the north and south side of the roadway and extend within the project limits from Seacrest Boulevard east to High Ridge Road. Bicycle facilities are not provided for within the project area.

2.7 Lighting

Existing lighting within the project area includes conventional pole lighting along the north and south side of SR 804/Boynton Beach Boulevard extending from Seacrest Boulevard west to Industrial Avenue. Conventional pole lighting is located along the outside shoulder of the on- and off-ramps from SR 9/I-95. Roadway lighting within the limited access ROW and along SR 804/Boynton Beach Boulevard is maintained by FDOT.

Conventional pole lighting exists along the north and south sides of Gateway Boulevard from east of Seacrest Boulevard to west of High Ridge Road. The lighting along the on- and off-ramps from SR 9/I-95 are conventional pole lighting behind barrier wall and/or shoulder. Roadway lighting is maintained by FDOT within the limited access ROW and along Gateway Boulevard by City of Boynton Beach.

2.8 Railroads

The Seaboard Air Line Railroad (SALR) runs north to south through the project area and is located immediately adjacent to and on the west side of SR-9/I-95. Both SR 804/Boynton Beach Boulevard (Bridge # 930289) and Gateway Boulevard (Bridge # 930433) cross over the railroad. The length of the railroad extends to the north and south beyond the project area boundaries and the ROW is approximately 100 feet in width.

The FDOT purchased the 67-mile SFRC that extends from West Palm Beach Station in Palm Beach County to the Hialeah Market Station in Miami-Dade County from CSX Railroad in 1988. The South Florida Regional Transportation Authority (SFRTA) was created in 2003. SFRTA, with cooperation from its transportation partners, coordinates, develops, and implements a viable regional transportation system in South Florida. The Tri-Rail Coastal Link operates a regional passenger rail service with one station located within the project area just north of Gateway Boulevard between Industrial Avenue and SR-9/I-95.

2.9 Structures

There are two existing bridge structures within the SR 804/Boynton Beach Boulevard project area and three bridge structures within the Gateway Boulevard project area. The existing bridge detail characteristics for each project area are described in the following sections and presented in **Tables 8** and **9**.

2.9.1 SR 804/Boynton Beach Boulevard

The existing SR 804/Boynton Beach Boulevard bridge crossing over the SFRC (Bridge # 930289), is a pre-stressed concrete bridge constructed in 1976. The bridge is comprised of three spans and is 231 feet 8 inches long by 106 feet 10 inches wide. The bridge currently accommodates two through lanes, one left-turn and one right-turn lane, and a 7-foot shoulder on the south side of the roadway. Three through lanes and an 8-foot shoulder are provided in the westbound direction. The minimum vertical clearance is 22 feet 11 inches.

The existing SR 804/Boynton Beach Boulevard bridge crossing over SR 9/I-95 (Bridge # 930285), is a pre-stressed concrete bridge constructed in 1976. The bridge is comprised of four spans and is 275 feet 8 inches long by 95 feet 10

inches wide. The bridge currently accommodates two through lanes and one left-turn in the east and westbound directions. A 14-foot shoulder is provided on the south side of the roadway and 8-foot shoulder on the north. The minimum vertical clearance is 16 feet 3 inches.

2.9.2 Gateway Boulevard

The existing Gateway Boulevard bridge crossing over the SFRC (Bridge # 930433) is a pre-stressed concrete bridge constructed in 1992. The bridge is comprised of one span and is 127 feet 3 inches long by 152 feet 1 inch wide. The bridge currently accommodates two through lanes, one left-turn and one right-turn lane, and a shoulder in the eastbound direction. Three through lanes and shoulder are provided in the westbound direction. The minimum vertical clearance is 22 feet 11 inches.

The existing Gateway Boulevard bridge crossing over SR 9/I-95 (Bridge # 930434) is a pre-stressed concrete bridge constructed in 1992. The bridge is comprised of two spans and is 214 feet long by 128 feet 1 inch wide. The bridge currently accommodates two through lanes and two left-turn lanes in each direction. The minimum vertical clearance is 16 feet 41 inches.

The existing Gateway Boulevard northbound exit ramp bridge (Bridge # 930435) is a pre-stressed concrete bridge constructed in 1992. The bridge is comprised of eight spans and is 732 feet eleven inches long by 51 feet 1 inch wide. The bridge currently accommodates two left-turn lanes and one right-turn lanes in each direction.

Table 8. Existing Bridge Characteristics – SR 804/Boynton Beach Boulevard

Bridge Description			Geometrics			Structural				Alignment	Condition	
Bridge ID No	Location	Direction	Structure Length (feet)	Structure Width (feet)	Number of Lanes	No. of Spans	Maximum Span (feet)	Super-structure Type	Sub-structure Type	Vertical Clearance	Year Built/Modified	Sufficiency Rating
930285	Boynton Beach Blvd over I-95	East and West	275’ – 8”	95’ – 10”	Eastbound: 2 thru, 1 left-turn lane, 14’ shoulder on south side Westbound: 2 thru, 1 left-turn lane, 8’ shoulder	4	100’ – 3”	Prestressed concrete	Stringer/ Girder	16’ – 3”	Built 1976	77.6
930289	Boynton Beach Blvd over SFRC	East and West	231’ – 8”	106’ – 10”	Eastbound: 2 thru, 1 left- and 1 right-turn lane, 7’ shoulder on south side Westbound: 3 thru, 8’ shoulder	3	100’ – 0”	Prestressed concrete	Stringer/ Girder	22’ – 11”	Built 1976	92.3

Table 9. Existing Bridge Characteristics – Gateway Boulevard

Bridge Description			Geometrics			Structural				Alignment	Condition	
Bridge ID No	Location	Direction	Structure Length (feet)	Structure Width (feet)	Number of Lanes	No. of Spans	Maximum Span (feet)	Super-structure Type	Sub-structure Type	Vertical Clearance	Year Built/Modified	Sufficiency Rating
930434	Gateway Blvd over I-95	East and West	214’ – 0”	128’ – 1”	Eastbound: 2 thru, 2 left-turn lanes Westbound: 2 thru, 2 left-turn lanes	2	108’ – 10”	Prestressed concrete	Stringer/ Girder	16’ – 5”	Built 1992	90.7
930435	Gateway Blvd over I-95 Northbound Exit Ramp	North	732’ – 11”	51’ – 1”	Northbound Exit Ramp: 2 left- and 1 right-turn lane	8	93’ – 4”	Prestressed concrete	Stringer/ Girder	N/A	Built 1992	99.3
930433	Gateway Blvd over SFRC	East and West	127’ – 3”	152 -’ 1”	Eastbound: 4 thru, 1 right turn lane Westbound: 3 thru lanes	1	127’ – 3”	Prestressed concrete	Stringer/ Girder	22’ – 6”	Built 1992	91.4

2.10 Soils

An inventory of the existing soils near the SR 9/I-95 at SR 804/Boynton Beach Boulevard and SR 9/I-95 at Gateway Boulevard interchanges was obtained from the U.S. Department of Agriculture (USDA), Soil Survey of Palm Beach County Area, Florida (1978). The primary soil types within the project area include St. Lucie-Paola-Urban land (No. 41), Basinger fine sand (No. 6), Immokalee fine sand (No. 18) and Pomello fine sand (No. 33) and are presented in **Table 10** and shown in **Figure 5**. Additional soil information and a preliminary geotechnical engineering review is included a Geotechnical Technical Memorandum (2015, Tierra South Florida) included in **Appendix C**.

Table 10. Existing Drainage Basins – SR 804/Boynton Beach Boulevard

Soil Type	Hydric	Slope	Drainage Class	Acreage
Basinger Fine Sand	Yes	---	Poorly Drained	33.77
Immokalee Fine Sand	No	---	Poorly Drained	0.78
Okeelanta Muck	Yes	---	Very Poorly Drained	3.11
Pomello Fine Sand	No	0 – 5 Percent Slopes	Moderately Well Drained	26.87
Quartzipsamments, Shaped	No	0 – 5 Percent Slopes	Well Drained	8.80
St. Lucie-Paola-Urban Land Complex	No	0 – 5 Percent Slopes	Excessively Drained	318.84
Urban Land	No	---	---	17.76

Source: NRCS, 2012

2.11 Drainage

The project area is located within the South Florida Water Management District (SFWMD) and the Lake Worth Drainage District (LWDD) C-16 Basin. The C-16 Basin drainage is comprised of a canal system with the C-16 canal located between SR 804/Boynton Beach Boulevard and Gateway Boulevard. The C-16 canal receives water from the C. Stanley Weaver Canal and Equalizing Canal Number 4 (E-4) and discharges to the Intracoastal Waterway to the east of the project area.

Tables 11 and **12** present the existing drainage basins for the SR 804/Boynton Beach Boulevard and Gateway Boulevard interchanges at SR 9/I-95.

Table 11. Existing Drainage Basins – SR 804/Boynton Beach Boulevard

Basin	From Station	To Station	Length (Feet)	Outfall Location
1	421+50.00	11+50.00	1,800	Basin 1 extends from Old Boynton Road approximately 1,800 feet to the high point of the existing I-95 bridge at station 11+50.00. Runoff is currently collected via pipes on the north of westbound lane and routed to canal E-4 (Lake Ida Canal) untreated.
2	11+50.00	43+00.00	3,150	Basin 2 extends from the high point of the existing I-95 bridge at station 11+50.00 approximately 3,150 feet to Seacrest Boulevard at station 43+00.00. Runoff is currently collected via pipes on the south side of the eastbound lane and routed to the Intracoastal Waterway untreated.

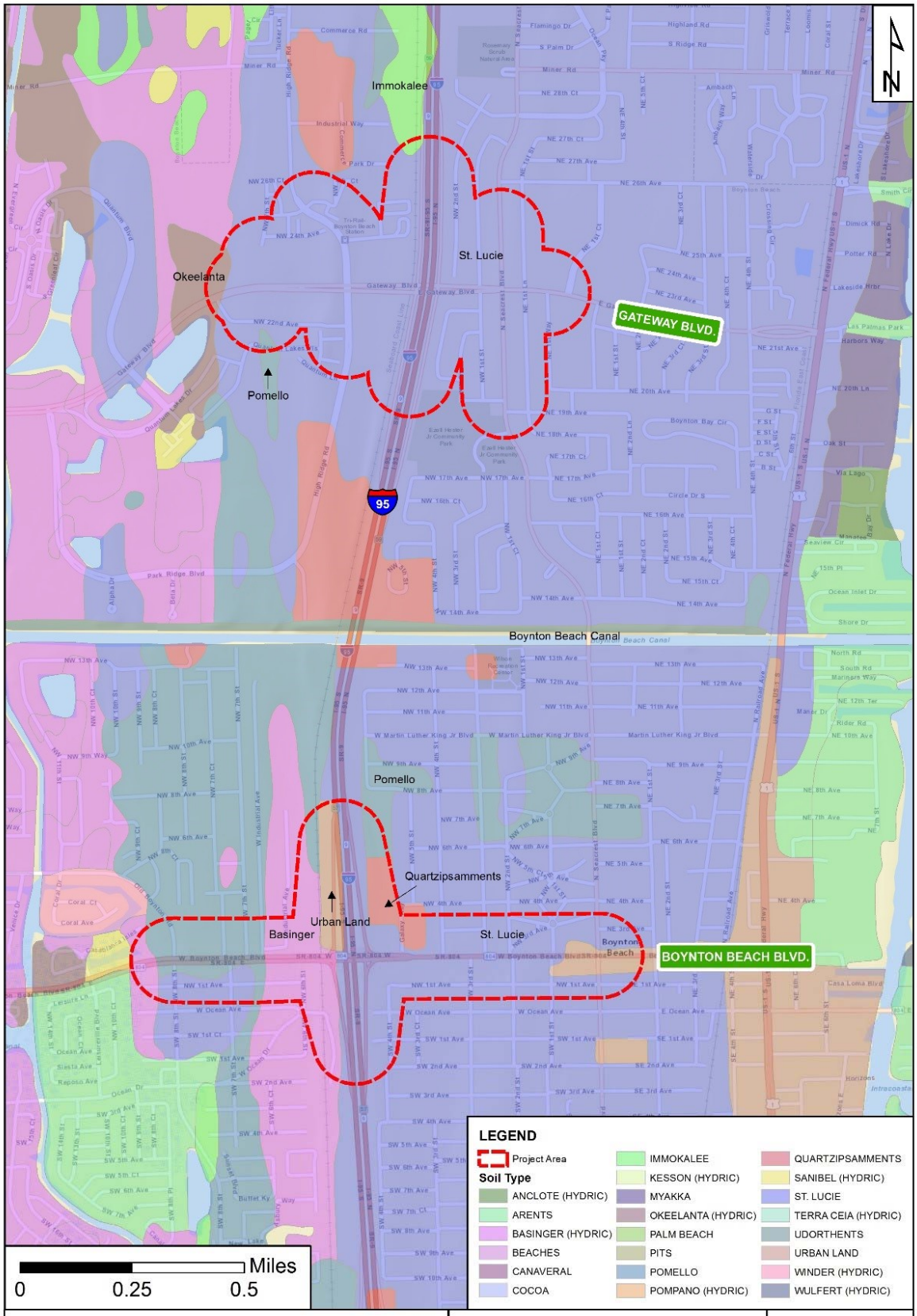
Basin	From Station	To Station	Length (Feet)	Outfall Location
3 (I-95 Ramps)	776+50.00	811+20.00	3,470	• I-95 Southbound On-ramp: Runoff on this ramp is currently treated in roadside swales and outfalls to the west of I-95 via a 48" diameter pipe at station 772+70.00 Left and ultimately discharges to canal E-4 (Lake Ida Canal). • I-95 Southbound Off-ramp: Runoff on this ramp is currently treated in roadside swales and ultimately outfalls to canal C-16. • I-95 Northbound On-ramp: Runoff on this ramp is currently treated in roadside swales and ultimately outfalls to canal C-16. • I-95 Northbound Off-ramp: Runoff on this ramp is currently treated in French drains. Discharge from the French drains is collected via a 30" diameter pipe located at sta. 773+70.00 and outfalls to the west via a 48" diameter pipe at sta. 772+70.00 Lt and ultimately discharges to canal E-4 (Lake Ida Canal).

Table 12. Existing Drainage Basins – Gateway Boulevard

Basin	Begin Station	End Station	Length (Feet)	Outfall Location
4	90+00.00	114+00.00	2,400	Basin 4 extends from approximately 2,400 feet west of High Ridge Road to the high point of the existing I-95 bridge located at station 114+00.00. Runoff is currently collected via pipes located on the south side of the westbound lane and routed to ponds at Quantum Boulevard.
5	114+00.00	135+50.00	2,150	Basin 5 extends from the high point of the existing I-95 bridge at station 114+00.00 to approximately 2,150 east of the bridge to NE 1st Court at station 135+50.00. Runoff is currently collected via pipes on the south side of the eastbound lanes and routed to Intracoastal waterway untreated.
6 (I-95 Ramps)	857+50.00	874+50.00	1,700	• I-95 Southbound On-ramp: Runoff on this ramp is currently collected via pipes and ultimately outfalls to canal C-16 to the south untreated. • I-95 Southbound Off-ramp: Runoff on this ramp is currently collected via pipes and ultimately outfalls to canal C-16 to the south untreated. • I-95 Northbound On-ramp: Runoff on this ramp is currently collected via pipes and ultimately outfalls to canal C-16 to the south untreated. • I-95 Northbound Off-ramp: Runoff on this ramp is currently collected via pipes and ultimately outfalls to canal C-16 to the south untreated.

2.12 Existing Cross Drains

Preliminary surveys and field reviews show that there are no existing cross drains in the project corridor.



PD&E Study
SR 9/I-95 at SR-804/Boynton Beach Boulevard Interchange
SR 9/I-95 at Gateway Boulevard Interchange
FPID Nos.: 435804-1-22-01; 231932-1-22-01
ETDM Nos.: 14180 and 14181

SOILS MAP
Source: NRCS, 2012

Figure 5

2.13 Utilities

Existing utilities within the project area are described in **Table 13** and include overhead power lines, underground fiber optic, cable, water distribution, sanitary sewer, and gas distribution. It is anticipated based on location and depth, utility relocations may be required.

Table 13. Summary of Utilities

UTILITY DESCRIPTION	
Interchange Location	
SR 9/I-95 at SR 804/Boynton Beach Boulevard	**SR 9/I-95 at Gateway Boulevard**
American Traffic Solutions	American Traffic Solutions
MCI	MCI
FLA Public Utilities	FLA Public Utilities
FPL Fibernet, LLC	FPL Fibernet, LLC
Florida Power & Light	Florida Power & Light
AT&T	AT&T
Comcast Boca Delray	Comcast Boca Delray
Hotwire Communications	Hotwire Communications
City of Boynton Beach	City of Boynton Beach
Palm Beach County Traffic Operations	Palm Beach County Traffic Operations
Florida Department of Transportation	Florida Department of Transportation
	Quantum Park Property Owner's Association

2.14 System Interchange Modification Report

FDOT completed an Interchange Master Plan (IMP) for interchanges along SR 9/I-95 in Palm Beach County in October 2015. The IMP identified short-term and long-term needs and developed design concepts to address traffic spillback onto SR 9/I-95 mainline, improve interchange operations, reduce congestion, and increase safety near the interchanges at 17 interchanges within Palm Beach County for the Design Year (2040). The interchanges at SR 804/Boynton Beach Boulevard and Gateway Boulevard were a part of this study. The study also considered SIS connector improvements needed within the project area and is consistent with plans for the SR 9/I-95 mainline, including the potential extension of SR 9/I-95 express lanes through Palm Beach County.

Two previous Interchange Access Requests (IAR) were approved by the FHWA within the area of influence for this project. An Interchange Operational Analysis Report (IOAR) was completed and approved in March 2013 for SR 9/I-95 at the Woolbright Road interchange and in March 2011 for SR 9/I-95 at Hypoluxo Road interchange. A Non-IAR was completed and approved by FDOT in May 2014 for interim improvements near the SR 9/I-95 at Gateway Boulevard interchange. These interim improvements will be a part of the **No Build** conditions for this PD&E Study.

The purpose of the System Interchange Modification Report (SIMR) completed for this PD&E Study is to request engineering and operational acceptability of the modifications proposed to SR 9/I-95 to address the Design Year (2040) needs at the two study interchanges. The SIMR has been prepared in accordance with FDOT Policy No. 000-525-015, FDOT Procedure No. 525-030-160, and the FDOT Traffic Forecasting Handbook (Procedure No. 525-030-120).

2.15 Traffic Data

The information presented in this section is a summary of the Traffic Forecasting Technical Memorandum (**Appendix D**). Traffic data was collected to evaluate the 2015 existing conditions and to provide a basis for future traffic analysis. The traffic counts were performed during typical weekdays (Tuesday through Thursday) from February 2015 to May 2015 at arterials, interchange ramps and freeway segments within the project study limits. For each intersection, the traffic data collection effort consisted of 72-hour approach/departure machine counts for all approaches and 6-hour intersection Turning Movement Counts (TMCs) (including Right-Turn-On-Red volumes) on three consecutive days. The 6-hour TMCs were performed during the AM peak period (3 hours, from 6:00 AM to 9:00 AM) and the PM peak period (3 hours, from 4:00 PM to 7:00PM). Based on the traffic volumes on major crossing facilities, 7:30 AM to 8:30 AM and 5:00 PM to 6:00 PM were recommended as AM and PM peak hour for all study intersections.

The approved Traffic Forecasting Technical Memorandum that summarizes the Existing Year 2015 and future demand traffic projection for the PD&E Study is provided in **Appendix D**.

2.16 Operational Analysis

The Existing Year (2015) level of service conditions were evaluated for the road segments and intersections within the PD&E Study area. Traffic operational analysis were based on the network lane configurations and traffic volumes presented in the SIMR. LOS calculations for freeway segments (basic freeway, merge, and diverge areas) and analyses of freeway weaving segments were performed using the Highway Capacity Software (HCS). Synchro 9 models were developed for computing the LOS of ramp terminal intersections and other intersections within the study area. Signal timings were developed based on data gathered from Palm Beach County, Traffic Engineering Division. The findings of the intersection analysis are included in the Traffic Forecasting Technical Memorandum (**Appendix D**) and SIMR. The SIMR is on file with the District Four PLEM office.

2.17 Design Traffic Volume

2.17.1 Traffic Factors and Characteristics

The design traffic factors agreed upon through the Methodology Letter of Understanding (MLOU) process for use in this PD&E study are summarized in **Table 14**. The T factor is a percentage of heavy vehicles during a 24-hour period. The factor T_f is the percentage of heavy vehicles during the peak hours. The truck factor (T-factor) was calculated from the recent five-year average of the T-factor from the FDOT Traffic Online historical count data. The peak hour factors from the turning movement and tube counts will be utilized for operational analysis for locations with available data. A minimum peak hour factor of 0.95 will be applied for locations without detailed traffic volume information, which is reflective of the expected conditions with the high overall level of travel demand in the area of influence.

Table 14. Traffic Factors and Characteristics for Boynton Beach and Gateway Boulevards

Roadway	K(1)	D(2)	T_{24}(1)	T_f(1)
SR 9/I-95	8.0%	59.0% (AM-SB/PM-NB)	7.0%	3.5%
SR 804/Boynton Beach Boulevard (West of I-95)	9.0%	58.0% (AM-EB/PM-WB)	3.6%	1.8%
SR 804/Boynton Beach Boulevard (East of I-95)		53.6% (AM-EB/PM-WB)	3.9%	2.0%
Gateway Boulevard (West of I-95)	9.0%	56.5% (AM-EB/PM-WB)	5.1%	2.5%
Gateway Boulevard (East of I-95)		60.3% (AM-WB/PM-EB)	4.4%	2.2%
Woolbright Road (West of I-95)	9.0%	52.1% (AM-EB/PM-WB)	3.5%	1.8%
Woolbright Road (East of I-95)		53.4% (AM-WB/PM-EB)	3.1%	1.6%
Hypoluxo Road (West of I-95)	9.0%	63.4% (AM-EB/PM-WB)	3.9%	2.0%
Hypoluxo Rd (East of I-95)		56.1% (AM-WB/PM-EB)	5.0%	2.5%
Other Cross Streets (West of I-95)	9.0%	60.9%	6.1%	3.1%
Other Cross Streets (East of I-95)		58.2%	3.6%	1.8%

Source: (1) FDOT Traffic Online, Year 2014 Traffic Factors;
(2) Existing Year 2015 Traffic Data

2.17.2 Level of Service Analysis

Future conditions operational analyses were performed for the **No Build Alternative** based on traffic forecasts and network conditions with the planned/programmed projects listed above for the years 2020, 2030 and 2040. LOS calculations for freeway segments (basic, merge and diverge areas) and analyses of freeway weaving segments were performed using the HCS. Synchro 9 models were developed for computing the LOS of ramp terminal intersections and other intersections within the PD&E Study area.

Future conditions operational analyses were performed for the TSM&O Alternative based on traffic forecasts and network conditions expected in years 2020, 2030 and 2040. LOS calculations for freeway segments (basic, merge and diverge areas) and analyses of freeway weaving segments were performed using the HCS. Synchro 9 models were developed for computing the LOS of ramp terminal intersections and other intersections within the PD&E Study area.

Future conditions operational analyses were performed for three Build Alternatives based on traffic forecasts and network conditions expected in years 2020, 2030, and 2040. LOS calculations for freeway segments (basic, merge, and diverge areas) and analyses of freeway weaving segments were performed using HCS. Synchro 9 models were developed for computing the LOS of ramp terminal intersections and other intersections within the PD&E Study area.

No Build and **TSM&O Alternative** operational analyses LOS calculations were completed years 2020, 2030, and 2040. A more detailed discussion of the operational analyses and output reports are provided in the SIMR on file with the District 4 PLEM office.

2.18 Crash Data and Safety Analysis

Vehicular crash data along SR 804/Boynton Beach Boulevard and SR 9/I-95 was obtained from the FDOT Crash Analysis Reporting System (CARS). CARS is a database maintained annually by FDOT for crashes reported along state highway facilities. The database provides information on various characteristics associated with each crash including: collision type, severity, weather conditions, road surface conditions and date/time information. Crash data along Gateway Boulevard was obtained from the University of Florida's Signal Four Analytics system and the Palm Beach County Sherriff's Office as Gateway Boulevard is a non-state roadway. Data from the latest available five years (2010 to 2014) was downloaded. The crashes were analyzed to make an assessment of safety conditions along SR 9/I-95 and arterial roadways within the project limits and study interchanges.

A detailed safety analysis was prepared for this PD&E Study as part of the SIMR. Crash data analysis was performed for the following sections:

1. SR 9/I-95 at SR 804/Boynton Beach Boulevard
2. SR 9/I-95 at Gateway Boulevard
3. SR 804/Boynton Beach Boulevard
4. Gateway Boulevard

Tables 15 and **16** present the crash summaries for SR 9/I-95 at SR 804/Boynton Beach Boulevard and at Gateway Boulevard for the 2010 to 2014 period.

Table 15. SR 9/I-95 at SR 804/Boynton Beach Boulevard Crash Summary (2010 to 2014)

Crash Type	Number of Crashes					5-Year Total Crashes	Percent of Total	Mean Crashes Per Year
	Year							
	2010	2011	2012	2013	2014			
Rear-End	**24**	**22**	**16**	**31**	**33**	**126**	**35.0%**	**25.2**
Head On	0	0	0	0	0	0	0.0%	0.0
Angle	0	2	0	0	0	2	0.6%	0.4
Left Turn	0	0	0	0	0	0	0.0%	0.0
Right Turn	0	0	0	0	0	0	0.0%	0.0
Sideswipe	**21**	**11**	**11**	**18**	**13**	**74**	**20.6%**	**14.8**
Backed Into	0	0	0	0	0	0	0.0%	0.0
Collision with Parked Car	0	0	1	1	0	2	0.6%	0.4
Collision with Pedestrian	0	0	0	0	0	0	0.0%	0.0
Collision with Bicycle	0	0	0	0	0	0	0.0%	0.0
Fixed Object	**12**	**10**	**16**	**11**	**8**	**57**	**15.8%**	**11.4**
Ran off Road	1	0	0	0	0	1	0.3%	0.2
Overturned	4	2	3	1	0	10	2.8%	2.0
Other	11	18	11	19	29	88	24.4%	17.6
TOTAL CRASHES	73	65	58	81	83	360	100.0%	72.0

Table 16. SR 9/I-95 at Gateway Boulevard Crash Summary (2010 to 2014)

Crash Type	Number of Crashes					5-Year Total Crashes	Percent of Total	Mean Crashes Per Year
	Year							
	2010	2011	2012	2013	2014			
Rear-End	**32**	**34**	**33**	**37**	**40**	**176**	**43.3%**	**35.2**
Head On	1	0	0	0	2	3	0.7%	0.6
Angle	0	0	0	0	1	1	0.2%	0.2
Left Turn	1	0	0	0	0	1	0.2%	0.2
Right Turn	0	0	0	0	0	0	0.0%	0.0
Sideswipe	**31**	**7**	**12**	**19**	**13**	**82**	**20.2%**	**16.4**
Backed Into	0	1	0	0	0	1	0.2%	0.2
Collision with Parked Car	0	1	0	0	1	2	0.5%	0.4
Collision with Pedestrian	0	0	0	1	0	1	0.2%	0.2
Collision with Bicycle	0	0	0	0	0	0	0.0%	0.0
Fixed Object	**8**	**13**	**9**	**8**	**9**	**47**	**11.6%**	**9.4**
Ran off Road	1	0	0	0	0	1	0.2%	0.2
Overturned	0	3	0	1	4	8	2.0%	1.6
Other	6	19	13	25	20	83	20.4%	16.6
TOTAL CRASHES	80	78	67	91	90	406	100.0%	81.2

Tables 17 and **18** present the crash summaries for SR 804/Boynton Beach Boulevard and Gateway Boulevard for the 2010 to 2014 period.

Table 17. SR 804/Boynton Beach Boulevard Crash Summary (2010 to 2014)

Crash Type	Number of Crashes					5-Year Total Crashes	Percent of Total	Mean Crashes Per Year
	Year							
	2010	2011	2012	2013	2014			
Rear-End	**16**	**17**	**17**	**20**	**32**	**102**	**41.0%**	**20.4**
Head On	3	0	1	4	1	9	3.6%	1.8
Angle	**8**	**7**	**5**	**18**	**16**	**54**	**21.7%**	**10.8**
Left Turn	7	1	1	0	1	10	4.0%	2.0
Right Turn	1	2	2	0	1	6	2.4%	1.2
Sideswipe	2	0	0	0	0	2	0.8%	0.4
Backed Into	2	1	0	0	1	4	1.6%	0.8
Collision with Parked Car	1	1	0	0	0	2	0.8%	0.4
Collision with Pedestrian	2	1	0	1	2	6	2.4%	1.2
Collision with Bicycle	1	1	0	0	0	2	0.8%	0.4
Fixed Object	0	3	1	3	3	10	4.0%	2.0
Ran off Road	0	0	0	0	0	0	0.0%	0.0
Overturned	0	1	0	0	0	1	0.4%	0.2
Other	**3**	**7**	**6**	**14**	**11**	**41**	**16.5%**	**8.2**
Total Crashes	**46**	**42**	**33**	**60**	**68**	**249**	**100.0%**	**49.8**

Table 18. Gateway Boulevard Crash Summary (2010 to 2014)

Crash Type	Number of Crashes					5-Year Total Crashes	Percent of Total	Mean Crashes Per Year
	Year							
	2010	2011	2012	2013	2014			
Rear-End	**35**	**35**	**20**	**70**	**59**	**219**	**46.5%**	**43.8**
Head On	0	0	4	2	2	8	1.7%	1.6
Angle	8	5	11	10	9	43	9.1%	8.6
Left Turn	**23**	**13**	**9**	**15**	**14**	**74**	**15.7%**	**14.8**
Right Turn	1	1	0	2	0	4	0.8%	0.8
Sideswipe	7	7	3	14	11	42	8.9%	8.4
Backed Into	0	0	0	0	0	0	0.0%	0.0
Collision with Parked Car	0	0	0	0	0	0	0.0%	0.0
Collision with Pedestrian	0	0	2	1	3	6	1.3%	1.2
Collision with Bicycle	2	0	0	1	1	4	0.8%	0.8
Fixed Object	1	2	0	4	4	11	2.3%	2.2
Ran off Road	0	0	0	0	0	0	0.0%	0.0
Overturned	1	1	0	0	0	2	0.4%	0.4
Other	**5**	**5**	**7**	**28**	**13**	**58**	**12.3%**	**11.6**
Total Crashes	**83**	**69**	**56**	**147**	**116**	**471**	**100.0%**	**94.2**

2.19 Interchanges, Intersections, and Signalization

The existing diamond interchange at SR 9/I-95 and SR 804/Boynton Beach is a Tight Urban Diamond Interchange (TUDI) configuration and services SR 9/I-95 through two closely spaced signalized intersections at the crossing of the ramp terminals and side street. A key operational aspect of a TUDI configuration is signal coordination to ensure efficient progression of traffic and minimum storage of vehicles between the terminals. Adjacent intersections to the TUDI configuration at SR 9/I-95 and SR 804/Boynton Beach Boulevard include three signalized intersections at SR 804/Boynton Beach Boulevard and Old Boynton Road, Industrial Avenue, and Seacrest Boulevard. There are several left turn lane accesses to businesses located along SR 804/Boynton Beach Boulevard within the project limits. A two-way left turn lane is present east of SR 9/I-95 from NW 2nd Street to Seacrest Boulevard.

The existing interchange at SR 9/I-95 and Gateway Boulevard is a TUDI configuration and services SR 9/I-95 through two closely spaced signalized intersections at the crossing of the ramp terminals and side street. Adjacent intersections to the TUDI configuration at SR 9/I-95 and Gateway Boulevard include three signalized intersections at Gateway Boulevard and Quantum Town Center, High Ridge Road, and Seacrest Boulevard. The intersection of Gateway Boulevard and NE 1st Lane, east of Gateway Seacrest Boulevard, is an unsignalized intersection controlled by stop signs at the cross street approaches.

The location, geometry, and intersection signal control timing and phasing information for the PD&E Study area is included in the Traffic Forecasting Technical Memorandum (**Appendix D**) and the SIMR. The SIMR is on file with the District Four PLEM office.

2.20 Transit Operations

Palm Tran operates one fixed route (Route 73) with three curbside bus stops on the north and south sides of SR 804/Boynton Beach Boulevard within the project area. One fixed route (Route 70) with one curbside bus stop east of SR 9/I-95 is operated on Gateway Boulevard ending at the Tri-Rail Station. Route 70 also travels Seacrest Boulevard from Lantana Road to Delray Beach.

No transit services are currently provided along SR 9/I-95 throughout the project limits. It is anticipated that implementation of the potential SR 9/I-95 Express Lanes project will facilitate operation of new express bus services along SR 9/I-95 similar to the current SR 9/I-95 Express bus services in Miami-Dade and Broward Counties.

The Build Alternative for this project will include bicycle lanes and sidewalks that will connect to existing facilities to the east and west of the project limits. The transit routes within the study area will not be affected by the Build Alternative. Alternative travel modes are not anticipated to reduce the future demand near this interchange.

2.21 Bicycle / Pedestrian Facilities

Bicycle and pedestrian improvements for the PD&E Study area have been evaluated in accordance with the FDOT Complete Streets Policy (Sept 2014) which recommends that appropriate pedestrian facilities be determined by the context of the roadway.

Existing 6-foot wide concrete sidewalks are located on the north and south sides of SR 804/Boynton Beach Boulevard. A 4-foot bicycle lane is located on the north and south sides of SR 804/Boynton Beach Boulevard from Seacrest Boulevard west over the I-95 and SFRC railroad bridges. No bicycle lane exists on the north side of SR 804/Boynton Beach Boulevard west to 7th Court. A bicycle lane is located on the south side to Old Boynton Road.

Galaxy Elementary school is located on the north side of SR 804/Boynton Beach Boulevard immediately east of I-95. School bus drop-off and pick-up is from NW 4th Avenue at the northwest side of the school. The surrounding areas north and south of SR 804/Boynton Beach Boulevard are predominantly residential.

Proposed improvements include a 6-foot sidewalk and 7-foot buffered bicycle lanes on the north and south side of SR 804/Boynton Beach Boulevard.

Along Gateway Boulevard, existing 6-foot concrete sidewalks are located on the north and south side of the roadway and extend within the project limits from Seacrest Boulevard east to High Ridge Road. Bicycle facilities are not provided for within the project area. The surrounding areas north and south of Gateway Boulevard include residential, commercial, light industrial, and transit.

Proposed improvements include a 6-foot sidewalk and 7-foot buffered bicycle lanes on the north and south side of Gateway Boulevard.

3. Project Design Standards

3.1 Design Criteria

The design criteria for this project presented in **Tables 19** and **20** are based on design parameters outlined in the Roadway Plans Preparation Manual, Volume I and II (FDOT, January 2016), the Manual of Uniform Minimum

Standards for Design, Construction and Maintenance for Streets and Highways (FDOT), and A Policy on Geometric Design of Highway and Streets (AASHTO, 2011).

Table 19. Roadway Design Standards – SR 804/Boynton Beach Boulevard

DESIGN ELEMENT	DESIGN VALUE	SOURCE
Facility Type	MP 7.822 - 8.172: Urban Principal Arterial	FDOT
	MP 8.172 - 8.769: Urban Minor Arterial	FDOT
Access Management Classification	Access Class 5	FDOT
Design Speed	45 mph	FDOT
Posted Speed	40 mph	FDOT
Sidewalks	6’ adjacent to curb	FDOT
Bicycle Lanes	2' buffer, 5' lane	FDOT
Queue Length	50' minimum	FDOT
Turn Lane Length	185'	Design Standards 301
Lane Widths	11'	PPM, Table 2.1.1
Median Width	22'	PPM, Table 2.2.1
Pavement Cross Slopes	Travel Lanes - 0.02 – 0.03 ft/ft	PPM, Figure 2.1.1
Border Width	14' (12' with Bike or Auxiliary Lane)	PPM, Table 2.5.2
Clear Zone	4'	
Superelevation	e max = 0.05 ft/ft	PPM, Table 2.9.2
Transition Ratio Distribution	1:200 80/20 (not less than 50/50)	PPM, Table 2.9.3 Design Standards 511
Horizontal Curves Max. Curvature w/0.10 Superelevation Max. Curvature w/o Superelevation Length of curve	 8° 15' (R=694') 2° 45' (R=2,083') 15V = 675' desired (400' minimum)	 PPM, Table 2.8.3 PPM, Table 2.8.4 PPM, Table 2.8.2a
Max. Deflection without Horizontal Curve	1° 00' 00" (w curb & gutter)	PPM, Table 2.8.1a
Grades	8% maximum 0.30% minimum	PPM, Table 2.6.1 PPM, Table 2.6.4
Max. Change in Grade w/o VC	0.70%	PPM, Table 2.6.2
Stopping Sight Distance	360' (grades 2% or less)	PPM, Table 2.7.1
Roadway Base Clearance Above ESHWL	1'	PPM, Table 2.6.3
Distance between VPI's	250' minimum	PPM, Table 2.6.4
Crest Vertical Curve	K = 98 Minimum L = 135 (L=3 * 45 mph)	PPM, Table 2.8.5
Sag Vertical Curve	K = 79 Minimum L = 135 (L=3 * 45 mph)	PPM, Table 2.8.6

e = superelevation, ft. = foot or feet, K = constant, L= length, MP = Milepost, mph = miles per hour, R = radius, VC = design speed, E. = East, W. = West
PPM = Plans Preparation Manual (FDOT)

Table 20. Roadway Design Standards – Gateway Boulevard

DESIGN ELEMENT	DESIGN VALUE	SOURCE
Facility Type	W. of I-95: Urban Minor Arterial	FDOT
	E. of I-95: Urban Major Collector	FDOT
Access Management Classification	Access Class 3	FDOT
Design Speed	50 mph W. of I-95; 40 mph E. of I-95	FDOT
Posted Speed	45 mph W. of I-95; 30 mph E. of I-95	FDOT

DESIGN ELEMENT	DESIGN VALUE	SOURCE
Sidewalks	6' adjacent to curb	FDOT
Bicycle Lanes	2' buffer, 5' lane	FDOT
Queue Length	50' minimum	FDOT
Turn Lane Length	185'	Design Standards 301
Lane Widths	11'	PPM, Table 2.1.1
Median Width	22' (≤ 45 mph Design Speed) 40' (> 45 mph Design Speed)	PPM, Table 2.2.1
Pavement Cross Slopes	Travel Lanes - 0.02 ft/ft to 0.03 ft/ft	PPM, Figure 2.1.1
Border Width	14' (12' w/ Bike or Auxiliary Lane)	PPM, Table 2.5.2
Clear Zone	4'	
Superelevation	e max = 0.05 ft/ft	PPM, Table 2.9.2
Transition Ratio Distribution	1:200 80/20 (not less than 50/50)	PPM, Table 2.9.3 Design Standards 511
Horizontal Curves Max. Curvature w/0.05 Superelevation Max. Curvature w/o Superelevation	 6° 30' (R=882') Design Speed = 50 mph 10° 45' (R=533') Design Speed = 40 mph 2° 00' (R=2,865) Design Speed = 50 mph 3° 45' (R=1,528) Design Speed = 40 mph 15V = desired (400' minimum)	PPM, Table 2.8.3 PPM, Table 2.8.4 PPM, Table 2.8.2a
Max. Deflection without Horizontal Curve	1° 00' 00" (with curb & gutter) (≥45 mph) 2° 00' 00" (with curb & gutter) (≤40 mph)	PPM, Table 2.8.1a
Grades	6% maximum W. of I-95 9% maximum E. of I-95 0.30% minimum	PPM, Table 2.8.1a PPM, Table 2.6.1 PPM, Table 2.6.4
Max. Change in Grade w/o VC	0.6% (Design Speed = 50 mph) 0.8% (Design Speed = 40 mph)	PPM, Table 2.6.2
Stopping Sight Distance	425' (Design Speed = 50 mph) 305' (Design Speed = 40 mph) (grades 2% or less)	PPM, Table 2.7.1
Roadway Base Clearance Above ESHWL	1'	PPM, Table 2.6.3
Distance between VPI's	250' minimum	PPM, Table 2.6.4
Crest Vertical Curve	K = 70 (Design Speed = 40 mph) K = 136 (Design Speed = 50 mph) Minimum L = 3 * Design Speed	PPM, Table 2.8.5
Sag Vertical Curve	K = 64 (Design Speed = 40 mph) K = 96 (Design Speed = 50 mph) Minimum L = 3 * Design Speed	PPM, Table 2.8.6

e = superelevation, ft. = foot or feet, K = constant, L= length, mph = miles per hour, R = radius, VC = design speed
E. = East, W. = West
PPM = Plans Preparation Manual (FDOT)

4. Alternatives Analysis

NEPA project development must consider a range of alternatives that meet the purpose and need of the project while balancing engineering requirements, impacts, and benefits. Project alternatives include the No-Build, Transportation Systems Management & Operations, and Build Alternatives.

FDOT is committed to the practicable avoidance and minimization of potential impacts to the social and natural environment when considering approval of proposed transportation projects. The study of alternatives and the associated environmental consequences were evaluated according to NEPA and FDOT's PD&E process. This study

process allows for coordination during the alternatives development process and thorough consideration of alternatives developed.

4.1 No-Build Alternative

NEPA requires that doing nothing to existing conditions be considered during the environmental review process. This alternative is designated as the No-Build Alternative, signifying that no new improvements or construction would take place. Although this alternative does not meet the purpose and need for the project, it will be considered serving as a baseline for comparison against other alternatives. The No-Build Alternative retains the existing roadway and interchange improvements and would not have any direct impacts to the physical, natural, and social environments, right-of-way, structures, or utilities.

4.2 Transportation System Management and Operations (TSM&O) Alternative

The TSM&O Alternative includes implementation of non-capacity improvements to the existing transportation network that improve traffic flow, manage congestion, and maximize highway operations. Intelligent transportation systems (ITS), multimodal applications, adjusting signal phasing and timing, auxiliary lane additions, and higher land-use density strategies are TSM&O instruments used to maximize transportation infrastructure utilization. Such improvements are often less costly and require little to no right-of-way compared to physical expansion of the transportation network.

TSM&O improvements alone would not adequately accommodate the future year traffic volumes within the project's area of influence. The TSM&O Alternative alone is not considered a viable alternative, however, the build alternatives developed will incorporate viable TSM&O improvements.

4.3 Alternative Travel Modes

Multimodal facilities such as transit routes currently exist within the proposed project limits. The existing modes are incorporated into the build alternatives with current design standards. The Build Alternative for this project will include bicycle lanes and sidewalks that will connect to existing facilities to the east and west of the project limits. The transit routes within the study area will not be affected by the Build Alternative. Alternative travel modes are not anticipated to reduce the future demand near this interchange.

4.4 Alternatives Development

As part of the PD&E Study, several roadway improvement alternatives were considered for improving traffic operations and safety near the SR 804/Boynton Beach Boulevard and Gateway Boulevard interchanges. The interchanges were initially evaluated in Concept Development Reports completed by the FDOT through the I-95 Master Plan Project. The SR 9/I-95 Interchange at SR 804/Boynton Beach Boulevard, Palm Beach County, Interchange Concept Development Report (2014) and SR 9/I-95 Interchange at Gateway Boulevard, Palm Beach County, Interchange Concept Development Report (2014) developed and evaluated conceptual design alternatives for geometric criteria, impacts on structures, drainage, signing, and utilities, adjoining side street connections, signalized intersections, and constructability.

The recommended improvements contained in the interchange Concept Development Reports resulted in development of a Conceptual Design Alternative (CDA). The CDA has been retained and will be evaluated as a build alternative in this PD&E Study. A Tier 1 Alternatives Evaluation Technical Memorandum (March 2016) was prepared

that identified preliminary alternatives that improved traffic operations and safety. In addition to the CDA, eight (8) conceptual alternatives were developed for SR 804/Boynton Beach Boulevard and three (3) for Gateway Boulevard interchanges. A preliminary screening of each alternative was completed with respect to the purpose and need for the project, traffic operations, traffic safety, constructability, cost, right of way, environmental, and socio-economic impacts.

Of the preliminary alternatives developed, the following build alternatives were retained for full evaluation for each interchange. All Build Alternatives will incorporate TSM&O improvements and will be developed further as the project progresses.

- Alternative 1 - Conceptual Design Alternative (CDA)
- Alternative 2 - Streamlined CDA
- Alternative 3 - Single-point Urban Interchange (SPUI)

The Tier I Alternatives Evaluation Technical Memorandum is provided in **Appendix E**.

4.5 Build Alternatives

4.5.1 SR 9/I-95 at SR 804/Boynton Beach Boulevard Interchange

4.5.1.1 Alternative 1 – Concept Development Alternative

This build alternative was retained from the Concept Development Reports previously prepared and discussed in Section 3.4. The development of this alternative considered practical design and evaluated traditional turn lane improvements for the existing Tight Urban Diamond Interchange configuration to optimize the benefit to cost (B/C) ratio without imperiling traffic operations and safety.

For this alternative, proposed improvements are described below and shown in **Figure 6**.

1. A new westbound right turn lane to Industrial Avenue
2. Dual left and triple right turn lanes in the southbound direction at the I-95 southbound ramp terminal intersection
3. Continuously flowing channelized eastbound single right turn lane and dual westbound left turn lanes that create three SR 9/I-95 southbound on-ramp lanes. The third lane on the SR 9/I-95 southbound on-ramp is merged south of the ramp terminal intersection from the right side to tie into the existing dual lane on-ramp
4. Dual left turn lanes in the eastbound and westbound along SR 804/Boynton Beach Boulevard
5. Triple left turn lanes and single channelized right turn lane in the northbound direction at the northbound I-95 ramp terminal intersection
6. Dual left turn lanes with extended queue lengths, single channelized right turn lane and additional through lane in the westbound direction along SR 804/Boynton Beach Boulevard east of the SR 9/I-95 bridge
7. Continuously flowing channelized westbound right turn lane and dual eastbound left turn lanes that create three SR 9/I-95 northbound on-ramp lanes. Two of the three lanes on this SR 9/I-95 northbound on-ramp are merged north of the ramp terminal intersection from the right to tie into the existing axillary lane between SR 804/Boynton Beach Boulevard and Gateway Boulevard

8. Increase right turn storage lane along eastbound SR 804/Boynton Beach Boulevard at the northbound SR 9/I-95 ramp terminal intersection.
9. New right turn storage lane in the eastbound direction at the SR 804/Boynton Beach Boulevard and Seacrest Boulevard intersection.

Alternative 1 also adds an additional westbound through lane between SR 9/I-95 southbound ramp terminal and Old Boynton Road/SW 8th Street. This additional westbound through lane is dropped near the intersection of SR 804/Boynton Beach Boulevard and Old Boynton Road/SR 8th Street as a westbound right turn lane. The required ROW for Alternative 1 is presented in **Table 21**.

Table 21. Alternative 1 Preliminary Right of Way Requirements – SR 804/Boynton Beach Boulevard

Parcel No.	Tax ID Number	Parcel Owner Name	Total Area (Acres)	Impact (Acres)	Total Take (Y/N)	Property Use	Location
1	08434520000005020	OFS Property Holdings LLC	1.090	0.199	N	C	NW
2	08434520000005010	OFS Property Holdings LLC	3.140	0.024	N	V	NW
3	08434520000000085	SS & F Boynton Beach Acquisition Inc.	0.913	0.100	N	C	NW
4	08434520060000111	OFS Property Holdings LLC	0.294	0.040	N	V/C	NW
5	08434520060000010	Double DS LLC	0.218	0.040	N	C	NW
6	08434520070000010	Wendy's/Arby's Group	0.682	0.086	N	C	NW
7	08434520070000021	Industrial Avenue Investments LLC	0.702	0.099	N	C	NW
8	08434529010030101	Southland Corp	0.278	0.015	N	C	SW
9	08434529010030030	Chackman Motels Inc.	2.313	0.058	N	C	SW
10	08434529010030010	RYO Cigarettes of Boynton Beach LLC	0.338	0.017	N	C	SW
11	08434529010020240	Citadel Real Estate Holdings Inc.	0.327	0.029	N	C	SW
12	08434529010020220	RHS Corp	0.568	0.038	N	C	SW
13	08434529010020071	Pientka Holdings LLC	1.105	0.030	N	C	SW
14	08434521000007030	School Board of Palm Beach County FL	9.907	0.258	N	PS	NE
15	08434521160001300	Parsons Richard	0.334	0.006	N	C	NE
16	08434521150000830	Boynton East LLC	0.569	0.005	N	V/C	NE
17	08434528150710010	Irache Partners LLC	2.216	0.086	N	C	SE
18	08434528270000052	KMG Holdings LLC	0.221	0.008	N	R/C	SE
19	08434528270000051	KMG Holdings LLC	0.270	0.012	N	C	SE
20	08434528110000050	ZAC Realty LLC	0.339	0.020	N	C	SE
21	08434528110000030	420 West Boynton Beach Blvd LLC	0.343	0.016	N	C	SE
22	08434528110000010	Suncoast Boynton Realty LLC	0.343	0.010	N	MF	SE
23	08434528100010010	Lake Osborne LLC	0.130	0.012	N	MF/C	SE
			TOTAL	**1.207**			

Property Use: R - Residential; C - Commercial; V - Vacant; G - Government; CO - Condominium; MF – multifamily; PS - Public School
Location: NE – Northeast; NW – Northwest; SE – Southeast; SW - Southwest

4.5.1.2 Alternative 2 – Streamlined CDA**.**

This build alternative enhances Alternative 1 and avoids reconstruction of the SR 804/Boynton Beach Boulevard bridges over the South Florida Rail Corridor (SFRC) railroad (Bridge Number 930289) and SR 9/I-95 (Bridge

Number 930285). This alternative retains most of Alternative 1 proposed improvements, but proposes the below described enhancements and are shown in **Figure 7**.

1. A closed median opening between 7th Street and Old Boynton Road
2. Dual right turn lanes, a single left turn lane and a shared left/right lane in the southbound direction at the SR 9/I-95 southbound exit ramp terminal intersection
3. Continuously flowing channelized eastbound right turn lane and dual westbound left turn lanes that create three SR 9/I-95 southbound on-ramp lanes. The third lane on the SR 9/I-95 southbound on-ramp is merged south of the ramp terminal intersection from the left side to tie into the existing dual lane on-ramp
4. Triple left and dual channelized right turn lanes in the northbound direction at the I-95 northbound ramp terminal intersection
5. Eliminates the eastbound right turn lane at the SR 804/Boynton Beach Boulevard and Seacrest Boulevard intersection.

Alternative 2 eliminates the additional westbound through lane between SR 9/I-95 southbound ramp terminal and Old Boynton Road/SW 8th Street added by the Alternative 1.

The required ROW for Alternative 2 is presented in **Table 22**.

Alternative 3 – Single-point Urban Interchange (SPUI). This build alternative proposes the construction of a new SPUI at the SR 9/I-95 and SR 804/Boynton Beach Boulevard Interchange. A SPUI configuration combines turning movements at the SR 9/I-95 northbound and southbound exit ramps to operate under a single traffic control device, resulting in a high capacity interchange. The following improvements are proposed for this alternative and are shown in **Figure 8**.

1. Convert existing dual ramp terminal signalized intersections into a single signalized intersection to serve both southbound and northbound ramp terminals. This Alternative will include:

- All improvements considered along SR 804/Boynton Beach Boulevard and the SR 9/I-95 northbound and southbound ramps under Alternative 2 as described above

The required ROW for Alternative 3 is presented in **Table 22**.

Table 22. Preliminary Right of Way Requirements – Alternatives 2 and 3, SR 804/Boynton Beach Boulevard

Parcel No.	Tax ID Number	Parcel Owner Name	Total Area (Acres)	Impact (Acres)	Total Take (Y/N)	Property Use	Location
1	08434529010030101	Southland Corp	0.278	0.017	N	C	SW
2	08434529010030030	Chackman Motels Inc.	2.313	0.077	N	C	SW
3	08434529010030010	RYO Cigarettes of Boynton Beach LLC	0.338	0.019	N	C	SW
4	08434529010020240	Citadel Real Estate Holdings Inc.	0.327	0.040	N	C	SW
5	08434529010020220	RHS Corp	0.568	0.045	N	C	SW
6	08434529010020071	Pientka Holdings LLC	1.105	0.040	N	C	SW
7	08434521000007030	School Board of Palm Beach County FL	9.907	0.204	N	PS	NE
8	08434521160001300	Parsons Richard	0.334	0.008	N	C	NE

Parcel No.	Tax ID Number	Parcel Owner Name	Total Area (Acres)	Impact (Acres)	Total Take (Y/N)	Property Use	Location
9	08434521150000830	Boynton East LLC	0.569	0.005	N	V/C	NE
10	08434528150710010	Irache Partners LLC	2.216	0.100	N	C	SE
11	08434528270000052	KMG Holdings LLC	0.221	0.009	N	R/C	SE
12	08434528270000051	KMG Holdings LLC	0.270	0.014	N	C	SE
13	08434528110000050	ZAC Realty LLC	0.339	0.023	N	C	SE
14	08434528110000030	420 West Boynton Beach Blvd LLC	0.343	0.019	N	C	SE
15	08434528110000010	Suncoast Boynton Realty LLC	0.343	0.012	N	MF	SE
16	08434528100010010	Lake Osborne LLC	0.130	0.011	N	MF/C	SE
			TOTAL	**0.644**			

Property Use: R - Residential; C - Commercial; V - Vacant; G - Government; CO - Condominium; MF – multifamily; PS - Public School
Location: NE – Northeast; NW – Northwest; SE – Southeast; SW - Southwest

4.5.2 SR 9/I-95 at Gateway Boulevard Interchange

Alternative 1 – CDA. This Build Alternative was retained from the Concept Development Reports previously prepared and discussed in Section 3.4. The development of this alternative considered practical design and evaluated traditional turn lane improvements for the existing Tight Urban Diamond Interchange configuration to optimize the benefit to cost (B/C) ratio without imperiling traffic operations and safety.

For this alternative, proposed improvements are described below and shown in **Figure 9**.

1. Dual left turn lanes, a single thru lane, and a single right turn lane in the northbound direction at the Gateway Boulevard and High Ridge Road intersection
2. Triple left turn lanes from southbound High Ridge Road to eastbound Gateway Boulevard
3. Dual left and right turn lanes in the southbound direction at the SR 9/I-95 southbound exit ramp terminal intersection
4. Dual right turn lanes from eastbound Gateway Boulevard to southbound SR 9/I-95
5. Triple left and single right turn lanes in the northbound direction at the SR 9/I-95 northbound exit ramp terminal intersection
6. Dual left turn lanes from northbound Seacrest Boulevard to westbound Gateway Boulevard
7. Single right turn lane from southbound Seacrest Boulevard to westbound Gateway Boulevard

Alternative 1 adds an additional through lane in the eastbound and westbound direction to create an eight-lane typical section along Gateway Boulevard within the project limits between Quantum Boulevard and NE 1st Way. The required ROW for Alternative 1 is presented in **Table 23**.

Table 23. Alternative 1 Preliminary Right of Way Requirements – Gateway Boulevard

Parcel No.	Tax ID Number	Parcel Owner Name	Total Area (Acres)	Impact (Acres)	Total Take (Y/N)	Property Use	Location
1	08434517090000344	Duke PGC AT Quantum 1 9 LLC	11.39	0.007	N	C	NW
2	08434517000001010	6 owners	23.27	0.121	N	V/C	NW
3	08434516320000832	2600 Quantum LLC	10.89	0.650	N	C	NW
4	08434516010270010	City of Boynton Beach	0.23	0.102	Y	G	SE
5	08434516010270020	City of Boynton Beach	0.14	0.051	Y	G	SE

Parcel No.	Tax ID Number	Parcel Owner Name	Total Area (Acres)	Impact (Acres)	Total Take (Y/N)	Property Use	Location
6	08434516010280360	Palm Beach County Housing Authority	0.22	0.143	Y	V	SE
7	08434516010280010	Cortes Rodolfo G	0.21	0.131	Y	R	SE
8	08434516140000190	Bush Jason L	0.21	0.101	Y	R	SE
9	08434515070340171	Annanias & Huguette Asse	0.19	0.095	Y	R	SE
10	08434516100191030	53 owners - condo		0.032	N	CO	SE
11	08434516010210450	Palm Beach County Housing Authority	0.17	0.025	N	R	NE
12	08434516010210440	Leo & Veronica Sears	0.17	0.025	N	R	NE
13	08434516010210430	Matthew & Sharon Wagman	0.17	0.025	N	R	NE
14	08434516010210420	Linda M & Albert L Moore	0.17	0.021	N	R	NE
15	08434516010210410	Eunide Belizaire	0.17	0.016	N	R	NE
16	08434516010210400	Joann Fitzgerald	0.17	0.012	N	R	NE
17	08434516010210390	Minda L Yarbrough	0.17	0.010	N	R	NE
18	08434516010210370	16 Prop LLC	0.18	0.001	N	R	NE
19	08434516010210380	Kenny L Joseph	0.17	0.007	N	R	NE
20	08434516010210590	Marie & Wincheel Maxis	0.25	0.040	N	R	SE
21	8434516010210600	Peter Powell	0.21	0.055	Y	R	SE
22	08434516010210610	Iarea D Macon	0.15	0.034	N	R	SE
23	08434516010210620	Janie F Fuller	0.15	0.034	N	R	SE
24	08434516010210630	Mervin C & Diane Razz & Butler Sallie Razz Est	0.15	0.034	N	R	SE
25	08434516010210640	Servando Gayosso	0.15	0.031	Y	R	SE
26	08434516010210650	Warren Wendell	0.15	0.026	Y	R	SE
27	08434516010210660	Wilbert Hollis	0.15	0.022	N	R	SE
28	08434516010210670	Audrey Williams	0.15	0.018	N	R	SE
29	08434516010210680	Dieudonne M Charry	0.15	0.011	N	R	SE
30	08434516010210690	Palm Beach County Housing Authority	0.18	0.002	N	R	SE
31	8434516010230240	Frank Guadagnino	0.19	0.021	Y	R	NE
32	8434516010230230	Domitila J Ortega	0.17	0.021	Y	R	NE
33	08434516010230220	Jose A Carrasquillo	0.17	0.021	Y	R	NE
34	08434516010230210	Hector F & Eufrisina Capetillo	0.17	0.019	Y	R	NE
35	08434516010230200	Tamar Parker	0.17	0.001	N	R	NE
36	08434516010240170	Nomis D LLC	0.22	0.017	N	R	NE
37	8434516010240180	Cedeno L Ihosvany & Maria C Torres	0.17	0.012	Y	R	NE
38	08434516010240190	Shunta T Jackson	0.17	0.010	N	R	NE
39	08434516010240200	John T Chism	0.17	0.008	N	R	NE
40	08434516010240210	Sophia & Widmaier Tranchant	0.17	0.006	N	R	NE
41	08434516010240220	Paula Pierre-Louis	0.17	0.004	N	R	NE
42	08434516010240230	Dieunette & Antoine Joseph	0.17	0.002	N	R	NE
43	08434516010280350	Ana M & Angel L Ares	0.17	0.029	Y	R	SE
44	08434516010280340	Mary R & Edward Engram Est	0.17	0.029	Y	R	SE
45	08434516010280330	Sanjuanita & Armando Garcia	0.17	0.029	Y	R	SE
46	08434516010280320	Delphine Hamon	0.17	0.029	Y	R	SE

Parcel No.	Tax ID Number	Parcel Owner Name	Total Area (Acres)	Impact (Acres)	Total Take (Y/N)	Property Use	Location
47	08434516010280310	Tatiana D Sanchez & Edin Velasquez	0.17	0.028	Y	R	SE
48	08434516010280300	Exclusive Investment Prop LLC	0.17	0.028	Y	R	SE
49	08434516010280290	Aum Properties LLC	0.17	0.028	Y	R	SE
50	08434516010280280	Rosa L Shuler	0.17	0.028	Y	R	SE
51	8434516320000911	Childrens Services Council of Palm Beach County	6.55	0.061	N	G	NW
52	08434516320000901	High Ridge Investments LLC	1.36	0.012	N	C	NW
53	08434516370020000	Canterbury at Quantum Village POA of Palm Beach Inc	1.78	0.001	N	R	NW
54	08434516340000820	City of Boynton Beach	5.46	0.040	N	G	SW
			TOTAL	**1.207**			

Property Use: R - Residential; C - Commercial; V - Vacant; G - Government; CO - Condominium; MF – multifamily; PS - Public School
Location: NE – Northeast; NW – Northwest; SE – Southeast; SW - Southwest

Alternative 2 – Streamlined CDA. This build alternative enhances Alternative 1 and retains most of Alternative 1 proposed improvements including the additional through lane in the eastbound and westbound direction along Gateway Boulevard between Quantum Boulevard and NE 1st Way. Most of the SR 9/I-95 northbound and southbound ramp termini turn lane improvements are retained from Alternative 1 with adjustments to the intersection turn lane improvements at High Ridge Road.

For this alternative, proposed modifications are described below and shown in **Figure 10**.

1. Dual left turn lanes from southbound High Ridge Road to eastbound Gateway Boulevard as opposed to triple left turn lanes in Alternative 1
2. A single right turn lane and shared thru/right turn lane from eastbound Gateway Boulevard to southbound SR 9/I-95
3. Triple left and dual right turn lanes in the northbound direction at the SR 9/I-95 northbound ramp terminal intersection

The required ROW for Alternative 2 is presented in **Table 24**.

Alternative 3 – Single-point Urban Interchange (SPUI). This build alternative proposes the construction of a new SPUI at the SR 9/I-95 at Gateway Boulevard Interchange. A SPUI configuration combines turning movements at the SR 9/I-95 northbound and southbound exit ramps to operate under a single traffic control device, resulting in a high capacity interchange. The following improvements are proposed for this alternative and are shown in **Figure 11**.

1. Convert existing dual ramp terminal signalized intersections into a single signalized intersection to serve both southbound and northbound ramp terminals. This Alternative will include:
    - All improvements considered along Gateway Boulevard and the SR 9/I-95 northbound and southbound ramps under Alternative 2 as described above

The required ROW for Alternative 2 is presented in **Table 24**.

Table 24. Alternatives 2 and 3 Preliminary Right of Way Requirements – Gateway Boulevard

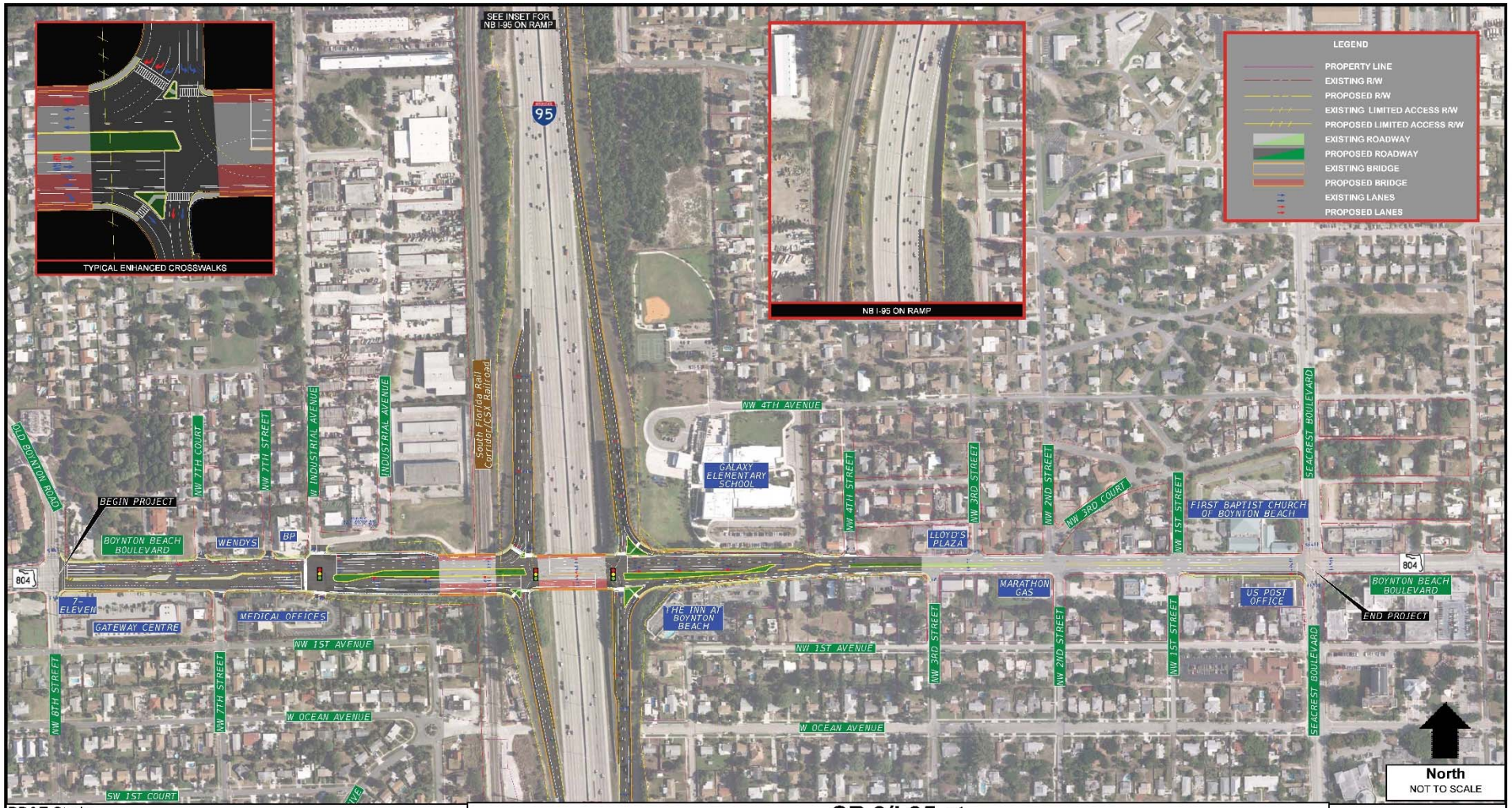
Parcel No.	Tax ID Number	Parcel Owner Name	Total Area (Acres)	Impact (Acres)	Total Take (Y/N)	Property Use	Location
1	08434517090000344	Duke PGC AT Quantum 1 9 LLC	11.39	0.007	N	C	NW
2	08434517000001010	6 owners	23.27	0.121	N	V/C	NW
3	08434516320000832	2600 Quantum LLC	10.89	0.627	N	C	NW
4	08434516010210370	16 Prop LLC	0.18	0.001	N	R	NE
5	08434516010270010	City of Boynton Beach	0.23	0.102	Y	G	SE
6	08434516010270020	City of Boynton Beach	0.14	0.051	Y	G	SE
7	08434516010280360	Palm Beach County Housing Authority	0.22	0.128	Y	V	SE
8	08434516010280010	Cortes Rodolfo G	0.21	0.131	Y	R	SE
9	08434516140000190	Bush Jason L	0.21	0.101	Y	R	SE
10	08434515070340171	Annanias & Huguette Asse	0.19	0.095	Y	R	SE
11	08434516100191030	53 owners - condo		0.032	N	CO	SE
12	08434516010210450	Palm Beach County Housing Authority	0.17	0.025	N	R	NE
13	08434516010210440	Leo & Veronica Sears	0.17	0.025	N	R	NE
14	08434516010210430	Matthew & Sharon Wagman	0.17	0.025	N	R	NE
15	08434516010210420	Linda M & Albert L Moore	0.17	0.021	N	R	NE
16	08434516010210410	Eunide Belizaire	0.17	0.016	N	R	NE
17	08434516010210400	Joann Fitzgerald	0.17	0.012	N	R	NE
18	08434516010210390	Minda L Yarbrough	0.17	0.010	N	R	NE
19	08434516010210380	Kenny L Joseph	0.17	0.007	N	R	NE
20	08434516010210590	Marie & Wincheel Maxis	0.25	0.040	N	R	SE
21	8434516010210600	Peter Powell	0.21	0.055	Y	R	SE
22	08434516010210610	Iarea D Macon	0.15	0.034	N	R	SE
23	08434516010210620	Janie F Fuller	0.15	0.034	N	R	SE
24	08434516010210630	Mervin C & Diane Razz & Butler S. Razz Est	0.15	0.035	N	R	SE
25	08434516010210640	Servando Gayosso	0.15	0.035	Y	R	SE
26	08434516010210650	Warren Wendell	0.15	0.034	Y	R	SE
27	08434516010210660	Wilbert Hollis	0.15	0.034	N	R	SE
28	08434516010210670	Audrey Williams	0.15	0.034	N	R	SE
29	08434516010210680	Dieudonne M Charry	0.15	0.036	N	R	SE
30	08434516010210690	Palm Beach County Housing Authority	0.18	0.052	N	R	SE
31	08434516010210700	Joseph O Dorcent	0.20	0.047	Y	R	SE
32	08434516010210710	Clova C Thomas	0.26	0.045	N	R	SE
33	08434516010210720	Darryl & Martinique Sanders	0.47	0.017	N	R	SE
			TOTAL	**2.37**			

Property Use: R - Residential; C - Commercial; V - Vacant; G - Government; CO - Condominium; MF – multifamily; PS - Public School
Location: NE – Northeast; NW – Northwest; SE – Southeast; SW - Southwest

4.6 Recommended Alternatives

Following the July 28, 2016 alternatives public workshop, a meeting was held with FDOT to discuss the comprehensive resources evaluation, transportation and traffic studies, costs, and involvement of the public, local and state officials, and select a recommended alternative for each interchange. The Recommended Alternative for the project areas was chosen by FDOT on January 26, 2017. **Alternative 2**, the Streamlined Concept Development Alternative, was chosen for the SR 804/Boynton Beach Boulevard Interchange and **Alternative 3**, Single Point Urban Interchange, was chosen for the Gateway Boulevard Interchange. The Recommended Alternatives are shown in **Appendices A** and **B**.

A Type 2 Categorical Exclusion Report was completed for the PD&E Study in accordance with FDOT PD&E Manual, Part 1, Chapter 5, Type 2 Categorical Exclusions ((July 15, 2016) and is on file with the District Four PLEM office.

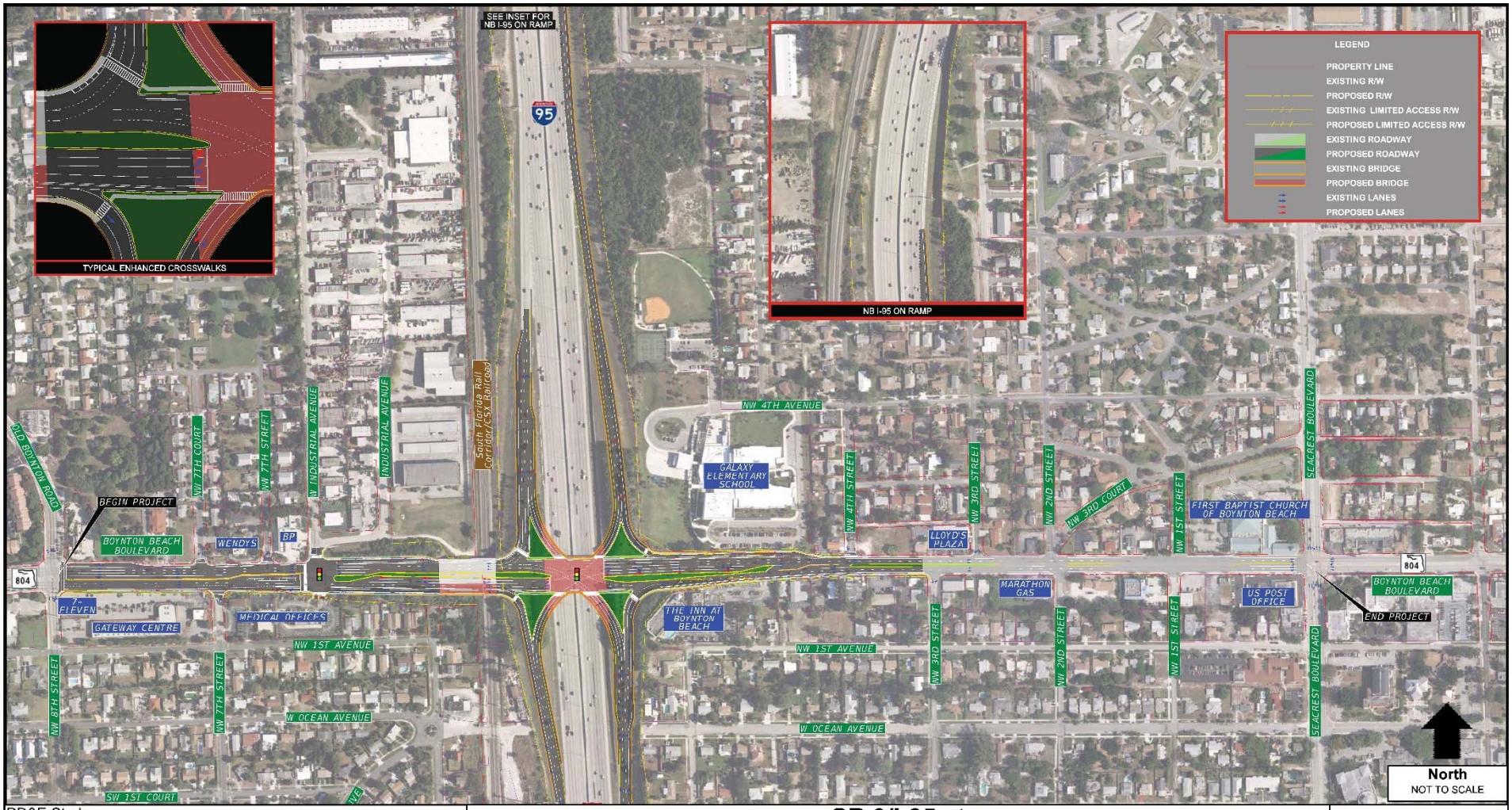


PD&E Study
SR 9/I-95 at SR-804/Boynton Beach Boulevard Interchange
SR 9/I-95 at Gateway Boulevard Interchange
FPID Nos.: 435804-1-22-01; 231932-1-22-01
ETDM Nos.: 14180 and 14181

SR 9/I-95 at
SR 804/Boynton Beach Boulevard Interchange
Alternative 1 - Conceptual Development Alternative (CDA)

Figure 6

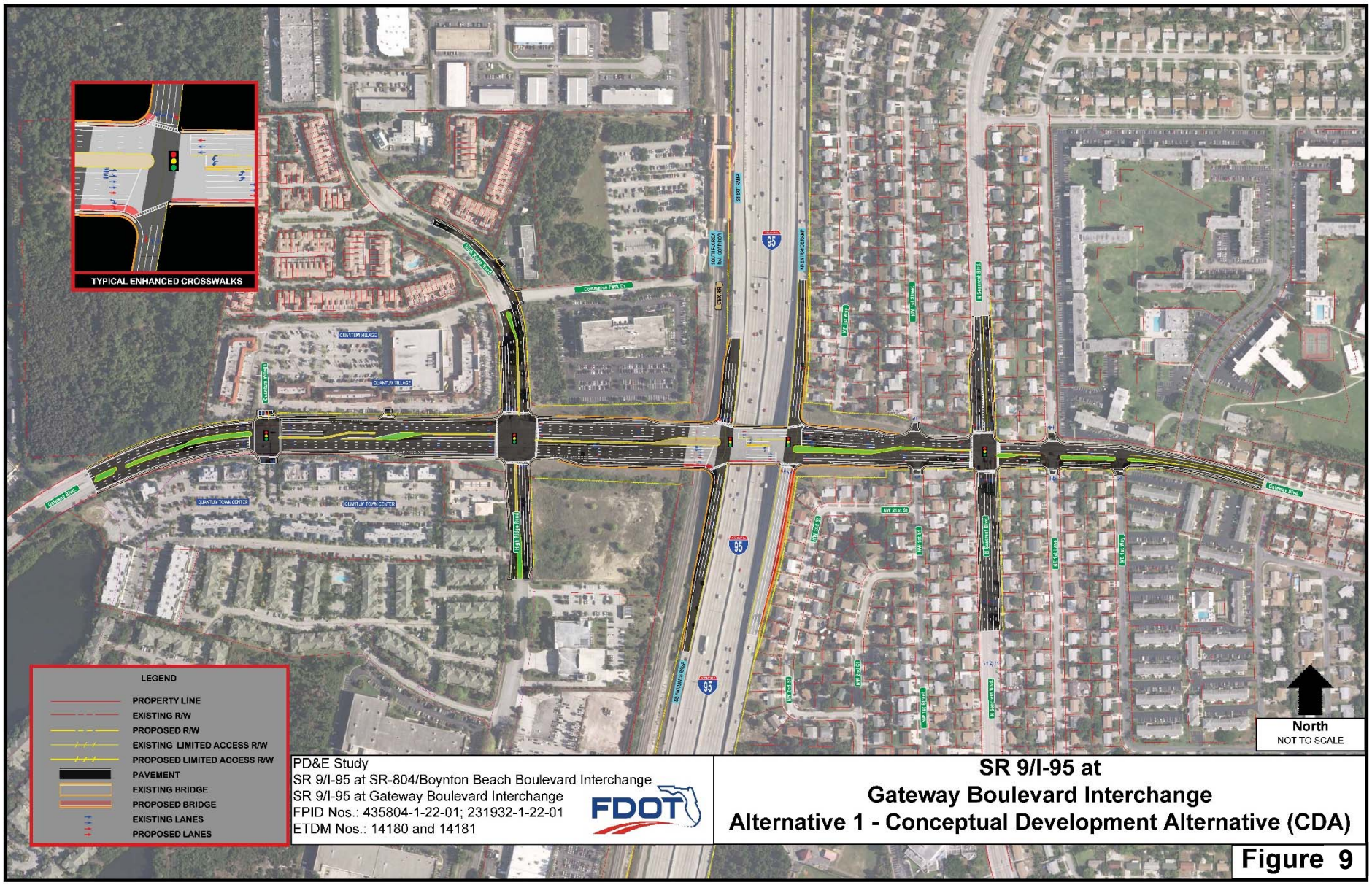
PD&E Study SR 9/I-95 at SR-804/Boynton Beach Boulevard Interchange SR 9/I-95 at Gateway Boulevard Interchange FPID Nos.: 435804-1-22-01; 231932-1-22-01 ETDM Nos.: 14180 and 14181	**SR 9/I-95 at** **SR 804/Boynton Beach Boulevard Interchange** **Alternative 2 - Streamlined CDA**	**Figure 7**

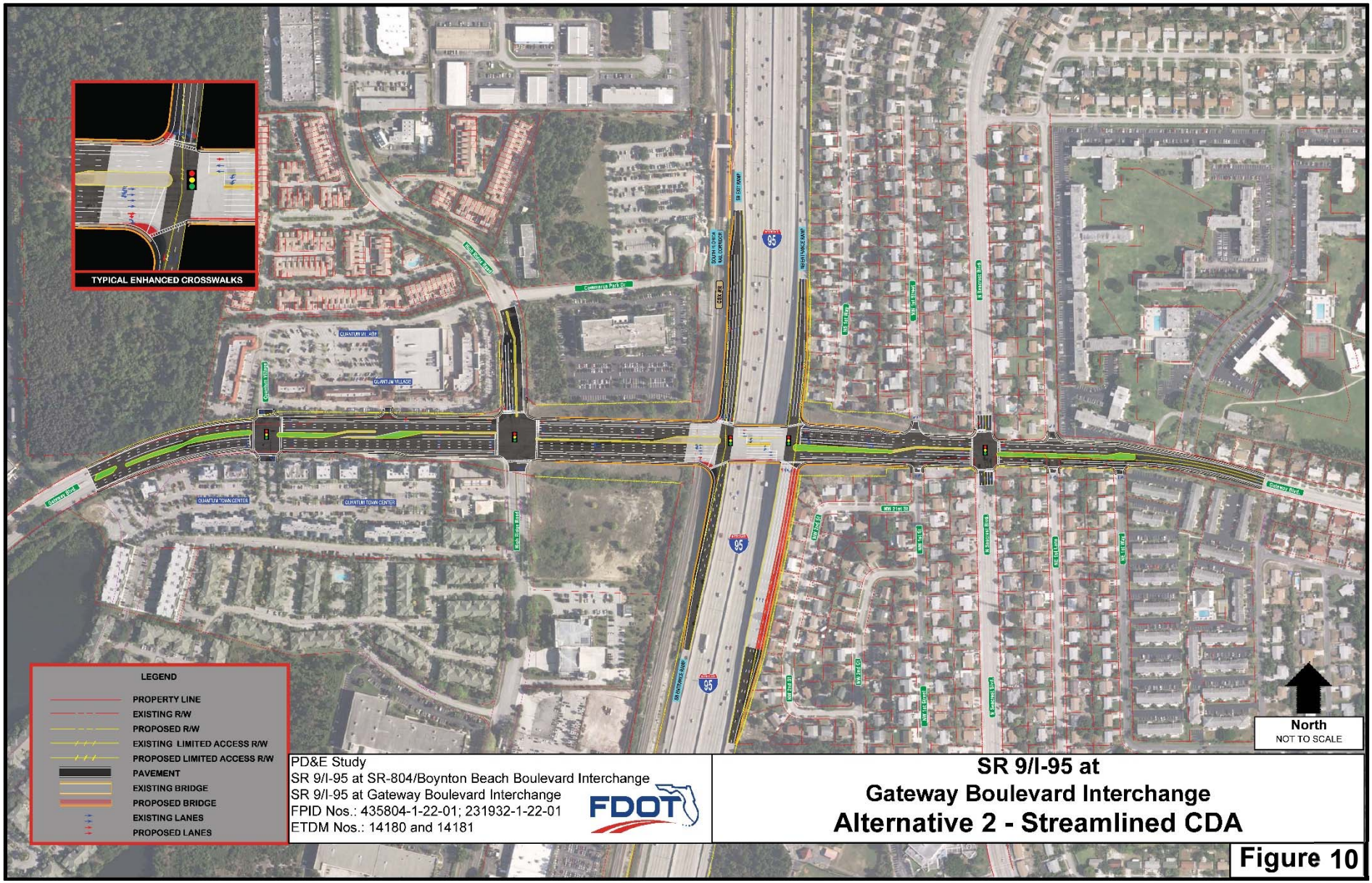


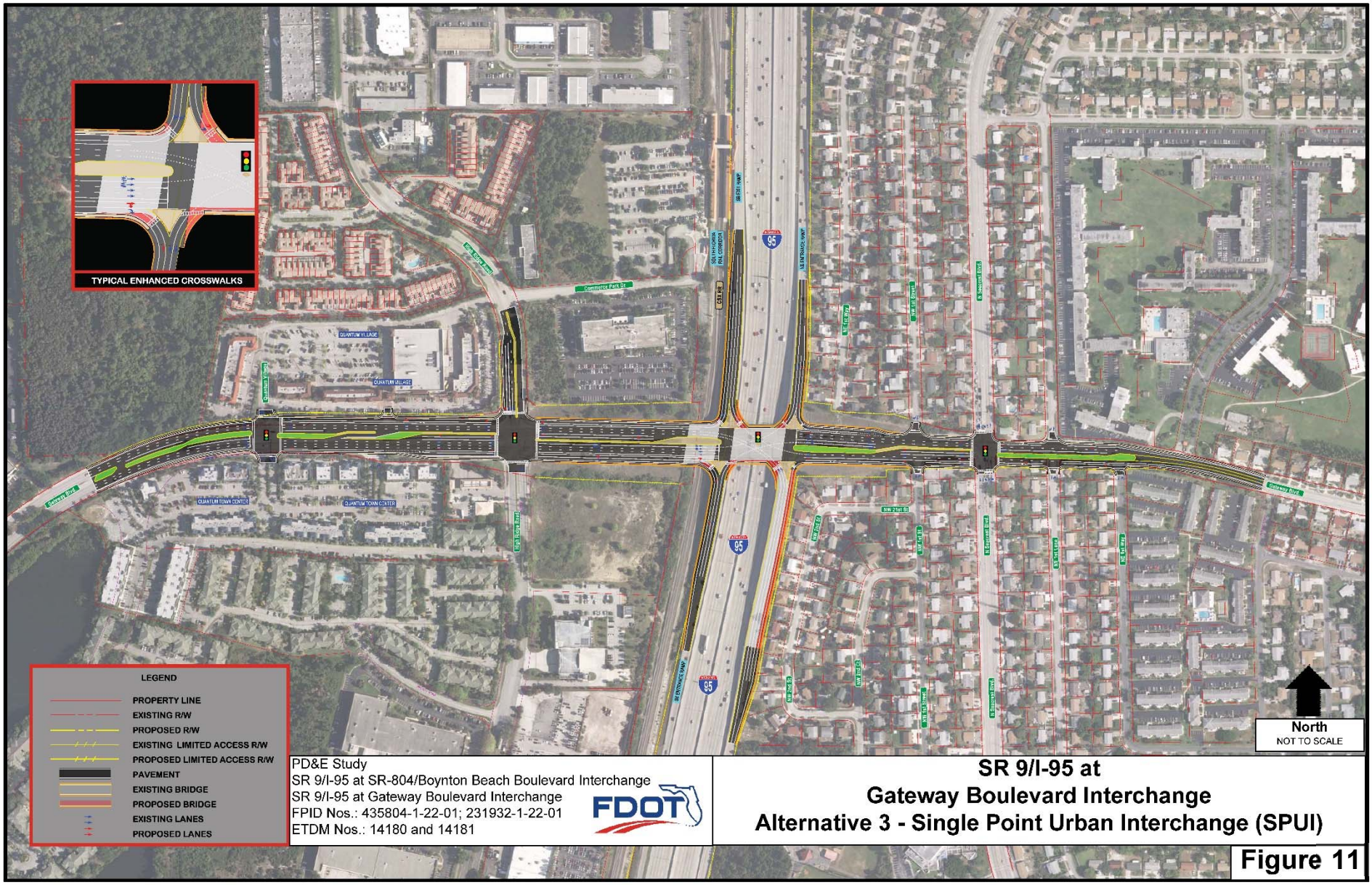
PD&E Study
SR 9/I-95 at SR-804/Boynton Beach Boulevard Interchange
SR 9/I-95 at Gateway Boulevard Interchange
FPID Nos.: 435804-1-22-01; 231932-1-22-01
ETDM Nos.: 14180 and 14181

SR 9/I-95 at
SR 804/Boynton Beach Boulevard Interchange
Alternative 3 - Single Point Urban Interchange (SPUI)

Figure 8


TYPICAL ENHANCED CROSSWALKS
LEGEND
PROPERTY LINE
EXISTING R/W
PROPOSED R/W
EXISTING LIMITED ACCESS R/W
PROPOSED LIMITED ACCESS R/W
PAVEMENT
EXISTING BRIDGE
PROPOSED BRIDGE
EXISTING LANES
PROPOSED LANES
North
NOT TO SCALE
PD&E Study
SR 9/I-95 at SR-804/Boynton Beach Boulevard Interchange
SR 9/I-95 at Gateway Boulevard Interchange
FPID Nos.: 435804-1-22-01; 231932-1-22-01
ETDM Nos.: 14180 and 14181
SR 9/I-95 at
Gateway Boulevard Interchange
Alternative 1 - Conceptual Development Alternative (CDA)
Figure 9


TYPICAL ENHANCED CROSSWALKS
LEGEND
PROPERTY LINE
EXISTING R/W
PROPOSED R/W
EXISTING LIMITED ACCESS R/W
PROPOSED LIMITED ACCESS R/W
PAVEMENT
EXISTING BRIDGE
PROPOSED BRIDGE
EXISTING LANES
PROPOSED LANES
North
NOT TO SCALE
PD&E Study
SR 9/I-95 at SR-804/Boynton Beach Boulevard Interchange
SR 9/I-95 at Gateway Boulevard Interchange
FPID Nos.: 435804-1-22-01; 231932-1-22-01
ETDM Nos.: 14180 and 14181
SR 9/I-95 at
Gateway Boulevard Interchange
Alternative 2 - Streamlined CDA
Figure 10


TYPICAL ENHANCED CROSSWALKS
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PROPERTY LINE
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EXISTING LIMITED ACCESS R/W
PROPOSED LIMITED ACCESS R/W
PAVEMENT
EXISTING BRIDGE
PROPOSED BRIDGE
EXISTING LANES
PROPOSED LANES
North
NOT TO SCALE
PD&E Study
SR 9/I-95 at SR-804/Boynton Beach Boulevard Interchange
SR 9/I-95 at Gateway Boulevard Interchange
FPID Nos.: 435804-1-22-01; 231932-1-22-01
ETDM Nos.: 14180 and 14181
SR 9/I-95 at
Gateway Boulevard Interchange
Alternative 3 - Single Point Urban Interchange (SPUI)
Figure 11

5. Environmental Impacts

This section provides the results of the analysis of the potential beneficial or adverse impacts of the project's **Recommended Alternative** and **No Build Alternative**. The project is evaluated with respect to transportation, social, economic, cultural, physical, natural, and biological resources as part of the PD&E Study. Information used to conduct the evaluation includes detailed studies completed for this PD&E and comments received from Environmental Technical Advisory Team (ETAT) members through the Efficient Transportation Decision Making (ETDM) process. The ETDM Programming Screen Summary Reports for SR 804/Boynton Beach Boulevard (#14180) was published on May 25, 2015 and Gateway Boulevard (#14181) on November 24, 2014.

5.1.1 Efficient Transportation Decision Making (ETDM) Screening

A program level ETDM screening was completed for SR 9/I-95 at SR 804/Boynton Beach Boulevard, ETDM #14180, dated May 27, 2015 and for Gateway Boulevard, ETDM #14181, dated November 24, 2014. Through ETDM, early agency and public comments were obtained to identify project related issues and potential environmentally sensitive areas. The ETDM Programming Summary Reports are available on the ETDM public website https://etdmpub.fla-etat.org/est/# and **Appendix F**.

5.1.2 Land Use

The proposed improvements associated with the Recommended Alternative will require a minimal amount of additional ROW and are not anticipated to significantly affect the land use in the area. The character of the study area remains unchanged and will continue to support the existing and future land uses within the project and surrounding area maintaining the goals of the City of Boynton Beach Future Land Use Map, the Community Redevelopment Area and Quantum DRI goals.

This project was reviewed by the Environmental Technical Advisory Team (ETAT) agencies through the ETDM process and assigned a summary degree of effect of minimal for land use. The Florida Department of Economic Opportunity (FDEO) assigned the degree of effect as none, the FHWA as minimal, and FDOT District Four as minimal. The proposed improvements are compatible with the City of Boynton Beach Comprehensive Plan and supports the plan's land use element. Effects on the area's character resulting from the project improvements are anticipated to be minor. The City of Boynton Beach does not have a Future Transportation Map. The FDOT will coordinate with the City of Boynton Beach to ensure that the project is included on the Future Transportation Map of the adopted Comprehensive Plan, and the Palm Beach MPO to ensure that funding is identified for future project phases in the TIP, LRTP, STIP and FDOT SIS Cost Feasible Plan.

5.1.3 Community Cohesion

The proposed improvements will reduce congestion and improve local and regional mobility. At SR 804/Boynton Beach Boulevard, improvements will accommodate expanding residential and commercial uses within the vicinity of the interchange including the goals of the Boynton Beach Redevelopment Area, while supporting the vision of both Palm Beach County and the City of Boynton Beach.

For Gateway Boulevard improvements will accommodate expanding residential and industrial activities within the vicinity of the interchange, including uses of the established Development of Regional Impact (Quantum Park at Boynton Beach).

Enhancement to community connectivity is anticipated with the inclusion of improved bicycle and pedestrian facilities at both interchanges. It is expected that the Recommended Alternative will have some beneficial effect.

No adverse effects to community cohesion are anticipated from the proposed improvements. With the **No Build Alternative**, overall impacts of the project on the social environment and community cohesion are anticipated to be minimal.

5.1.4 Relocation Potential

The proposed project is anticipated to require additional ROW at both interchanges. To minimize property impacts along SR 804/Boynton Beach Boulevard, improvements to the west of SR9/I-95 are located to the south side of the roadway. To the east of I-95, improvements are located on both the north and south sides of the roadway. Approximately 0.82 acres of ROW will be required for the Recommended Alternative. ROW acquisition along SR 804/Boynton Beach Boulevard is anticipated to impact one multi-family residential, 14 commercial and one school property. Of these 16 property impacts only 1 potential residential relocation is anticipated.

For Gateway Boulevard, approximately 2.07 acres of ROW will be required for the Recommended Alternative. ROW acquisition is anticipated to impact 25 single family residential, 1 multi-family residential, and 7 commercial properties. Of these 33 properties, 5 residential and 1 commercial relocation is anticipated.

A Conceptual Stage Relocation Plan will be prepared by the FDOT if relocations are determined to be necessary. FDOT will carry out a ROW and relocation program in accordance with Florida Statute 339.09 and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91- 646 as amended by Public Law 100-17).

5.1.5 Nondiscrimination Considerations

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (59 Federal Register 7629 1994), and FHWA Order 6640.23A, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, require federal agencies to determine whether a proposed action would have an adverse and disproportionately high impact on minority and/or low-income populations.

5.1.5.1 Population

Data from the 2015 American Community Survey (ACS) 5-Year Estimates were collected for the census tracts located within a 1,320-foot buffer. This data was examined to determine total population, minority, and/or low-income populations associated with improvements related to all alternatives and to identify potential disproportionate impacts.

Total and minority population data is presented in **Table 25**. The demographic information indicates a minority population greater than 49%. A total of 14,098 individuals comprise the minority population of the project buffer

area. It should further be noted that 4,413 persons within the project buffer (15.4% of the total buffer population) identified as Hispanic.

Neither the **Recommended** nor the **No Build Alternative** would have a disproportionate impact on minority populations.

Table 25 Total and Minority Population

Geographic Area	Total Pop.	Not Latino or Hispanic							Hispanic or Latino of Any Race
		White	Black / African American	AIAN	Asian	NHPI	Other Race	Two or More Races	
Census Tract 5601	3230	1488	1270	0	87	27	318	40	1364
Census Tract 5701	2777	1023	1552	11	0	0	156	35	284
Census Tract 5702	5408	1025	4024	0	135	0	224	0	444
Census Tract 5808	4930	3616	723	13	458	0	62	58	529
Census Tract 6010	3486	1998	1291	0	17	0	71	109	695
Census Tract 6012	1982	1467	400	9	0	0	15	91	372
Census Tract 6100	2867	180	2492	0	56	0	115	24	221
Census Tract 6201	4019	1571	2346	0	67	0	6	29	504
TOTAL	**28699**	**12368**	**14098**	**33**	**820**	**27**	**967**	**386**	**4413**
TOTAL Percent	100	43	49.1	0.1	3	0.1	3.4	1.3	15.4

Source: U.S. Census Bureau, 2015 American Community Survey (ACS) 5-Year Estimates

5.1.5.2 Low-Income Populations

The median household income and households below the poverty status were examined in order to identify the presence or absence of low-income populations within the Study Area and to identify potential disproportionate impacts. The poverty level was determined based on the 2016 U.S. Department of Health and Human Services poverty threshold of $24,300. A total of 12,435 households are within the project area buffer. Of the total households identified, 3,135 households representing 25% of the total households are at or below the poverty level.

Neither the **Recommended** nor the **No Build Alternative** would have a disproportionate impact on low-income populations within or adjacent to the PD&E Study area.

5.1.5.3 Limited English-Speaking Proficiency

Executive Order 13166, *Improving Access to Services for Persons with Limited English Proficiency* (LEP) (2001), requires federal agencies to work to provide meaningful access to LEP applications and beneficiaries. Data from 2015 American Community Survey 5-Year Estimates were reviewed for language spoken at home by ability to speak English for the population 5 years and above within the project buffer. Approximately 6 percent of the population 5 years old and above speaks English "less than very well." Demographic data indicates that approximately 14% of the population within the project area buffer speak a language other than English.

Neither the **Recommended** nor the **No Build Alternative** would have a disproportionate impact on LEP populations within or adjacent to the PD&E Study area.

5.1.6 Farmlands

The U.S. Department of Agriculture (USDA), through the Natural Resources Conservation Service (NRCS), administers the Farmland Protection Policy Act 1983 Subtitle I of Title XV, Section 1539 – 1549 (FPPA). The purpose of the FFPA is to "minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses." The NRCS defines prime farmland and soils as those that have the best combination of physical and chemical characteristics to economically produce high yields of agricultural crops when treated and managed according to acceptable farming practices.

To ensure compliance with the FPPA, agency coordination with the NRCS was completed through the ETDM review process and a degree of effect of None has been assigned. NRCS determined that there are no Prime, Unique or Locally Important Farmland soils within a 500-foot project buffer. The project interchanges are also located within the Miami Urbanized Area. According to Part 2, Chapter 28, Section 28.2.1(2) of the FDOT PD&E Manual, transportation projects situated entirely within urbanized areas with approved comprehensive land use maps and no adjacent present or future agricultural lands are excluded from coordination with the NRCS

5.1.7 Cultural Resources

In accordance with the procedures contained in 36 CFR Part 800, a Cultural Resource Assessment Survey (CRAS), including background research and a field survey coordinated with the State Historic Preservation Officer (SHPO), was performed for the project, and is on file at the FDOT District Four PLEM Office.

No archaeological sites or occurrences have been identified and no further archaeological survey is recommended.

The architectural survey resulted in the identification and evaluation of 79 previously and newly recorded resources within the SR 804/Boynton Beach Boulevard and Gateway Boulevard Interchanges APE. The Seaboard Air Line Railroad (SALR, 8PB12917) linear resource group has previously been determined eligible for listing in the National Register of Historic Places (NRHP) by the SHPO. The portion of the railroad within the SR 804/Boynton Beach Boulevard and Gateway Boulevard Interchanges APE is recommended eligible as a contributing segment to the linear resource group. Based on the results of previous and the current survey, SEARCH recommends resource 8PB00177, the Robert E. & Margaret Stogdill House as NRHP-eligible. No existing or potential historic districts were identified.

The State Historic Preservation Office (SHPO) reviewed the CRAS and provided concurrence with the findings of the CRAS (February 2017) and specifically, the eligibility of the SALR and the Robert E. & Margaret Stogdill House, on March 31, 2017 (**Appendix G**). The SHPO also stated the following: *SHPO/DHR wishes to postpone an effect finding until a case study can be completed. SHPO/DHR concurs with the eligibility determinations in this letter & document*. Therefore, an effect finding cannot be concluded at this time. A request for concurrence with the finding of no adverse effect was submitted to the SHPO July 14, 2017.

5.1.8 Section 4(f)

A Section 4(f) Determination of Applicability (DOA) for the project area was completed and is on file at the FDOT District Four Planning and Environmental Management (PLEM) office. The purpose of this Section 4(f) Determination of Applicability (DOA) is to apply Section 4(f) criteria to determine the applicability of seven identified resources

located in proximity to the SR 804/Boynton Beach Boulevard and Gateway Boulevard Interchange project areas and proposed improvements.

Table 26 List of Potential Section 4(f) Resources – SR 804/Boynton Beach Boulevard

Parcel Number	Resource Name	Location	Distance to Project Area	Owner/ Official with Jurisdiction	Size (Acres)	Access Change	Facility	Direct/ Indirect Impacts
08-43-45-21-00-000-7020	Galaxy Park	North of Galaxy Elementary east side of SR-9/I-95	700 feet north of Boynton Beach Blvd; 50 feet east of I-95	City of Boynton Beach	3.65	No	Neigh-borhood Park	None
08-43-45-28-15-074-0090	Seaboard Air Line Railroad	Parallel to and on the west side of SR-9/I-95	Adjacent to the west side of I-95; immediately north and south of Boynton Beach Blvd.	Florida State Historic Preservation Office	Varies - adjacent north and south	No	FDOT Railroad ROW	Indirect minor
08-43-45-29-01-001-0010	Robert E. & Margaret Stogdill House	206 NW 6th Street (Near southwest quadrant of SR-9/I-95 and Boynton Beach Blvd	100 feet south of Boynton Beach Blvd. and 175 feet west of I-95	Michael F. and Dulce A. MacAndrew	0.45	No	Resi-dence	None
08-43-45-21-12-001-0121	Barton Memorial Park	North of Boynton Beach Blvd on east side of SR-9/I-95	700 feet north of Boynton Beach Blvd; 50 feet east of I-95	City of Boynton Beach	6.26	No	Special Use Park	None

Table 27 List of Potential Section 4(f) Resources – Gateway Boulevard

Parcel Number	Resource Name	Location	Distance to Project Area	Owner/ Official with Jurisdiction	Size (Acres)	Access Change	Facility	Direct/ Indirect Impacts
08-43-45-16-01-013-0010	Ezell Hester Jr. Park	South of Gateway Boulevard and east of SR-9/I-95	1,100 feet south of Gateway Blvd. and adjacent to east side of I-95	City of Boynton Beach	23.82	No	Park	None
08-43-45-16-00-000-3020	Seaboard Air Line Railroad	Parallel to and on the west side of SR-9/I-95	Adjacent to the west side of I-95; immediately north and south of Gateway Blvd.	Florida State Historic Preservation Office	North and south	No	Railroad ROW	Indirect minor
08-43-45-09-00-000-7080	Rosemary Scrub	North of Gateway	2,350 feet north of	The Nature Conservancy	13.44	No	Preserve	None

	Natural Area	Boulevard and east of SR-9/ I-95	Gateway Blvd. and adjacent to east side of I-95					

For the sites identified except the SALR, no ROW acquisition will be required. The bridge crossing over the SFRC currently exists at both interchanges. The proposed project improvements associated with the SFRC crossing include bridge widening. The FDOT commits to providing necessary clearances (horizontal and vertical) over the SFRC. No structure will be placed in the SFRC ROW.

The FDOT concluded that Section 4(f) would not apply to the resources identified. Access to all facilities will not be interrupted during construction related activities. No direct or constructive use of these five resources under Section 4(f) is anticipated.

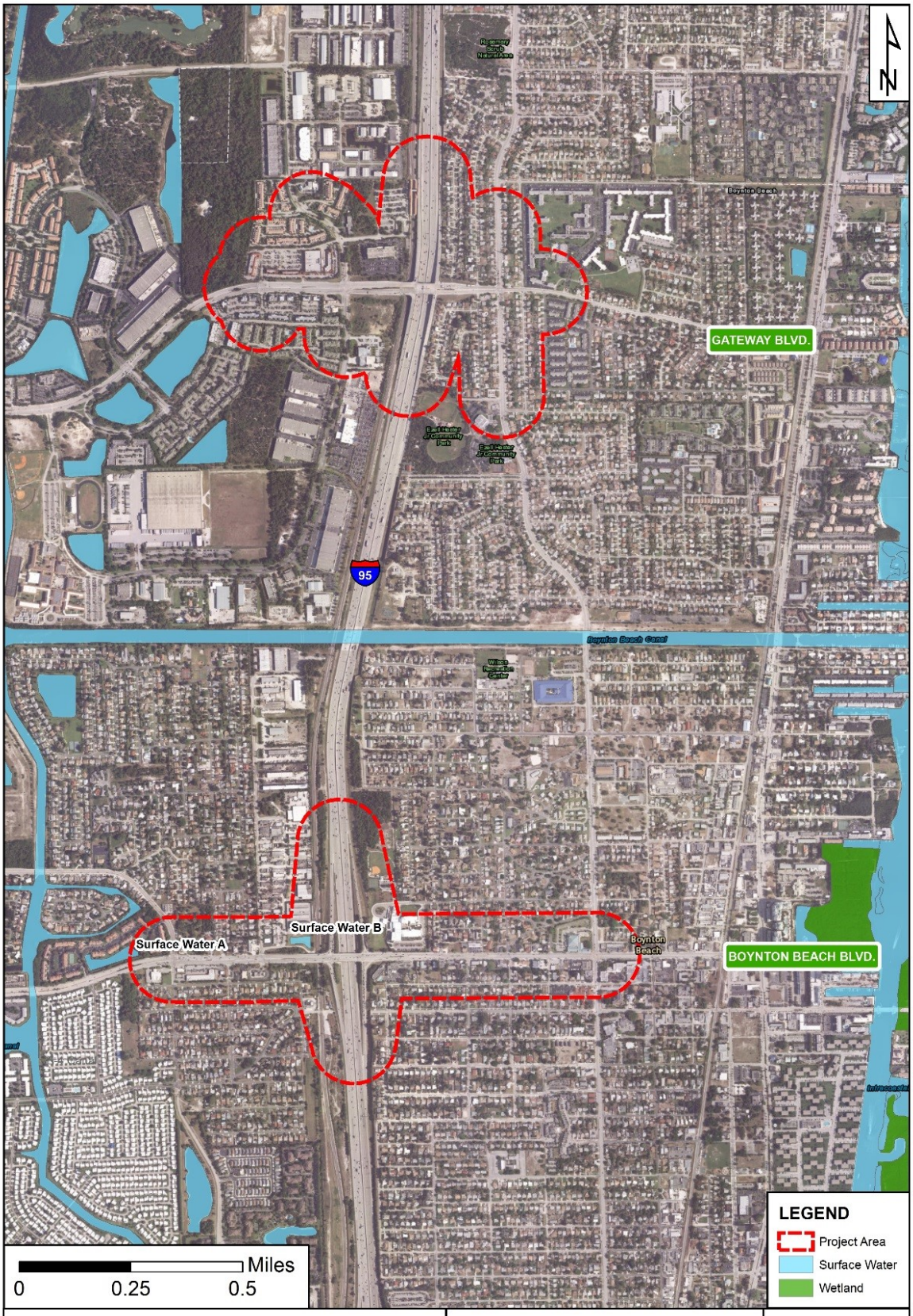
5.1.9 Wetlands

The project areas were evaluated for the presence of wetlands and other surface waters. Study methodology included reviews of the Environmental Technical Advisory Team (ETAT) comments, literature reviews, agency database searches, agency coordination, GIS analyses, and field reviews. The GIS analysis utilized the 500-foot buffer of the proposed interchange improvements for review of natural resources (**Figure 12**). Field reviews were conducted in August 2015, April 2016, and January 2017. Potential wetland and surface water impacts associated with each of the alternatives were evaluated and quantified and are presented in **Table 28**. Wetlands and other surface waters that are impacted are named and mapped. Standard federal and state definitions were utilized for the identification of wetlands in the project areas per FDOT and FHWA guidance. Characteristics of hydric soils, hydrophytic vegetation, and wetland hydrology are pertinent factors in these definitions.

Table 28 Potential Wetland Impacts

Evaluation Factor	No Build Alternative	Concept Development Alternative	Streamlined Concept Development Alternative	Single Point Urban Interchange (SPUI) Alternative
SR 9/I-95 at SR 804/Boynton Beach Boulevard Interchange				
Wetlands (Acres)	0	0	0	0
SR 9/I-95 at Gateway Boulevard Interchange				
Wetlands (Acres)	0	0	0	0

No natural wetland habitat exists within 500 feet of the Gateway Boulevard Interchange or SR 804/Boynton Beach Boulevard Interchange project areas. The ETDM tool, the 2014 NWI, and three field reviews, conducted in August 2015, April 2016, and January 2017, confirmed these findings and are discussed further in the Wetland Evaluation Report (WER). The WER is on file at the FDOT District Four PLEM office.



PD&E Study
SR 9/I-95 at SR-804/Boynton Beach Boulevard Interchange
SR 9/I-95 at Gateway Boulevard Interchange
FPID Nos.: 435804-1-22-01; 231932-1-22-01
ETDM Nos.: 14180 and 14181

WETLANDS AND OTHER SURFACE WATERS LOCATION MAP
Source: NWI, 2014

Figure 12

5.1.10 Floodplain

Flood hazard areas identified on the Flood Insurance Rate Map (FIRM) are identified as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. The areas of minimal flood hazard, which are the areas outside the Special Flood Hazard Area (SFHA) and higher than the elevation of the 0.2-percent-annual-chance flood, are Zone X, unshaded.

Review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) map numbers 1201960004C and 1201960003C, show the existing SR 9/I-95 at SR 804/Boynton Beach Boulevard and SR 9/I-95 at Gateway Boulevard interchanges passing through Zone X. Zone X encompasses areas of minimal flooding. The floodplain boundaries and associated information are shown on the FEMA flood map provided in **Figure 13**.
Per the requirements of the PD&E Manual Part 2, Chapter 24 a determination of the level of significance is identified as None. None denotes that there are floodplains in the project vicinity but there are no floodplain encroachment impacts from the **Recommended Alternative**. Therefore, a location hydraulic study is not required.

Proposed improvements will not encroach into any special flood zone hazard (100-yr floodplain) areas, thus potential impacts to the 100-year floodplain will not occur. The following statement has been modified to address the specific project related improvements:

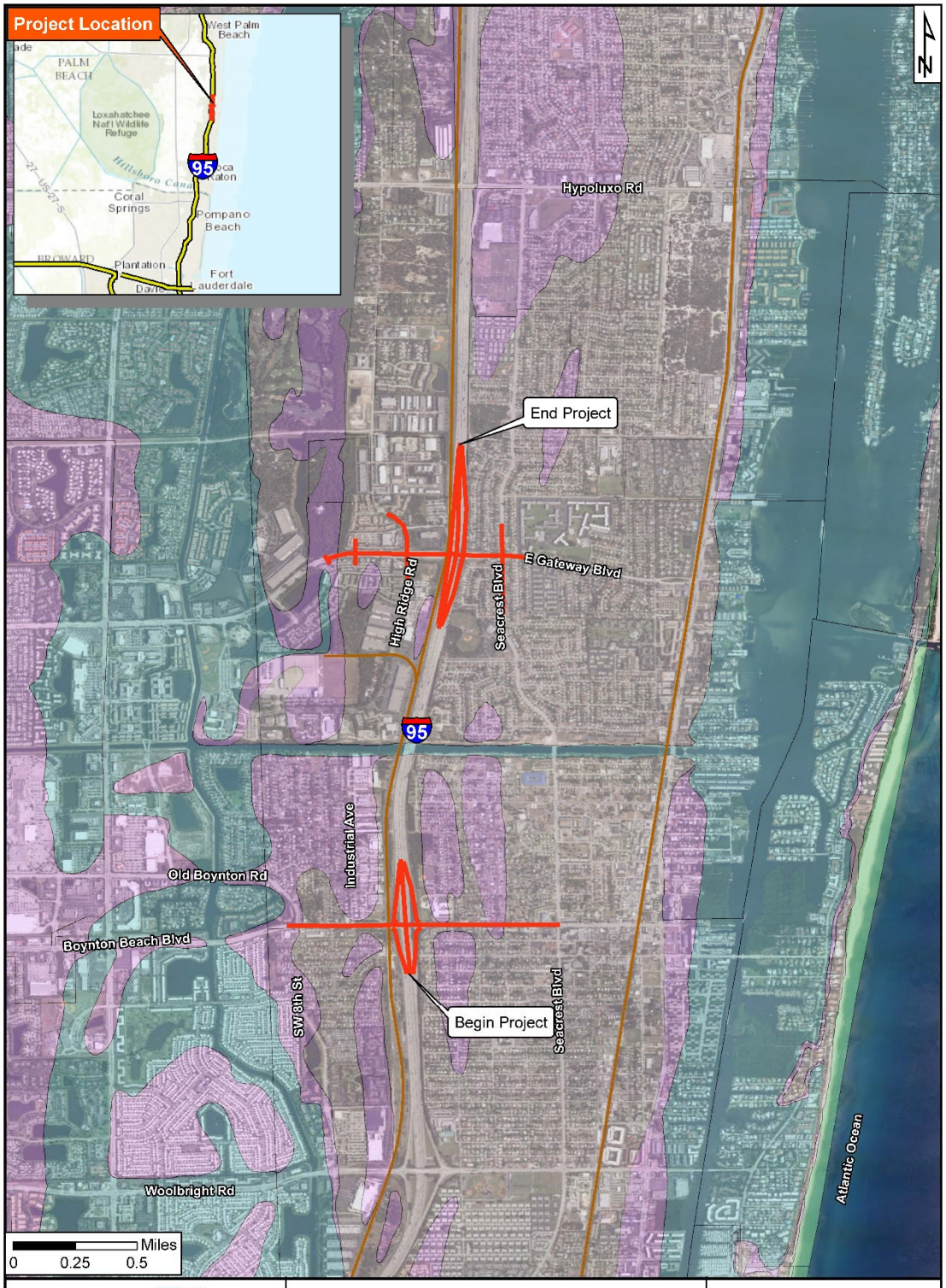
This project does not involve work within the horizontal limits of the 100-year floodplain, no work is being performed below the 100-year flood elevation and, as a result, this project does not encroach upon the base floodplain.

5.1.11 Wildlife and Habitat

The project area was reviewed to identify, map, and assess the presence of critical habitat; the presence of protected species habitat; the level of impact, if any, to critical habitat and/or protected species by the project; and whether any protected species present would be adversely impacted by the proposed project. The study methodology included reviews of the ETAT comments, literature reviews, agency database searches, GIS analyses, and field reviews.

There are no U.S. Fish and Wildlife Service designated critical habitats or National Marine Fisheries (NMFS) Essential Fish Habitat (EFH) within the project areas or potential pond sites. Within the two study areas, several undeveloped parcels and storm water ponds could be utilized by listed species. However, the undeveloped parcels represent low quality upland habitats are within highly developed areas. No natural wetlands exist within, or in the vicinity of the project areas or the potential pond sites.

No other indirect impacts to listed species are anticipated as part of his project. No cumulative impacts to the project areas or potential pond sites are anticipated due to the developed, urban nature of the project area along SR 9/I-95 in Palm Beach County. More detailed discussion of the methodology, data, and findings are included in the Endangered Species Biological Assessment Report (ESBA). The ESBA is on file at the FDOT District Four PLEM office.



FDOT	PD&E Study - SR 9/I-95 at SR 804/Boynton Beach Blvd interchange SR 9/I-95 at Gateway Blvd interchange Palm Beach County, FL FPID: 435804-1-22-01 231932-1-22-01	**FEMA MAP** **Legend** Study Area **Flood Zone** A VE AE X AO X500
PROJECT MANAGER: ERIK VAN ZANDEN / CHECKED BY: HOA NGUYEN		
DRAWING BY: ARCADIS / DATE: 03.17.2017		
PROJECT NUMBER: WF900273 / **Figure 13**		

5.1.12 Noise

A traffic noise study was conducted in accordance with the FDOT PD&E Manual, Part 2, Chapter 17, Highway Traffic Noise (2016) and Title 23 Code of Federal Regulations (CFR) Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise. The primary objectives of the noise study were to determine the existing site conditions including noise-sensitive land uses within the project study area, document the methodology used to conduct the noise assessment, assess the significance of traffic noise levels on noise-sensitive sites for the Existing Conditions, **Recommended** and **No Build Alternatives**, and evaluate the abatement measures for the noise sensitive sites, that approach or exceed the Noise Abatement Criteria (NAC) set forth by the FDOT and FHWA. Traffic Noise Model version 2.5 (TNM) was used for this evaluation. A Noise Study Report (NSR) was prepared for the project and is on file at the FDOT District Four PLEM office.

Noise monitoring was conducted at seven locations to determine the existing sound levels in the study area and to validate the accuracy of the noise model in predicting traffic noise levels within the study area. Within the project study area, a total of 528 receivers representing 528 receptors were identified for the noise study. The noise-sensitive sites identified in the immediate project area are primarily single-family dwelling units near the SR 804/Boynton Beach Boulevard interchange. A few multi-family dwelling units in the area of the Gateway Boulevard interchange were identified.

Noise impacts were observed at 136 receiver locations between the SR 804/Boynton Beach Boulevard and Gateway Boulevard project study limits. Under the Build Alternative (2040), SR 804/Boynton Beach Boulevard traffic noise analysis reported 61 impacted receptors with an average noise level change of 1.18 dB(A) from the Existing Year (2015) is less than the perceived noticeable noise, indicating that the noise impacts of the **Recommended Alternative** for the SR 804/Boynton Beach Boulevard interchange are minimal or negligible.

Under the Build Alternative (2040), Gateway Boulevard traffic noise analysis reported 71 impacted receptors with an average noise level change of 1.3 dB(A) from the Existing Year (2015) is less than the perceived noticeable noise, indicating that the noise impacts of the **Recommended Alternative** for the Gateway Boulevard interchange are minimal or negligible.

This NSR completed for the PD&E Study concludes that construction of noise abatement is neither feasible nor reasonable. Further analysis for noise abatement maybe required during the Design Phase of the project.

5.1.13 Water Quality

The SFWMD & LWDD regulate stormwater discharge and typically require an individual ERP for this project. The SFWMD has also been delegated the authority to regulate impacts to isolated wetlands and wetlands connected to waters of the State. LWDD has determined that the project improvements will be exempt from permitting.

The SFWMD requires that all projects meet State water quality standards, as set forth in Chapter 62-40, Florida Administrative Code (FAC) and the Basis of Review for ERP applications within SFWMD. A Water Quality Impact Evaluation (WQIE) was completed for the project to comply with the Clean Water Act and the Safe Drinking Water Act (**Appendix H**). The results of the WQIE indicate that the project will not result in significant impacts to water quality. (e.g., chemical, physical, and biological properties) because the proposed improvements are to an existing

facility. In addition, the runoff from any proposed impervious surfaces associated with the roadway improvements will be treated in accordance with SFWMD storm water permitting requirements.

The additional impervious area required for the proposed improvements at the SR 804/Boynton Beach and Gateway Boulevard interchanges will be accommodated in the proposed stormwater management system Stormwater treatment facilities will be designed in accordance with applicable state and local regulations. To meet SFWMD water quality criteria the requirements shall be met:

- Wet detention volume shall be provided for the first inch of runoff from the developed project, or the total runoff of 2.5-inches times the percentage of imperviousness, whichever is greater.
- Dry detention volumes shall be provided equal to 75% of the above amounts computed for wet detention.
- Dry retention volumes shall be provided equal to 50% of the above amounts computed for wet detention.

5.1.14 Air Quality

The Recommended Build and No-Build Alternatives of this project were screened for potential air quality impacts using FDOT's screening model (CO Florida 2012, Version 1.01) to produce estimates of one-hour and eight-hour CO at default air quality receptor locations. The one-hour and eight-hour estimates can be directly compared to the current one-and eight-hour National Ambient Air Quality Standards (NAAQS) for CO, 35 PPM and 9 PPM, respectively.

The roadway intersection selected for screening is typically the one with the worst-case combination of traffic volumes, low vehicular speeds, and closest receptors. The **Recommended** and **No Build Alternatives** for the Open Year (2020) and the Design Year (2040) were evaluated. Based on the traffic study completed for the project, the SR 804/Boynton Beach Boulevard at SR 9/I-95 southbound ramp terminal intersection was chosen for the SR-9/I-95 at SR 804/Boynton Beach Boulevard interchange project area for both Open Year (2020) and Design Year (2040) traffic conditions and the Gateway Boulevard at High Ridge Road and Gateway Boulevard at SR 9/I-95 southbound ramp terminal intersection were chosen for the Open Year (2020) and Design Year (2040) respectively for the SR-9/I-95 and Gateway Boulevard interchange project area. The Build and No-Build alternatives for this project assumed similar traffic demand and have identical traffic volume input information. The traffic data input used in the evaluation are provided in the Air Quality Technical Memorandum completed which is included in **Appendix I**.

The project **"passes"** the screening model by achieving CO levels well below the one- and eight-hour NAAQS CO standards. Results of the analysis indicate that the all intersections analyzed are below the one-and eight-hour NAAQS for CO. The outputs from the CO Florida 2012 screening models are provided in **Appendix I**. Air quality impacts due to construction operations for the proposed highway improvement project are expected to be short-term, minor, and localized.

To date, no national standards have been established regarding GHGs, nor has United States EPA established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO_2 under the Clean Air Act. FHWA has concluded, based on the nature of GHG emissions and the exceedingly small potential GHG impacts of the proposed action that the GHG emissions from the proposed action will not result in "reasonably foreseeable significant adverse impacts on the human environment" (40 CFR 1502.22(b)). The GHG emission from the project Build Alternatives will be insignificant, and will not play a meaningful role in a

determination of the environmentally preferable alternative or the selection of the **Recommended Alternative**. For these reasons, no GHG analysis has been performed for the alternatives proposed for this project.

The project is located in Palm Beach County, an area currently designated as being in attainment for all of the National Ambient Air Quality Standards under the criteria provided in the Clean Air Act. Therefore, the Clean Air Act conformity requirements do not apply to the project.

5.1.15 Contamination

A Contamination Screening Evaluation Report (CSER) was completed for this PD&E Study in accordance with Part 2, Chapter 22 "Contamination Impacts" of the FDOT PD&E Manual, revised September 1, 2016. This report evaluated potential and existing contamination sources within the project area buffer. The CSER is included is on file at the FDOT District Four PLEM office.

Available records reported many sources associated with hazardous waste management, petroleum storage systems/spills, cleaning or dry-cleaning activities, and environmental contamination within a one-quarter mile radius of the project corridor. An evaluation of site characteristics for these sources and associated environmental information identified 71 sources. The risk rating distribution for these identified sites/facilities is presented in **Table 29**.

Based on these risk ratings, soil or groundwater contamination which can potentially impact worker health, the environment, construction schedule, and costs may be encountered during construction if potentially impacted sites are not addressed in the design phase.

Asbestos was banned in most friable building materials (spray-applied surfacing materials and thermal system insulation) in 1978, but the U.S. Occupational Safety and Health Administration deems spray-applied surfacing materials, thermal system insulation materials, and vinyl flooring materials as presumed asbestos-containing materials (ACM) if they are present in pre-1980 structures (29 Code of Federal Regulations, Subparts 1910.1001 and 1926.1101).

Table 29 Summary of Potential Contamination Sources by Risk Rating

Risk Rating	Number of Sites		
	SR 804/Boynton Beach Boulevard Interchange	Gateway Boulevard Interchange	TOTAL
High	11	5	16
Medium	11	5	16
Low	20	12	32
No	6	1	7
TOTAL	48	23	71

A hazardous materials survey or visual inspection of potential ACMs and metal based coatings were not included in the CSER. ACMs may have been used in building materials for construction of the SR 804/Boynton Beach Boulevard bridge structure crossing over the SFRC (Bridge # 930289) and crossing over SR 9/I-95 (Bridge # 930285). Both bridges were constructed in 1976.

It is recommended that a hazardous material survey be completed if construction activities will disturb existing infrastructure, equipment, or utilities that potentially contain asbestos PCBs, or paint with heavy metals.

5.2 Evaluation Matrix

The project is evaluated with respect to transportation, social, economic, cultural, physical, natural, and biological resources as part of the PD&E Study. This section discusses direct impacts (loss of a resource), indirect impacts (changes in function or quality of a resource), and cumulative impacts (historical, project-related, and foreseeable impacts). The analysis of the potential beneficial or adverse impacts of the project's **Build** and **No Build Alternatives** are summarized in **Tables 30** and **31**.

Table 30. Evaluation Matrix – SR 804/Boynton Beach Boulevard

Evaluation Factors	No Build Alternative	TSM&O[1]	Concept Development Alternative	Streamlined Concept Development Alternative	Single Point Urban Interchange (SPUI) Alternative
Engineering					
Meets Geometric Design Criteria	No	No	Yes	Some	Yes
Provides Current FDOT Standards for Bicycle Facilities	No	No	Yes	Yes	Yes
Provides Pedestrian Facilities	Yes	Yes	Yes	Yes	Yes
Improves Mobility	No	Some	Yes	Yes	Yes
Improves Traffic Operations	No	Some	Yes	Yes	Yes
Improves Safety	No	Some	Yes	Yes	Yes
Meets Purpose & Need	No	No	Yes	Yes	Yes
Physical Resource Impacts					
Residential Properties Impacted – Single Family	0	0	0	0	0
Residential Properties Impacted – Multifamily	0	0	1	1	1
Schools Impacted	0	0	1	1	1
Business Properties Impacted	0	0	21	14	14
Total Properties Impacted	**0**	**0**	**23**	**16**	**16**
Potential Relocations - Residential	0	0	1	1	1
Potential Relocations - Commercial	0	0	1	0	0
Contamination Sites Impacted	0	0	1	0	0
Required Right of Way (Acres)	0	0	1.207	0.644	0.644
Cultural and Natural Resource Impacts					
Improves Air Quality	No	Some	Yes	Yes	Yes
Impacted Noise Receptors[2]	None	N/A	N/A	61	N/A
Wetlands (acres)	0	0	0	0	0

Evaluation Factors	No Build Alternative	TSM&O[1]	Concept Development Alternative	Streamlined Concept Development Alternative	Single Point Urban Interchange (SPUI) Alternative
Wildlife and Habitat	0	0	0	0	0
Archaeological Sites	0	0	0	0	0
Current and Previously Recorded Historic Structures to Avoid	0	2	2	2	2
Parks / Recreation (Section 4f)	0	0	0	0	0
Operational Improvement (Design Year 2040)					
Total Intersection Delay AM Peak Hour (minutes/vehicle)	10.75	8.45	4.75	4.77	4.33
Reduction in Delay from No-Build AM Peak Hour (percent)	-	**21.4%**	**55.8%**	**55.6%**	**59.7%**
Total Intersection Delay PM Peak Hour (minutes/vehicle)	8.68	7.27	5.47	4.82	4.45
Reduction in Delay from No-Build PM Peak Hour (percent)	-	**16.2%**	**37.0%**	**44.5%**	**48.7%**
Costs ($-millions)					
Roadway Construction (LRE Cost)	N/A	N/A	$32,914,899	$20,377,866	$47,478,774
Engineering/Design (10% of Construction)	N/A	N/A	$3,291,490	$2,037,787	$4,747,877
CEI (15% of Construction)	N/A	N/A	$4,937,235	$3,056,680	$7,121,816
Right-of-Way Acquisition	N/A	N/A	$18,600,000	$13,600,000	$13,600,000
TOTAL COST	**N/A**	N/A	**$59,743,624**	**$39,072,333**	**$72,948,467**

sec/veh – seconds per vehicle

1 Transportation Systems Management and Operations

2 Noise Impacts evaluated for the Recommended Alternative only

All public comments received will be considered during the PD&E Study

Table 31. Evaluation Matrix – Gateway Boulevard

Evaluation Factors	No Build Alternative	TSM&O[1]	Concept Development Alternative	Streamlined Concept Development Alternative	Single Point Urban Interchange (SPUI) Alternative
Engineering					
Meets Geometric Design Criteria	No	No	Yes	Some	Some
Provides Current FDOT Standards for Bicycle Facilities	No	No	Yes	Yes	Yes
Provides Pedestrian Facilities	Yes	Yes	Yes	Yes	Yes
Improves Mobility	No	Some	Yes	Yes	Yes
Improves Traffic Operations	No	Some	Yes	Yes	Yes
Improves Safety	No	Some	Yes	Yes	Yes
Meets Purpose & Need	No	No	Yes	Yes	Yes
Physical Resource Impacts					
Residential Properties Impacted – Single Family	0	0	41	25	25
Residential Properties Impacted – Multifamily	0	0	1	1	1
Schools Impacted	0	0	0	0	0
Business Properties Impacted	0	0	11	7	7
Total Properties Impacted	**0**	**0**	**53**	**33**	**33**
Displacements - Residential	0	0	5	5	6
Displacements - Commercial	0	0	1	1	1
Contamination Sites Impacted	0	0	5	3	3
Required Right of Way (Acres)	0	0	2.37	2.28	2.07
Cultural and Natural Resource Impacts					
Improves Air Quality	No	Some	Yes	Yes	Yes
Impacted Noise Receptors[2]	No	N/A	N/A	N/A	71
Wetlands (acres)	0	0	0	0	0

Evaluation Factors	No Build Alternative	TSM&O[1]	Concept Development Alternative	Streamlined Concept Development Alternative	Single Point Urban Interchange (SPUI) Alternative
Wildlife and Habitat	0	0	0	0	0
Archaeological Sites	0	0	0	0	0
Current and Previously Recorded Historic Structures To Avoid	0	0	1	1	1
Parks / Recreation (Section 4f)	0	0	0	0	0
Operational Improvement (Design Year 2040)					
Total Intersection Delay AM Peak Hour (minutes/vehicle)	11.00	8.24	3.49	3.99	3.28
Reduction in Delay from No-Build AM Peak Hour (percent)	-	**25.1%**	**68.3%**	**63.7%**	**70.2%**
Total Intersection Delay PM Peak Hour (minutes/vehicle)	8.02	6.79	3.02	3.38	2.85
Reduction in Delay from No-Build PM Peak Hour (percent)	-	**15.3%**	**62.3%**	**57.9%**	**64.5%**
Costs ($-millions)					
Roadway Construction	N/A	N/A	$19,946,597	$18,109,969	$20,545,855
Engineering/Design (10% of Construction)	N/A	N/A	$1,994,660	$1,810,997	$2,054,586
CEI (15% of Construction)	N/A	N/A	$2,991,990	$2,716,495	$3,081,878
Right-of-Way Acquisition	N/A	N/A	$13,000,000	$10,700,000	$10,100,000
TOTAL COST	**N/A**	**Low**	**$37,933,247**	**$33,337,461**	**$35,782,319**

sec/veh – seconds per vehicle

1 Transportation Systems Management and Operations

2 Noise Impacts evaluated for the Recommended Alternative only

All public comments received will be considered during the PD&E Study

6. Design Details of Recommended Alternatives

6.1 Typical Section Package

The proposed typical section for SR 804/Boynton Beach Boulevard Recommended Alternative provides three 11-foot lanes in the east and west directions with a raised center median. Two turn left-lanes for access to the SR 9/I-95 ramps are provided in the east and west directions. A 7-foot buffered bicycle lane will be provided in the east and west directions along with 6-foot sidewalks adjacent to the back of the curb. **Figure 14** shows the proposed roadway typical section for SR 804/Boynton Beach Boulevard on the west side of SR 9/I-95 at the ramp locations. **Appendix J** depicts more detailed information for the project typical section package.

The proposed typical section for the Gateway Boulevard Recommended Alternative provides three 11-foot lanes in the east and west directions with a raised center median. for access to the SR 9/I-95 ramps are provided in the east and west directions. A 7-foot buffered bicycle lane will be provided in the east and west directions along with 6-foot sidewalks adjacent to the back of the curb. **Figure 15** shows the existing roadway typical section for Gateway Boulevard on the west side of SR 9/I-95 at the ramp locations. **Appendix J** depicts more detailed information for the project typical section package.

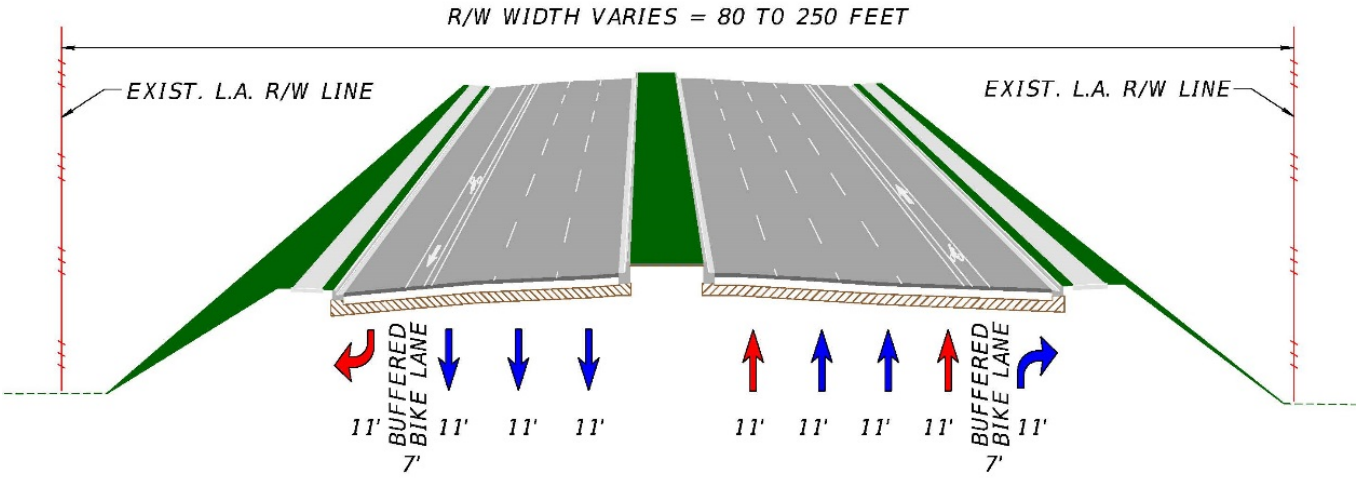


Figure 14. Proposed Typical Section – SR 804/Boynton Beach Boulevard

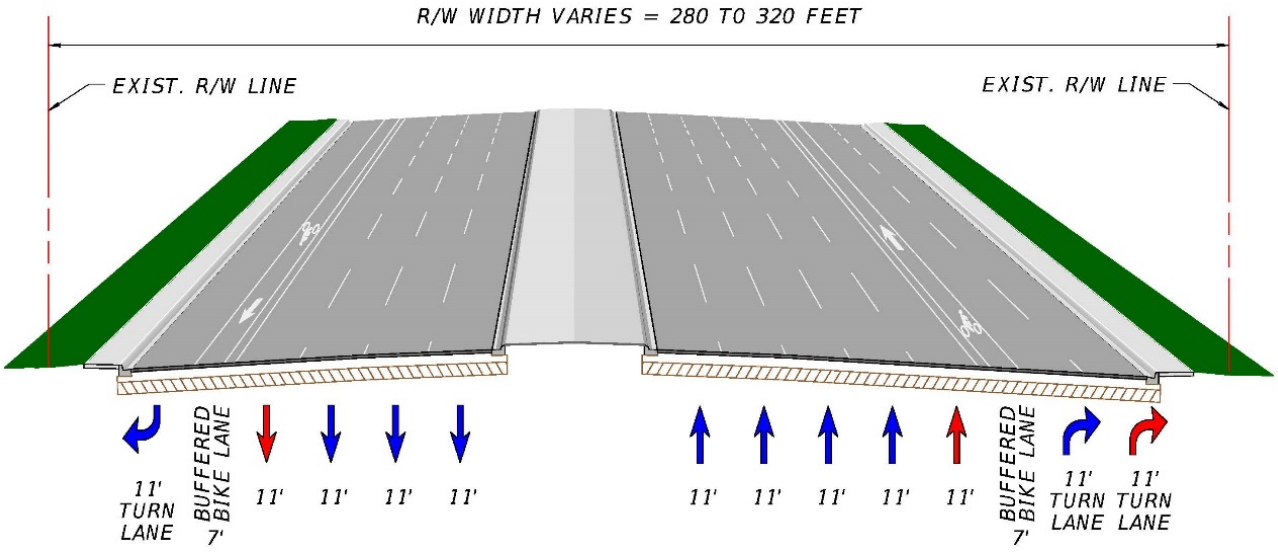


Figure 15. Proposed Typical Section – Gateway Boulevard

6.2 Intersection and Signal Analysis

Analyses of the SR 9/I-95 system including the mainline and interchange ramps and the SR 804/Boynton Beach Boulevard and Gateway Boulevard arterials for the **Recommended Alternatives** were based on criteria and policies detailed in the FDOT Traffic Analysis Handbook (March 2014). Freeway and ramp merge/diverge or weaving operational analyses were conducted utilizing Highway Capacity Software (HCS 2010). Intersection capacity analyses were conducted using Synchro 9.0 software. Results were reported utilizing the HCM 2000 outputs from Synchro 9 for all alternatives analyzed to maintain consistency. The measures of effectiveness (MOE) summarized and reported to evaluate the performance of the **Recommended Alternatives** are consistent with the MOEs approved in the MLOU for this project.

A SIMR was completed for this PD&E study and summarizes the traffic operational and safety analysis performed to evaluate the operational performance of the Recommended Alternatives. The SIMR has been prepared in accordance with FDOT Policy No. 000-525-015, FDOT Procedure No. 525-030-160, and the FDOT Traffic Forecasting Handbook (Procedure No. 525-030-120). The findings from the LOS analysis for the **Recommended Alternatives** are included in the Traffic Forecasting Technical Memorandum (**Appendix D**) and the SIMR which is on file with the District Four PLEM office.

6.3 Right of way Needs and Relocation

The proposed improvements associated with the Recommended Alternatives will require a minimal amount of additional ROW and are not anticipated to significantly affect the land use in the area. To minimize property impacts along SR 804/Boynton Beach Boulevard, improvements to the west of SR 9/I-95 are located to the south side of the roadway. To the east of SR 9/I-95, improvements are located on both the north and south sides of the roadway. Approximately 0.6 acres of ROW will be required for the Recommended Alternative. ROW acquisition along

SR 804/Boynton Beach Boulevard is anticipated to impact one multi-family residential, 14 commercial and one school property. Of these 16 property impacts only 1 potential residential relocation is anticipated.

To minimize property impacts along Gateway Boulevard, improvements to the west of I-95 are located to the south side of the roadway. To the east of I-95, improvements are located on both the north and south sides of the roadway. Approximately 2 acres of ROW will be required for the Recommended Alternative. ROW acquisition is anticipated to impact 25 single family residential, 1 multi-family residential, and 7 commercial properties. Of these 33 properties, 5 residential and 1 commercial relocation is anticipated.

A Conceptual Stage Relocation Plan will be prepared by the FDOT if relocations are determined to be necessary. FDOT will carry out a ROW and relocation program in accordance with Florida Statute 339.09 and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91- 646 as amended by Public Law 100-17).

6.4 Costs Estimates

Preliminary construction cost estimates were established using the FDOT Long Range Estimate (LRE) program. **Tables 32** and **33** presents a summary of the estimated costs for the Recommended Alternative for SR 9/I-95 at SR 804/Boynton Beach Boulevard and Gateway Boulevard. The FDOT Long Range Estimates (LRE) were completed for each interchange location and are provided in **Appendix K**.

Table 32. Preliminary Cost Estimate – SR 804/Boynton Beach Boulevard

Description	Streamlined Concept Development Alternative Costs ($-millions)
Roadway Construction	$22,728,797
Engineering/Design (10% of Construction)	$2,272,880
CEI (15% of Construction)	$3,409,320
Right-of-Way Acquisition	$13,600,000
TOTAL COST	**$42,010,997**

Table 33. Preliminary Cost Estimate - Gateway Boulevard

Description	Single Point Urban Interchange (SPUI) Alternative Costs ($-millions)
Roadway Construction	$21,937,976
Engineering/Design (10% of Construction)	$2,193,798
CEI (15% of Construction)	$3,290,696
Right-of-Way Acquisition	$10,100,000
TOTAL COST	**$37,522,470**

6.5 Planning Consistency

The federal Fixing America's Surface Transportation Act (FAST Act, 2015) serves as the current regulatory and funding framework for transportation planning. The Palm Beach Metropolitan Planning Organization (MPO) is the government organization that provides both long-range and short-term transportation planning for Palm Beach County. The Palm Beach MPO 2040 Long Range Transportation Plan (LRTP, October 2014), as amended, represents long-term transportation planning for Palm Beach County. Short-term planning is represented by the MPO's Transportation Improvement Program (TIP). The purpose of the LRTP is to identify the transportation needs of the community and establish priorities for funding those improvements in the TIP. The MPO priority projects are listed in the TIP Priority Projects FY 2017-2021 (June 2016).

FDOT lists planned projects with federal participation, including all MPO TIPs, in the State Transportation Improvement Program (STIP) which is submitted to and approved by the FHWA. The PD&E Study for the SR 804/Boynton Beach Boulevard Interchange and Gateway Boulevard Interchange is programmed for PD&E Study under the STIP (February 2017). Planning consistency information is presented in **Tables 34** and **35**.

Table 34. Planning Consistency – SR 804/Boynton Beach Boulevard

Currently Adopted CFP-LRTP	**COMMENTS**				
PHASE	**Currently Approved TIP**	**Currently Approved STIP**	**TIP/STIP $**	**TIP/STIP FY**	**COMMENTS**
PE (Final Design)	Y	Y	$5,150,000	FY 2016-2020	STIP reports $1,023,456 for PD&E year <2016 and 362,376 for 2017. STIP reports $5,150,000 for PE >2020. Shown in LRTP in Year 2020-2040 Desires Plan SIS and Turnpike Projects. TIP FY 2017 – 2021 shows $5,150,000 for preliminary engineering at year 2021.
R/W	N	N	$0	FY >2020	
Construction	N	N	$13,823,592	FY >2020	TIP FY 2017 – 2021 shows Future Years Cost at $13,823,592 for preliminary engineering STIP reports $113,823,592 for construction >2020.

Table 35. Planning Consistency – Gateway Boulevard

Currently Adopted CFP-LRTP	**COMMENTS**				
PHASE	**Currently Approved TIP**	**Currently Approved STIP**	**TIP/STIP $**	**TIP/STIP FY**	**COMMENTS**
PE (Final Design)	Y	Y	$6,000,000	2020	TIP Includes $50,000 railroad and utilities (RRU) TIP Reports prior year (2015) cost of $1,010,000 for PD&E. STIP reports $6,000,000 for PE and $11,300,000 for RRU. STIP reports $1,009,913 for PD&E year <2016

R/W	Y	Y	$5,623,170	>2020	TIP and STIP report $1,000,000 in FY>2019
Railroad & Utilities	Y	Y	$50,000 $11,250,000	2020 >2020	Current STIP shows railroad and utilities at $50,000 for year 2020 and $11,250,000 for years >2020. FY 2017-2021 TIP shows railroad and utilities at $6,050,000 in year 2020 and future years cost $46,471,808 and $53,543,183 total for all years.
Construction	Y	Y	$33,437,704	>2020	FY 2017-2021 TIP shows future years cost at 46,471,808. STIP reports $33,437,704 for construction >2020 and $57,747,164 total for all years.

6.6 Bicycle and Pedestrian Facilities

The Recommended Alternatives for both SR 804/Boynton Beach Boulevard and Gateway Boulevard include provisions for bicycles with a 7-foot buffered bicycle lane in each direction located adjacent to the outside travel lanes. A 6-foot sidewalk will be located adjacent to the back of curb.

6.7 Utility Impacts

Requests for utility data were made to Utility Agency/Owners (UAO) within the PD&E Study area**.**

Existing utilities within the project area are summarized in **Table 36** and include overhead power lines, underground fiber optic, cable, water distribution, sanitary sewer, and gas distribution.

The **Recommended Alternatives** will impact existing utilities located along SR 804/Boynton Beach Boulevard and Gateway Boulevard. Along the south side of SR 804/Boynton Beach Boulevard, utility poles are located at the back of the existing sidewalk and west and east of SR 9/I-95. These utility poles carry overhead electric, telephone, and cable tv lines along with streetlights. These poles and overhead lines will conflict with proposed roadway widening and will have to be relocated. SR 9/I-95 on- and off-ramp lighting conflicts with the proposed ramp improvements at all four interchange ramps. Relocation and/or replacement lighting will be required.

Along Gateway Boulevard, streetlights exist on both sides of the roadway. On the west side of SR 9/I-95, streetlights on the north side of the roadway will need to be relocated to accommodate the proposed roadway widening. East of SR 9/I-95, streetlights on the south side of Gateway Boulevard will need to be relocated to accommodate roadway widening. An existing overhead utility pole and associated guy wires located on the south side of Gateway Boulevard east of Seacrest Boulevard will be in conflict with the roadway widening and will have to be relocated.

Within the SR 804/Boynton Beach Boulevard and Gateway Boulevard interchanges, FDOT and Palm Beach County maintain underground ITS and roadway lighting conduits or cables. Coordination during design and construction will be required to determine the need for relocation and or replacement of the underground ITS and/or lighting facilities.

At the SR 804/Boynton Beach Boulevard and Gateway Boulevard interchanges, underground utilities may be affected due to construction of new stormwater drainage improvements. The underground utilities include potable water, sanitary sewer, telecommunications, gas, and ITS lines. Coordination with the utility agencies/owners will be required to identify potential conflicts and mitigate utility relocation requirements.

Table 36. Summary of Utility Agency/Owners

Service Code	Utility	Contact	Address	Phone Numbers	Utility Type	Marked Plans
AT1931	American Traffic Solutions	Santiago Martinez	1330 West Southern Avenue Suite 101 Tempe, AZ 85282	Day: 480-596-4595 Em: 866-682-8689	Communications/ Electric	
BOY796	City of Boynton Beach	Chistopher Roschek	124 E Woolbright Road Boynton Beach, FL 33435	Day: 561-742-6413 Alt: 561-632-4000	Water/Sewer/ Stormwater	
FD2054	FDOT Palm Beach	Katherine Rico	2300 N Jog Road, Suite 4E-41E West Palm Beach, FL 33411	Day: 954-847-8680 Alt: 954-829-9385 Em: 954-847-2680	Electic & Fiber	
FPLFPB	FPL Fibernet LLC	Danny Haskett	9250 W Flagler Street Miami, FL 33174	Day: 305-552-2931 Alt: 786-246-7827	Fiber	
FPLPAL	Florida Power & Light - Palm Beach	Tracy Stern	2900 Catherine Street Palatka, FL 32177	Day: 800-868-9554 Alt: 386-329-5152	Electric	
FPUC01	FLA Public Utilities	Dale M. Butcher	209 N Sapodilla Avenue West Palm Beach, FL 33401	Day: 561-366-1635 Alt: 561-602-3702	Gas	
MCIU01	MCI	Dean Boyers	2400 N Glenville Drive Richardson, TX 75802	Day: 972-729-6322	Communications/ Fiber Optic	
PBT865	Palm Beach County Traffic Operations	Rod Friedel	2300 Jog Road West Palm Beach FL 33411-2747	Day: 561-681-4371	Traffic Signal Lights	
SBF13	AT&T/Distribution	Garth Bedward		gb7410@att.com 561-357-6553	Telephone	
WBTV01	Comcast Boca Delray	Tony Sprinsteel	1495 NW Britt Road Stuart, FL 34994	Day: 561-804-0973 Alt: 772-321-3425	CATV	
HC1660	Hotwire Communications	Phil Gallub		Day: 305-219-0286	Fiber, Telephone, CATV, COAX	
QPA987	Quantum Park Property Owners Association	Eugene Garlica	2500 Quantum Lakes Drive, Suite 101 Boynton Beach, FL 33426	Day: 561-740-2447 x16 Alt: 772-971-9491	Water	

The SR 804/Boynton Beach Boulevard and Gateway Boulevard PD&E Study areas are in a developed urban area that contains numerous existing utility facilities. As such, it is anticipated that the roadway and interchange improvements will impact many utility facilities. Mitigation measures should be incorporated into the final design to minimize impacts to existing utilities to the maximum extent practicable. The final design should be evaluated to minimize and avoid utility conflicts where possible and minimize costs and impacts to the utility owners and customers.

Additional information regarding the existing utilities and anticipated impacts can be found in the Utility Assessment Package (**Appendix L**).

6.8 Railroad

No portion of SFRC land is required for the Recommended Alternative. Expansion of the existing aerial easement for the roadway bridges will be required. As part of the alternatives development and selection, the FDOT has made a commitment that the proposed interchange improvements will provide adequate clearance (horizontal and vertical) over the SFRC as part of the bridge widening. It is anticipated that no structure will be located within the SFRC ROW.

The FDOT is the owner of the SFRC. The SFRTA provides coordination and administration of proposed permits and occupancies by outside parties for the SFRC. The SFRTA is the contact for any upgrade/modification/demolition to existing overhead bridges crossing over or parallel to SFRC tracks.

6.9 Drainage

The additional impervious area required for the proposed improvements at the SR 804/Boynton Beach and Gateway Boulevard interchanges will be accommodated. The proposed drainage basin divides will generally follow the existing drainage basin divides and the proposed drainage system will mimic the existing drainage pattern. The stormwater runoff flows will be captured in the proposed curb and gutter inlets which will convey the captured stormwater runoff into wet or dry retention or detention ponds. Since the proposed roadway improvements mainly consist of widening existing pavements, the existing profile grade will be generally maintained.

The evaluation of potential pond site locations was completed following the District Four Pond Siting Procedures. This included identification of pond site locations and screening through an evaluation matrix of 18 criteria. The results of the pond siting screening process for SR 9/I-95 at SR 804/Boynton Beach Boulevard are included in the Pond Siting Report (**Appendix M**) completed for the project.

Pond site location recommendations are based on preliminary data calculations, reasonable engineering judgment, and assumptions along with the results of the pond screening analysis. Stormwater management sizing calculations are included in **Appendix M**. Pond sizes and locations may change during final design as more detailed information becomes available. The recommended pond site alternatives for SR 9/I-95 at SR 804/Boynton Beach Boulevard are presented in **Table 37** and shown in **Figure 16**. The recommended pond site alternatives for SR 9/I-95 at Gateway Boulevard are presented in **Table 38** and shown in **Figure 17**. Pre- versus post-development calculation results are included in **Appendix M**.

Table 37. Summary of Recommended Pond Site Alternatives – SR 804/Boynton Beach Boulevard

Basin	Pond Site Number	Pond Area (Acres)	Basin Area (Acres)	Required Dry Pre-Treatment (Acre-Feet)	Required Wet Detention (Acre-Feet)	Total Required PAV (Acre-Feet)	Provided Dry Pre-Treatment (Acre-Feet)	Provided Wet Detention (Acre-Feet)	Total Provided PAV (Acre-Feet)
1	17	1.44	7.94	0.75	0.00	0.75	0.79	0.00	0.79
2	9	1.00	3.37	0.37	0.00	0.37	0.69	0.00	0.69

Table 38. Summary of Recommended Pond Site Alternatives – Gateway Boulevard

Basin	Pond Site Number	Pond Area (Acres)	Basin Area (Acres)	Required Dry Pre-Treatment (Acre-Feet)	Required Wet Detention (Acre-Feet)	Total Required PAV (Acre-Feet)	Provided Dry Pre-Treatment (Acre-Feet)	Provided Wet Detention (Acre-Feet)	Total Provided PAV (Acre-Feet)
4	1	1.11	4.89	0.00	0.79	0.79	0.00	0.81	0.81
5	4	1.51	5.78	0.67	0.00	0.67	0.67	0.00	0.67

Figure 16. Recommended Pond Sites – SR 804/Boynton Beach Boulevard

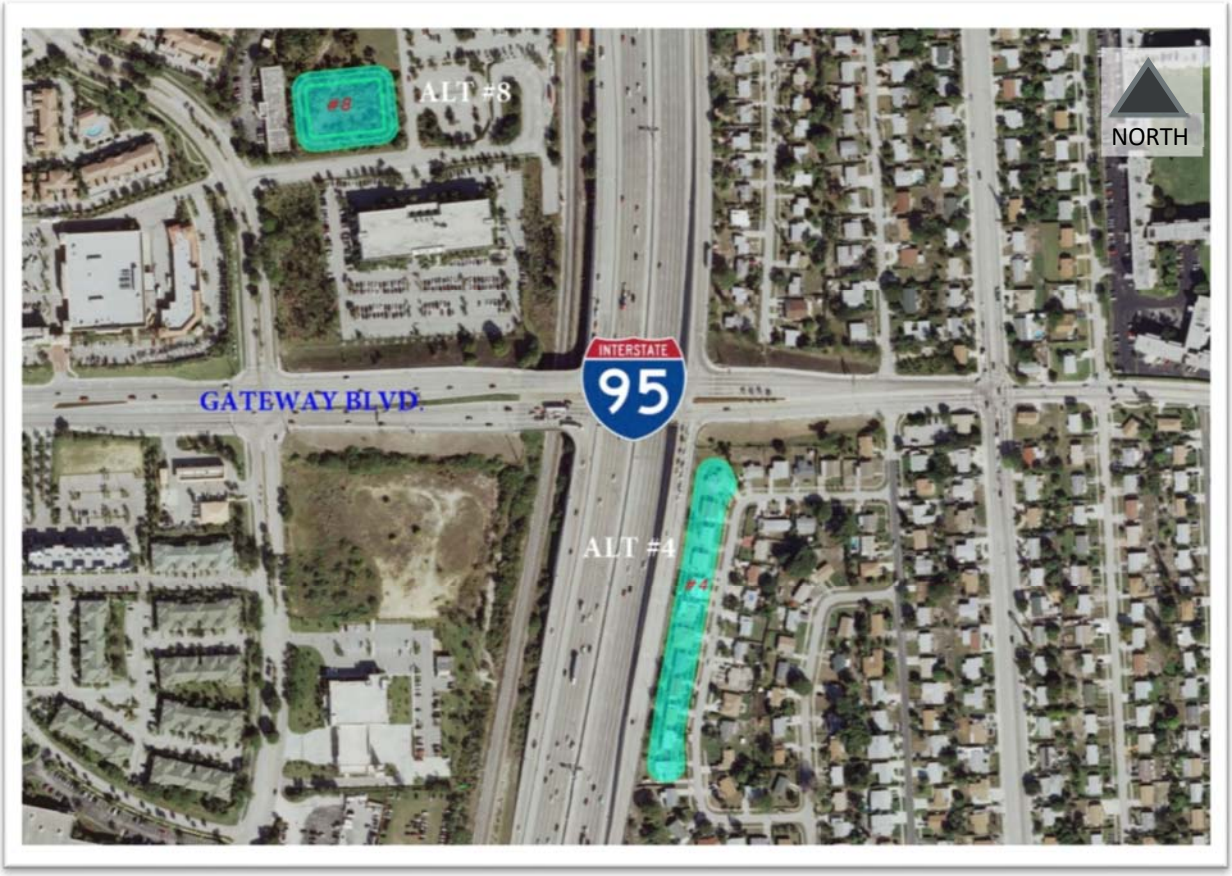


Figure 17. Recommended Pond Sites – Gateway Boulevard

6.10 Access Management

According to FDOT Access Management standards, SR 804/Boynton Beach Boulevard is a Class 5 facility. **Table 39** presents the existing access and recommended changes for access management along SR 804/Boynton Beach Boulevard from Old Boynton Road to Seacrest Boulevard for the Recommended Alternative.

According to FDOT Access Management standards, Gateway Boulevard is a Class 3 facility. **Table 40** presents the existing access and recommended changes for access management along Gateway Boulevard from Quantum Town Center to Seacrest Boulevard for the Recommended Alternative.

6.11 Design Variations

The following Design Variations have been identified for the SR 9/I-95 at SR 804/Boynton Beach Boulevard **Recommended Alternative**:

- Border Width: 14 feet required (12 feet with bicycle or auxiliary lanes provided), 10 feet minimum proposed
- Border width at interchange ramps: 4 feet required, 12 feet minimum proposed
- K value for crest vertical curve: 98 required for 45 mph design speed, 77.8 existing

Table 39. Access Management Plan – SR 804/Boynton Beach Boulevard

State Section Number:	93200000	**County:**	Palm Beach
FM Number:	435804-1-22-01	**Classification:**	5
State Road Number:	SR 804 (Boynton Beach Boulevard)	**Speed Limit:**	45 MPH
Limits:	Old Boynton Road (MP 7.822) to Seacrest Boulevard (MP 8.769)		

Existing Opening	Mile Post	Approximate Station	Existing Opening Type	Existing Spacing (Feet)	Recommended Changes	Proposed Spacing (Feet)	Deviation from Standard (%)
WB to EB directional median opening	7.910	426+00	Directional		Close Opening	N/A	N/A
West Industrial Avenue	8.022	431+74	Full	574	None	1,041	21%
I-95 SB Ramps	8.182	12+30	Full	860	None	860	35%
I-95 NB Ramps	8.245	15+60	Full	330	None	330	75%
Left Turn - Inn at Boynton Beach	8.358	21+55	Full	595	Convert to Directional	595	10%
Left Turn - NW 4th Street	8.422	24+60	Directional	305	None	305	54%

Table 40. Access Management Plan – Gateway Boulevard

State Section Number:	93220000	**County:**	Palm Beach
FM Number:	231932-1-22-01	**Classification:**	3
State Road Number:	Gateway Boulevard	**Speed Limit:**	45 MPH
Limits:	Quantum Town Center to Seacrest Boulevard		

	Existing Opening	Mile Post	Approximate Station	Existing Opening Type	Existing Spacing (Feet)	Recommended Changes	Proposed Spacing (Feet)	Deviation from Standard (%)
1	Entrance to Quantum Lake Village	N/A	90+70	Directional		None		
2	Quantum Village/Quantum Town Center	N/A	96+60	Full	590	None	590	55%
3	Quantum Village	N/A	100+90	Directional	430	None	430	67%
4	High Ridge Road	N/A	106+25	Full	535	None	535	59%
5	I-95 SB Ramps	N/A	114+50	Full	830	Revise to SPUI Configuration	945	N/A
6	I-95 NB Ramps	N/A	117+00	Full	185	Revise to SPUI Configuration	N/A	N/A
7	Seacrest Boulevard	N/A	124+50	Full	880	None	880	67%

The following Design Variations have been identified for the SR 9/I-95 at Gateway Boulevard **Recommended Alternative**:

- Border width: 14 feet required (12 feet with bicycle or auxiliary lanes provided), 8 feet minimum proposed
- Border width at interchange ramps: 94 feet required, 12 feet minimum proposed
- Median width: 40 feet required for design speed >45 mph, 28 to 29 feet proposed

6.12 Value Engineering

A Value Engineering (VE) Study was held, during May 22 – 26, 2017 using the VE methodology to improve PD&E Study. The objective of the VE Study was to identify opportunities and propose recommendations that may improve value in terms of capital cost, constructability, maintenance of traffic, and the basic functional requirements of the project. The objective of this evaluation was to identify ideas with the most promise to achieve savings while preserving functions or improving operations

The VE team will prepare a VE Study Report that will document the value engineering analysis performed related to the planned project improvements. The report will summarize existing conditions, documents the purpose and need for the project, as well as document other engineering, environmental, and social data related to preliminary design concepts.

The design suggestions identified by the VE team are presented for FDOT's consideration. No specific action is normally required to accept or not accept the suggestions, though it is often helpful, for documentation purposes, to formally list those suggestions that will be acted upon by FDOT. A summary of the VE Study recommendations are will be following the public hearing and selection of the Preferred Alternative.

7. Public Involvement & Coordination

7.1 Public Involvement Plan

A project specific Public Involvement Plan (PIP) was developed at the beginning of the PD&E process for the project. The purpose of the PIP is to assist in providing information to and obtaining input from concerned citizens, agencies, private groups (residential/business), and governmental entities. The overall goal of this plan is to help ensure that the study reflects the values and needs of the communities it is designed to benefit.

7.2 Public Kickoff Meeting

An Elected and Appointed Officials/Agencies and Public Kick-off Meeting was held on Thursday, September 17, 2015 from 5:30 p.m. to 7:30 p.m. The meeting was intended to introduce local officials, agencies, and the public to the project and provide an opportunity to discuss the social, environmental, and economic effects of potential improvements.

Approximately 76 individuals attended the meeting representing local agencies, elected officials, the public, and media. Thirteen FDOT staff and FDOT consultants project team members were available at the meeting to discuss the project and answer questions. A copy of the Public Kickoff Meeting Summary is in **Appendix N**.

7.3 Alternatives Public Workshop

An Alternatives Public Workshop was held on Thursday, July 28, 2016 from 5:30 p.m. to 7:30 p.m. The workshop was intended to provide the public and update on the PD&E Study.

Approximately 71 individuals attended the meeting representing local agencies, elected officials, the public, and media. Thirteen FDOT staff and FDOT consultants project team members were available at the meeting to discuss the project and answer questions. A copy of the Alternatives Public Workshop Summary is in **Appendix O**.

8. List of Technical Reports

The following technical documents were completed for this PD&E study and are appended to this document:

- Methodology Letter of Understanding
- Design Traffic Technical Memorandum
- System Interchange Modification Report
- Section 4(f) Determination of Applicability
- Cultural Resources Assessment Survey
- Endangered Species Biological Assessment
- Wetlands Evaluation Report
- Contamination Screening Evaluation Report
- Location Hydraulics Report
- Pond Siting Report
- Noise Study Report
- Air Quality Technical Memorandum
- Geotechnical Technical Memorandum
- Typical Section Package
- Utility Assessment Package
- Type 2 Categorical Exclusion