



# Preliminary Engineering Report

**SR 9/I-95 @ SR 842/Broward Boulevard (Broward  
Boulevard from West of SW 24<sup>th</sup> Avenue to East of  
NW/SW 18<sup>th</sup> Avenue)  
Project Development & Environment (PD&E) Study**

**Efficient Transportation Decision Making (ETDM) No.: 14226**

**Broward County, Florida  
Financial Project ID Number: 435513-1-22-02**

**Prepared for:  
Florida Department of Transportation, District Four  
3400 West Commercial Boulevard  
Fort Lauderdale, FL 33309**

**February 2019**

*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 FHWA and FDOT.*

*[page blank for two-sided printing]*

PRELIMINARY ENGINEERING REPORT

Florida Department of Transportation

District IV

SR 9/I-95 at SR 842/Broward Boulevard Interchange

SR-9/I-95 @ SR 842/Broward Boulevard  
from West of SW 24th Avenue to East of NW/SW 18th Avenue

Broward County, Florida

Financial Project ID Number: 435513-1-22-02

ETDM Number: 14226

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 FHWA and FDOT.

Guillermo J. Suero, P.E.  
P.E. License Number 49224  
Project manager

# Contents

Contents .....	i
List of Tables .....	vi
List of Figures .....	vii
List of Appendices .....	viii
Abbreviations .....	ix
<b>1.0 Project Summary .....</b>	<b>1</b>
1.1 Project Description .....	1
1.2 Purpose and Need .....	4
1.2.1 System Linkage .....	4
1.2.2 Modal Interrelationships .....	4
1.2.3 Capacity .....	5
1.2.4 Safety .....	5
1.2.5 Transportation Demand .....	5
1.2.6 Social Demands and Economic Development .....	5
1.2.7 Emergency Evacuation .....	6
1.3 Commitments .....	6
1.4 Recommendations .....	6
1.4.1 Mainline I-95 Build Alternative .....	6
1.4.2 Broward Boulevard Interchange Build Alternatives .....	7
1.4.2.1 Interchange Build Alternative 1 – Tight Diamond .....	7
1.4.2.2 Interchange Build Alternative 2A – Displaced Left .....	8
1.4.2.3 Interchange Build Alternative 2B – Modified Displaced Left .....	8
1.4.3 Broward Boulevard Eastbound to Southbound 95 Express Alternatives .....	14
1.4.3.1 Option 1 – Broward Boulevard EB to SB Express Lane Traffic via SW 1 <sup>st</sup> Street .....	14
1.4.4 Park-and-Ride Lot Build Alternatives .....	18
1.4.4.1 Park-and-Ride Design Controls .....	19
1.4.4.2 Park-and-Ride Alternative 1 .....	19
1.4.4.3 Park-and-Ride Alternative 2 .....	19
1.4.4.4 Park-and-Ride Alternative 3 .....	19
<b>2.0 Existing Conditions .....</b>	<b>23</b>

2.1 Existing Roadway Conditions ..... 23

    2.1.1 Typical Section ..... 23

    2.1.2 Roadway Classification..... 25

    2.1.3 Vertical Alignment..... 25

    2.1.4 Horizontal Alignment..... 26

2.2 Existing ITS Conditions..... 28

    2.2.1 I-95 ITS Devices ..... 28

    2.2.2 Broward Boulevard ITS devices ..... 30

    2.2.3 Broward Boulevard Park and Ride ITS devices ..... 30

2.3 Existing Structure Conditions ..... 31

    2.3.2 Historical Significance..... 33

2.4 Existing Lighting Conditions ..... 33

2.5 Environmental Characteristics ..... 33

    2.5.1 Existing Land Use ..... 33

    2.5.2 Future Land Use ..... 33

    2.5.3 Cultural Resource Assessment Survey ..... 38

    2.5.4 Community Facilities..... 38

    2.5.5 Parks and Recreational Facilities ..... 38

    2.5.6 Wetlands ..... 39

    2.5.7 Essential Fish Habitat ..... 39

    2.5.8 Wildlife and Habitat Survey..... 39

    2.5.9 Floodplains/Floodways ..... 41

    2.5.10 Noise..... 41

    2.5.11 Contamination..... 42

2.6 Right-of-Way ..... 43

    2.6.1 Right-of-Way Encroachment..... 43

2.7 Pedestrian and Bicycle Facilities ..... 43

2.8 Transit Facilities ..... 43

    2.8.1 Broward County Transit ..... 44

    2.8.2 Sun Trolley..... 44

    2.8.3 95 Express Bus..... 44

    2.8.4 Amtrak..... 44

    2.8.5 Tri-Rail ..... 45

    2.8.6 Tri-Rail Commuter Connector..... 45

2.9 Existing Drainage Systems..... 45

2.9.1 Existing Drainage System 16A (I-95) ..... 45

2.9.2 Existing Drainage System 16B (I-95) ..... 46

2.9.3 Existing Drainage System 17 (I-95)..... 47

2.9.4 Existing Drainage System Broward Blvd. (SR 824) and Park & Ride ..... 47

2.9.5 Total Maximum Daily Load (TMDLs) and Nutrient Impaired Water Bodies ..... 49

2.9.6 Floodplain Encroachment ..... 49

2.10 Geotechnical Characteristics ..... 50

    2.10.1 Soils Information ..... 50

    2.10.2 Hydraulic Conductivity ..... 50

2.11 Crash Data and Safety Analysis ..... 50

    2.11.1 I-95 from Davie Blvd. to Sunrise Blvd. .... 51

    2.11.2 I-95 Southbound on Ramp from SW 21<sup>st</sup> Terr. (Section 86070156) ..... 52

    2.11.3 I-95 Northbound off Ramp to SW 21<sup>st</sup> Terr. (Section 86070146) ..... 52

    2.11.4 I-95 Southbound on Ramp at Broward Blvd. Intersection (Section 86070038)..... 53

    2.11.5 I-95 Southbound off Ramp at Broward Boulevard (Section 86070039) ..... 54

    2.11.6 I-95 northbound Off Ramp at Broward Blvd. (Section 86070040)..... 55

    2.11.7 I-95 Northbound on Ramp at Broward Blvd. (Section 86040041) ..... 56

    2.11.8 I-95 Northbound on Ramp from Access Road (Section 86070143)..... 57

    2.11.9 I-95 Southbound off Ramp to Access Road (86070144)..... 58

    2.11.10 Broward Blvd from NW 12<sup>th</sup> Avenue to NW 15<sup>th</sup> Avenue..... 58

2.12 Utilities ..... 60

2.13 Design and Posted Speeds ..... 61

2.14 Traffic Characteristics ..... 61

    2.14.1 Existing Conditions ..... 61

    2.14.2 Existing Transportation Network..... 61

2.15 Existing Traffic Volumes ..... 62

    2.15.1 Data Collection ..... 62

2.16 Modeling and Travel Demand ..... 63

    2.16.1 VISSIM Model Development and Calibration ..... 63

    2.16.2 Intersection Node Evaluation..... 67

    2.16.3 Link Evaluation ..... 68

2.17 Future Conditions Analysis ..... 71

    2.17.1 No-Action 2020 and 2040 Peak Hour Traffic Development ..... 71

    2.17.2 Build 2020 and 2040 Peak Hour Traffic Development ..... 71

2.18 Existing ITS Conditions..... 88

<b>3.0</b>	<b>Design Controls and Criteria</b> .....	<b>88</b>
3.1	Design Controls .....	88
3.2	Design Criteria .....	90
<b>4.0</b>	<b>Alternatives Analysis</b> .....	<b>93</b>
4.1	No-Action Alternative .....	93
4.2	TSM&O Alternative .....	93
4.3	Evaluation and Elimination of Alternatives .....	93
<b>5.0</b>	<b>Public Involvement/Project Coordination</b> .....	<b>95</b>
5.1	MPO Coordination .....	95
5.2	Coordination with Elected/Appointed Officials.....	95
5.3	Public Meetings .....	96
5.3.1	Public Kick-Off Meeting .....	96
5.3.2	Technical Charrettes.....	96
5.3.3	Alternatives Public Workshops .....	97
5.4	Small Group and Stakeholders Meetings.....	97
5.5	Public Hearing .....	98
<b>6.0</b>	<b>Preferred Alternative</b> .....	<b>98</b>
6.1	Right-of-Way Needs and Relocation .....	98
6.2	Typical Sections.....	101
6.3	Pedestrian Safety .....	102
6.4	Horizontal and Vertical Geometry.....	102
6.4.1	Broward Boulevard .....	102
6.4.2	I-95 Mainline .....	103
6.4.3	Ingress/Egress Ramps .....	104
6.5	Access Management .....	107
6.6	Design Variations and Exceptions.....	107
6.6.1	Design Variations.....	107
6.6.2	Design Exceptions .....	109
6.7	Lighting .....	109
6.8	Utilities .....	109

6.9	Preliminary Drainage Analysis.....	109
6.9.1	Proposed Drainage Systems.....	109
6.9.2	Stormwater Management System Design.....	110
6.9.2.1	Project Datum.....	110
6.9.2.2	Control Elevations.....	110
6.9.2.3	Roadway Base Protection.....	110
6.9.2.4	Conceptual Drainage Design Recommendations.....	111
6.10	Structures.....	111
6.10.1	Horizontal and Vertical Clearance.....	111
6.10.2	Broward Blvd. over SFRTA RR and Access Road to Park and Ride Facility.....	112
6.10.2.1	Bridge Analysis.....	112
6.10.2.2	Proposed Bridge Configuration.....	113
6.10.2.3	Construction Sequence.....	114
6.10.3	Broward Boulevard over I-95.....	116
6.10.3.1	Proposed Bridge Configuration.....	116
6.10.3.2	Construction Sequence.....	117
6.10.4	I-95 over NW 6th Street (Sistrunk Blvd) Bridge Widening.....	119
6.10.5	Ingress/Egress Ramps.....	120
6.10.5.1	Ramp B.....	120
6.10.5.2	Ramp C.....	120
6.10.5.3	Ramp D.....	120
6.10.5.4	Ramp E.....	120
6.10.6	Aesthetics.....	120
6.10.7	Potential ITS/TSM&O Features.....	120
6.11	Maintenance of Traffic.....	121
6.11.1	Southbound Express Lanes Egress to Broward Blvd. and Northbound Express Lanes Ingress from Broward Blvd.....	121
6.11.2	Northbound I-95 general purpose lanes to Broward Blvd ramp and Northbound Express Lanes Egress to Broward Blvd ramp.....	122
6.11.3	Miscellaneous Overhead Structures.....	122
6.12	Cost Estimates.....	125
6.13	Transit Improvements.....	125
6.14	Value Engineering Review.....	125
7.0	List of Technical Reports Completed for the Project.....	125



## List of Tables

Table 2-1   Horizontal Alignment: Broward Blvd.....	26
Table 2-2   Horizontal Alignment: I-95 NB .....	27
Table 2-3   Horizontal Alignment: I-95 SB .....	28
Table 2-4   Existing Bridge Characteristics.....	32
Table 2-5   Community Facilities .....	38
Table 2-6   Direct Impacts Acreages to Surface Waters within a 500-Foot Buffer of the Project Area.....	39
Table 2-7   Likelihood of Occurrences of Federally Listed Species .....	40
Table 2-8   Crash Summary Along I-95 from Davie Blvd. to Sunrise Blvd. ....	51
Table 2-9   Crash Summary along Ramp 86070146 .....	52
Table 2-10   Crash Summary along Ramp 86070038 .....	53
Table 2-11   Crash Summary Along Ramp 86070039 .....	54
Table 2-12   Crash Summary Along Ramp 86070040 .....	55
Table 2-13   Crash Summary Along Ramp 86070041 .....	56
Table 2-14   Crash Summary Along Ramp 86070143 .....	57
Table 2-15   Crash Summary Along Broward Blvd. from NW 27th Ave. to NW 15th Ave.....	59
Table 2-16   Existing Utility Owners.....	60
Table 2-17   Intersection Node Evaluation Summary - Existing AM Peak Hour .....	67
Table 2-18   Intersection Node Evaluation Summary - Existing PM Peak Hour .....	68
Table 2-19   SERPM Model Traffic Split Percentages for Broward Blvd Direct Connects.....	72
Table 3-1   Project Design Controls: Broward Blvd .....	88
Table 3-2   Project Design Controls: I-95 .....	89
Table 3-3   Project Design Controls: I-95 Ingress/Egress Ramps.....	89
Table 3-4   Design Criteria: Broward Blvd .....	90
Table 3-5   Design Criteria: I-95 Mainline .....	91
Table 3-6   Design Criteria: I-95 Express Lanes Ingress/Egress Ramps and NB/SB Service Interchange Ramps	92
Table 4-1   Alternative Matrix.....	94
Table 5-1   Small Group and Stakeholder Meetings Summary.....	98
Table 6-1   Estimated Right-of-Way Impacts for Preferred Alternative .....	99
Table 6-2   Horizontal Geometry: EB Broward Blvd. ....	102
Table 6-3   Horizontal Geometry: WB Broward Blvd. ....	102
Table 6-4   Vertical Geometry: Broward Blvd. ....	103
Table 6-5   Horizontal Geometry: NB I-95 .....	103
Table 6-6   Horizontal Geometry: SB I-95 .....	104
Table 6-7   Horizontal Geometry: Ramp A – Relocated Broward GP Exit .....	104
Table 6-8   Horizontal Geometry: Ramp B – NB Express Lanes Egress .....	104

Table 6-9 | Horizontal Geometry: Ramp C – SB Express Lanes Ingress ..... 105  
Table 6-10 | Horizontal Geometry: Ramp D – NB Express Lanes Ingress ..... 105  
Table 6-11 | Horizontal Geometry: Ramp E – SB Express Lanes Egress ..... 105  
Table 6-12 | Vertical Geometry: Ramp A – Relocated Broward GP Exit ..... 106  
Table 6-13 | Vertical Geometry: Ramp B – NB Express Lanes Egress ..... 106  
Table 6-14 | Vertical Geometry: Ramp C – SB Express Lanes Ingress ..... 106  
Table 6-15 | Vertical Geometry: Ramp D – NB Express Lanes Ingress ..... 107  
Table 6-16 | Vertical Geometry: Ramp E – SB Express Lanes Egress ..... 107  
Table 6-17 | Datum Conversion from NGVD 29 to NAVD 88 ..... 110

## List of Figures

Figure 1-1 | Existing Park-and-Ride Conditions .....3  
Figure 1-2 | 95 Express Ingress-Egress Connections with Broward Boulevard Interchange .....9  
Figure 1-3 | 95 Express Ingress-Egress Connections with Broward Boulevard Interchange ..... 10  
Figure 1-4 | Alternative 1 – Tight Diamond ..... 11  
Figure 1-5 | Alternative 2A – Displaced Left ..... 12  
Figure 1-6 | Alternative 2B – Modified Displaced Left ..... 13  
Figure 1-7 | SW 1st Street Alternative 1 – No-Action ..... 15  
Figure 1-8 | SW 1st Street Alternative 2 – T-Intersection and Roundabout ..... 16  
Figure 1-9 | SW 1st Street Alternative 3 – Double Roundabout ..... 17  
Figure 1-10 | SW 1st Street Alternative 4 – Combined Roundabout ..... 18  
Figure 1-11 | Alternative 1 – With I-95 at Broward Boulevard Interchange Modified Displaced Left Alternative .... 20  
Figure 1-12 | Alternative 2 – With I-95 at Broward Boulevard Interchange Modified Displaced Left Alternative .... 21  
Figure 1-13 | Alternative 3 – With I-95 at Broward Boulevard Interchange Modified Displaced Left Alternative .... 22  
Figure 2-1 | Typical Section – Broward Blvd. .... 24  
Figure 2-2 | Typical Section – Broward Blvd. Bridges Over SW 21st Terr. and Railroad and Over I-95 ..... 24  
Figure 2-3 | Existing Land Use ..... 34  
Figure 2-4 | Existing Land Use ..... 35  
Figure 2-5 | Future Land Use ..... 36  
Figure 2-6 | Future Land Use ..... 37  
Figure 2-7 | Existing Traffic for I-95 at Davie Blvd Interchange ..... 64  
Figure 2-8 | Existing Traffic for I-95 at Broward Blvd Interchange ..... 65  
Figure 2-9 | Existing Traffic for I-95 at Sunrise Blvd Interchange ..... 66  
Figure 2-10 | Existing Northbound Average Speed for AM Peak Hour ..... 69  
Figure 2-11 | Existing Northbound Volume Profiles for AM Peak Hour ..... 69  
Figure 2-12 | Existing Northbound Average Speed for PM Peak Hour ..... 69

Figure 2-13 | Existing Northbound Volume Profiles for PM Peak Hour..... 69

Figure 2-14 | Existing Southbound Average Speed Profiles for AM Peak Hour ..... 70

Figure 2-15 | Existing Southbound Volume Profiles for AM Peak Hour ..... 70

Figure 2-16 | Existing Southbound Average Speed Profiles for PM Peak Hour ..... 70

Figure 2-17 | Existing Southbound Volume Profiles for PM Peak Hour ..... 70

Figure 2-18 | Forecasted AADT for I-95 at Davie Interchange ..... 73

Figure 2-19 | Forecasted AADT for I-95 at Broward Blvd Interchange ..... 74

Figure 2-20 | Forecasted AADT for I-95 at Sunrise Blvd Interchange..... 75

Figure 2-21 | 2020 Peak Hour Traffic Volumes for I-95 at Davie Blvd Interchange ..... 76

Figure 2-22 | 2020 Peak Hour Traffic Volumes for I-95 at Broward Blvd Interchange ..... 77

Figure 2-23 | 2020 Peak Hour Traffic Volumes for I-95 at Sunrise Blvd Interchange ..... 78

Figure 2-24 | 2040 Peak Hour Traffic Volumes for I-95 at Davie Blvd Interchange ..... 79

Figure 2-25 | 2040 No-Action Peak Hour Traffic Volumes for I-95 at Broward Blvd Interchange ..... 80

Figure 2-26 | 2040 Peak Hour Traffic Volumes for I-95 at Sunrise Blvd Interchange ..... 81

Figure 2-27 | 2020 Peak Hour Traffic Volumes for I-95 at Davie Blvd Interchange ..... 82

Figure 2-28 | 2020 Peak Hour Traffic Volumes for I-95 at Broward Blvd Interchange ..... 83

Figure 2-29 | 2020 Peak Hour Traffic Volumes for I-95 at Sunrise Blvd Interchange ..... 84

Figure 2-30 | 2040 Peak Hour Traffic Volumes for I-95 at Davie Blvd Interchange ..... 85

Figure 2-31 | 2040 Peak Hour Traffic Volumes for I-95 at Broward Blvd Interchange ..... 86

Figure 2-32 | 2040 Peak Hour Traffic Volumes for I-95 at Sunrise Blvd Interchange ..... 87

Figure 6-1 | Right of Way Impacts ..... 100

Figure 6-2 | Typical Section: Broward Blvd over SFCR ..... 101

Figure 6-3 | Typical Section: Broward Blvd over I-95 ..... 101

Figure 6-4 | Typical Section: Bridge over SFRTA RR ..... 114

Figure 6-5 | Construction Sequence ..... 115

Figure 6-6 | Typical Section: Bridge Over I-95 ..... 117

Figure 6-7 | Construction Sequence ..... 118

Figure 6-8 | FDOT Bridge Load Rating Manual Flowchart ..... 119

Figure 6-9 | Maintenance of Traffic Typical Sections ..... 123

## List of Appendices

- Appendix A – Concept Plans
- Appendix B – Typical Section Package
- Appendix C – Public Meetings Documentation
- Appendix D – Value Engineering Report
- Appendix E – Transit Maps

## Abbreviations

<b>ADA</b>	American with Disabilities Act
<b>AADT</b>	Average Annual Daily Traffic
<b>CFR</b>	Code of Federal Regulation
<b>CRA</b>	Community Redevelopment Agency
<b>EPA</b>	United States Environmental Protection Agency
<b>FDEP</b>	Florida Department of Environmental Protection
<b>FDM</b>	FDOT Design Manual (2018)
<b>FDOT</b>	Florida Department of Transportation
<b>HOV</b>	High Occupancy Vehicles
<b>LDCA</b>	Location and Design Concept Acceptance
<b>LOS</b>	Level of Service
<b>LRE</b>	Long Range Estimate
<b>mph</b>	miles per hour
<b>MPO</b>	Metropolitan Planning Organization
<b>NEPA</b>	National Environmental Policy Act
<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>PD&amp;E</b>	Project Development and Environment Study
<b>RTMC</b>	Regional Transportation Management Centers
<b>SFRC</b>	South Florida Rail Corridor
<b>SIS</b>	Strategic Intermodal System
<b>SR</b>	State Road
<b>USACE</b>	United States Army Corps of Engineers
<b>USCG</b>	United States Coast Guard
<b>vpd</b>	vehicles per day

*[page blank for two-sided printing]*

## 1.0 Project Summary

### 1.1 Project Description

The Interchange of I-95 at Broward Blvd. is located in central Broward County in the City of Fort Lauderdale, between the Sunrise Blvd. Interchange (one mile to the north) and the Davie Blvd. Interchange (one mile to the south). The South Florida Rail Corridor (SFRC)/CSX Railroad is adjacent to and runs parallel along the west side of I-95 in this area. The limits for this report extend from just south of Dave Blvd. to just south of Sunrise Blvd. along I-95 and from NW 24th Ave to NW 18th Ave along Broward Blvd.

The typical section of I-95 within the study area varies. From the Davie Blvd. interchange to SW 5th Pl. the typical section of I-95 is an eight-lane facility comprised of three General Purpose Lanes in each direction and one Special Use Lane (previously designated for High Occupancy Vehicle (HOV) use and in transition to managed toll lanes) in each direction. From the vicinity of SW 5th Place (Pl.), where the northbound Collector-Distributor (CD) road ramp system merges traffic from I-595 into the General Purpose Lanes, and through to the Sunrise Blvd. interchange, I-95 is a 10-lane facility comprised of four General Purpose Lanes in each direction and one Special Use Lane in each direction. Southbound ingress to I-95 from Broward Blvd. is provided at the western terminal intersection by a single lane access ramp from eastbound Broward Blvd. and a double left turn lane from westbound Broward Blvd. Egress from southbound I-95 to Broward Blvd. is provided by a ramp with a single right turn lane for traffic heading west on Broward Blvd. and a double left turn lane for traffic heading east on Broward Blvd.

Currently, northbound ingress to I-95 from Broward Blvd. is provided by a single lane access ramp from westbound Broward Blvd. at the eastern terminal intersection and a single lane flyover from eastbound Broward Blvd. west of the western terminal intersection. Egress to Broward Blvd. from northbound I-95 is provided by a ramp, which is part of the northbound CD road ramp system, that was recently reconstructed to include triple right turn lanes for traffic heading eastbound on Broward Blvd. and double left turn lanes for traffic heading westbound on Broward Blvd. Additional ingress and egress to I-95 is provided through the Park-and-Ride lot. For both directions of travel along I-95 ingress and egress is provided by single lane ramps that cross over the southbound lanes of I-95 and connect with the Special Use Lanes located in the center of I-95.

SR-842/Broward Blvd. is a six-lane urban divided roadway with a raised median within the vicinity of the I-95 Interchange. In its current configuration there are no provisions for bicycle traffic within these limits outside of the general travel lanes 22nd Avenue and NW/SW 18th Avenue west of NW/SW 22nd Avenue. Westbound Broward Boulevard to the west of NW/SW 22nd Avenue the sidewalk is seven feet wide, and in the eastbound direction the sidewalk is six feet wide. Broward Blvd. provides the main entry way to the downtown Fort Lauderdale Central Business District from I-95 and the east-west connection between US-1 and SR-817/University Drive in the City of Plantation.

There are a number of transit options on Broward Blvd. that provide direct service and transfer connections along the corridor. These include passenger rails service (Tri-Rail and Amtrak) and bus

service (Broward County Transit (BCT), Sun Trolley, 95 Express Bus, and the Tri-Rail Commuter Connector). There is a Park-and-Ride lot located within the interchange area. The existing conditions at the Park-and-Ride lot include the provision of 794 parking spaces throughout five parking lots, shown in **Figure 1-1**. Spaces in Lot 5 are designated for Amtrak and Tri-Rail parking only while the spaces in Lots 1-4 are available for any purpose, including car pools and 95 Express Bus. There are no designated bicycle facilities within the Park-and-Ride lot and minimal sidewalk facilities. Access to the Park-and-Ride lots is provided via Broward Blvd. and I-95. Ingress from eastbound Broward Blvd. is provided via a left turn lane at NW 24th Ave and via right turn lane at SW 22nd Ave/SW 1st St. Ingress from westbound Broward Blvd. is provided via right turn lanes at NW 22nd Ave and NW 24th Ave. Egress to westbound Broward Blvd. is provided via the intersections with NW 22nd Ave and NW 24th Ave, requiring drivers coming from the south to circulate through the northern parking areas. Egress to eastbound Broward Blvd. is provided via SW 22nd Ave/SW 1st St and NW 24th Ave.

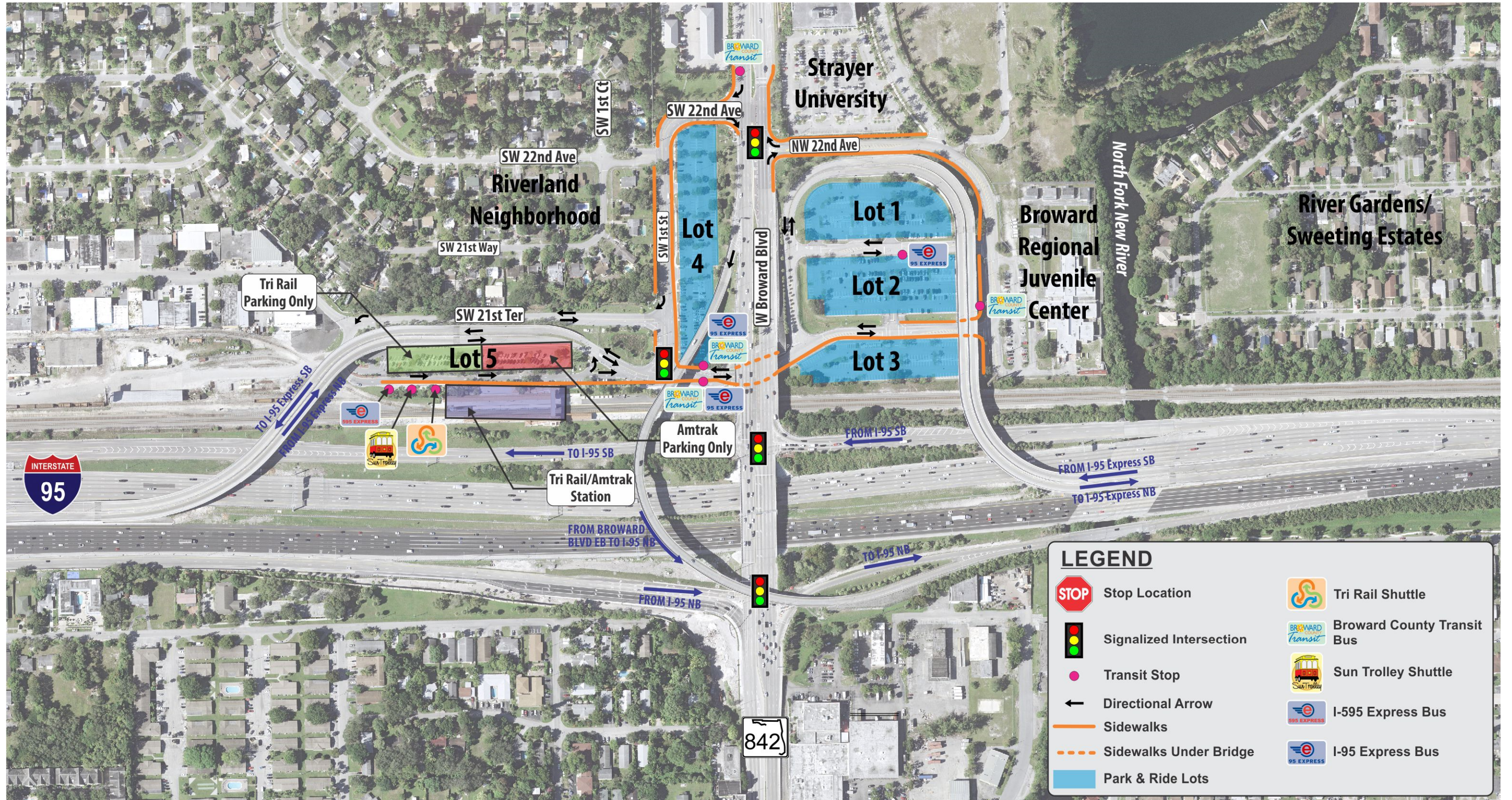
Ingress to southbound I-95 is provided on the south side of Broward Blvd. via a ramp that crosses over the southbound General Use Lanes of I-95 and connects to the southbound HOV lane. Ingress to northbound I-95 is provided by a ramp on the north side of Broward Blvd., accessed from the northern parking area, which crosses over the southbound General Use Lanes of I-95 and connects to the northbound HOV lane. Egress from both northbound and southbound I-95 are provided in a similar manner with northbound vehicles exiting on the south side of Broward Blvd. and merging into SW 21st Terrace and southbound vehicles exiting on the north side of Broward Blvd. with connections to NW 22nd Ave and SW 22nd Ave/SW 1st St. provided via access roads within the parking areas.

Broward Blvd.'s elevation over I-95 creates vertical access challenges for transit users, bicyclists and pedestrians looking to connect with the transit services available in the Park-and-Ride and Transit Station area northwest and southwest of the interchange. As a result of these challenges and due to its location as the entry way to downtown Fort Lauderdale, this interchange has been the subject of a variety of studies including the City of Fort Lauderdale's Gateway Vision and FDOT's Broward Boulevard Transit Corridor Study. Each of these studies has evaluated these challenges and recommended improvements to the west side of the interchange where connections to Tri-Rail and the 95 Express Bus services are offered. These prior studies and recommendations will be considered as the alternatives are developed during this study.





Figure 1-1 | Existing Park-and-Ride Conditions





## 1.2 Purpose and Need

The primary purpose of this study is to develop and evaluate design concepts to improve traffic flow to and from I-95 and along Broward Blvd., connectivity between the 95 Express Lanes and Broward Blvd., and intermodal connectivity. Improved connections between the 95 Express Lanes and Broward Blvd., as well as the surrounding intermodal facilities, are desired. The primary need for this project is to enhance system linkage and modal interrelationships at the I-95/Broward Blvd. interchange.

Secondary considerations for the purpose and need are further described in the following sections that include Capacity, Safety, Transportation Demand, Social Demands, Economic Development, and Emergency Evacuation.

### 1.2.1 System Linkage

Broward Blvd. is a state road (SR 842) that provides the main entry way to the downtown Fort Lauderdale Central Business District from I-95 and the east-west connection between US-1 and SR 817/University Drive in the City of Plantation. Broward Blvd. continues west toward SR 823/Flamingo Road as a county road. The section of Broward Blvd. from I-95 to NE 3rd Ave is part of the state's Strategic Intermodal System (SIS), which consists of high-priority transportation facilities and services of statewide and interregional significance. I-95 north and south of Broward Blvd. is also a SIS facility and serves as the primary north-south interstate facility that links all major cities along the Atlantic Seaboard and is one of the most important transportation systems in southeast Florida. These SIS facilities are critical to the movement of people and goods in Florida, and their function is considered to be vital to Florida's economic competitiveness.

### 1.2.2 Modal Interrelationships

Transit services along Broward Blvd. are currently experiencing recurring congestion that reduces vehicle speeds, increases operating costs, and makes scheduling of buses from a system level challenging. There are a number of transit options on Broward Blvd. that provide direct service and transfer connections along the corridor. These include passenger rail service (Tri-Rail and Amtrak) and bus service (BCT, Sun Trolley, 95 Express Bus, and the Tri-Rail Commuter Connector). The operation of these services is vital to the mobility of the entire corridor.

The desired geometric and operational improvements to the Broward Blvd. interchange and surrounding transit facilities will reduce bus travel times, improve intermodal connectivity, and improve access to bus stops and transfers. 95 Express Bus service is desired to access Broward Blvd. more effectively from the 95 Express Lanes and the existing Park-and-Ride lots. Functionality of the I-95 median ramps and Park-and-Ride road network is to be improved for the intermodal services within the interchange area.

### 1.2.3 Capacity

I-95 within the project limits currently operates at Level of Service (LOS) F. Broward Blvd. within the project limits also operates at LOS F. Without improvements, the driving conditions will continue to operate well below acceptable LOS standards into the future. The 95 Express Phase 3 improvements will help improve the mainline I-95 corridor LOS by adding one travel lane in each direction in the form of an Express Lane, and when added to the existing HOV lane in each direction, will result in dual express lanes in each direction, managing congestion along I-95. The improvements proposed as part of the interchange project will be developed to complement the 95 Express Lanes improvements by enhancing existing connectivity within the Park-and-Ride lots, improving existing I-95/Broward Blvd. terminal intersections, and providing improved Express Lane access to Broward Blvd.

### 1.2.4 Safety

The comprehensive improvements to the interchange and surrounding transit facilities will improve the interaction between the different modes of transportation in the vicinity. The improvements are to include safe connections for pedestrians using transit services, circulation of traffic within the Park-and-Ride lot network, and access between the Express Lanes and Broward Blvd. Additionally, the capacity improvements will aid in reducing the number of crashes within the project limits.

### 1.2.5 Transportation Demand

The Broward Blvd. Interchange Project PD&E Study is included in the Broward Metropolitan Planning Organization's (MPO) Transportation Improvement Program (TIP) for Fiscal Years (FY) 2015-2019 and the FDOT Work Program FY 2015-2019.

The Broward MPO's 2035 Long Range Transportation Plan (LRTP) included improvements to all I-95 interchanges in Broward County under Illustrative Roadway Projects. Illustrative projects are those that cannot be included in the Cost Feasible Plan due to financial constraints but would be included in a future approved TIP. The MPO's 2040 LRTP, Commitment 2040, adopted by reference the Strategic Intermodal System 2040 Cost Feasible Plan, which includes modifications to the I-95/Broward Blvd. interchange in the first five years.

### 1.2.6 Social Demands and Economic Development

Social and economic demands on the I-95 corridor will continue to increase as population and employment increase. The Broward MPO 2035 LRTP predicted that the population would grow from 1.7 million in 2005 to 2.3 million by 2035, an increase of 29 percent. Jobs were predicted to increase from 0.7 to 1 million during the same time period, an increase of 37 percent. Commitment 2040 revised the growth projections to 1.9 million persons and 0.8 million jobs by 2040. These numbers reflect growth rates of 13.4 percent for population and 10.4 percent for jobs by 2040. These numbers, however, only account for the projected growth in Broward County and do not reflect the number of commuters from adjacent areas who may use this interchange to access jobs.

## 1.2.7 Emergency Evacuation

The project is anticipated to improve emergency evacuation capabilities by enhancing connectivity and accessibility to major arterials designated on the state evacuation route. I-95 serves as part of the emergency evacuation route network designated by the Florida Division of Emergency Management and Broward County. Broward Blvd. moves traffic from the east and west to I-95. I-95 is critical in facilitating traffic during emergency evacuation periods as it connects to other major arterials and highways of the state evacuation route network (i.e., I-595 and the Florida's Turnpike).

## 1.3 Commitments

## 1.4 Recommendations

The proposed improvements for the I-95 at Broward Blvd. Interchange consist of three elements:

1. Improvements to the mainline of I-95 to accommodate ingress and egress ramps for 95 Express and the existing Broward Blvd. Interchange ramps,
2. Three alternatives for the Broward Blvd. east and west terminal intersections to improve interchange operations, and
3. Conceptual plans for the Park-and-Ride lot to improve circulation and conditions for all users.

The mainline improvements are consistent across each of the three interchange alternatives. Each of the Park-and-Ride concepts was designed to work with the proposed mainline and interchange improvements.

### 1.4.1 Mainline I-95 Build Alternative

The proposed improvements to the mainline account for the programmed implementation of 95 Express, which adds one additional Special Use Lane in each direction and modifies the use of these lanes to include managed toll lanes. The resulting typical section becomes a 12-lane facility comprised of four General Purpose Lanes and two Special Use Lanes in each direction.

The primary proposed improvements for the mainline, which are shown in **Figures 1-2 and 1-3**, are for the new ramps providing ingress and egress to the 95 Express lanes.

- In the southbound egress direction, the proposed improvements include a braided ramp over the southbound I-95 General Use Lanes with a connection to the west ramp terminal intersection of the Broward Boulevard service interchange to provide egress from 95 Express near NW 6th Street/Sistrunk Boulevard.
- Similarly in the southbound ingress direction, there is a braided ramp over the southbound I-95 General Use Lanes located just south of Broward Boulevard that provides ingress access for the westbound traffic on Broward Boulevard. This elevated braided ramp provides direct access via the west ramp terminal intersection of the Broward Boulevard service interchange. The

westbound left-turn at the west ramp terminal intersection feeds directly into the southbound express lane ramp and does not require drivers to weave through the General Use Lanes.

- To access Southbound (SB) 95 Express from eastbound Broward Boulevard, motorists use SW 1<sup>st</sup> Street, from SW 22<sup>nd</sup> Avenue, to access the legacy HOV SB entrance ramp at the south side of the Park and Ride Lot just south of Broward Boulevard. Along SW 1<sup>st</sup> Street, the residential road of SW 22<sup>nd</sup> Ave is closed. The stop-controlled intersection at SW 21<sup>st</sup> Terrace and the signalized intersection immediately east of that are converted to a single roundabout.
- For the northbound direction, egress from 95 Express near Davie Boulevard is proposed through the use of a braided ramp over the northbound I-95 General Use Lanes with a connection to the northbound CD road ramp system that terminates at the east terminal intersection of the Broward Boulevard service interchange. This elevated braided ramp provides eastbound and westbound Broward Boulevard access to northbound 95 Express without requiring drivers to weave through the General Use Lanes.
- Ingress from the Broward Boulevard service interchange to the northbound 95 Express lanes is proposed through a braided ramp over the northbound I-95 General Use Lanes in the vicinity of NW 6th Street/Sistrunk Boulevard. This elevated braided ramp provides direct access between Broward Boulevard and the northbound Express Lanes, using the existing eastbound to northbound flyover, and westbound to northbound ramp, for access to northbound 95 Express without requiring drivers to weave through the General Use Lanes.

## 1.4.2 Broward Boulevard Interchange Build Alternatives

The proposed improvements to Broward Blvd. include the replacement of the bridge that spans I-95 and the South Florida Rail Corridor with a wider and higher bridge span, the provision of three through lanes of traffic with seven foot wide bicycle lanes in each direction, six foot wide sidewalks which transition to eight foot barrier protected sidewalk along the north side of the bridge spanning over South Florida Rail Corridor, and along the north and south of the bridge spanning over I-95, and three interchange alternatives, which are further described below. The replacement of this bridge span is common to all three interchange alternatives and is being proposed to accommodate necessary turn lanes at the intersections as well as to provide an envelope for a future premium transit stop with connectivity between East-West service along Broward Blvd., and the many multi-modal transit service provided in the Broward Blvd. P&R Lot/Transit Station on the north and south sides of Broward Blvd. In each of the interchange alternatives the service interchange ramps are proposed for reconstruction to accommodate the wider and higher proposed bridge span. Most of the ingress and egress ramps are also proposed to include additional lanes to accommodate the forecasted 2040 year traffic.

The proposed interchange alternatives include Tight Diamond, Displaced Left Turn, and Modified Displaced Left Turn. Each of these alternatives is described below. For each of these alternatives the northbound ingress to I-95 remains as a single lane access ramp.

### 1.4.2.1 Interchange Build Alternative 1 – Tight Diamond

The Tight Diamond Interchange is a compressed version of the diamond interchange designed to accommodate right-of-way constraints. The interchange consists of two closely spaced signalized

intersections at the crossing of the ramp terminals. The key operational aspect of a Tight Diamond Interchange is signal coordination to ensure efficient progression of traffic and minimum storage of vehicles between the terminals. The existing interchange is a Tight Diamond Interchange and this alternative will improve the existing operation through the addition of turn lanes at the ramp terminal locations and optimization of the intersection signal timings. Specifically, one additional left turn lane is proposed for southbound ingress from Broward Blvd. to I-95 resulting in triple left turn lanes for traffic traveling westbound. An additional right turn lane is also proposed resulting in double right turn lanes for eastbound traffic on Broward Blvd. There are no proposed improvements to the northbound ingress ramps from Broward Blvd. These improvements are illustrated in **Figure 1-4**.

### 1.4.2.2 Interchange Build Alternative 2A – Displaced Left

The Displaced Left Turn Interchange is also known as the Continuous Flow Interchange. The main geometric feature of the Displaced Left Turn Interchange is the removal of left turn movements from the main intersection to an upstream signalized location to reduce the number of traffic signal phases and conflict points. For this alternative the westbound left turn movements are displaced at the east ramp terminal intersection to a new roadway that is south and runs parallel to the eastbound through lanes where it combines with the displaced left turn lanes from the northbound ramp. This configuration enables the westbound left turn lanes to execute the left turn simultaneously with the westbound through traffic and under a different signal phase also transition the traffic from the northbound ramp on to the westbound at the west ramp terminal intersection. This proposed alternative increases the number of right turn lanes for the southbound ingress to I-95 from eastbound Broward Blvd., resulting in dual right turn lanes. Although displaced as previously described, the left turn lanes for southbound ingress remain as dual left turn lanes as is currently provided. These improvements are illustrated in **Figure 1-5**.

### 1.4.2.3 Interchange Build Alternative 2B – Modified Displaced Left

The Modified Displaced Left Turn Interchange alternative provides for the displacement of the northbound exit ramp onto a new roadway (bridge structure) that is on the south of Broward Boulevard over I-95, and runs south of and parallel to the eastbound Broward Boulevard through lanes. The northbound ramp left-turn traffic is then transitioned on to the westbound Broward Boulevard roadway at the west ramp terminal intersection.

This alternative differs from Alternative 2A in that there are three westbound left-turn lanes at the west ramp terminal intersection. The inner left-turn lane is a barrier separated direct connect to 95 Express and the outer two left-turn lanes are for general use that feed to the southbound C-D road. Note the eastbound traffic destined to the southbound 95 Express lanes cannot use the eastbound right turn at the ramp terminal; the traffic must use legacy ramps. This design separates the westbound express lane traffic from the westbound C-D road traffic and eliminates the short weave between the westbound left-turn and the eastbound right-turn on the C-D. **Figure 1-6** illustrates the Modified Displaced Left-Turn Alternative. Alternatives for the eastbound to southbound express lane traffic are provided in **Section 1.4.2**.





Figure 1-2 | 95 Express Ingress-Egress Connections with Broward Boulevard Interchange

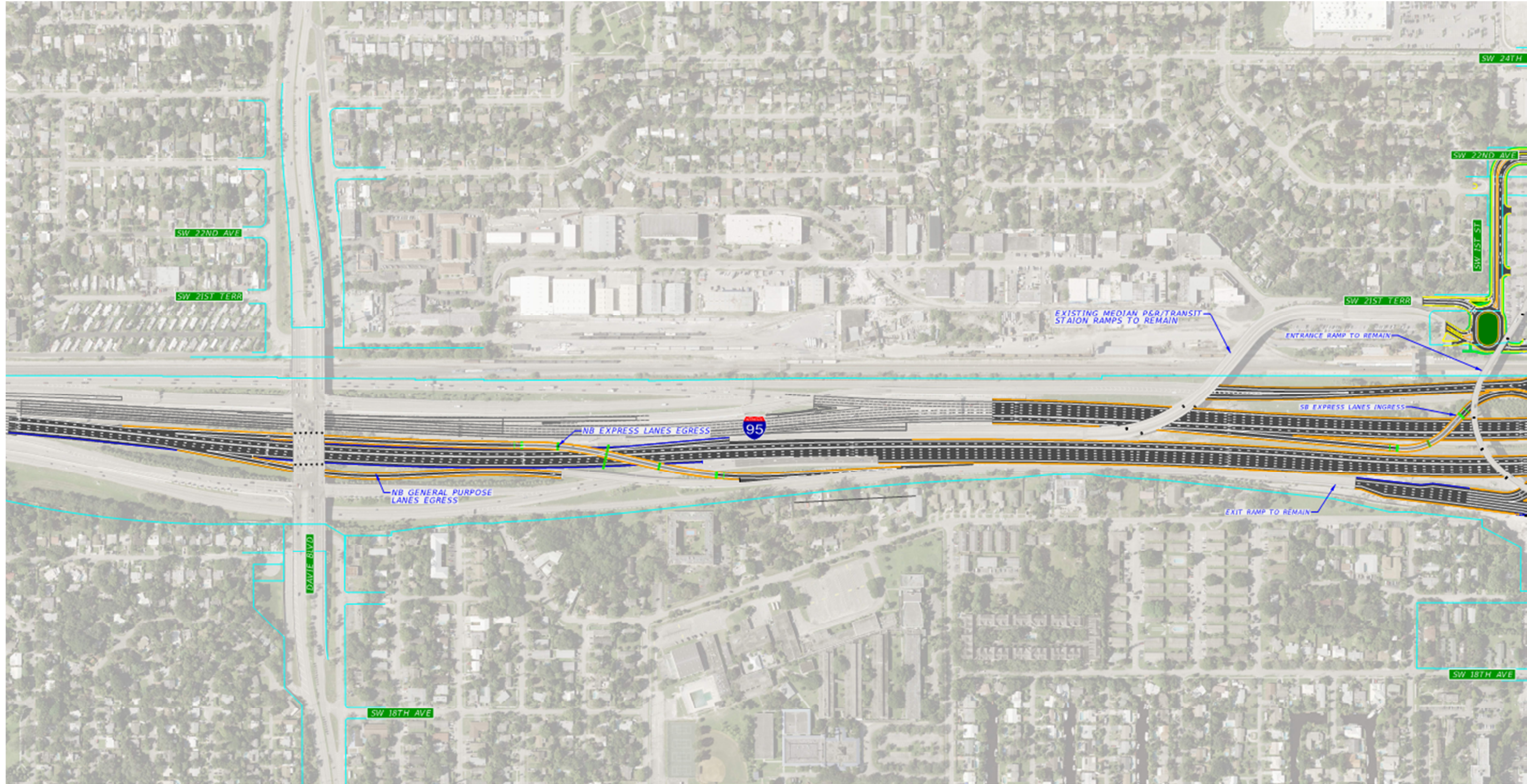


Figure 1-3 | 95 Express Ingress-Egress Connections with Broward Boulevard Interchange

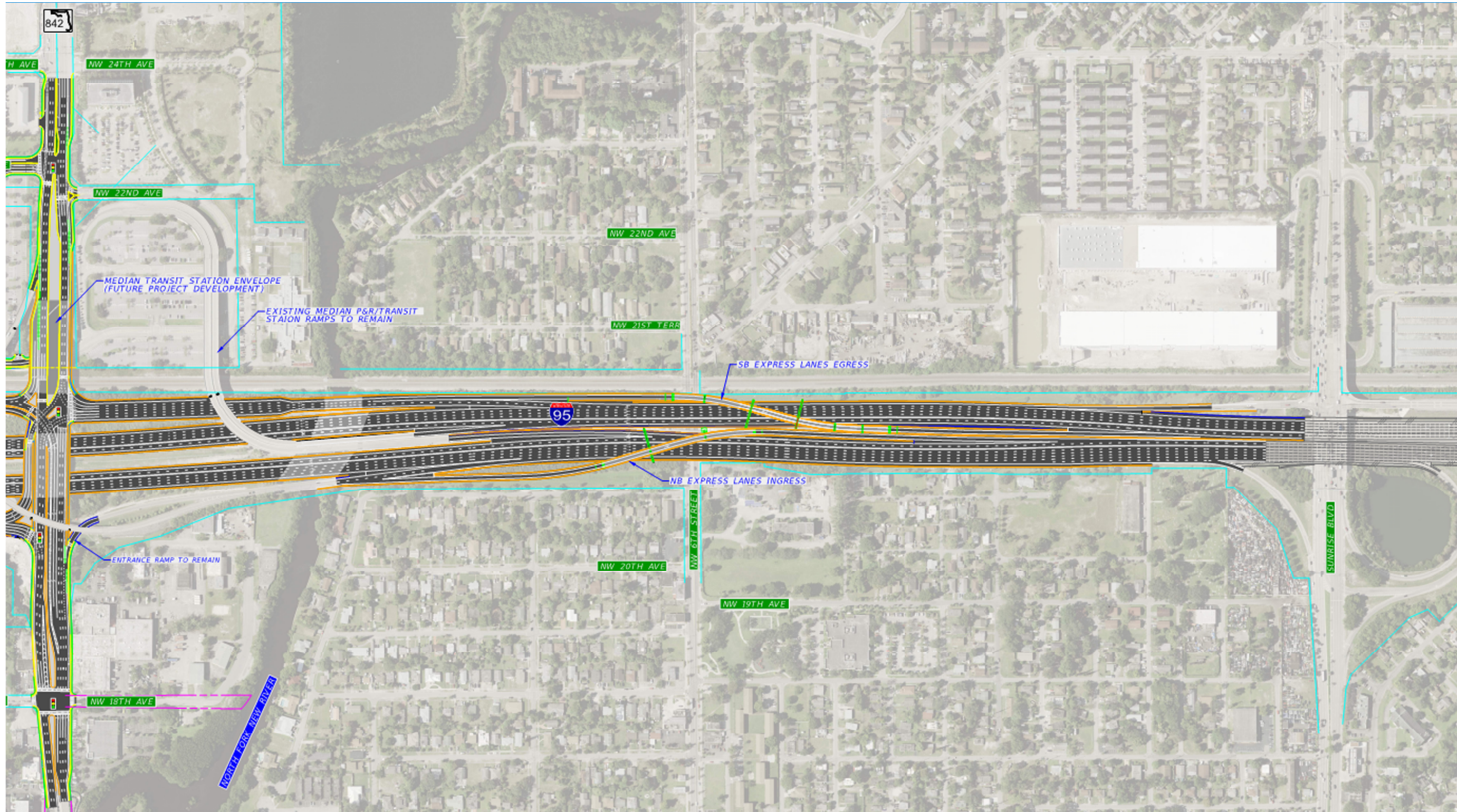


Figure 1-4 | Alternative 1 – Tight Diamond



Figure 1-5 | Alternative 2A – Displaced Left



Figure 1-6 | Alternative 2B – Modified Displaced Left





### 1.4.3 Broward Boulevard Eastbound to Southbound 95 Express Alternatives

In the preferred Broward Boulevard Build Alternative (Build Alternative 2B), there is a barrier separation on the southbound C-D road (SW 20<sup>th</sup> Terrace) that restricts Broward Boulevard eastbound right-turn traffic from entering the express lanes via the new braid. Thus, the eastbound traffic on Broward Boulevard destined to the I-95 southbound express lanes must use an alternative route. The SW 1<sup>st</sup> Street Alternatives (Option 1) and the Flyover Alternative (Option 2) was developed to accommodate the future year traffic and facilitate a functional route for Broward Boulevard eastbound to southbound express lane traffic. The total volume of eastbound motorists seeking access to southbound 95 Express in 2040 is 258 vehicles in the AM peak and 267 vehicles in the PM peak.

#### 1.4.3.1 Option 1 – Broward Boulevard EB to SB Express Lane Traffic via SW 1<sup>st</sup> Street

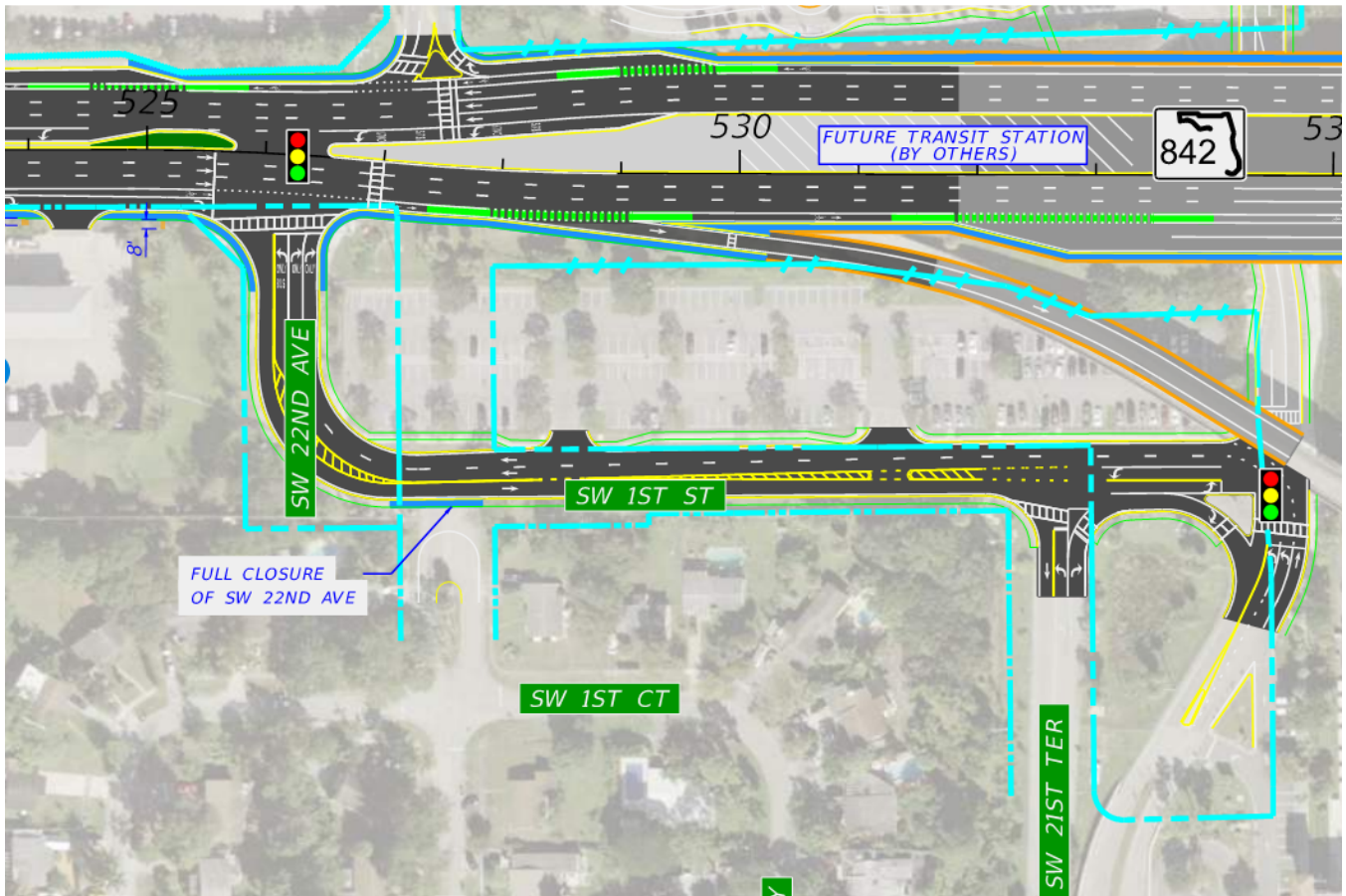
In this option, the eastbound to southbound express lane traffic must continue to use the legacy ramps via SW 1<sup>st</sup> Street. On SW 1<sup>st</sup> Street, there is an existing stop control intersection at SW 21<sup>st</sup> Terrace and an existing signal approximately 200 feet east of SW 21<sup>st</sup> Terrace at the Park and Ride Access Road. A traffic analysis was conducted to evaluate different control types at those two intersections. Four alternatives with different control types were developed. To be conservative and consistent in analysis, all alternatives (including No-Action) assume the residential road SW 22<sup>nd</sup> Avenue is closed to SW 1<sup>st</sup> Street. The four alternatives evaluated are:

- Alternative 1 – No-Action
- Alternative 2 – T-Intersection at SW 21st Terrace and Roundabout at Access Road
- Alternative 3 – Double Roundabout
- Alternative 4 – Combined Roundabout

**Alternative 1 – No-Action**

This alternative assumes the existing geometry on SW 1<sup>st</sup> Street. The westbound direction is maintained as two lanes and the eastbound direction is maintained as one lane to SW 21<sup>st</sup> Terrace where it then becomes a left-turn and a right-turn lane. The No-Action Alternative is illustrated in **Figure 1-7**.

**Figure 1-7 | SW 1st Street Alternative 1 – No-Action**

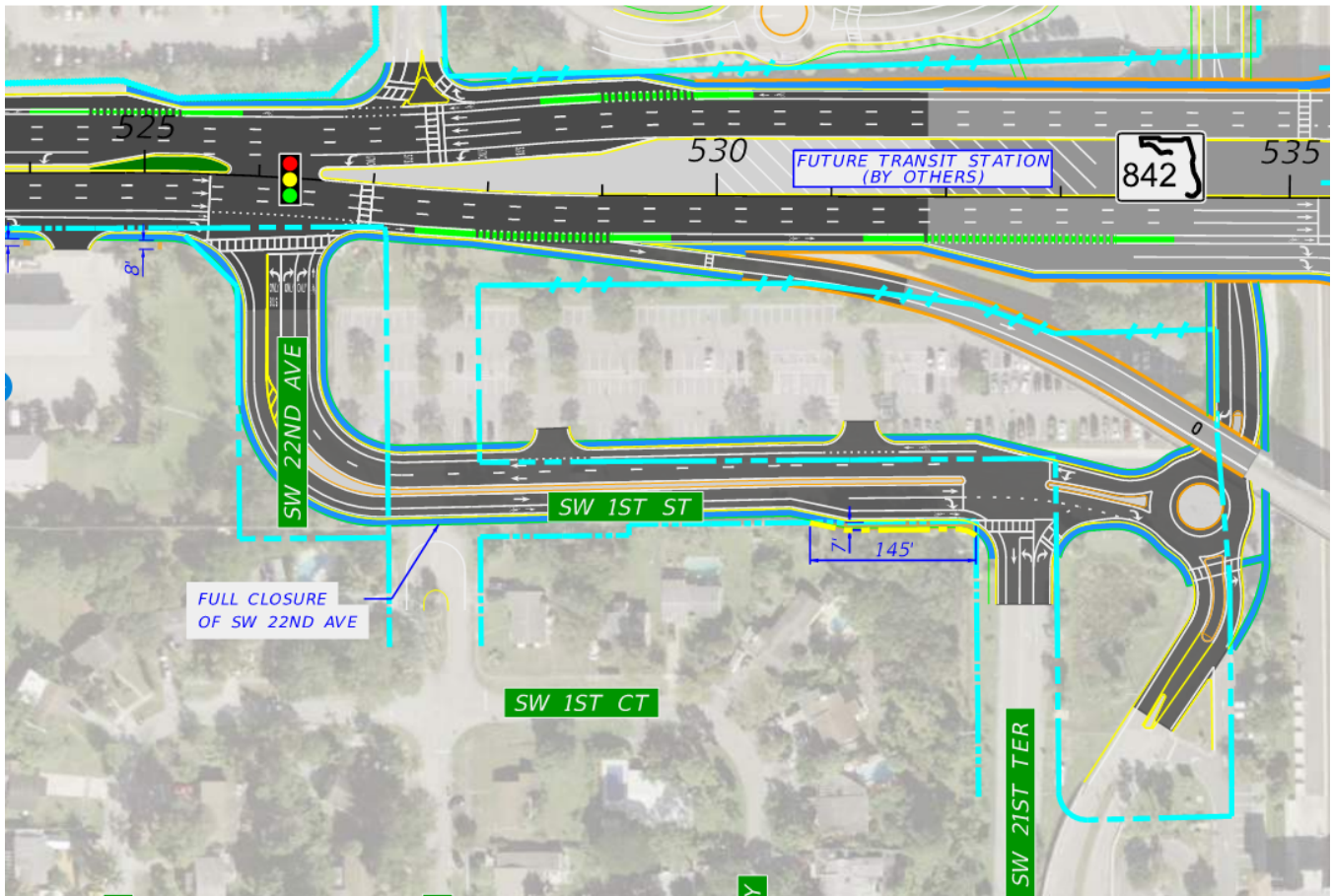




**Alternative 2 – T-Intersection and Roundabout**

This alternative keeps the SW 21<sup>st</sup> Terrace intersection as stop control but converts the east signalized intersection to a single-lane roundabout. The eastbound section on SW 1<sup>st</sup> Street between SW 21<sup>st</sup> Terrace and the roundabout is reduced to one lane to facilitate a single-lane roundabout entry. The eastbound direction maintains one lane from SW 22<sup>nd</sup> Avenue to SW 21<sup>st</sup> Terrace and the westbound direction maintains two lanes from SW 21<sup>st</sup> Terrace to SW 22<sup>nd</sup> Avenue. There is also an eastbound right-turn lane added on SW 1<sup>st</sup> St for vehicles to access SW 21<sup>st</sup> Terrace. To construct the right-turn bypass lane, right-of-way is required. These improvements are illustrated in **Figure 1-8**.

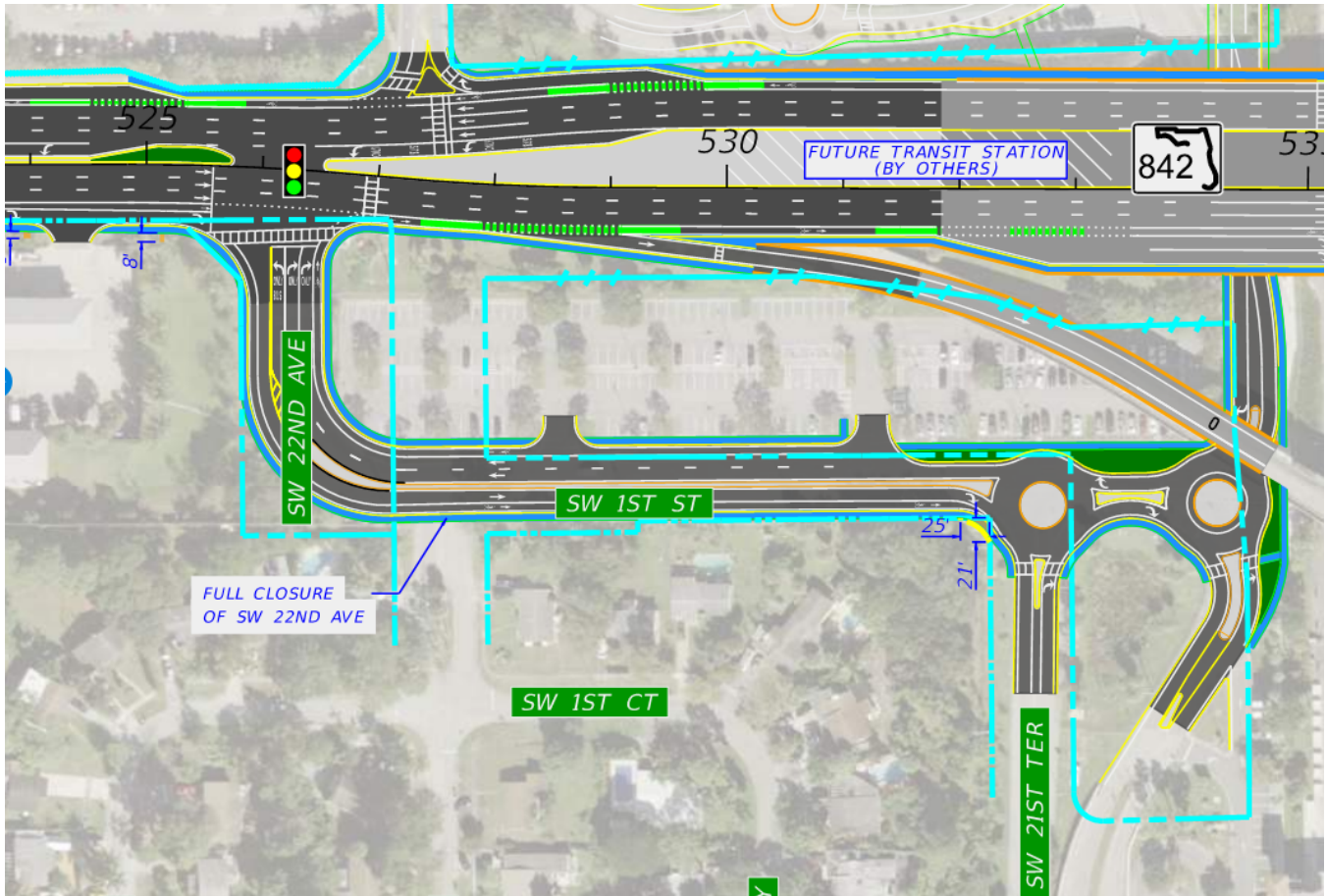
**Figure 1-8 | SW 1st Street Alternative 2 – T-Intersection and Roundabout**



**Alternative 3 – Double Roundabout**

This alternative converts the intersection of SW 21<sup>st</sup> Terrace and the existing east signalized intersection to single-lane roundabouts. The section of SW 1<sup>st</sup> Street between the two junctions is reduced to one lane in each direction to facilitate single-lane roundabout entries. The eastbound direction maintains one lane from SW 22<sup>nd</sup> Avenue to SW 21<sup>st</sup> Terrace and the westbound direction maintains two lanes from SW 21<sup>st</sup> Terrace to SW 22<sup>nd</sup> Avenue. These improvements are illustrated in **Figure 1-9**.

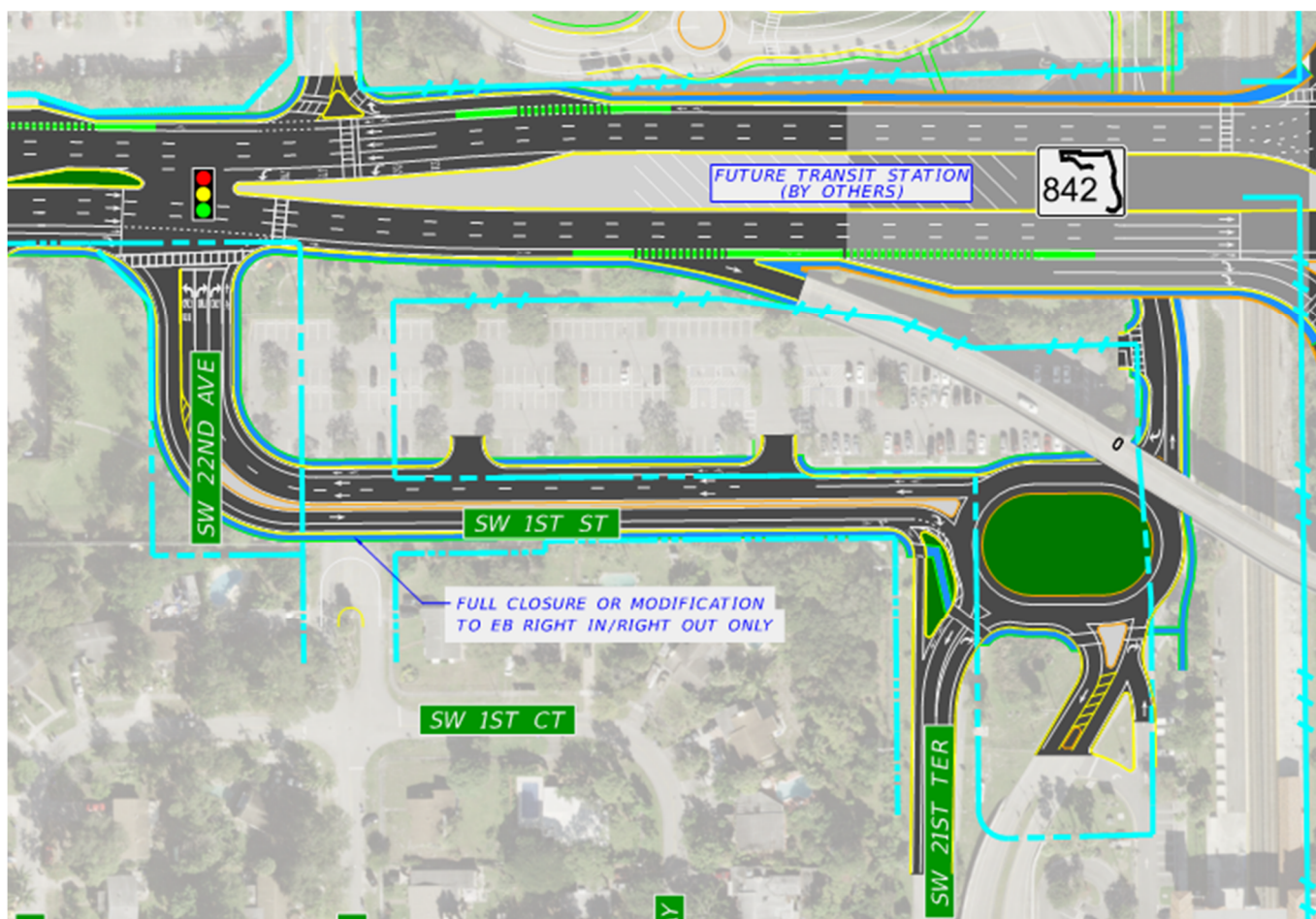
**Figure 1-9 | SW 1st Street Alternative 3 – Double Roundabout**



### Alternative 4 – Combined Roundabout

This alternative combines the intersection of SW 21<sup>st</sup> Terrace and the existing east signalized intersection into one roundabout. This design eliminates the need for two roundabouts (described in Alternative 3) by bringing all approach movements from the two intersections into a single roundabout. The roundabout is designed to accommodate transit vehicles exiting the Park and Ride lot. There is also an eastbound right-turn bypass lane added on SW 1<sup>st</sup> St for vehicles to access SW 21<sup>st</sup> Terrace without entering the roundabout, which provides less impedance to eastbound vehicles destined for southbound 95 Express. To construct the right-turn bypass lane, right-of way is required. These improvements are illustrated in Figure 1-10.

Figure 1-10 | SW 1st Street Alternative 4 – Combined Roundabout



### 1.4.4 Park-and-Ride Lot Build Alternatives

Three concept alternatives were developed to address vehicular circulation through the northern lots, also referred to as Lots 1, 2, and 3 in the figure provided. Each of the alternatives includes a realignment of Access Road to provide for a straighter geometry and adjusts the parking areas and other roadway connections as necessary. Specifically, the parking spaces provided in Lot 3 will be shifted west and

accommodated in the area currently identified as Lots 1 and 2. Each alternative also provides additional sidewalk throughout the northern parking areas, identifies crosswalks, and proposes a canopy for the sidewalks connecting the train station to the newly created area underneath the expanded Broward Blvd. bridge structure. The primary difference between these alternatives is the proposed location of the 95 Express Bus stops and the use of the newly created space underneath the expanded Broward Blvd. bridge structure. These alternatives are concepts and the details of the improvements will be determined as part of the Design phase of the project.

#### **1.4.4.1 Park-and-Ride Design Controls**

Bus-45 was the design vehicle used in the Park-and-Ride alternatives development.

#### **1.4.4.2 Park-and-Ride Alternative 1**

The 95 Express Bus stop in the northern parking area is retained in its current location and a Kiss-and-Ride facility is provided on the opposite side of the existing bus stop. The 95 Express Bus stops currently located on Access Road just south of the Broward Blvd. bridge structure are relocated north to allow for passenger loading underneath the expanded bridge structure. A traffic signal is proposed at the intersection of Access Road with the roadway that provides ingress and egress from I-95 on the north side of the parking area to accommodate left turns by transit vehicles. The additional space provided underneath the bridge structure is not identified for any specific use aside from being reserved to accommodate an elevator and other access features to allow for a transfer between the possible future transit station in the median of Broward Blvd. and this lower level. These concepts are illustrated in **Figure 1-11**.

#### **1.4.4.3 Park-and-Ride Alternative 2**

In this alternative the 95 Express Bus stop in the northern parking area is shifted south to the east-west access road between the two parking areas, and a Kiss-and-Ride facility is provided on the east-west access road that becomes the I-95 ingress and egress ramps. At the terminus of the I-95 ramps in the northern lot a roundabout is proposed in lieu of the existing three-sided intersection. The area underneath the expanded bridge structure is proposed to be used for the 95 Express Bus stops currently located just south of the bridge structure. This concept provides for a more formal transit boarding and alighting area. These concepts are illustrated in **Figure 1-12**.

#### **1.4.4.4 Park-and-Ride Alternative 3**

In this alternative, the 95 Express Bus stop is shifted south to the north-south access road, and retains the location of the Kiss-and-Ride facility as well as the proposed roundabout in the northern lot. A roundabout to access the formal transit station area created underneath the expanded bridge structure is proposed to further facilitate bus access to the transit station area. These concepts are illustrated in **Figure 1-13**.

Figure 1-11 | Alternative 1 – With I-95 at Broward Boulevard Interchange Modified Displaced Left Alternative

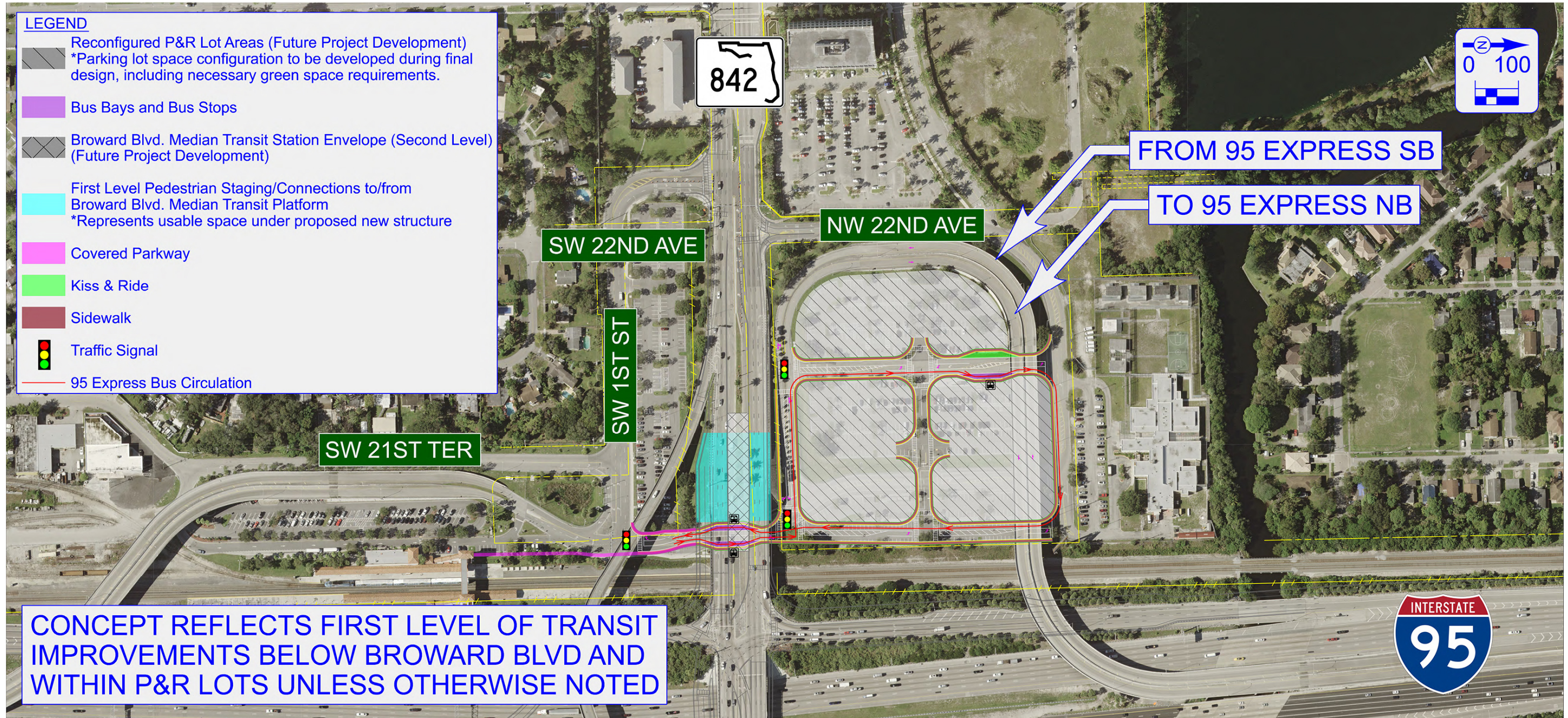


Figure 1-12 | Alternative 2 – With I-95 at Broward Boulevard Interchange Modified Displaced Left Alternative

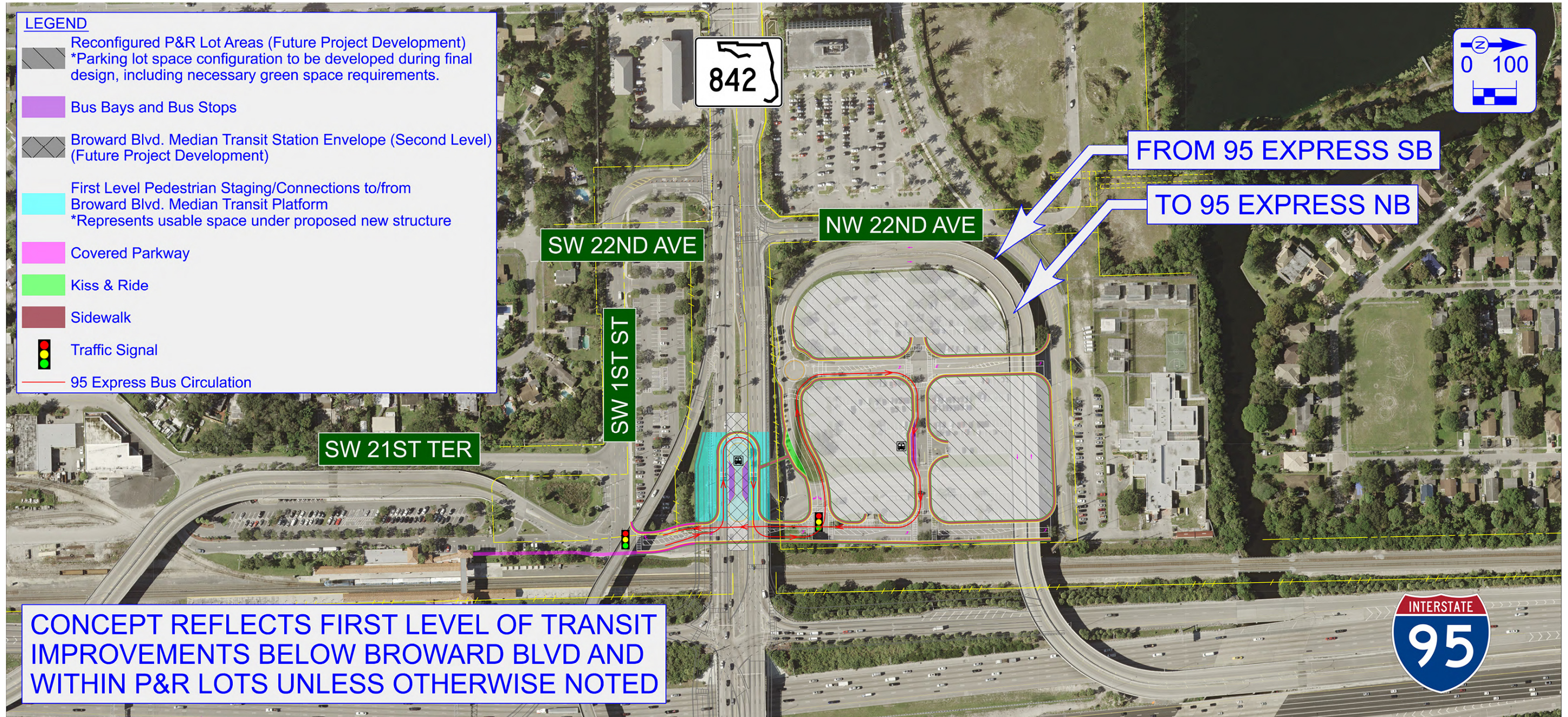
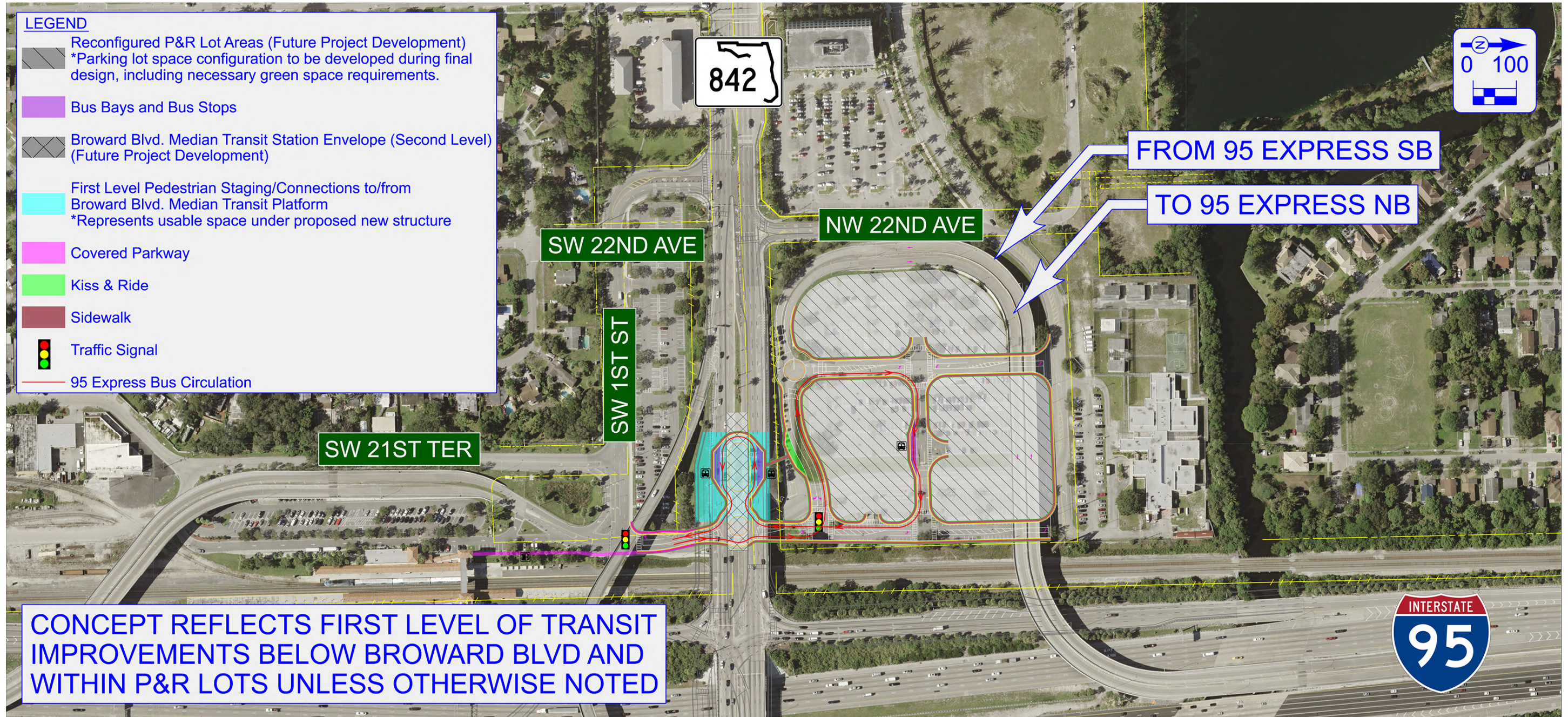


Figure 1-13 | Alternative 3 – With I-95 at Broward Boulevard Interchange Modified Displaced Left Alternative







## 2.0 Existing Conditions

### 2.1 Existing Roadway Conditions

#### 2.1.1 Typical Section

From the Davie Blvd. interchange to SW 5<sup>th</sup> Place (Pl.) the typical section of I-95 is a 10-lane facility comprised of 3-12' General Purpose Lanes (0.02 cross slope for the 2 inside lanes, 0.03 cross slope for the outside lane) and 2-11' Special Use Lanes (0.02 cross slope towards the inside) with a 2' buffer in each direction, varied width (3-10') inside shoulders (0.06 cross slope), and varied width (10'-13.5') outside shoulders (0.06 cross slope) along northbound I-95, and varied width (6.5'-10') inside shoulders and 12' outside shoulders (0.06 cross slope) along southbound I-95, and a varied width (2'-16') median. From the vicinity of SW 5<sup>th</sup> Pl., where the northbound Collector-Distributor (CD) road ramp system merges traffic from I-595 into the General Purpose Lanes, to NW 6<sup>th</sup> Street/Sistrunk Blvd., I-95 is a 12-lane facility comprised of 4-12' General Purpose Lanes and 2-11' Special Use Lanes with a varied width (2'-4') buffer, varied width (0'-12') auxiliary lanes in each direction, varied width (6'-12') inside shoulders along northbound I-95, varied width (5'-12') inside shoulders along southbound I-95, and varied width (8'-12') outside shoulders in each direction, and a varied width (2.5'-70.5') median. From the vicinity of NW 6<sup>th</sup> Street/Sistrunk Blvd., and through to the Sunrise Blvd. interchange, I-95 is a 12-lane facility comprised of 4-12' General Purpose Lanes and 2-11' Special Use Lanes with a varied width (2'-4') buffer, and varied width (0'-12') auxiliary lanes, varied width (5'-12') inside and 12' outside shoulders, and a 2.5' median.

SR-842/Broward Blvd. is a six-lane divided roadway with 3 varied width (11'-12') lanes in each direction, 0.02 cross slope for the 2 inside lanes, and 0.03 cross slope for the outside lane, curb & gutter, 6'-8' wide sidewalks, and raised varied width (7'-28') median. There are two bridges along Broward Blvd. The first bridge spans over SW 21<sup>st</sup> Terrace and the railroad corridor and the second bridge spans over I-95. The bridge over SW 21<sup>st</sup> Terrace and the railroad corridor has three through lanes and an auxiliary lane in each direction, raised sidewalk, and raised median. The bridge over I-95 has three through lanes in each direction, two left turn lanes in the westbound direction, raised sidewalk, and a traffic separator.

Figure 2-1 | Typical Section – Broward Blvd.

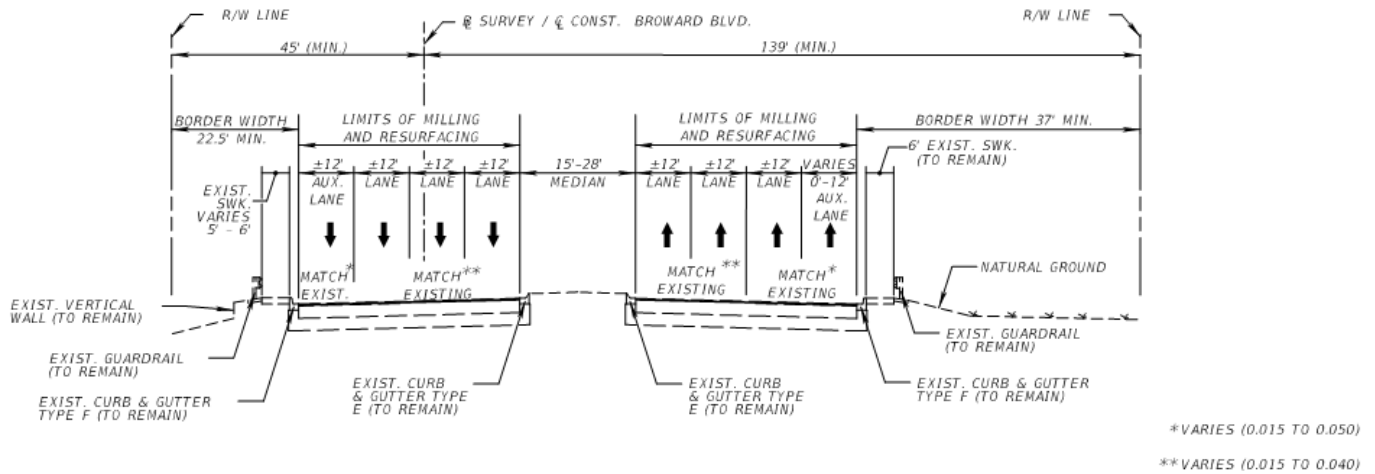
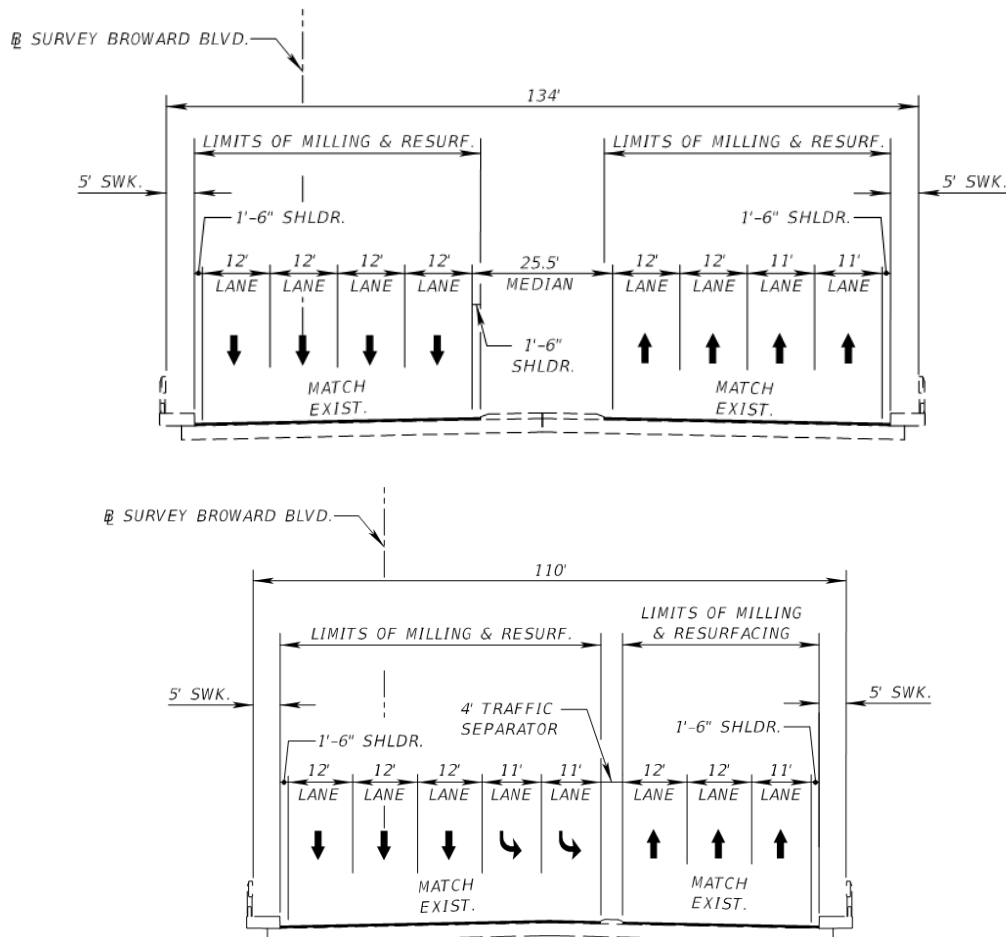


Figure 2-2 | Typical Section – Broward Blvd. Bridges Over SW 21st Terr. and Railroad and Over I-95



## 2.1.2 Roadway Classification

The FDOT classifies roadways according to the nature and character of their uses. Functional Classification defines the role that a particular roadway plays in serving the flow of vehicular traffic through the network. The functional classification of I-95 (86070000) is that of an Urban Interstate that serves as a major north/south mode of transportation for Broward County. I-95 is also designated as an SIS corridor, which is part of a statewide network of high priority transportation facilities that are critical to Florida's economic competitiveness, and on the National Highway System.

The Access Management classification of I-95 is Access Class 1 (Limited Access).

The functional classification of SR-842/Broward Blvd. (86006000) is that of an Urban Principal Arterial that serves as the main entry way to the downtown Fort Lauderdale Central Business District from I-95 and the east/west connection between US-1 and SR-817/University Drive in the City of Plantation.

The Access Management classification of Broward Blvd. is Access Class 5 (Restrictive).

The FDOT Context Classification in combination with Transportation Characteristics of a roadway will determine key design criteria for all non-limited-access state roadways. The Context Classification system describes the general characteristics of the land use, development patterns, and roadway connectivity, providing cues as to the types of uses and user groups that will likely utilize the roadway. The Transportation Characteristics define the type of access the roadway provides, the types of trips served, and the users served. The Context Classification designation for Broward Blvd. is C4-Urban General.

## 2.1.3 Vertical Alignment

The vertical profile of I-95 was obtained from the FPID 433108-4-52-01 plans. Within the limits of the study, the northbound I-95 profile slopes downward to a low point with an elevation of approximately 15.3' as it passes underneath David Blvd., and continues with upward and downward changes between approximate elevations of 17.5' and 7.4', respectively, before passing under the Broward Blvd Bridge at an approximate elevation of 8.5' along the northbound lanes, and 9.0' along the southbound lanes. North of Broward Blvd. the I-95 profile rises to reach an approximate elevation of 30' and flattens to a 0% grade to and through the bridge over NW 6<sup>th</sup> St. before transitioning to downward slope from (-) 1.45% to (-) 2.12% then transitions with a vertical curve to 0.005% to and through the north study limits.

The vertical profile of Broward Blvd. was obtained from FPID 22714-1-52-01 and FPID 429958-1-52-01 plans. Within the limits of the study, the Broward Blvd. profile slopes slightly downward to a low point about 250' east of SW 24<sup>th</sup> Ave, from this point the profile rises 5.0% as it passes over the SFRC and I-95 and transitions with a vertical curve to (-) 4.0%, flattening out to an approximate 0.30% to and through the east study limits.

## 2.1.4 Horizontal Alignment

The existing geometry of Broward Blvd. is linear between SW 24<sup>th</sup> Ave and a point just east of I-95 where it deflects approximately 0°00'39" this 138' segment is followed by another segment with a deflection of approximately 0°00'24". Then a curve of approximately 3,245' radius follows to and through the study limits. **Table 2-1** provides a summary of the existing horizontal alignment data.

**Table 2-1 | Horizontal Alignment: Broward Blvd.**

Curve No.	Existing Curve Parameters				Design Criteria	
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>1</b>	45	3245.00	NC	349.55	400	NC

The existing geometry of the northbound side of I-95 within the proposed improvement limits follows a reverse curve of approximately 34,900' and 22,900' radii respectively. The last curve is followed by another curve in the same direction of about 22,900' radius. Then a tangent section followed by a curve of approximately 29,900' radius. The curve is followed by three tangent sections with deflections of approximately (-) 0°44'52", and (-) 0°1'48" respectively. These sections are followed by a compound curve of approximately 11,000', 30,000', and 20,000' respectively. Then a tangent section is followed by another compound curve of approximately 13,900' and 11,400' respectively. The last section to and through the study limits consists of 5 tangent sections with deflections of approximately 0°30'00", 0°55'37", (-) 0°55'37", and 0°07'39" respectively. **Table 2-2** provides a summary of the existing horizontal alignment data.

**Table 2-2 | Horizontal Alignment: I-95 NB**

Curve No.  crowned between GP and EL	Existing Curve Parameters			Design Criteria		
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>14</b>	65	34903.74	NC (GP) 0.03 (EL)	229.97	400	NC
<b>15</b>	65	22954.08	NC (GP) 0.02 to 0.026 (EL)	1737.66	400	NC
<b>16</b>	65	22953.62	NC	353.25	400	NC
<b>1-4</b>	65	29976.00	NC	1136.82	400	NC
<b>1-5</b>	65	11024.00	RC (GP) NC (EL)	742.07	400	RC
<b>1-6</b>	65	30024.00	RC to NC (GP) NC (EL)	622.38	400	NC
<b>1-7</b>	65	20023.98	NC (GP) RC (EL)	733.84	400	NC
<b>1-8</b>	65	13983.00	NC (GP) 0.02 to 0.025 (EL)	719.23	400	RC
<b>1-9</b>	65	11433.16	(-) 0.02 to (-) 0.03 (GP) 0.02 to (-) 0.02 (EL)	648.62	400	RC

The existing geometry of the southbound side of I-95 within the proposed improvement limits follows a compound curve of approximately 7,800' and 11700' radii respectively. Then a tangent section is followed by a curve of approximately 5600' radius. There are two tangent sections with a deflection of (-) 0°45'00" between them, followed by a curve of approximately 7,500' radius. The last section to and through the study limits consists of eight tangent sections with deflections of approximately 0°06'33", (-) 0°06'33", (-) 0°06'33", 0°06'22", (-) 0°44'58", 0°45'08", and 0°44'51" respectively. **Table 2-3** provides a summary of the existing horizontal alignment data.

**Table 2-3 | Horizontal Alignment: I-95 SB**

Curve No.  crowned between GP and EL	Existing Curve Parameters			Design Criteria		
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>3</b>	65	7815.00	0.025 to 0.03 (GP) (-) 0.03 (EL)	878.61	400	0.025
<b>4</b>	65	11722.00	0.025 to 0.03 (GP) (-) 0.03 (EL)	307.42	400	RC
<b>5</b>	65	5653.00	(-) 0.037 (GP) 0.037 (EL)	843.57	400	0.034
<b>6</b>	65	7550.00	(-) 0.02 to (+) 0.03 (GP) (-) 0.02 to (-) 0.03 (EL)	728.63	400	0.025

## 2.2 Existing ITS Conditions

The existing Intelligent Transportation System (ITS) devices within the study limits on I-95, Broward Boulevard, and the Broward Boulevard Park and Ride facility are currently operated, monitored, and managed from the FDOT District Four Regional Transportation Management Centers (RTMC) using the SunGuide software to control and monitor the existing ITS devices. Prior to the opening of the I-95 Express Lanes Phase 3A-1 project, District Six will operate the existing toll amount Dynamic Messaging Signs (T-DMS), lane status DMS (S-DMS) and the closed circuit television (CCTV) cameras that are dedicated to those T-DMS and S-DMS within the study area however all ITS devices are maintained by District Four. District Four operates all other ITS devices within the study area, however upon final acceptance of the I-95 Express Lanes Phase 3A-1 project the District Four RTMC is expected to take over the operations of all ITS devices. Because of this, it is assumed that the FDOT District Four RTMC will operate all of the ITS devices within the study area. A separate Arterial Management Services (AMS) contract operates, manages, and maintains the ITS devices on Broward Blvd however this is also done out of the FDOT District Four RTMC. The following is a description of all the existing ITS devices within the study area and the potential impacts on them for the proposed improvements as part of the Preferred Alternative. Note that the ITS devices on I-95 and in the Broward Boulevard Park and Ride described below are the devices that are to be installed/included as part of the I-95 Express Lanes Phase 3A-1 project.

### 2.2.1 I-95 ITS Devices

**Pan-Tilt-Zoom (PTZ) Closed Circuit Television (CCTV) cameras:** Within the study limits, the District Four RTMC operates twelve (12) CCTV cameras along I-95. It is anticipated that each of these camera locations would be affected by the Preferred Alternative and most likely require relocation or replacement.

**Microwave Vehicle Detection System (MVDS):** Within the study limits, the District Four RTMC operates seventeen (17) MVDS along I-95. It is anticipated that each of these MVDS locations would be affected by the Preferred Alternative and most likely require relocation or replacement.

**Dynamic Messaging Signs (DMS):** Within the study limits, the District Four RTMC operates three (3) freeway DMS, one (1) S-DMS, and one (1) arterial DMS on Broward Blvd used for the freeway operations. The overhead structures would need to be relocated due to the widening of the I-95 mainline and Broward Boulevard.

**Wireless Access Points (WAP):** Within the study limits, the District Four RTMC operates seven (7) WAPs along I-95. With the exception of three (3) WAP that are located on one ITS pole near Broward Blvd, the other four (4) WAP either share a pole with a CCTV camera or MVDS. It is anticipated that each of these WAP locations would be affected by the Preferred Alternative and most likely require relocation.

**Voice over IP (VoIP) antennas:** Within the study limits, the District Four RTMC operates two (2) VoIP antennas along I-95. These VoIP antennas are located on existing CCTV poles or MVDS poles throughout the study limits. These VoIP antennas are no longer utilized by the Department and do not have to be relocated. They can be returned to the Department upon removal.

**Ramp Signaling System (RSS):** Within the study limits, the District Four RTMC operates three (3) RSS sites along I-95. The RSS consists of several components which include loop detectors, (ramp queue loop, demand loop, and passage loop), flashing beacons, ramp signal heads, and ramp signal cabinets (RSC). The following components are anticipated to be affected by the Recommend Alternative and will most likely require relocation:

- Broward Blvd SB entrance ramp to I-95 (one lane entrance ramp):
  - the RSC,
  - one (1) flashing beacon
- Broward Blvd NB entrance ramp to I-95 (two lane entrance ramp):
  - one (1) flashing beacon for the EB to NB movement,
  - one (1) flashing beacon for the WB to NB movement,
  - two (2) ramp queue loop detectors from the WB to NB movement,
  - four (4) demand loop detectors
  - four (4) passage loop detectors
  - the RSC,
  - four (4) ramp signal heads on two (2) pole assemblies
- Sunrise Blvd SB entrance ramp to I-95 (one lane entrance ramp):
  - two (2) demand loop detectors
  - two (2) passage loop detectors
  - the RSC,
  - two (2) ramp signal heads on one (1) pole assembly

**Fiber Optic Communication System:** Fiber Optic (FO) infrastructure is already in place for the currently deployed ITS equipment. FDOT has two (2) one hundred forty-four (144) strand FO cables and one seventy-two (72) strand FO cable (for shared AMS/Broward County) FO backbones along the I-95 study limits. FDOT typically provides an FO connection to their CCTV cameras, MVDS sensors, DMSs, and other ITS devices. The current FO backbones and conduits will have to be relocated or replaced as part of the modified locations to the ITS system.

## 2.2.2 Broward Boulevard ITS devices

**Pan-Tilt-Zoom (PTZ) Closed Circuit Television (CCTV) cameras:** Within the study limits, the District Four RTMC AMS team operates a total of three (3) CCTV cameras, two (2) of which are along Broward Blvd and one (1) within the Broward Blvd Park and Ride. It is anticipated that the two (2) camera locations along Broward Blvd would be affected by the Preferred Alternative and most likely require relocation or replacement.

**Microwave Vehicle Detection System (MVDS):** Within the study limits, the District Four RTMC AMS team operates one (1) MVDS along Broward Blvd. It is anticipated that this MVDS location would be affected by the Preferred Alternative and most likely require relocation or replacement.

**Bluetooth Travel Time System (BTTS):** Within the study limits, the District Four RTMC AMS team operates a total of three (3) BTTS devices, two (2) of which are along Broward Blvd and one (1) within the Broward Blvd Park and Ride. It is anticipated that the two (2) BTTS device locations along Broward Blvd would be affected by the Preferred Alternative and most likely require relocation or replacement.

**Fiber Optic Communication System:** Fiber Optic (FO) infrastructure is already in place for the currently deployed ITS equipment. FDOT has a combination of a twelve (12) strand and ninety-six (96) strand FO backbone along the Broward Blvd study limits. FDOT typically provides an FO connection to their CCTV cameras, MVDS sensors, DMSs, and other ITS devices. The current FO backbones and conduits will have to be relocated or replaced as part of the modified locations to the ITS system.

## 2.2.3 Broward Boulevard Park and Ride ITS devices

**Pan-Tilt-Zoom (PTZ) Closed Circuit Television (CCTV) cameras:** Within the study limits, the District Four RTMC AMS team operates six (6) CCTV cameras within the Broward Blvd Park and Ride facility. These CCTV are dedicated to the T-DMS within the Park and Ride. It is anticipated that three (3) of this camera locations would be affected by the Preferred Alternative and most likely require relocation or replacement.

**Dynamic Messaging Signs (DMS):** Within the study limits, the District Four RTMC operates twelve (12) T-DMS on six (6) static panels (two T-DMS per static panel) used for the Express Lane operations. Two (2) of the static panels (total of four T-DMS) would be affected by the activities performed in the Park and Ride and most likely require relocation or replacement.



**Fiber Optic Communication System:** Fiber Optic (FO) infrastructure is already in place for the currently deployed ITS equipment. FDOT has a twenty-four (24) strand FO drop cable that is spliced into the one hundred forty-four (144) strand FO backbone along I-95 for these ITS devices within the Park and Ride. The current FO drop cable and conduit in the lot to the north of Broward Blvd would be affected by the activities performed in the Park and Ride and most likely require relocation or replacement

## 2.3 Existing Structure Conditions

There are nineteen existing bridges within the study limits:

1. SB I-95 over SW 6th Street – Bridge No. 860272
2. NB I-95 over SW 6th Street - 860273
3. SB I-95 over North Fork New River - Bridge No. 860270
4. NB I-95 over North Fork New River - Bridge No. 860271
5. SB I-95 to Broward Blvd Ramp over North Fork New River - Bridge No. 860260
6. SB I-95 to PNR Ramp over SB I-95, Broward Blvd. and RR - Bridge No. 860601
7. PNR to NB I-95 Ramp over SB I-95, Broward Blvd. and RR - Bridge No. 860628
8. Broward Blvd. to NB I-95 Ramp over North Fork New River - Bridge No. 860602
9. WB Broward Blvd. over P&R Access Road and CXS RR - Bridge No. 860257
10. EB Broward Blvd. over P&R Access Road and CXS RR - Bridge No. 860258
11. EB Broward Blvd. to NB I-95 – Bridge No.860598
12. Broward Blvd. over I-95 - Bridge No. 860269
13. P&R#2 to SB I-95 Ramp over SB I-95, I-595 Connector and RR - Bridge No. 860600
14. P&R to NB I-95 Ramp over SB I-95, Broward Blvd and RR - Bridge No. 860638
15. Broward Blvd. to SW I-95 Ramp over SB I-95 ramp to I-595 - Bridge No. 860606
16. NB I-95 to Broward Blvd over I-595 ramp to NB I-95 - Bridge No. 860607
17. Davie Blvd. over I-95, I-595 Ramp, RR and 21th Ave - Bridge No. 860603
18. SB I-95 Exit Ramp - Bridge No. 860604
19. Davie Blvd. to NB I-95 Ramp - Bridge No. 860605

All nineteen bridges in the study limits have been tested for asbestos and lead paint and none of them tested positive for asbestos-containing materials. Out of the nineteen bridges, ten bridges contain non-hazardous metals.

The existing bridge characteristics are summarized in **Table 2-4**.



Table 2-4 | Existing Bridge Characteristics

Bridge Number	860257	860602	860257	860258	860269	860600	860272	860273	860270	860271	860260	860601	860638	860606	860607	860603	860604	860605
Year Built/ Reconstructed	1974	1993	1974/1994	1974	1974	1995	1975/1994	1975/1994	1974/1994	1974/1994	1974/1994	1994	1995	1994	1994	1994	1993	1994
Structure Type	AAHSTO beam	AAHSTO beam	AAHSTO beam	AAHSTO beam	AAHSTO beam	Steel Box	AAHSTO beam	AAHSTO beam	AAHSTO beam	AAHSTO beam	AAHSTO beam	Steel Box	Steel Box	Steel Box	Steel Box	Steel Box	Steel Box	Steel Box
No. of Spans	4	3	3	3	4	8	3	3	3	5	3	8	7	3	3	8	1	1
Total Length of Bridge	222 ft	272 ft	207 ft	222 ft	338.1 ft	1315 ft	188.6	188.6	207 ft	250 ft	195 ft	1315 ft	1345 ft	671.5 ft	567.5 ft	1019 ft	101 ft	121 ft
Bridge Width	68.1 ft	44.1 ft	95 ft	68.2 ft	112.1 ft	31.1 ft	97	109	95 ft	85.1 ft	45.5 ft	31.1	31.1 ft	29.8 ft	29.8 ft	141.2 ft	57 ft	52.8 ft
Year of Last Inspection	2016	2015	2017	2016	2017	2016	2016	2016	2017	2017	2017	2017	2015	2016	2017	2016	2016	2016
Health Index	98.6	94.3	99.55	99.34	100	98.6	99.3	99.6	99.5	100	100	58.4	98.8	76.5	97.2	90.1	80.8	93.5
Sufficiency Rating	78.4	97.9	91	78.4	79	98.1	84.5	84.5	91	90	95.8	99	98.4	97.3	97.5	88	100	98.2
Controlling NBI Condition	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
LFR Load Rating Inventory	48.9 tons	55.4 tons	42.8 tons	50.2 tons	46.1 tons	34.2 tons	34.3 tons	34.3 tons	42.8 tons	48.6 tons	35.7 tons	43.2 tons	34.2 tons	39.6 tons	58.0 tons	36 tons	50.8 tons	51.1 tons
LFR load Rating Operating	55.6 tons	87.8 tons	49.3 tons	63.0 tons	76.8 tons	61.9 tons	57.1 tons	57.1 tons	49.3 tons	63.0 tons	59.4 tons	55.8 tons	57.2 tons	65.9 tons	97.2 tons	60.1 tons	84.6 tons	85.3 tons
FL-120 Rating	NA	NA	NA	NA	NA	NA	NA	NA	68.4 tons	67.2 tons	NA	55.2 tons	NA	NA	NA	NA	NA	NA
Acceptable Load Rating Based on Widening Y/N	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	Y
Acceptable Load Rating Based on Remaining Y/N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Existing Min Lateral Clearance	0 ft	29.8 ft Navigational	29.8 ft Navigational	0 ft	10.2 ft	11.4 ft	11.8 ft	11.8 ft	29.8 ft navigational	29.8 ft navigational	29.8 ft navigational	21 ft	11.4 ft	8.5 ft	7.2 ft	9.8 ft	Not over road/wat er	Not over road/wat er
Existing Minimum Vertical Clearance (As-Builts)	23.5 ft over RR	6.8 ft over water	6.8 ft over water	23.5 ft over RR	16.5 ft over Road	18 ft over Road	16.3 ft	16.3 ft	6.8 feet of water	6.8 feet of water	6.8 feet of water	16.4 ft	18 ft	16.4 ft	16.4 ft	16.5 ft	NA	NA
Functionally Obsolete Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Structurally Deficient Y/N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N



## 2.3.2 Historical Significance

The historical significance of the existing bridges within the project study area along Broward Boulevard were reviewed to determine if any are considered historic or possess any substantial community value. All the bridges were originally constructed in 1974, and have not been widened or reconstructed. As such, these bridges are either non-historic or have non-historic reconstruction dates.

## 2.4 Existing Lighting Conditions

Within the limits of the study, along Broward Blvd, there is existing lighting on both the south and north side of the roadway. Within the study limits along I-95 there is existing lighting in the median, servicing both northbound and southbound lanes of I-95 from Davie Blvd. to the existing HOV Ramps south of Broward Blvd. From the HOV ramps south of Broward Blvd. to the HOV ramps north of Broward Blvd. existing lighting is located along the outside of both northbound and southbound I-95 mainline. From the HOV ramps north of Broward Blvd. to and through the study limits, existing lighting is provided in the median of I-95. In addition to the lighting along the mainline of I-95 there is existing lighting along entrance and exit ramps.

## 2.5 Environmental Characteristics

### 2.5.1 Existing Land Use

The study area is mostly comprised of low and medium residential, commercial and service land uses within a 500-foot buffer of the project area. Surface waters in the project area are limited to highway drainage, stormwater features associated with development, and a portion of the North Fork of the New River. These natural land uses are disturbed due to their proximity to dense development. The study area is also home to several large employers and public uses. Community facilities, such as parks and religious institutions, are integrated throughout the study area. The project limits are within the incorporated area of the City of Fort Lauderdale, in Broward County. Existing Land use is shown in **Figures 2-3** and **Figure 2-4**.

### 2.5.2 Future Land Use

Future land use is expected to be primarily industrial, commercial, residential, and institutional. Adjacent to I-95 and major arterials, the areas are mainly Commerce or Activity Center, with the exception of the lands located on the east side of I-95 south of Broward Boulevard, which are designated for residential use. The majority of the residential lands are designated Low Residential, the next most prevalent residential land use is Medium Residential. There are small pockets of Medium-High Residential adjacent to Broward Blvd. and Davie Blvd. on the east side of I-95. Transportation, Open Space, Community, and Recreation are other Future Land Use designations in the project area. Future Land use is shown in **Figures 2-5** and **Figure 2-6**.



Figure 2-3 | Existing Land Use

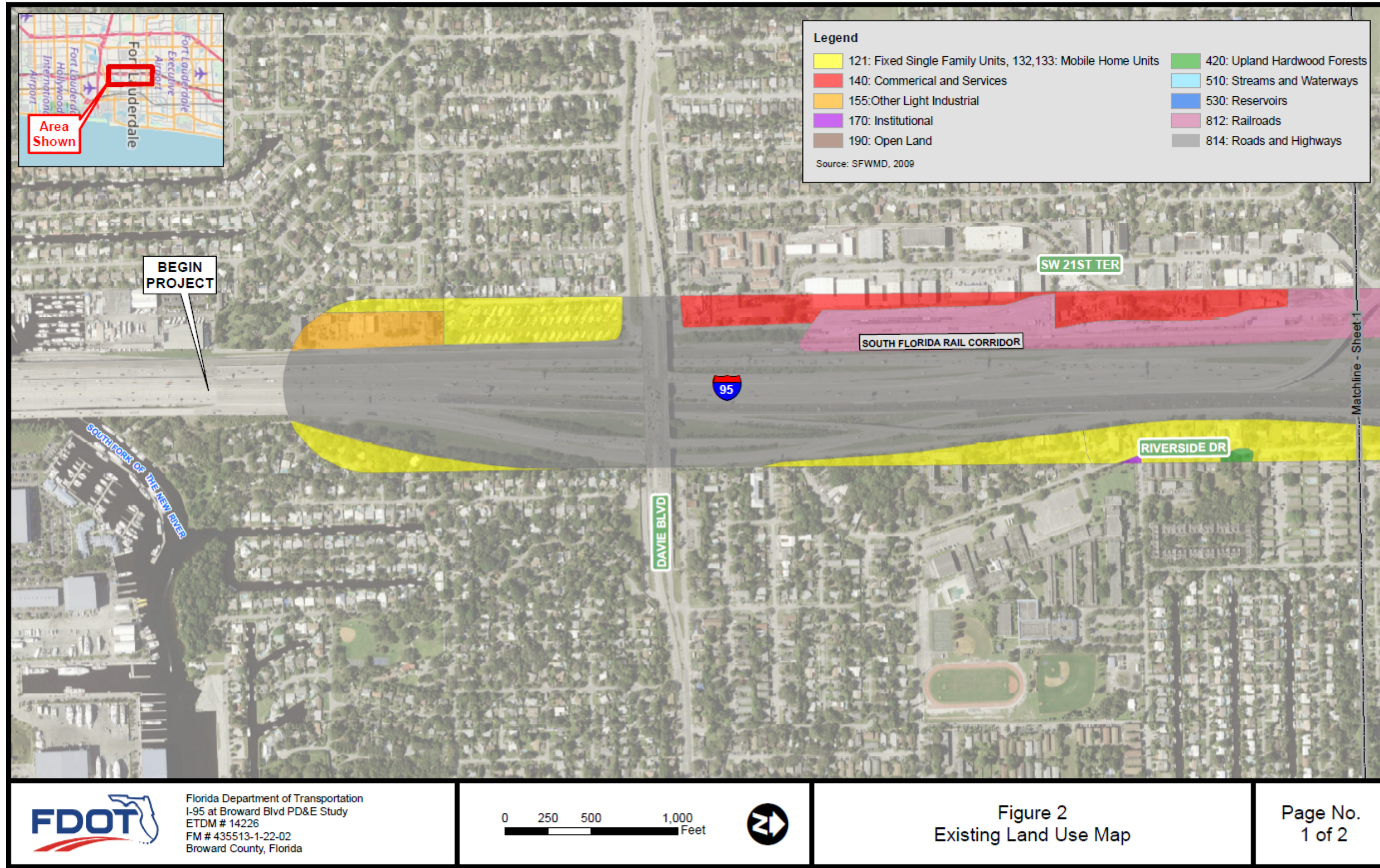
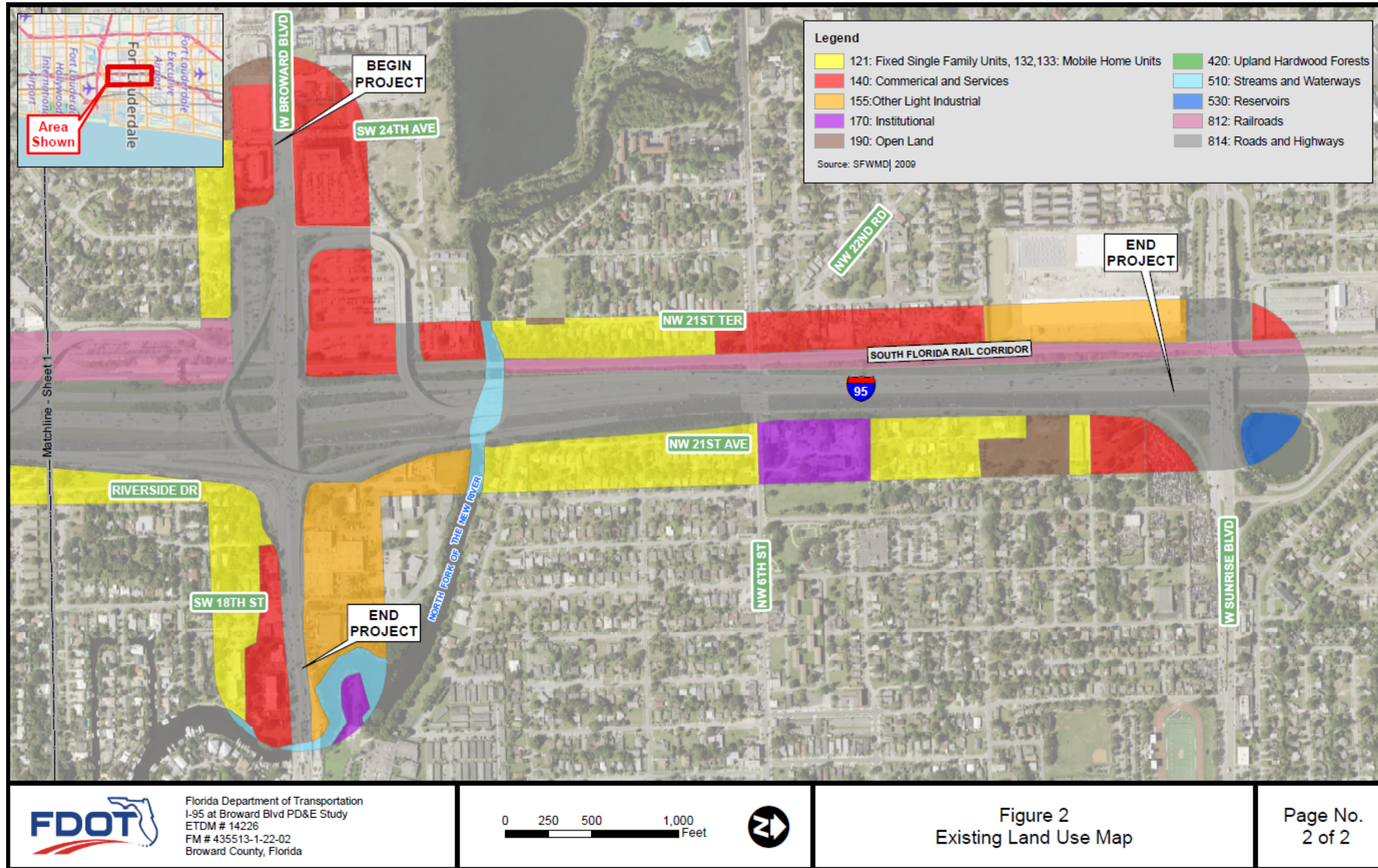


Figure 2-4 | Existing Land Use



Florida Department of Transportation  
 I-95 at Broward Blvd PD&E Study  
 ETDM # 14226  
 FM # 435513-1-22-02  
 Broward County, Florida

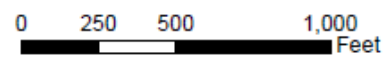
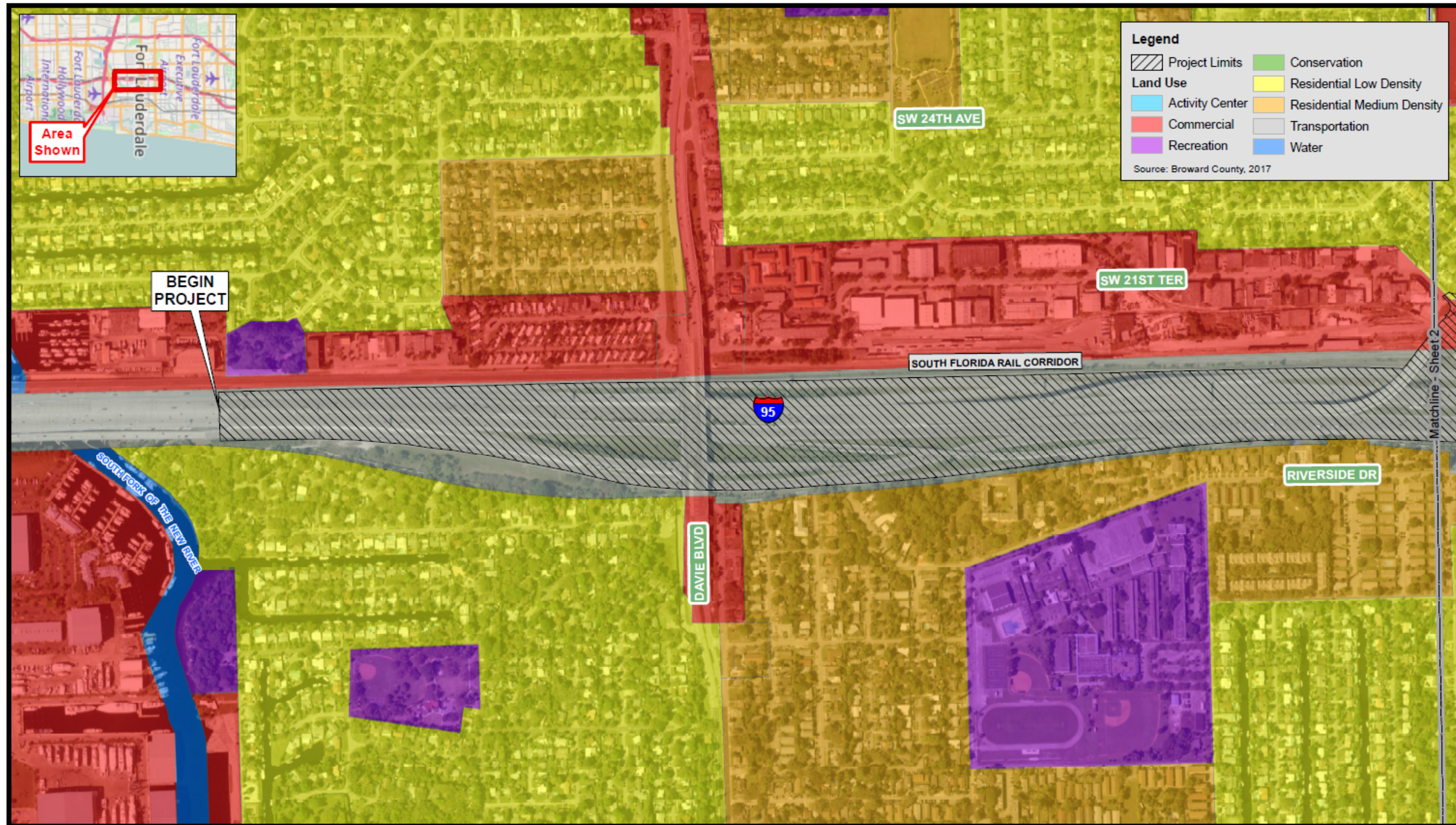


Figure 2  
 Existing Land Use Map

Page No.  
 2 of 2



Figure 2-5 | Future Land Use



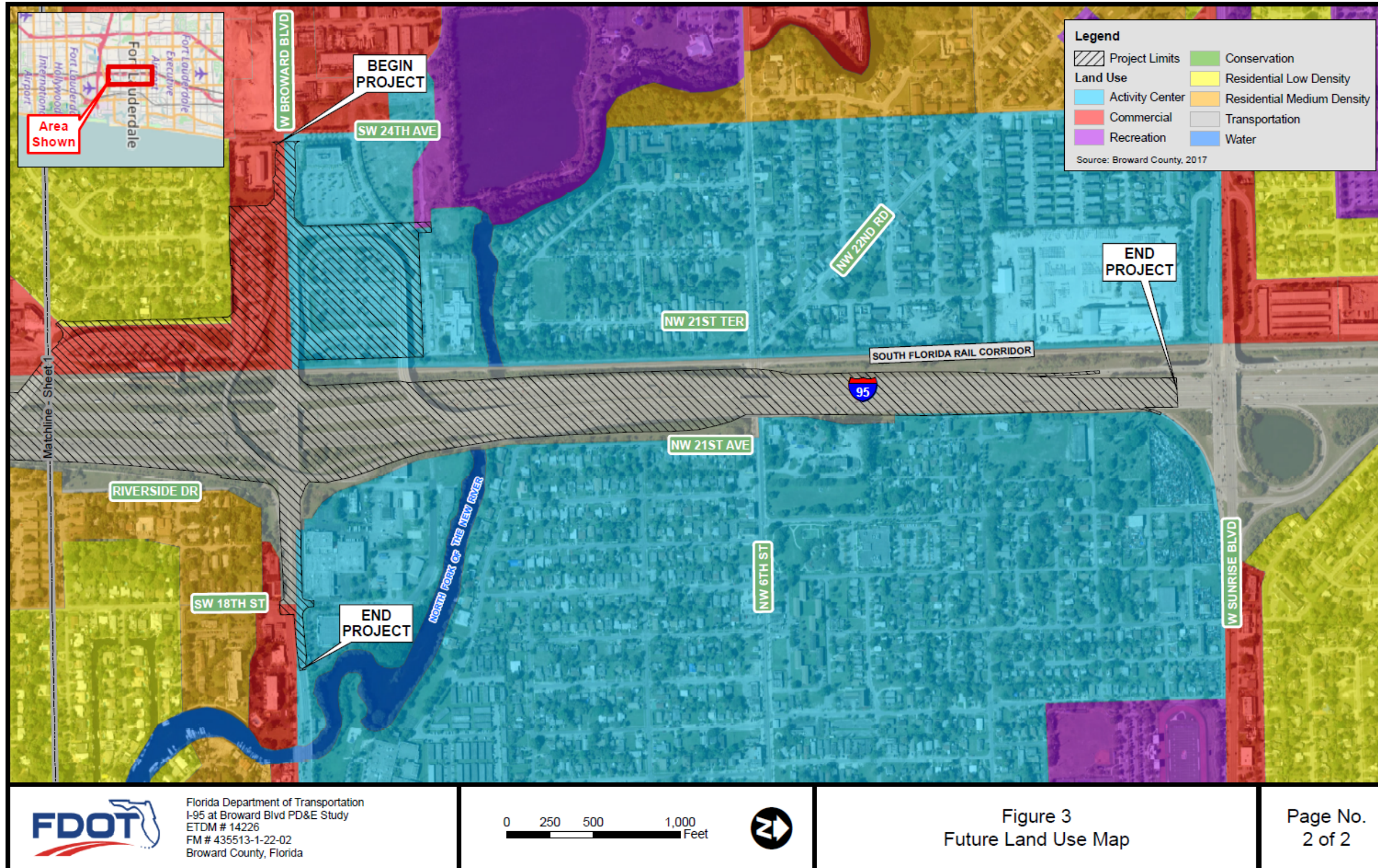
**FDOT**  
 Florida Department of Transportation  
 I-95 at Broward Blvd PD&E Study  
 ETDM # 14226  
 FM # 435513-1-22-02  
 Broward County, Florida



Figure 3  
 Future Land Use Map

Page No.  
 1 of 2

Figure 2-6 | Future Land Use



## 2.5.3 Cultural Resource Assessment Survey

### 2.5.4 Community Facilities

A community is a defined geographic boundary that is comprised of residents, businesses, facilities, and institutions. Community facilities provide a focal point for neighborhoods and communities, as well as providing services, goods and recreation to the surrounding areas. The project area has a variety of facilities such as public and private schools, public parks, religious centers, community centers, a convention center, a cemetery, and a public safety building. Community Facilities are summarized in Table 2-5.

Table 2-5 | Community Facilities

Community Facilities - Schools	
Public	Private
Stranahan High School	Strayer University
North Fork Elementary School	
Walker Elementary School	
Community Facilities - Parks	
Rev. Samuel Delevoe Memorial Park	Lincoln Park
Hortt Park	Bill Keith Preserve Park
Flamingo Park	Sweeting Park
North Fork Riverfront Park	Southwest 15 <sup>th</sup> Terrace Park
Community Facilities – Religious Facilities	
Abundant Life Christian Center	Bethel Missionary Baptist Church
Royal Assembly Church	Peaceful Zion Missionary Baptist Church
National Church of God	Gospel Mission – South America
Church of Christ	Rock of Ages Baptist Church
Church of New Life Christian Fellowship	Willie C Frazier Outreach Ministry
Kingdom Hall of Jehovah’s Witness	More Abundant Powerhouse
Victory Tabernacle of Faith	Spirit of Jesus
St. James #83 Masonic Hall	

### 2.5.5 Parks and Recreational Facilities

In accordance with the FDOT PD&E Manual, Part 2, Chapter 7, Section 4(f) Evaluations, dated January 14, 2019, this project was evaluated for potential Section 4(f) involvement. Section 4(f) resources can be divided into three categories: Historic and archaeological sites; publicly-owned parks; and recreation areas, wildlife refuges, and waterfowl refuges.

The potential Section 4(f) resources that have been identified within a quarter mile of the project area are: For the City of Fort Lauderdale - Sweeting Park, North Fork Riverfront Park, North Fork School Park, Lincoln Park, Hortt Park, Flamingo Park and Little Lincoln Park. For Broward County - Rev. Samuel Delevoe Memorial Park.

## 2.5.6 Wetlands

It has been identified that one wetland exists as a fringe mangrove on the banks of the tidal North Fork of the New River. Seven surface waters exist within the project area, including the North Fork of the New River and six permitted stormwater management areas containing hydrophytic vegetation. The build alternatives encroach upon the fringe mangrove wetland (W-1) and North Fork of the New River (SW-4), however, they are already planned to be fully impacted and mitigated by the I-95 Express Phase 3A-1 project (FPID No. 433108-5-52-01), authorized under South Florida Water Management District (SFWMD) Environmental Resource Permit No.06-01465-S and United States Army Corps of Engineers (USACE) Dredge & Fill Permit No. SAJ 2014-01584. The remaining surface waters (SW-3, SW-5, and SW-7) will be mitigated through offsetting stormwater management areas to be constructed as part of the build alternative.

**Table 2-6 | Direct Impacts Acreages to Surface Waters within a 500-Foot Buffer of the Project Area**

ID	Impact Area (Acres)
<b>W-1</b>	<b>0.004</b>
SW-3	0.28
SW-4	0.02
SW-5	0.02
SW-7	0.08
<b>Total Impacts</b>	<b>0.404</b>

## 2.5.7 Essential Fish Habitat

The North Fork of the New River is located within the project corridor and provides potential manatee access to the waterways crossing underneath I-95. Manatee Protection Zones, enforced by the FWC, apply to this river and begin east and extend west of I-95 at the river crossing. Due to the presence of fringe mangroves the National Marine Fisheries Service has designated areas of The North Fork of the New River as Essential Fish Habitat (EFH). While the build alternatives will result in shading and pile driving impacts to the North Fork of the New River, any impacts to critical habitats and EFH have already been mitigated by the I-95 Express Phase 3A-1 project. As such, it was determined that the project “may effect, not likely to adversely affect” the West Indian manatee and the Smalltooth sawfish.

## 2.5.8 Wildlife and Habitat Survey

Eleven federally listed animals, and two plant species were determined to potentially occur within, or within the vicinity of the project area based on USFWS sources, this is based on the most current listed species as of April 10, 2017. However, little suitable habitat remains available for use by listed species in this developed project area.

Based on the limited available habitat and the proposed improvements, it was determined that the project will have “no effect” on the following federally listed species: Everglades snail kite (*Rostrhamus sociabilis plumbeus*); American alligator (*Alligator mississippiensis*); American crocodile (*Crocodylus acutus*); Hawksbill (*Eretmochelys imbricata*), Leatherback (*Dermochelys coriacea*), Green (*Chelonia mydas*), and Loggerhead sea turtles (*Caretta caretta*); Beach jacquemontia (*Jacquemontia reclinata*); and Tiny Polygala (*Polygala smallii*). It was determined that the project “may effect, not likely to adversely affect” the following species: Wood stork (*Mycteria americana*); West Indian manatee; Smalltooth sawfish; and the Eastern Indigo snake (*Drymarchon corais couperi*).

**Table 2-7 | Likelihood of Occurrences of Federally Listed Species**

Scientific Name	Common Name	Status	Likelihood of Occurrence
<b>Fish</b>			
<i>Pristis pectinata</i>	Smalltooth Sawfish	FE	Low
<b>Avian</b>			
<i>Mycteria americana</i>	Wood Stork	FT	Moderate
<i>Rostrhamus sociabilis plumbeus</i>	Everglades Snail Kite	FE	Low
<b>Mammals</b>			
<i>Trichechus manatus</i>	West Indian Manatee	FT	Moderate
<b>Reptiles</b>			
<i>Drymarchon corais couperi</i>	Eastern Indigo Snake	FT	Low
<i>Alligator mississippiensis</i>	American Alligator	FT (SA)	Low
<i>Crocodylus acutus</i>	American Crocodile	FT	Low
<i>Chelonia mydas</i>	Green Sea Turtle	FE	Low
<i>Eretmochelys imbricata</i>	Hawksbill Sea Turtle	FE	Low
<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	FE	Low
<i>Caretta caretta</i>	Loggerhead Sea Turtle	FT	Low
<b>Plants</b>			
<i>Jacquemontia reclinata</i>	Beach Jacquemontia	FE	Low
<i>Polygala smallii</i>	Tiny Polygala	FE	Low

Note: FT = Federally-designated Threatened; FE = Federally-designated Endangered

Source: Florida Fish and Wildlife Conservation Commission, Florida's Endangered and Threatened Species, Official Lists, January 2017; U.S. Fish and Wildlife Service, County Listed Species; and Florida's Imperiled Species Management Plan 2016.

## 2.5.9 Floodplains/Floodways

Floodplains within the project area were identified using the Federal Emergency Management (FEMA) 2016 Statewide National Flood Hazard Layer (NFHL) GIS data. The majority of the project is within Zone X, “area of minimal food hazard”. The project is also within five small areas of Zone AE, 100-year floodplain and two small areas of Zone A, 100-year floodplain.

## 2.5.10 Noise

Residential land uses are located southeast and southwest of the I-95/Broward Boulevard Interchange, and north of the interchange east and west of I-95 from the north bank of the North Fork of the New River to Sistrunk Boulevard. Noise walls are in place on the east side of the I-95 corridor where residential land uses are present east of the roadway. A noise study was conducted separately for the proposed improvements and presented in the Noise Study Report (NSR).

As described in Sections 4.2.1 through 4.2.3 and summarized in Table 4.2.2 of the NSR, predicted design year noise levels for the Build Alternative will approach or exceed the NAC at 19 residences in the Riverbend community; 16 residences in the Liberty Park community; one residence in River Garden/Sweeting Estates; five residences in the Washington Park community; and at the Woodlawn Cemetery. Consequently, the feasibility and reasonableness of noise barriers were considered for those noise sensitive sites predicted to be impacted.

Four separate Common Noise Environments (CNEs) were used to assess noise barriers for the noise sensitive sites that approach or exceed the NAC:

- E4S - Represents the 19 impacted residences in the Riverbend Community;
- E4N - Represents the 16 residences in the Liberty Park Community;
- E5 - Represents the Woodlawn Cemetery; and
- W4 - Represents the six residences in River Garden/Sweeting Estates and Washington Park.

Noise barriers at three of the CNEs (E4S, E4N, and W4) were determined to be feasible and cost reasonable and/or represent replacement noise barriers and are recommended for further consideration during the design phase and for public input. Noise barriers recommended for CNE-E4S and -W4 represent replacement noise barriers for the existing and planned shoulder mounted noise barriers that are required to be replaced to construct the improvements associated with the Build Alternative. The recommended noise barriers benefit 27 of the 41 residences with reduction from the existing noise barrier impacted by the Build Alternative. The elevated roadways in the vicinity of these communities and the 8-foot-tall height limitation on bridge and Mechanically Stabilized Earth walls limit the ability to provide benefits to all of the impacted residences in these communities.

The estimated cost of the recommended nose barriers is \$1,935,600. Noise barriers were not found to be cost reasonable at the Woodlawn Cemetery (CNE-E5). The usage of the cemetery was less than required to be cost reasonable; therefore, a noise barrier is not recommended for further consideration or construction at this location. Based on the noise analyses performed to date, there appears to be no apparent solutions available to mitigate the noise impacts at this cemetery or the 14 impacted residences

in the vicinity of the existing and proposed noise barriers. The traffic noise impacts to these noise sensitive sites are an unavoidable consequence of the project. FDOT is committed to the construction of feasible noise abatement measures at the noise impacted locations identified above contingent upon the following conditions:

- Final recommendations on the construction of abatement measures is determined during the project s Final Design and through the public involvement process;
- Detailed noise analyses during the Final Design process support the need, feasibility and reasonableness of providing abatement;
- Cost analysis indicates that the cost of the noise barrier(s) will not exceed the cost reasonable criterion;
- Community input supporting types, heights, and locations of the noise barrier(s) is provided to the District Office; and
- - Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed and any conflicts or issues resolved.

It is likely that the noise abatement measures for the identified locations will be constructed if found feasible based on the contingencies listed above. If, during the Final Design phase, any of the contingency conditions listed above cause abatement to no longer be considered reasonable or feasible for a given location(s), such determination(s) will be made prior to requesting approval for construction advertisement. Commitments regarding the exact abatement measure locations, heights, and type (or approved alternatives) will be made during project reevaluation and at a time before the construction advertisement is approved.

## 2.5.11 Contamination

From a review of the Contamination Screening Evaluation Report (CSER), a total of 78 sites were identified as potential source of contamination.

Each site identified within the defined 500-foot screening area from the proposed improvements was evaluated for its potential impact and assigned a rating of High, Medium, Low, or No potential risk. Sites within 200 feet of the project corridor were defined as adjacent to the corridor and rated based on their characteristics. Sites greater than 200 feet from the corridor were rated based on their characteristics and distance from proposed improvements. Risk ratings were assigned in accordance with Part 2, Chapter 20, Section 20.2.2.4 of the FDOT PD&E Manual and District 4 requirements. The identified sources/facilities have a risk rating distribution as follows: 13 - High, 17 - Medium, 27 - Low, and 21 – No. Based on these risk ratings, construction activities may encounter soil or groundwater contamination which can potentially impact worker health, the environment, and construction schedule and costs if these sites are not addressed in the design.

A Level II Assessment is recommended for 13 sources/facilities that have the potential to adversely impact the project if identified environmental concerns are not further investigated. The Level II Assessment should include the advancement of environmental soil borings and discrete groundwater

sampling at specific locations within the project corridor that require subsurface construction (i.e. soil excavation and/or dewatering activities) near sources identified as having potential contamination.

## 2.6 Right-of-Way

The existing Limited Access right-of-way along I-95 within the study limits varies 121' to 440' east of the I-95 centerline, and 136' to 345' west of the I-95 centerline.

The existing right-of way along Broward Blvd from SW 24<sup>th</sup> Ave to NW/SW 22<sup>nd</sup> Ave, and from east of I-95 to east of NW/SW 18<sup>th</sup> Ave varies from 112' to 189'. Limited Access right-of-way from east of SW 22<sup>nd</sup> Ave to east of I-95 which varies from 183' to 288'.

### 2.6.1 Right-of-Way Encroachment

There is an encroachment onto FDOT right-of-way located on the east border I-95 between NW 7<sup>th</sup> Place and NW 8<sup>th</sup> Street in the City of Ft. Lauderdale. The property owner located adjacent to the FDOT parcel (Rodney's Relocation Services; 2001 NW 7<sup>th</sup> Place Ft. Lauderdale, FL 33311) has a fence that is situated within FDOT right-of-way. The FDOT Parcel with the encroachment is listed as Folio Number 50420432010 per the Broward County Property Appraiser's office.

## 2.7 Pedestrian and Bicycle Facilities

Pedestrians are accommodated with six foot wide sidewalks on both sides of Broward Blvd. between NW/SW 22<sup>nd</sup> Ave and NW/SW 18<sup>th</sup> Ave West of NW/SW 22<sup>nd</sup> Ave the sidewalk is eight feet in width. In its current configuration, SR-842/Broward Blvd has no provisions for bicycle traffic within the limits of NW 24<sup>th</sup> Ave to NW 18<sup>th</sup> Ave, outside of the general travel lanes. Crosswalks are located along Broward Boulevard on every side street. The only crosswalks available to cross Broward Boulevard are located at SW/NW 24<sup>th</sup> Avenue and at SW/NW 18<sup>th</sup> Avenue. This area currently serves as the main entry way to downtown Fort Lauderdale Central Business District from I-95 and the east-west connection between US-1 and SR-817/ University Drive in the City of Plantation.

Currently the elevation of Broward Blvd. over I-95 has created vertical access challenges for transit users, pedestrians, and bicyclists to connect to the Park-and-Ride lot and Transit Station area. There are also currently no designated bicycle facilities within the Park-and-Ride lot and minimal sidewalk facilities.

## 2.8 Transit Facilities

Broward Blvd. currently has a variety of transit options that provide direct service and transfer connections along the corridor. The options in this area include bus service (Broward County Transit, Sun Trolley, 95 Express Bus, and Tri-Rail Commuter Connector) and passenger rails service (Amtrak and Tri-Rail).

Located within the Broward Blvd. interchange area (between SW 24<sup>th</sup> Ave and SW 18<sup>th</sup> Ave ) are a transit station (Amtrak & Tri-Rail), a Park-and-Ride Lot, and a variety of bus stops from the different services that run on Broward Blvd. and within the Park-and-Ride Lot (BCT, Sun Trolley, 95 Express, and Tri-Rail



Commuter Connectors). The Park-and-Ride Lot currently consists of 794 parking spaces throughout five parking lots, with designated parking spaces for Amtrak and Tri-Rail.

Appendix E provides maps of all transit routes that provide service to the project area.

## 2.8.1 Broward County Transit

Broward County Transit, the public transit authority in Broward County, has three bus routes that operating on Broward Blvd. (Routes 9, 22, and 81).

Route 9 provides service from the central business district in Hollywood to the Broward Central Terminal in Fort Lauderdale. Route 9 stops at Broward Blvd and SW 22 Ave (Bus Stop ID #0725) in the eastbound direction and at Broward and NW 18 Ave (Bus Stop ID #0615) in the westbound direction.

Route 22 provides service from Sawgrass Mills Mall in Sunrise to the Broward Central Terminal. Route 22 stops at 6 locations within the Park-and-Ride lot, including the Tri-Rail Station (Bus Stop ID #3732).

Route 81 provides service from Plantation to the Broward Central Terminal. Route 81 stops at Broward Blvd and SW 22 Ave (Bus Stop ID #0725) in the eastbound direction and stops at Broward and NW 18 Ave (Bus Stop ID #0615) in the westbound direction.

## 2.8.2 Sun Trolley

Sun Trolley is a free trolley service that provides routes throughout Fort Lauderdale. Sun Trolley has two routes with a bus stop in front of the train stations at the Park and Ride lot; the NW Community Link and the Neighborhood Link.

As its name indicates, the NW Community Link provides service NW of the Broward Boulevard Interchange from Lauderdale Manors (NW 19 St and NW 9 Ave) to the Broward Central Terminal.

The Neighborhood Link route provides service to the east and the west of the interchange from Plantation General Hospital (Broward Blvd and SR 7) to the Broward Central Terminal.

## 2.8.3 95 Express Bus

Miami-Dade Transit (MDT) runs the 95 Express Bus service from the Broward Boulevard Park-and-Ride lot to Downtown Miami (SE 2nd St.) on weekdays during the AM/PM peak hours. There are multiple stops within the Park-and-Ride lot for 95 express, including a stop in front of the train stations.

## 2.8.4 Amtrak

Amtrak, a private national passenger rail service, provides service in South Florida from the Fort Lauderdale station directly south to the Hollywood station and directly north to the Deerfield Beach station. Refer to the Amtrak website for more details regarding nationwide routes and stations.

## 2.8.5 Tri-Rail

Tri-Rail, a commuter rail line managed by the South Florida Regional Transportation Authority (SFRTA), provides service from the Fort Lauderdale station to 17 other Tri-Rail stations from Miami-Dade to Palm Beach County.

## 2.8.6 Tri-Rail Commuter Connector

Tri-Rail provides three commuter buses from the Ft. Lauderdale Station; Commuter Connectors 1, 2, and 3. Commuter Connectors 1 and 2 run on the weekdays while 3 only runs on the weekends. All three commuter buses provide service to the downtown area and circulate south of Broward Boulevard.

Route 1 provides service from the Tri-Rail station east to NE/SE 3 Ave, then south to SE/SW 6 St, then north on Andrews Ave up to the Broward Central Terminal. Route 2 provides service from the Tri-Rail station south to State Road 84 via I-95, then east to SW 4 Ave, then north to SE 17 St, then east to Eisenhower Blvd. Route 3 provides service from the Tri-Rail station east to SE 8 Ave, then south to Las Olas Blvd, then west to SE 3 Ave, then south to SE 17 St.

## 2.9 Existing Drainage Systems

The existing drainage within the project limits can be divided into four distinct systems based on existing collection and conveyance systems, interconnected stormwater management facilities, and outfalls. Refer to Appendix B from the Preliminary Drainage Report for pre-development drainage maps. The existing drainage systems have been delineated as follows:

### 2.9.1 Existing Drainage System 16A (I-95)

System 16A is defined as the segment of the I-95 corridor from the South Fork of the New River to south of Broward Boulevard, including the Davie Boulevard interchange. The system consists of French drains, multiple dry detention ponds, linear dry detention swales along the east and west sides of I-95, ultimately discharging to the South Fork of the New River. The system is located within the SFWMD North New River Drainage Basin. Refer to Figure 8 of Appendix A from the Preliminary Drainage Report for the SFWMD Drainage Basin Map.

System 16A has been divided into 24 basins, including four offsite basins that are interconnected by culverts connecting the east and west roadside swales and ditches, along with several other existing pipes that drain the runoff to the outside swales. The existing drainage facilities within this section of the corridor include dry detention swales and ponds, located within the northbound on-ramp and southbound off-ramp on Davie Boulevard, and on the east and west sides of I-95. Runoff from the inside northbound and southbound travel lanes is collected by barrier wall inlets and discharged through median drains along the system. Runoff from the outside northbound and southbound travel lanes sheet flows into roadside swales in some portions, and is collected by barrier wall inlets where there is retaining wall, and conveyed to the swales and ponds. The flow pattern is generally towards the south, where the existing drainage system ultimately discharges into the South Fork of the New River via a 66-inch outfall pipe.

Existing water quality treatment and discharge attenuation is provided within interconnected ponds, swales and French Drains upstream of a control structure consisting of a raised Type K Ditch Bottom Inlet and a V-notch bleeder in the southeast pond, just south of the Davie Boulevard interchange (Pond 16A-1).

The Seasonal High Groundwater Table (SHGWT) elevation and static tailwater elevation for the South Fork of the New River assumed for the analysis, modeling, and design associated with this study is 0.42-ft NAVD. This assumption is in accordance with previous permitting documentation and designs.

Refer to Appendix B from the Preliminary Drainage Report for pre-development drainage maps.

## 2.9.2 Existing Drainage System 16B (I-95)

System 16B is defined as the segment of the I-95 corridor from south of Broward Boulevard to the North Fork of the New River, and includes the Broward Boulevard interchange. The existing system consists of French drains, multiple dry ponds and swales within the infield areas and along the east and west sides of I-95, ultimately discharging to the North Fork of the New River. The system is located within the SFWMD North New River Drainage Basin. Refer to Figure 8 of Appendix A from the Preliminary Drainage Report for the SFWMD Drainage Basin Map.

System 16B is divided into 33 basins, including five offsite basins that are interconnected by culverts connecting the median, east and west roadside ditches, swales and ponds. The existing drainage facilities within this section of the corridor include conveyance swales and ponds, located within the infield areas on the Broward Boulevard interchange, as well as the east and west sides of I-95. Runoff from the inside northbound and southbound travel lanes is collected through barrier wall inlets and discharged through median drains along the system. Runoff from the outside northbound and southbound travel lanes sheet flows into roadside swales in some portions, and is collected by barrier wall inlets where there is retaining wall, and conveyed to the swales and ponds. The flow pattern is generally towards the north, where the existing drainage system ultimately discharges into the North Fork of the New River via a 54-inch outfall pipe.

Existing water quality treatment and discharge attenuation is provided via a series of ponds, swales, and French drain systems. The existing outfall control structures consist of raised Ditch Bottom Inlets with circular orifices for the detention system. These control structures collect and convey all roadway runoff and discharge to the wet pond located in the northeast quadrant of the Broward Boulevard interchange. The existing wet pond does not provide any water quality treatment or discharge attenuation, but rather collects and conveys the runoff from the upstream systems to the North Fork of the New River through the aforementioned 54-inch outfall pipe.

The Seasonal High Groundwater Table (SHGWT) elevation and static tailwater elevation for the North Fork of the New River assumed for the analysis, modeling, and design associated with this study is 0.42-ft NAVD. This assumption is in accordance with previous permitting documentation and designs.

Refer to Appendix B from Preliminary Drainage Report for pre-development drainage maps.

### 2.9.3 Existing Drainage System 17 (I-95)

System 17 is defined as the segment of the I-95 corridor from the North Fork of the New River to just south of the Sunrise Boulevard interchange. The existing system consists of linear dry ponds (swales) along the east and west sides of I-95, ultimately discharging to the North Fork of the New River. The system is located within the SFWMD C-12 Drainage Basin. Refer to Figure 8 of Appendix A from Preliminary Drainage Report for the SFWMD Drainage Basin Map.

System 17 is divided into nine basins, including two offsite basins. Runoff from the inside northbound and southbound travel lanes is collected by median inlets and conveyed through median drains along the corridor. Runoff from the outside northbound and southbound travel lanes sheet flows into roadside swales. The flow pattern is generally towards the south, where the existing drainage system ultimately discharges into the North Fork of the New River via a 48-inch outfall pipe and a 24-inch outfall pipe. Refer to Appendix B from the Preliminary Drainage Report for the Pre-Development Drainage Maps.

A control structure is located on the east side of I-95, north of the North Fork of the New River (Pond 17-1). The control structure consists of a raised Type H Ditch Bottom Inlet with a 4-inch circular orifice. A second control structure is located on the west side of I-95, north of the North Fork of the New River (Pond 17-2). This control structure consists of a raised Type D Ditch Bottom Inlet with a 4-inch circular orifice. The two control structures overflow into the North Fork of the New River through the two aforementioned existing 48-inch pipe from Pond 17-1 and 24-inch pipe from Pond 17-2.

The Seasonal High Groundwater Table (SHGWT) elevation and static tailwater elevation for the North Fork of the New River assumed for the analysis, modeling, and design associated with this study is 0.42-ft NAVD. This assumption is in accordance with previous permitting documentation and designs.

Refer to Appendix B from the Preliminary Drainage Report for pre-development drainage maps.

### 2.9.4 Existing Drainage System Broward Blvd. (SR 824) and Park & Ride

The Broward Boulevard Park & Ride is comprised of three parking lots on the north and south sides of Broward Boulevard, between the South Florida Rail Corridor (SFRC) and NW 22<sup>nd</sup> Avenue. Interconnected drainage sub-systems provide stormwater collection, conveyance, water quality treatment and discharge attenuation for the Broward Boulevard Park & Ride. A separate drainage system provides collection and conveyance of stormwater runoff for Broward Boulevard, between the SFRC and West 22<sup>nd</sup> Avenue. The existing Park & Ride drainage systems consist of French drains and dry ponds that ultimately discharge to the North Fork of the New River via a 60" pipe. The existing Broward Blvd. drainage system consists of curb inlets and solid pipe that collect and convey stormwater runoff from the western approach to the bridge over the SFRC and I-95. Runoff from the Broward Blvd. system comingles with runoff from one of the southern Park & Ride systems, and ultimately discharges to the North Fork of the New River via a 72" pipe, serving Broward Boulevard from SW 28<sup>th</sup> Terrace to west of I-95 as well as Riverland Road from Davie Boulevard to NW 2<sup>nd</sup> Street. The system is located within the

SFWMD C-12 Drainage Basin. Refer to Appendix A from the Preliminary Drainage Report for the SFWMD Drainage Basin Map.

The drainage area for the Park & Ride and Broward Boulevard consists of interconnected systems. In the southernmost parking lot, runoff from SW 21<sup>st</sup> Terrace, the southern ramp connection to I-95, a portion of SW 1<sup>st</sup> Street, and a portion of the offsite Riverland Neighborhood adjacent to SW 21<sup>st</sup> Terrace and SW 1<sup>st</sup> Street is collected and conveyed to the triangular retention pond at the southwest quadrant of SW 1<sup>st</sup> Street and SW 21<sup>st</sup> Terrace, between the I-95 ramp and SW 21<sup>st</sup> Terrace. A control structure, consisting of a raised ditch bottom inlet with a vertical rectangular weir provides water quality treatment and discharge attenuation. This drainage sub-system is referred to as South Lot Sub-System 1.

Stormwater runoff from the southernmost Park & Ride lot and Fort Lauderdale Broward Train Station is collected by curb inlets in the parking lot and yard drains around the train station, and conveyed northward to a control structure consisting of a curb inlet with an internal weir wall. Water quality treatment and discharge attenuation is provided by French drains upstream of the weir. This drainage sub-system is referred to as South Lot Sub-System 3. Downstream of the weir, stormwater overflows from South Lot Sub-Systems 1 and 3 comingles and is conveyed northward, ultimately discharging to the North Fork of the New River via an existing 60-inch pipe.

Runoff from the South Park & Ride lot adjacent to the Broward Blvd. eastbound travel lanes and from a portion of SW 22<sup>nd</sup> Avenue is collected by catch basins and curb inlets within the parking lot and on SW 22<sup>nd</sup> Avenue. Water quality treatment and discharge attenuation is provided by existing French drains in the parking lot. Stormwater is conveyed to a control structure located in the northwest quadrant of the parking lot, where overflows are conveyed northward into the Broward Boulevard drainage system, where it is ultimately conveyed to the North Fork of the New River. This drainage sub-system is referred to as South Lot Sub-System 2.

Stormwater runoff from the North Park & Ride lot, as well as the adjacent I-95 on/off ramp, is collected in curb inlets and catch basins and conveyed eastward to a pair of dry retention ponds connected by an existing 18" pipe. The more southern pond (Pond N-5) of the pair contains a control structure consisting of a raised ditch bottom inlet. Water quality treatment and discharge attenuation is provided in the two ponds (Pond N-2 and Pond N-5), and by French drains upstream of the control structure and ponds. Stormwater overflows from this drainage system, referred to as North Lot Sub-System 2, into the existing 60-inch pipe that conveys stormwater overflows from the South Park & Ride Lot Sub-Systems 1 and 3, ultimately discharging to the North Fork of the New River.

Runoff from the northernmost portion of the North Park & Ride lot, along with a portion of NW 22<sup>nd</sup> Avenue, is collected by curb inlets along NW 22<sup>nd</sup> Avenue, and catch basins in the northeast quadrant of the North Park & Ride lot. This drainage sub-system is referred to as North Lot Sub-System 1. Stormwater is conveyed to a catch basin with an internal weir wall, prior to overflowing into the existing 60-inch pipe that conveys stormwater overflows from the South Park & Ride Lot Sub-Systems 1 and 3, and North Park & Ride Lot Sub-system 2, ultimately discharging to the North Fork of the New River. Water quality treatment and discharge attenuation is provided by French drains upstream of the weir.

Stormwater runoff from NW 22<sup>nd</sup> Avenue, along the north and west perimeters of the Park & Ride lot is collected in curb inlets and conveyed to the large 72" trunkline, where it comingles with runoff from the Broward Boulevard and South Park & Ride lot drainage systems, ultimately discharging to the North Fork of the New River. This drainage sub-system is part of the North Lot Sub-System 1.

Refer to Appendix B from the Preliminary Drainage Report for pre-development drainage maps.

## 2.9.5 Total Maximum Daily Load (TMDLs) and Nutrient Impaired Water Bodies

The Florida Department of Environmental Protection (FDEP) has developed a Basin Management Action Plan (BMAP) which implements certain measures in order to restore and protect state waters and addresses Total Maximum Daily Load (TMDLs) requirements for impaired waterbodies. TMDLs represent the maximum amount of a given pollutant that a waterbody can assimilate and still meet water quality standards, including its applicable water quality criteria and its designated uses. TMDLs are developed for waterbodies that are verified as not meeting their water quality standards.

Section 303(d) of the Federal Clean Water Act requires states to submit to the United States Environmental Protection Agency (EPA) lists of surface waters that do not meet applicable water quality standards (impaired waters) and establish a TMDL for each pollutant causing the impairment of listed waters on a schedule. The FDEP has developed such lists, commonly referred to as 303(d) lists, since 1992. The list of impaired waters in each basin, referred to as the Verified List, is also required by the FWRA (Subsection 403.067[4], Florida Statutes [F.S.]); the state's 303(d) list is amended annually to include basin updates.

For assessment purposes, the FDEP has divided the North New River Canal Basin and the South New River Canal (C-11) Basin into water assessment polygons with a unique waterbody identification (WBID) number for each watershed or stream reach. There is one WBID identified within the North New River Canal Basin with TMDLs – for Dissolved Oxygen, Fecal Coliform, Nutrients (Chlorophyll-A), and Mercury (in fish tissue). FDEP listed the North Fork of the New River Canal, WBID No. 3276A, as an impaired waterbody under the Verified List of 2014. There is one WBID identified within the South New River Canal Basin with TMDLs – for Fecal Coliform, Copper, and Mercury (in fish tissue). FDEP listed the South Fork of the New River (C-11) Canal, WBID No. 3277A, as an impaired waterbody under the Verified List of 2014. Refer to [Figure 6](#) of Appendix A from the Preliminary Drainage Report for limits of WBID No. 3276A and 3277A, and the Verified List of 2014, respectively.

Since the WBIDs identified within the North New River Canal Basin and the South New River Canal (C-11) Basin are not impaired for Nitrogen or Phosphorous, a nutrient loading analysis is not required.

## 2.9.6 Floodplain Encroachment

The project falls within the Federal Emergency Management Administration (FEMA) defined Zones X, AE, and AH. Zone X is an area considered to be outside of the 500-year flood. Zone AE is a special flood hazard area subject to inundation by the 100-year flood, with determined base flood elevations.

Zone AH is a special flood hazard area, also subject to inundation by the 100-year flood, that experiences flood depths of 1 to 3 feet (which are usually areas of ponding), with determined base flood elevations.

The project will result only in minimal encroachments to floodplains. These base floodplain encroachments will be constrained to along the east and west sides of I-95, and within the median of the I-95 mainline, as well as along Broward Boulevard. Encroachments resulting from the construction of the project will be fully compensated within the proposed stormwater management facilities to ensure there will be no increase or significant change to flood elevations and/or limits. This project does not encroach upon the base floodplain.

Refer to Figure 7 in Appendix A from the Preliminary Drainage Report for the FEMA Flood Zone Map.

## 2.10 Geotechnical Characteristics

A Geotechnical Report was prepared by GCME, Inc. as a part of this PD&E study. The report included review of all existing geotechnical information in connection with the subject project and completed six (6) borehole permeability tests (BHP) at the project site. Refer to Appendix I from the Preliminary Drainage Report for the Geotechnical Report.

### 2.10.1 Soils Information

Review of the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soils Map for Broward County, as well as the project's Geotechnical Report, the project area is underlain by Arents-Urban land complex, Basinger fine sand, Duette-Urban land complex, Immokalee (limestone substratum)-Urban land complex, Immokalee-Urban land complex, Udorthents, and Urban land. Based on the NRCS Maps, no unsuitable soils are found within the project limits. See Figure 4 in Appendix A from the Preliminary Drainage Report for the USDA NRCS Soil Map of the project and Appendix I for the Geotechnical Report.

### 2.10.2 Hydraulic Conductivity

As part of the geotechnical investigations, six borehole permeability tests were conducted at the Broward Boulevard Park & Ride parking lots. The BHPs were conducted in order to determine hydraulic conductivity (k-values) of existing soils for the analysis of existing French drains and design of proposed French drains. Please refer to Appendix I from the Preliminary Drainage Report for results of the Borehole Permeability Tests.

## 2.11 Crash Data and Safety Analysis

The operational and safety analysis for SIMR were conducted based on the approved Methodology Letter of Understanding (MLOU) in February 2017. The safety analysis as documented in the approved MLOU included evaluating crash rates, crash patterns, crash types, and their contributing causes.

A crash analysis was performed for crashes along I-95 from David Blvd to Sunrise Blvd., and ramps at the I-95 Interchange of Broward Blvd., and Broward Blvd. from NW 27<sup>th</sup> Ave to NW 15<sup>th</sup> Ave. Five years of the most recent available crash data was obtained from the FDOT’s Crash Analysis Reporting System (CARS) for years 2011 to 2015.

### 2.11.1 I-95 from Davie Blvd. to Sunrise Blvd.

The crash analysis for I-95 was performed for the segment between Davie Blvd. and Sunrise Blvd. (Section 86070000, MP 8.714 to MP 11.858). A total of 1,868 crashes were reported during the referenced five-year period with 273 crashes in 2011, 333 crashes in 2012, 422 crashes in 2013, 466 crashes in 2014 and 374 crashes in 2015. **Table 2–8** summarizes crash types and contributing factors.

**Table 2-8 | Crash Summary Along I-95 from Davie Blvd. to Sunrise Blvd.**

I-95 from Davie Blvd to Sunrise Blvd		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2011	2012	2013	2014	2015			
CRASH TYPE	Rear End	108	144	206	219	194	871	174	46.6%
	Head On	0	0	0	0	0	0	0	0.0%
	Angle	25	18	16	14	19	92	18	4.9%
	Left Turn	0	0	0	0	0	0	0	0.0%
	Right Turn	0	0	0	0	0	0	0	0.0%
	Sideswipe	59	69	79	81	77	365	73	19.5%
	Backed Into	0	0	0	0	0	0	0	0.0%
	Pedestrian	1	2	2	1	3	9	2	0.5%
	Bicycle	0	0	0	0	0	0	0	0.0%
	<b>Fixed Object</b>	<b>45</b>	<b>44</b>	<b>56</b>	<b>59</b>	<b>30</b>	<b>234</b>	<b>47</b>	<b>12.5%</b>
	<b>Other Non Fixed Object Collisions</b>	<b>5</b>	<b>12</b>	<b>12</b>	<b>23</b>	<b>13</b>	<b>65</b>	<b>13</b>	<b>3.5%</b>
	<b>Non-Collisions</b>	<b>13</b>	<b>19</b>	<b>15</b>	<b>24</b>	<b>10</b>	<b>81</b>	<b>16</b>	<b>4.3%</b>
	<b>Others</b>	<b>17</b>	<b>25</b>	<b>36</b>	<b>45</b>	<b>28</b>	<b>151</b>	<b>30</b>	<b>8.1%</b>
	<b>Total Crashes</b>	<b>273</b>	<b>333</b>	<b>422</b>	<b>466</b>	<b>374</b>	<b>1868</b>	<b>374</b>	<b>100.0%</b>
CONTRIBUTING CAUSES (VEHICLE ONLY)	No Contributing Action	80	75	85	79	55	374	75	20.0%
	Careless or Negligent Manner	60	109	149	197	161	676	135	36.2%
	Failed to Yield Right-Of-Way	2	0	2	2	4	10	2	0.5%
	Improper Backing	0	0	0	0	0	0	0	0.0%
	Improper Turn	0	1	0	2	0	3	1	0.2%
	Followed too Closely	9	9	11	3	7	39	8	2.1%
	Ran Red Light	0	0	0	0	0	0	0	0.0%
	Drove too Fast for Conditions	5	2	14	11	7	39	8	2.1%
	Ran Stop Sign	0	0	0	0	0	0	0	0.0%
	Improper Passing	3	4	4	8	1	20	4	1.1%
	Exceed Posted Speed	1	0	1	0	0	2	0	0.1%
	Wrong Side or Wrong Way	0	0	0	0	0	0	0	0.0%
	Failed To Keep In Proper Lane	8	10	11	12	11	52	10	2.8%
	Ran Off Roadway	1	2	2	2	0	7	1	0.4%
	Disregarded Other Traffic Sign	0	0	0	0	0	0	0	0.0%
	Disregarded other Road Markings	0	0	0	0	0	0	0	0.0%
	Over-Correcting/Over-Steering	3	4	5	10	2	24	5	1.3%
	Swerved Or Avoided	7	4	12	11	5	39	8	2.1%
	Erratic, Reckless or Aggressive	1	1	0	1	0	3	1	0.2%
	Other Contributing Action	93	112	126	128	121	580	116	31.0%



Based on crash severity, of the 1,868 crashes reported, 746 (40%) were injury type crashes and 1,116 (60%) were property damage only crashes. There were 6 fatal crashes reported during the referenced five-year period that occurred within the study segment.

The study segment was identified as part of high crash segments and included high crash intersections on the Department's high crash listings for all referenced five years.

### **2.11.2 I-95 Southbound on Ramp from SW 21<sup>st</sup> Terr. (Section 86070156)**

There were no crashes reported during the referenced five-year period on the ramp

### **2.11.3 I-95 Northbound off Ramp to SW 21<sup>st</sup> Terr. (Section 86070146)**

A total of 2 crashes were reported during the referenced five-year period with 2 crashes in 2014. **Table 2 – 9** summarizes crash types and contributing factors.

**Table 2-9 | Crash Summary along Ramp 86070146**

I-95 NB off Ramp to SW 21 Ter		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2011	2012	2013	2014	2015			
CRASH TYPE	Rear End	0	0	0	0	0	0	0	0.0%
	Head On	0	0	0	0	0	0	0	0.0%
	Angle	0	0	0	0	0	0	0	0.0%
	Left Turn	0	0	0	0	0	0	0	0.0%
	Right Turn	0	0	0	0	0	0	0	0.0%
	Sideswipe	0	0	0	0	0	0	0	0.0%
	Backed Into	0	0	0	0	0	0	0	0.0%
	Pedestrian	0	0	0	0	0	0	0	0.0%
	Bicycle	0	0	0	0	0	0	0	0.0%
	<b>Fixed Object</b>	0	0	0	2	0	2	0	100.0%
	<b>Other Non Fixed Object Collisions</b>	0	0	0	0	0	0	0	0.0%
	<b>Non-Collisions</b>	0	0	0	0	0	0	0	0.0%
	<b>Others</b>	0	0	0	0	0	0	0	0.0%
	<b>Total Crashes</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>100.0%</b>
CONTRIBUTING CAUSES (VEHICLE ONLY)	No Contributing Action	0	0	0	0	0	0	0	0.0%
	Careless or Negligent Manner	0	0	0	1	0	1	0	50.0%
	Failed to Yield Right-Of-Way	0	0	0	0	0	0	0	0.0%
	Improper Backing	0	0	0	0	0	0	0	0.0%
	Improper Turn	0	0	0	0	0	0	0	0.0%
	Followed too Closely	0	0	0	0	0	0	0	0.0%
	Ran Red Light	0	0	0	0	0	0	0	0.0%
	Drove too Fast for Conditions	0	0	0	0	0	0	0	0.0%
	Ran Stop Sign	0	0	0	0	0	0	0	0.0%
	Improper Passing	0	0	0	0	0	0	0	0.0%
	Exceed Posted Speed	0	0	0	0	0	0	0	0.0%
	Wrong Side or Wrong Way	0	0	0	0	0	0	0	0.0%
	Failed To Keep In Proper Lane	0	0	0	0	0	0	0	0.0%
	Ran Off Roadway	0	0	0	0	0	0	0	0.0%
	Disregarded Other Traffic Sign	0	0	0	0	0	0	0	0.0%
	Disregarded other Road Markings	0	0	0	0	0	0	0	0.0%
	Over-Correcting/Over-Steering	0	0	0	0	0	0	0	0.0%
	Swerved Or Avoided	0	0	0	1	0	1	0	50.0%
	Erratic, Reckless or Aggressive	0	0	0	0	0	0	0	0.0%
Other Contributing Action	0	0	0	0	0	0	0	0.0%	

There were no fatal crashes reported during the referenced five-year period within the study segment. Of the 2 crashes reported, both crashes were property damage only crashes. Both crashes were fixed object crashes.

The subject I-95 ramp did not include high crash intersections nor was a part of a high crash segment on the Department’s high crash listings for all referenced five years.

### 2.11.4 I-95 Southbound on Ramp at Broward Blvd. Intersection (Section 86070038)

A total of 23 crashes were reported during the referenced five-year period with 5 crashes in 2011, 3 crashes in 2012, 3 crashes in 2013, 4 crashes in 2014, and 8 crashes in 2015. **Table 2 - 10** summarizes crash types and contributing factors.

**Table 2-10 | Crash Summary along Ramp 86070038**

I-95 SB on Ramp from Broward Blvd		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2011	2012	2013	2014	2015			
CRASH TYPE	Rear End	2	0	1	3	2	8	2	34.8%
	Head On	0	0	0	0	0	0	0	0.0%
	Angle	1	1	0	0	0	2	0	8.7%
	Left Turn	0	0	0	0	2	2	0	8.7%
	Right Turn	0	0	0	0	1	1	0	4.3%
	Sideswipe	0	1	0	0	0	1	0	4.3%
	Backed Into	0	0	0	0	0	0	0	0.0%
	Pedestrian	0	0	0	0	0	0	0	0.0%
	Bicycle	0	0	0	0	0	0	0	0.0%
	<i>Fixed Object</i>	2	1	2	0	3	8	2	34.8%
	<i>Other Non Fixed Object Collisions</i>	0	0	0	0	0	0	0	0.0%
	<i>Non-Collisions</i>	0	0	0	0	0	0	0	0.0%
	<i>Others</i>	0	0	0	1	0	1	0	4.3%
	<b>Total Crashes</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>8</b>	<b>23</b>	<b>5</b>	<b>100.0%</b>
CONTRIBUTING CAUSES (VEHICLE ONLY)	No Contributing Action	0	2	0	0	1	3	1	13.0%
	Careless or Negligent Manner	3	0	2	3	1	9	2	39.1%
	Failed to Yield Right-Of-Way	0	0	0	0	0	0	0	0.0%
	Improper Backing	0	0	0	0	0	0	0	0.0%
	Improper Turn	0	0	0	0	0	0	0	0.0%
	Followed too Closely	0	0	0	0	1	1	0	4.3%
	Ran Red Light	0	0	0	0	0	0	0	0.0%
	Drove too Fast for Conditions	0	0	0	0	0	0	0	0.0%
	Ran Stop Sign	0	0	0	0	0	0	0	0.0%
	Improper Passing	0	0	0	0	0	0	0	0.0%
	Exceed Posted Speed	0	0	0	0	0	0	0	0.0%
	Wrong Side or Wrong Way	0	0	0	0	0	0	0	0.0%
	Failed To Keep In Proper Lane	1	0	0	0	0	1	0	4.3%
	Ran Off Roadway	0	1	0	0	0	1	0	4.3%
	Disregarded Other Traffic Sign	0	0	0	0	0	0	0	0.0%
	Disregarded other Road Markings	0	0	0	0	0	0	0	0.0%
	Over-Correcting/Over-Steering	0	0	1	0	0	1	0	4.3%
	Swerved Or Avoided	0	0	0	0	0	0	0	0.0%
Erratic, Reckless or Aggressive	0	0	0	0	0	0	0	0.0%	
Other Contributing Action	1	0	0	1	5	7	1	30.4%	

Based on crash severity, of the 23 crashes reported, 8 (35%) were injury type crashes and 15 (65%) were property damage only crashes. There were no fatal crashes reported during the referenced five-year period within the study segment.

The subject ramp included a high crash intersection on the Department’s high crash listings for the year 2013 and 2014.

### 2.11.5 I-95 Southbound off Ramp at Broward Boulevard (Section 86070039)

A total of 54 crashes were reported during the referenced five-year period with 12 crashes in 2011, 12 crashes in 2012, 9 crashes in 2013, 11 crashes in 2014, and 10 crashes in 2015. **Table 2 – 11** summarizes crash types and contributing factors.

**Table 2-11 | Crash Summary Along Ramp 86070039**

I-95 SB off Ramp to Broward Blvd		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2011	2012	2013	2014	2015			
CRASH TYPE	Rear End	10	10	8	8	5	41	8	75.9%
	Head On	0	0	0	0	0	0	0	0.0%
	Angle	0	1	0	0	1	2	0	3.7%
	Left Turn	0	0	0	0	0	0	0	0.0%
	Right Turn	0	0	0	0	0	0	0	0.0%
	Sideswipe	1	0	1	0	0	2	0	3.7%
	Backed Into	0	0	0	0	0	0	0	0.0%
	Pedestrian	0	0	0	0	0	0	0	0.0%
	Bicycle	0	0	0	0	3	3	1	5.6%
	<i>Fixed Object</i>	1	1	0	1	1	4	1	7.4%
	<i>Other Non Fixed Object Collisions</i>	0	0	0	0	0	0	0	0.0%
	<i>Non-Collisions</i>	0	0	0	0	0	0	0	0.0%
	<i>Others</i>	0	0	0	2	0	2	0	3.7%
	<b>Total Crashes</b>	<b>12</b>	<b>12</b>	<b>9</b>	<b>11</b>	<b>10</b>	<b>54</b>	<b>11</b>	<b>100.0%</b>
CONTRIBUTING CAUSES (VEHICLE ONLY)	No Contributing Action	2	1	0	3	0	6	1	11.1%
	Careless or Negligent Manner	5	6	5	6	2	24	5	44.4%
	Failed to Yield Right-Of-Way	0	0	0	0	0	0	0	0.0%
	Improper Backing	0	0	0	0	0	0	0	0.0%
	Improper Turn	0	0	0	0	0	0	0	0.0%
	Followed too Closely	0	1	0	0	1	2	0	3.7%
	Ran Red Light	0	0	0	0	0	0	0	0.0%
	Drove too Fast for Conditions	1	0	0	0	0	1	0	1.9%
	Ran Stop Sign	0	0	0	0	0	0	0	0.0%
	Improper Passing	0	0	0	0	0	0	0	0.0%
	Exceed Posted Speed	0	1	0	0	0	1	0	1.9%
	Wrong Side or Wrong Way	0	0	0	0	0	0	0	0.0%
	Failed To Keep In Proper Lane	0	0	0	0	0	0	0	0.0%
	Ran Off Roadway	1	0	0	1	0	2	0	3.7%
	Disregarded Other Traffic Sign	0	0	0	0	0	0	0	0.0%
	Disregarded other Road Markings	0	0	0	0	0	0	0	0.0%
	Over-Correcting/Over-Steering	0	0	0	0	0	0	0	0.0%
	Swerved Or Avoided	0	0	0	0	0	0	0	0.0%
Erratic, Reckless or Aggressive	0	0	0	0	0	0	0	0.0%	
Other Contributing Action	3	3	4	1	7	18	4	33.3%	

Based on crash severity, of the 54 crashes reported, 27 (50%) were injury type crashes and 27 (50%) were property damage only crashes. There were no fatal crashes reported during the referenced five-year period within the study segment.

The subject ramp included high crash intersections on the Department’s high crash listings for the year 2011, 2013 and 2014.

### 2.11.6 I-95 northbound Off Ramp at Broward Blvd. (Section 86070040)

A total of 80 crashes were reported during the referenced five-year period with 16 crashes in 2011, 15 crashes in 2012, 15 crashes in 2013, 23 crashes in 2014, and 11 crashes in 2015. **Table 2 – 12** summarizes crash types and contributing factors.

**Table 2-12 | Crash Summary Along Ramp 86070040**

I-95 NB off Ramp to Broward Blvd		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2011	2012	2013	2014	2015			
CRASH TYPE	Rear End	14	11	12	13	8	58	12	72.5%
	Head On	0	0	0	0	1	1	0	1.3%
	Angle	0	0	0	0	1	1	0	1.3%
	Left Turn	0	0	0	0	0	0	0	0.0%
	Right Turn	0	0	0	0	0	0	0	0.0%
	Sideswipe	0	0	1	3	0	4	1	5.0%
	Backed Into	0	0	0	0	0	0	0	0.0%
	Pedestrian	0	0	0	1	0	1	0	1.3%
	Bicycle	1	0	0	0	0	1	0	1.3%
	<i>Fixed Object</i>	0	2	1	3	0	6	1	7.5%
	<i>Other Non Fixed Object Collisions</i>	0	0	0	0	0	0	0	0.0%
	<i>Non-Collisions</i>	0	1	1	2	0	4	1	5.0%
	<i>Others</i>	1	1	0	1	1	4	1	5.0%
	<b>Total Crashes</b>	<b>16</b>	<b>15</b>	<b>15</b>	<b>23</b>	<b>11</b>	<b>80</b>	<b>16</b>	<b>100.0%</b>
CONTRIBUTING CAUSES (VEHICLE ONLY)	No Contributing Action	2	1	2	2	0	7	1	8.8%
	Careless or Negligent Manner	6	7	10	13	8	44	9	55.0%
	Failed to Yield Right-Of-Way	0	0	0	1	0	1	0	1.3%
	Improper Backing	0	0	0	0	0	0	0	0.0%
	Improper Turn	0	0	0	0	0	0	0	0.0%
	Followed too Closely	1	1	0	1	1	4	1	5.0%
	Ran Red Light	0	0	0	0	0	0	0	0.0%
	Drove too Fast for Conditions	1	0	0	0	0	1	0	1.3%
	Ran Stop Sign	0	0	0	0	0	0	0	0.0%
	Improper Passing	1	0	0	0	0	1	0	1.3%
	Exceed Posted Speed	0	0	0	0	0	0	0	0.0%
	Wrong Side or Wrong Way	0	0	0	0	0	0	0	0.0%
	Failed To Keep In Proper Lane	0	0	0	0	0	0	0	0.0%
	Ran Off Roadway	0	0	0	0	0	0	0	0.0%
	Disregarded Other Traffic Sign	0	0	0	0	0	0	0	0.0%
	Disregarded other Road Markings	0	0	0	0	0	0	0	0.0%
	Over-Correcting/Over-Steering	0	0	0	0	0	0	0	0.0%
	Swerved Or Avoided	0	0	0	2	0	2	0	2.5%
	Erratic, Reckless or Aggressive	0	1	0	0	0	1	0	1.3%
	Other Contributing Action	5	5	3	4	2	19	4	23.8%

Based on crash severity, of 88 reported, 30 (38%) were injury type crashes and 50 (62%) were property damage only crashes. There were no fatal crashes reported during the referenced five-year period within the study segment.

The subject ramp included high crash intersections on the Department’s high crash listings for the year 2011, 2012, 2013 and 2014.

### 2.11.7 I-95 Northbound on Ramp at Broward Blvd. (Section 86040041)

A total of 21 crashes were reported during the referenced five-year period with 4 crashes in 2011, 7 crashes in 2012, 2 crashes in 2013, 4 crashes in 2014, and 4 crashes in 2015. **Table 2 – 13** summarizes crash types and contributing factors.

**Table 2-13 | Crash Summary Along Ramp 86070041**

I-95 NB on Ramp from WB Broward Blvd		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2011	2012	2013	2014	2015			
CRASH TYPE	Rear End	1	2	0	1	2	6	1	28.6%
	Head On	0	0	0	0	0	0	0	0.0%
	Angle	0	0	0	0	0	0	0	0.0%
	Left Turn	0	0	0	0	0	0	0	0.0%
	Right Turn	0	0	0	0	0	0	0	0.0%
	Sideswipe	0	1	0	0	1	2	0	9.5%
	Backed Into	0	0	0	0	0	0	0	0.0%
	Pedestrian	0	0	0	0	0	0	0	0.0%
	Bicycle	0	1	0	0	0	1	0	4.8%
	<b>Fixed Object</b>	2	2	1	2	1	8	2	38.1%
	<b>Other Non Fixed Object Collisions</b>	0	1	0	0	0	1	0	4.8%
	<b>Non-Collisions</b>	0	0	1	1	0	2	0	9.5%
	<b>Others</b>	1	0	0	0	0	1	0	4.8%
	<b>Total Crashes</b>	<b>4</b>	<b>7</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>21</b>	<b>4</b>	<b>100.0%</b>
CONTRIBUTING CAUSES (VEHICLE ONLY)	No Contributing Action	0	3	0	0	0	3	1	14.3%
	Careless or Negligent Manner	0	2	2	3	2	9	2	42.9%
	Failed to Yield Right-Of-Way	1	0	0	0	0	1	0	4.8%
	Improper Backing	0	0	0	0	0	0	0	0.0%
	Improper Turn	0	0	0	0	0	0	0	0.0%
	Followed too Closely	0	1	0	0	0	1	0	4.8%
	Ran Red Light	0	0	0	0	0	0	0	0.0%
	Drove too Fast for Conditions	0	0	0	0	0	0	0	0.0%
	Ran Stop Sign	0	0	0	0	0	0	0	0.0%
	Improper Passing	0	0	0	0	0	0	0	0.0%
	Exceed Posted Speed	0	0	0	0	0	0	0	0.0%
	Wrong Side or Wrong Way	0	0	0	0	0	0	0	0.0%
	Failed To Keep In Proper Lane	0	0	0	0	0	0	0	0.0%
	Ran Off Roadway	0	0	0	0	0	0	0	0.0%
	Disregarded Other Traffic Sign	0	0	0	0	0	0	0	0.0%
	Disregarded other Road Markings	0	0	0	0	0	0	0	0.0%
	Over-Correcting/Over-Steering	0	0	0	0	1	1	0	4.8%
	Swerved Or Avoided	0	0	0	0	0	0	0	0.0%
	Erratic, Reckless or Aggressive	0	0	0	0	0	0	0	0.0%
Other Contributing Action	3	1	0	1	1	6	1	28.6%	

Based on crash severity, of the 21 crashes reported, 7 (33%) were injury type crashes, and 13 (62%) were property damage only crashes. There was one fatal crash reported in 2012 within the study segment.

The subject ramp included high crash intersections on the Department’s high crash listings for the year 2013 and 2014.

### 2.11.8 I-95 Northbound on Ramp from Access Road (Section 86070143)

A total of 2 crashes were reported during the referenced five-year period with one crash in 2011, and another in 2013. **Table 2 – 14** summarizes crash types and contributing factors.

**Table 2-14 | Crash Summary Along Ramp 86070143**

I-95 NB on Ramp from Access Rd		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2011	2012	2013	2014	2015			
CRASH TYPE	Rear End	0	0	0	0	0	0	0	0.0%
	Head On	0	0	0	0	0	0	0	0.0%
	Angle	0	0	0	0	0	0	0	0.0%
	Left Turn	0	0	0	0	0	0	0	0.0%
	Right Turn	0	0	0	0	0	0	0	0.0%
	Sideswipe	0	0	0	0	0	0	0	0.0%
	Backed Into	0	0	0	0	0	0	0	0.0%
	Pedestrian	0	0	0	0	0	0	0	0.0%
	Bicycle	0	0	0	0	0	0	0	0.0%
	<b>Fixed Object</b>	1	0	1	0	0	2	0	100.0%
	<b>Other Non Fixed Object Collisions</b>	0	0	0	0	0	0	0	0.0%
	<b>Non-Collisions</b>	0	0	0	0	0	0	0	0.0%
	<b>Others</b>	0	0	0	0	0	0	0	0.0%
<b>Total Crashes</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>100.0%</b>	
CONTRIBUTING CAUSES (VEHICLE ONLY)	No Contributing Action	1	0	0	0	0	1	0	50.0%
	Careless or Negligent Manner	0	0	0	0	0	0	0	0.0%
	Failed to Yield Right-Of-Way	0	0	0	0	0	0	0	0.0%
	Improper Backing	0	0	0	0	0	0	0	0.0%
	Improper Turn	0	0	0	0	0	0	0	0.0%
	Followed too Closely	0	0	0	0	0	0	0	0.0%
	Ran Red Light	0	0	0	0	0	0	0	0.0%
	Drove too Fast for Conditions	0	0	0	0	0	0	0	0.0%
	Ran Stop Sign	0	0	0	0	0	0	0	0.0%
	Improper Passing	0	0	0	0	0	0	0	0.0%
	Exceed Posted Speed	0	0	0	0	0	0	0	0.0%
	Wrong Side or Wrong Way	0	0	0	0	0	0	0	0.0%
	Failed To Keep In Proper Lane	0	0	0	0	0	0	0	0.0%
	Ran Off Roadway	0	0	0	0	0	0	0	0.0%
	Disregarded Other Traffic Sign	0	0	0	0	0	0	0	0.0%
	Disregarded other Road Markings	0	0	0	0	0	0	0	0.0%
	Over-Correcting/Over-Steering	0	0	0	0	0	0	0	0.0%
	Swerved Or Avoided	0	0	0	0	0	0	0	0.0%
Erratic, Reckless or Aggressive	0	0	0	0	0	0	0	0.0%	
Other Contributing Action	0	0	1	0	0	1	0	50.0%	

Based on crash severity, of the 2 crashes reported, one was injury type crash and another was property damage only crash. There were no fatal crashes reported during the referenced five-year period within the study segment.

The subject ramp included a high crash intersection on the Department’s high crash listings for the year 2013 and 2014.

### 2.11.9 I-95 Southbound off Ramp to Access Road (86070144)

There were not crashes reported during the referenced five-year period at the subject ramp.

### 2.11.10 Broward Blvd from NW 12<sup>th</sup> Avenue to NW 15<sup>th</sup> Avenue

A total of 568 crashes were reported during the referenced five-year period with 68 crashes in 2011, 86 crashes in 2012, 152 crashes in 2013, 191 crashes in 2014, and 68 crashes in 2015. **Table 2 – 15** summarizes crash types and contributing factors.

Table 2-15 | Crash Summary Along Broward Blvd. from NW 27th Ave. to NW 15th Ave.

Broward Blvd from NW 27 Ave to NW 15 Ave		Number of Crashes					5 Year Total Crashes	Mean Crashes Per Year	%
		Year							
		2011	2012	2013	2014	2015			
CRASH TYPE	Rear End	31	44	83	103	29	290	58	51.1%
	Head On	0	1	0	0	0	1	0	0.2%
	Angle	10	15	22	28	11	86	17	15.1%
	Left Turn	1	4	4	7	1	17	3	3.0%
	Right Turn	0	0	1	1	2	4	1	0.7%
	Sideswipe	9	7	16	8	9	49	10	8.6%
	Backed Into	0	0	0	3	0	3	1	0.5%
	Pedestrian	4	1	6	4	5	20	4	3.5%
	Bicycle	1	3	3	4	0	11	2	1.9%
	<b>Fixed Object</b>	1	2	5	3	1	12	2	2.1%
	<b>Other Non Fixed Object Collisions</b>	2	1	2	4	0	9	2	1.6%
	<b>Non-Collisions</b>	2	2	0	5	2	11	2	1.9%
	<b>Others</b>	7	6	10	24	8	55	11	9.7%
	<b>Total Crashes</b>	<b>68</b>	<b>86</b>	<b>152</b>	<b>194</b>	<b>68</b>	<b>568</b>	<b>114</b>	<b>100.0%</b>
CONTRIBUTING CAUSES (VEHICLE ONLY)	No Contributing Action	14	11	23	12	7	67	13	11.8%
	Careless or Negligent Manner	9	8	32	45	3	97	19	17.1%
	Failed to Yield Right-Of-Way	3	9	11	15	3	41	8	7.2%
	Improper Backing	1	1	1	5	2	10	2	1.8%
	Improper Turn	0	2	6	3	1	12	2	2.1%
	Followed too Closely	6	10	15	19	5	55	11	9.7%
	Ran Red Light	3	7	0	10	2	22	4	3.9%
	Drove too Fast for Conditions	0	2	1	0	0	3	1	0.5%
	Ran Stop Sign	0	0	0	0	0	0	0	0.0%
	Improper Passing	2	1	1	1	1	6	1	1.1%
	Exceed Posted Speed	0	0	0	0	0	0	0	0.0%
	Wrong Side or Wrong Way	0	0	1	0	0	1	0	0.2%
	Failed To Keep In Proper Lane	7	0	6	11	2	26	5	4.6%
	Ran Off Roadway	0	0	0	0	0	0	0	0.0%
	Disregarded Other Traffic Sign	0	0	0	0	0	0	0	0.0%
	Disregarded other Road Markings	0	0	0	0	0	0	0	0.0%
	Over-Correcting/Over-Steering	0	0	0	0	0	0	0	0.0%
	Swerved Or Avoided	0	0	0	0	0	0	0	0.0%
	Erratic, Reckless or Aggressive	0	0	0	0	0	0	0	0.0%
	Other Contributing Action	23	35	55	73	42	228	46	40.1%

Based on crash severity of the 568 crashes reported, 207 (36%) were injury type crashes and 360 (63%) were property damage only crashes. There was one fatal crash reported in 2012 within the study segment.

The crash rate of the study segment was higher than statewide average crash rate in the year 2011 through 2014 and higher than the district average crash rate in the year 2013 and 2014.



## 2.12 Utilities

Based on field evaluation there is an electrical distribution overhead line crossing I-95 approximately 650' north of Davie Blvd. and a high voltage electrical transmission line crossing I-95 over the NW 6<sup>th</sup> St. Bridge. Overhead power lines cross Broward Blvd. just east of SW 22<sup>nd</sup>. Ave. Exploratory utility test holes were not part of the project's scope.

**Table 2-16 | Existing Utility Owners**

Type	Location	Utility Agency/ Owner	Contact Information	Contact Person
Water, Sewer, Traffic	Pending	Broward County	(954) 8477-2745 Alt (954) 261-44-27	Robert Blount
CATV, Fiber		Comcast Cable	(954) 447-8405 Leonard_Maxwell-Newbold@cable.comcast.com	Leonard Maxwell-Newbold
Water, Sewer	Pending	City of Ft. Lauderdale	(954) 828-7830 JStahl@fortlauderdale.gov	Jon Stahl
Fiber optic	Pending	Fiberlight	(754) 227-4345 wayne.kramer@fiberlight.com	Wayne Kramer
Electric, Fiber	Pending	FDOT/ELAND Engineering	(954) 847-1996 cbeaudry@smartsunguide.com (954) 847-2690 cleach@smartsunguide	Chris Beaudry Carolyn Leach
Electric		FPL Distribution	(954) 321-2056 byron.sample@fpl.com	Byron Sample
Fiber		Fibernet Direct	(605) 552-2931 Alt (786) 246-7827 danny.haskett@fpl.com	Danny Haskett
Fiber optic	Pending	Level 3	(720) 888-0916 michael.nunez@level3.com	Michael Nunez
Communications, Fiber optics	Pending	MCI/Verizon	(863) 965-6438 john.mcneil@verizon.com	John McNeil
Gas	4" steel gas main sw corner of Broward at SW 24th Ave, intersection 4" steel gas main runs east approximately 15' south of ROW on the north side of Broward Blvd., crosses to the south side of Broward at NW 22nd Ave. connecting to a 2" steel gas main. 4" Steel gas main at SE corner of Browrad Blvd. at SW 18th Ave, and runs east to and through the study limits. 6" steel gas main crosses I-95 north of Davie Blvd. 6" steel gas main crossing I-95 at NW 8th St.	TECO Peoples gas	(954) 453-0794 <a href="mailto:Drrivera@Tecoenergy.com">Drrivera@Tecoenergy.com</a>	David Rivera
Telephone		AT&T	(954) 723-2540 ok1184@att.com	Otis Keeve

## 2.13 Design and Posted Speeds

The posted speed limits for the roadways within the study limits are as follows:

- Broward Blvd.: 40 miles per hour
- I-95: 65 miles per hour
- HOV off Ramps: 25 miles per hour (advisory)

The design speed for Broward Blvd. and I-95, field verified within the project limits are as follows:

- Broward Blvd.: 45 miles per hour
- I-95: 65 miles per hour

## 2.14 Traffic Characteristics

### 2.14.1 Existing Conditions

The Interchange of I-95 at Broward Boulevard is located in central Broward County in the City of Fort Lauderdale, between the Sunrise Boulevard Interchange (one mile to the north) and the Davie Boulevard Interchange (one mile to the south). The interchange provides the main entryway to the downtown Fort Lauderdale Central Business District from I-95 and the east-west connection between US-1 and SR 817/University Drive in the City of Plantation.

The South Florida Rail Corridor (SFRC)/CSX Railroad is adjacent to and runs parallel along the west side of I-95 in this area. The I-95/Broward Boulevard (SR 842) (Roadway Segment 86006000) interchange is located at milepost 10.201 of I-95 (Roadway Segment 86070000) on the west edge of the Fort Lauderdale city limits. It is approximately 1.0 mile south of the I-95/Sunrise Boulevard (SR 838) (Roadway Segment 86110000) interchange and 1.42 miles north of the I-95/Davie Boulevard (SR 736) (Roadway Segment 86210000) interchange.

SR-842/Broward Boulevard and Sunrise Boulevard are six-lane urban divided roadways with raised medians within the vicinity of the I-95 Interchange. The SR-842/Broward Boulevard interchange provides the main entryway to the downtown Fort Lauderdale Central Business District from I-95 and the east-west connection between US-1 and SR-817/University Drive in the City of Plantation.

### 2.14.2 Existing Transportation Network

I-95 is the primary north-south interstate facility that links all major cities along the Atlantic Seaboard and is one of the most important transportation systems in southeast Florida. I-95 is one of two major expressways, Florida's Turnpike being the other, that connect the major employment centers and residential areas within the South Florida tri-county area. I-95 is part of the State's Strategic Intermodal System (SIS) and the National Highway System (NHS). In addition, I-95 is designated as an evacuation route along the east coast of Florida.

I-95 within the project area is a ten-lane facility with four general purpose travel lanes and one high occupancy vehicle (HOV) lane in each direction. I-95 has a posted speed limit near the Broward Boulevard interchange of 65 mph.

The Broward Boulevard interchange is a diamond interchange. Broward Boulevard is a six-lane east-west arterial through Broward County and the City of Fort Lauderdale. Within the project limits, Broward Boulevard is functionally classified as a Divided Urban Principal Arterial with a posted speed limit of 40 mph. Broward Boulevard from I-95 to NE 3rd Avenue is a designated Strategic Intermodal System (SIS) Connector providing access to the Greyhound Bus Station located just east of NW 2nd Avenue in Fort Lauderdale. The Broward Boulevard interchange currently provides direct connect HOV access with a southbound entrance ramp from Broward Boulevard onto I-95, and a northbound exit ramp from I-95 to Broward Boulevard.

The Sunrise Boulevard interchange is currently a modified partial cloverleaf interchange with one loop ramp on the NE quadrant located on the west edge of the Fort Lauderdale city limits. Sunrise Boulevard is classified as a six-lane divided Urban Principal Arterial with a posted speed limit of 40 mph.

The Davie Boulevard interchange is currently a diamond interchange. Within the project limits, Davie Boulevard is functionally classified as a four-lane divided State Minor Arterial with a posted speed limit of 40 mph.

The collector distributor (C-D) system currently exists south of the Broward Boulevard interchange. The southbound C-D originates after one of the two lanes from the southbound on-ramp terminal splits and forms a southbound C-D. The northbound C-D terminates at southbound off-ramp. The northbound off-ramp is a two-lane facility with one lane ramp coming from the northbound C-D and another lane ramp from the I-95 general purpose lanes. Both southbound and northbound C-Ds provide access to Davie Boulevard and I-595 interchanges.

## 2.15 Existing Traffic Volumes

### 2.15.1 Data Collection

The traffic data including traffic volume counts, the intersection turning movement volumes, I-95 collector-distributor (C-D) ramps, origin-destination (O-D) data and data for microsimulation were collected in September and October 2016. The signal timing plans for signalized intersections were obtained from Broward County. **Figure 2-7** through **Figure 2-9** show intersection geometry, number of lanes, and peak-hour traffic volumes for the study area.

The Park-and-Ride lot usage inventory was conducted in October 2016 and detailed data collection information and referenced documents are included in the Systems Interchange Modification Report (SIMR).

## 2.16 Modeling and Travel Demand

### 2.16.1 VISSIM Model Development and Calibration

VISSIM models were constructed and calibrated to 2016 Existing Conditions. The Federal Highway Administration's (FHWA) Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software, 2014 FDOT Traffic Analysis Handbook and 2011 Oregon Department of Transportation (ODOT) Protocol for VISSIM Simulation were used as guidelines for the development of VISSIM models.

The development of the VISSIM models and the calibration process are documented in detail in the SR 9/I-95 at Broward Boulevard from West of SW 24th Avenue to East of NW/SW 18th Avenue VISSIM Model Development and Calibration Report dated August 9, 2017 and is included in Appendix D from the Systems Interchange Modification Report.

The VISSIM model was utilized to evaluate traffic operations for the Existing Year (2016) Conditions. All simulation output is based on the average data from ten simulation runs. Consistent with the approved MLOU, the Measures of Effectiveness (MOEs) that were assessed from the simulation analysis include the following:

- Intersection Node Evaluation: Volume, delay, and max queue length for the study area intersections for all movements.
- Link Evaluation Segments: Volume and Speed information for General Use Lanes, Express Lanes and access points within the study area. Temporal and spatial volume and speed profiles will be provided.
- Network-Wide Output: Total travel time, total delay time, latent volume and latent delay.

Figure 2-7 | Existing Traffic for I-95 at Davie Blvd Interchange

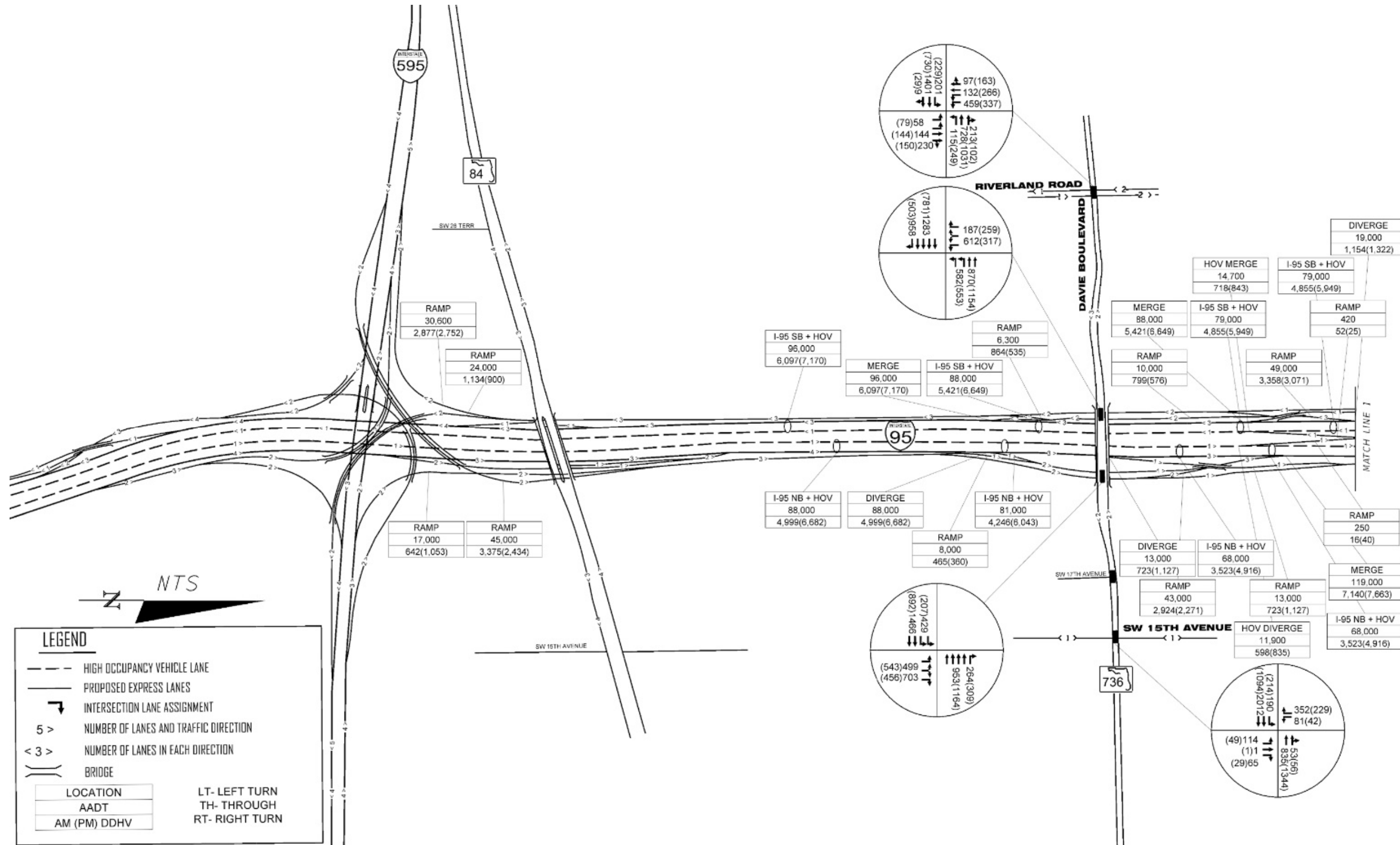


Figure 2-8 | Existing Traffic for I-95 at Broward Blvd Interchange

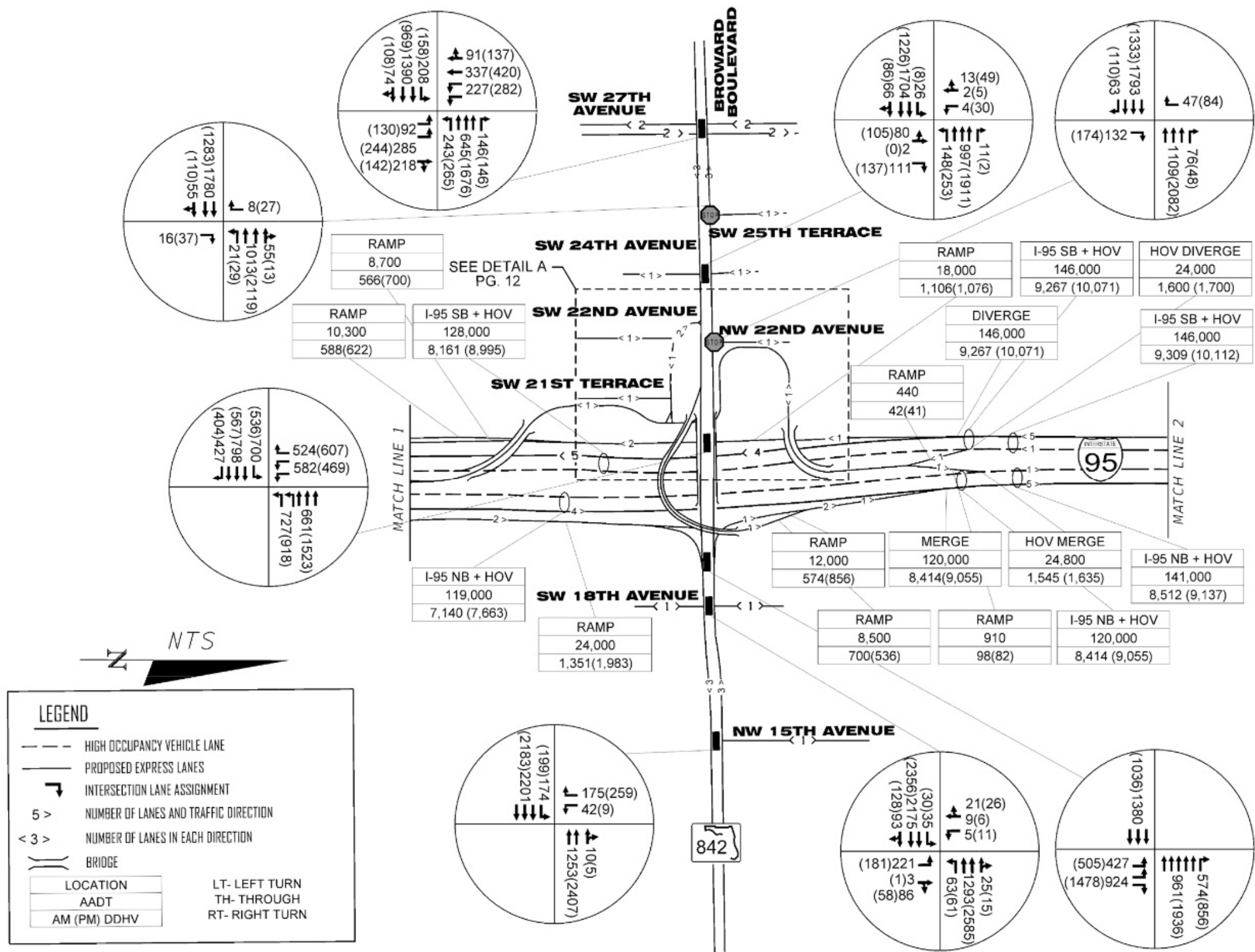
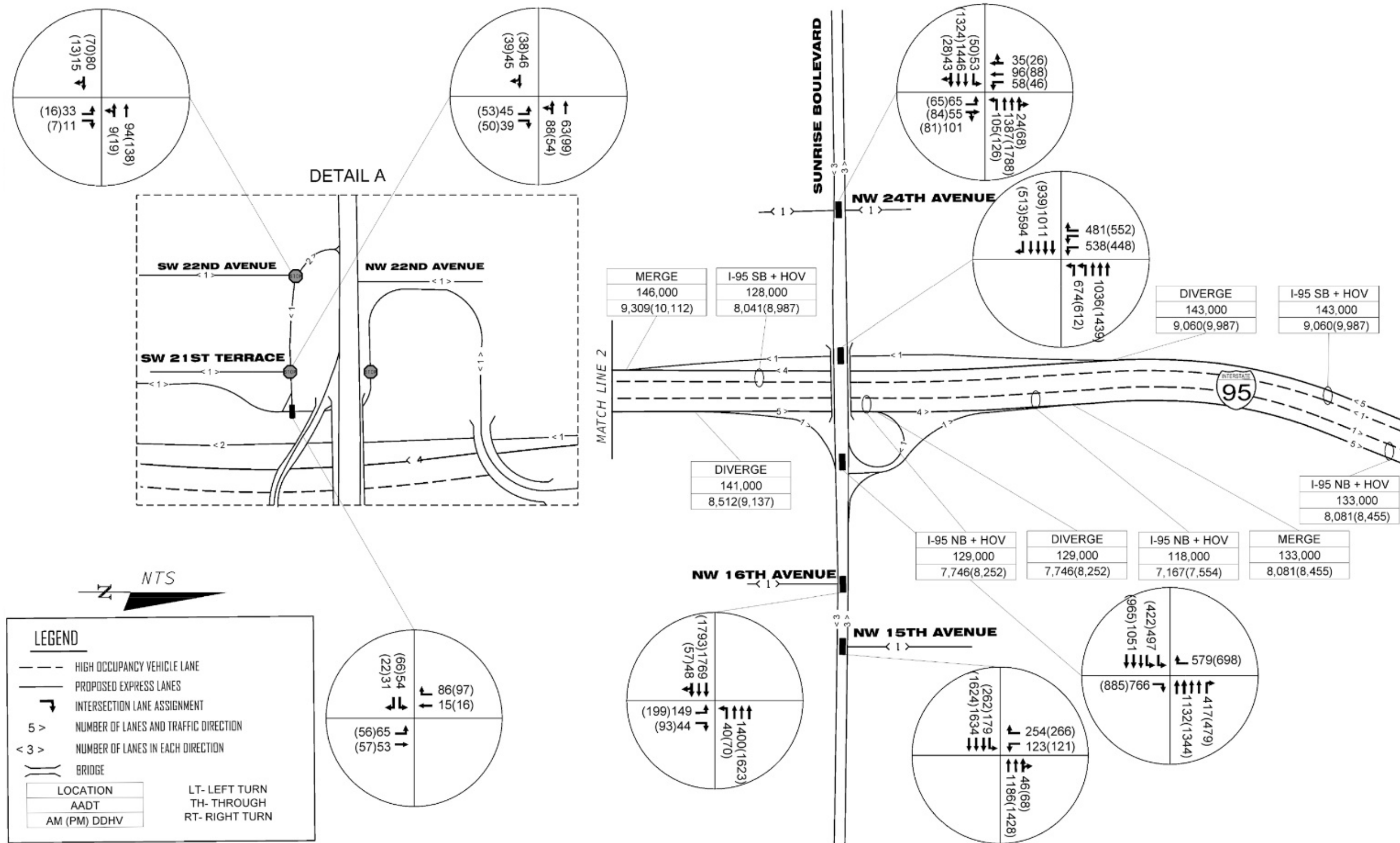


Figure 2-9 | Existing Traffic for I-95 at Sunrise Blvd Interchange







## 2.16.2 Intersection Node Evaluation

Node Evaluation output from VISSIM represents intersection evaluation for the study intersections. An estimated Level of Service (LOS) based on Highway Capacity Manual metrics for both AM and PM peak-hour is summarized in **Table 2-17** and **Table 2-18**. The signal timing plans and detailed output for the Node Evaluation analysis showing volume, delay, and max queue length for the study area intersections for all movements are included in Appendix E from the Systems Interchange Modification Report.

The results of intersection analyses indicate that all the intersections are performing at D or better with the exception of the Davie Boulevard and Riverland Road intersection which is operating at LOS E in the AM peak hour.

**Table 2-17 | Intersection Node Evaluation Summary - Existing AM Peak Hour**

Interchange	Signalized Intersection	Existing AM	
		Delay (sec)	Estimated LOS
Sunrise Blvd	NW 24 <sup>th</sup> Ave	27.3	C
	I-95 SB Ramp	37.6	D
	I-95 NB Ramp	21.5	C
	NW 16 <sup>th</sup> Ave	10.3	B
	NW 15 <sup>th</sup> Ave	18.3	B
Broward Blvd	NW 27 <sup>th</sup> Ave	34.1	C
	SW 24 <sup>th</sup> Ave	7.9	A
	SW 22 <sup>nd</sup> Ave	7.1	A
	I-95 SB Ramp	36.0	D
	I-95 NB Ramp	12.6	B
	SW 18 <sup>th</sup> Ave / NW 18 <sup>th</sup> Ave	22.5	C
	NW 15 <sup>th</sup> Ave	5.3	A
PNR	SW 21 <sup>th</sup> T	18.6	B
Davie Blvd	Riverland Dr	65.2	E
	I-95 SB Ramp	10.4	B
	I-95 NB Ramp	26.3	C
	SW 15 <sup>th</sup> Ave	46.8	D

Table 2-18 | Intersection Node Evaluation Summary - Existing PM Peak Hour

Interchange	Intersection	Existing PM	
		Delay (sec)	Estimated LOS
Sunrise Blvd	NW 24 <sup>th</sup> Ave	30.9	C
	I-95 SB Ramp	32.7	C
	I-95 NB Ramp	17.8	B
	NW 16 <sup>th</sup> Ave	13.6	B
	NW 15 <sup>th</sup> Ave	21.7	C
Broward Blvd	NW 27 <sup>th</sup> Ave	35.5	D
	SW 24 <sup>th</sup> Ave	7.1	A
	SW 22 <sup>nd</sup> Ave	9.5	A
	I-95 SB Ramp	24.5	C
	I-95 NB Ramp	22.1	C
	SW 18 <sup>th</sup> Ave / NW 18 <sup>th</sup> Ave	15.6	B
	NW 15 <sup>th</sup> Ave	5.7	A
PNR	SW 21 <sup>th</sup> T	18.8	B
Davie Blvd	Riverland Dr.	38.1	D
	I-95 SB Ramp	5.2	A
	I-95 NB Ramp	20.6	C
	SW 15 <sup>th</sup> Ave	20.8	C

### 2.16.3 Link Evaluation

The VISSIM micro-simulation models were used to produce volume and speed profiles along the I-95 general purpose (GP) lanes for freeway operations for both the AM and PM peak hours using link evaluation. Average volume and average speed profiles provide a good representation of the traffic flow along the corridor. **Figure 2-10** through **Figure 2-17** depict the average speed and volumes profiles along the corridor for the existing condition.

The results of link evaluation indicate the following:

- I-95 northbound is operating at or near free flow speed during the AM and PM peak periods.
- I-95 southbound experiences significant congestion near Broward Boulevard and Sunrise Boulevard due to the weaving segment between interchanges. Speeds between 20 mph and 30 mph were observed in both the AM and PM peak periods. Slow operating speeds extend well beyond Sunrise Boulevard in the PM peak period.
- I-95 southbound experiences significant congestion south of I-595 as well, with reduced operating speeds that extend to Davie Boulevard.

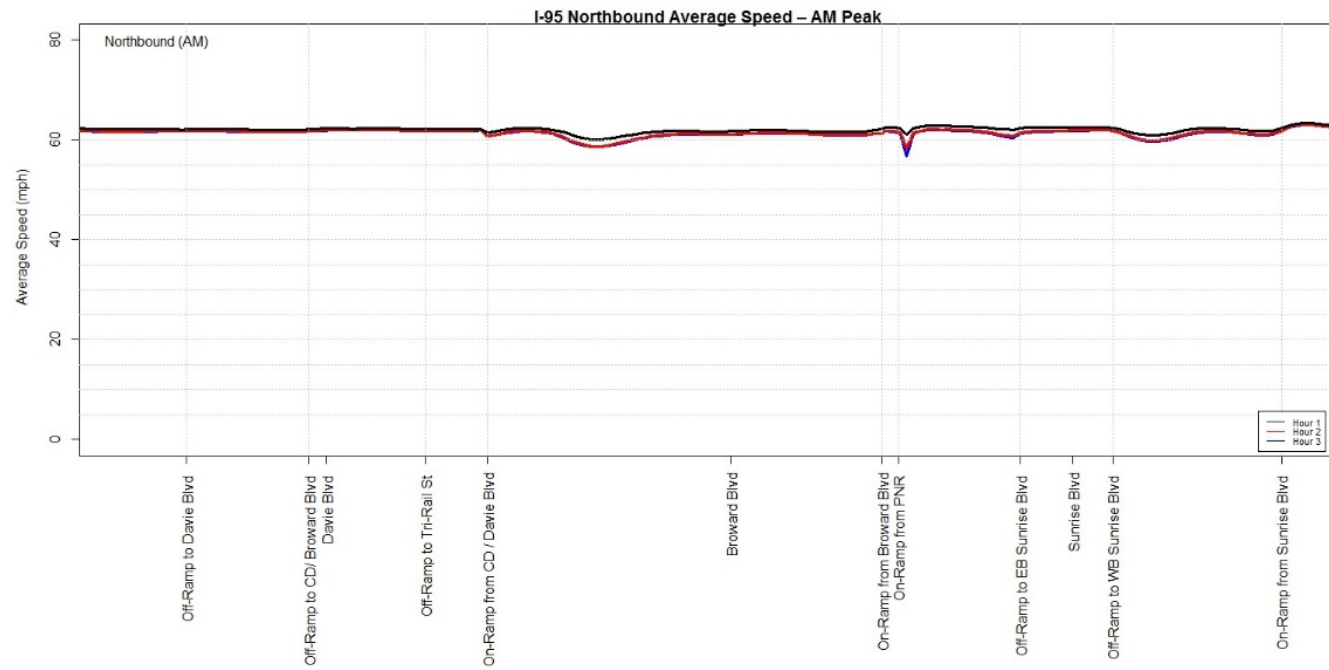


Figure 2-10 | Existing Northbound Average Speed for AM Peak Hour

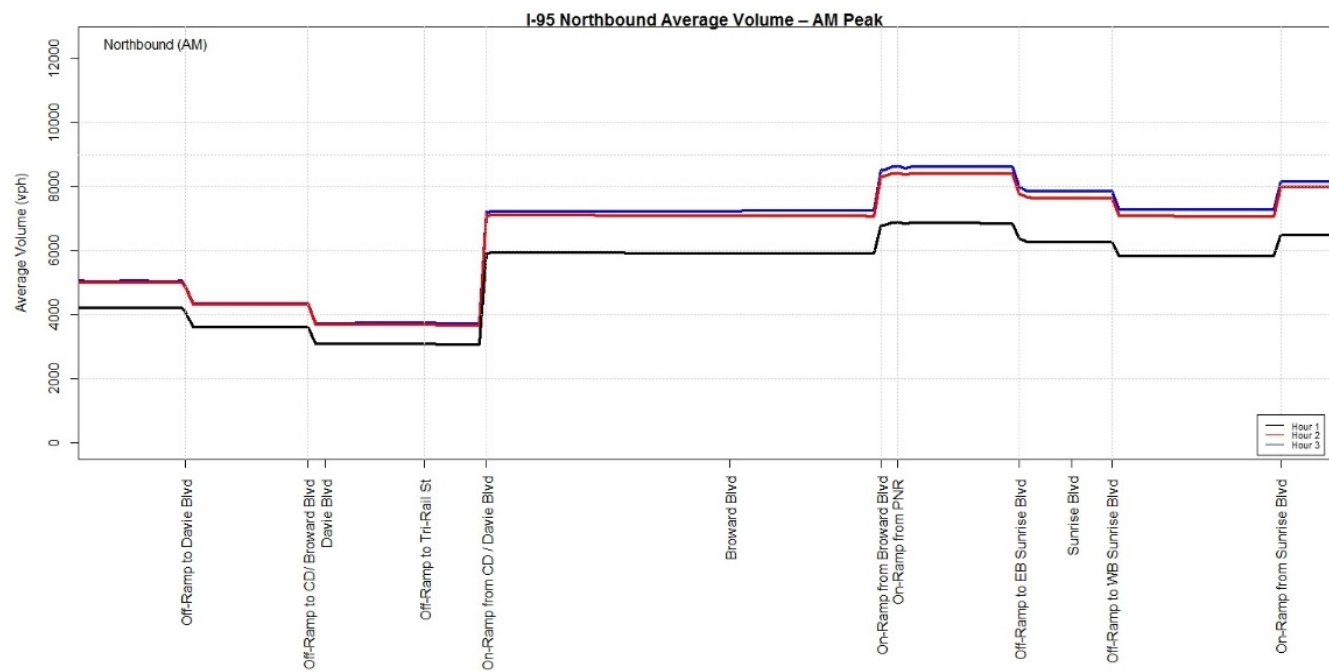


Figure 2-11 | Existing Northbound Volume Profiles for AM Peak Hour

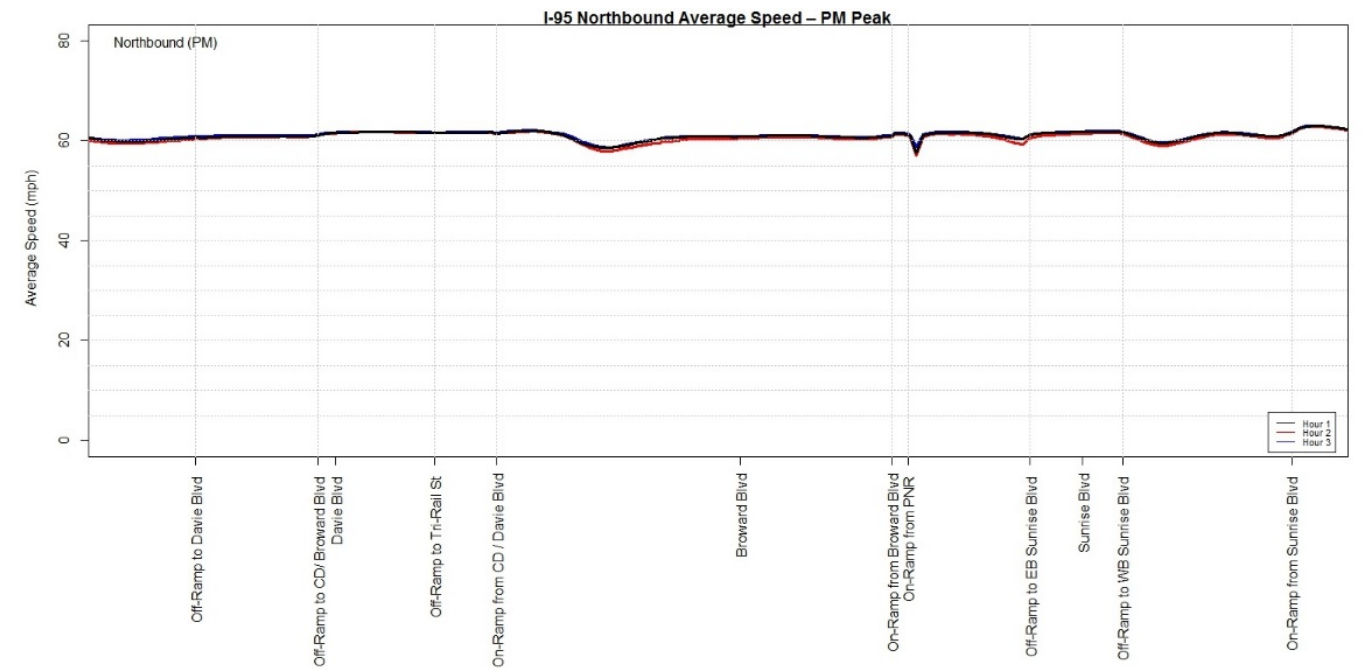


Figure 2-12 | Existing Northbound Average Speed for PM Peak Hour

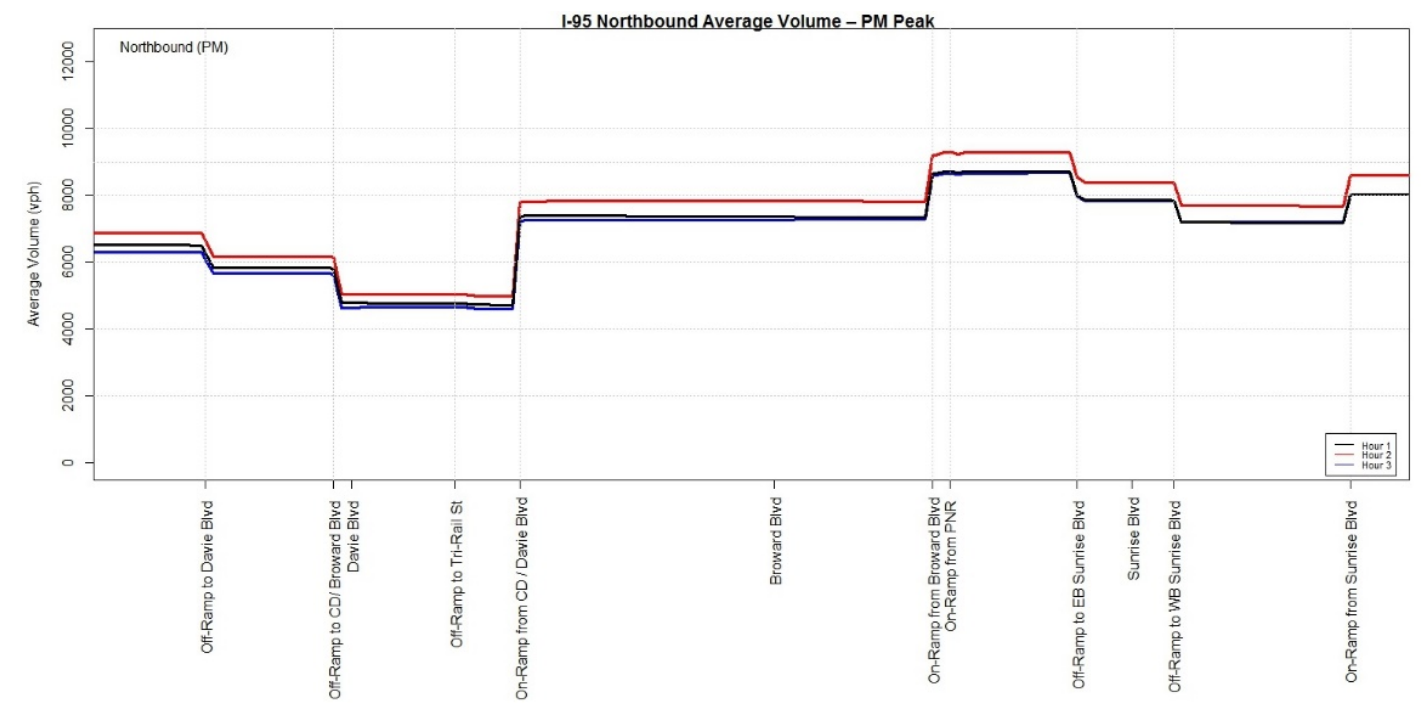


Figure 2-13 | Existing Northbound Volume Profiles for PM Peak Hour

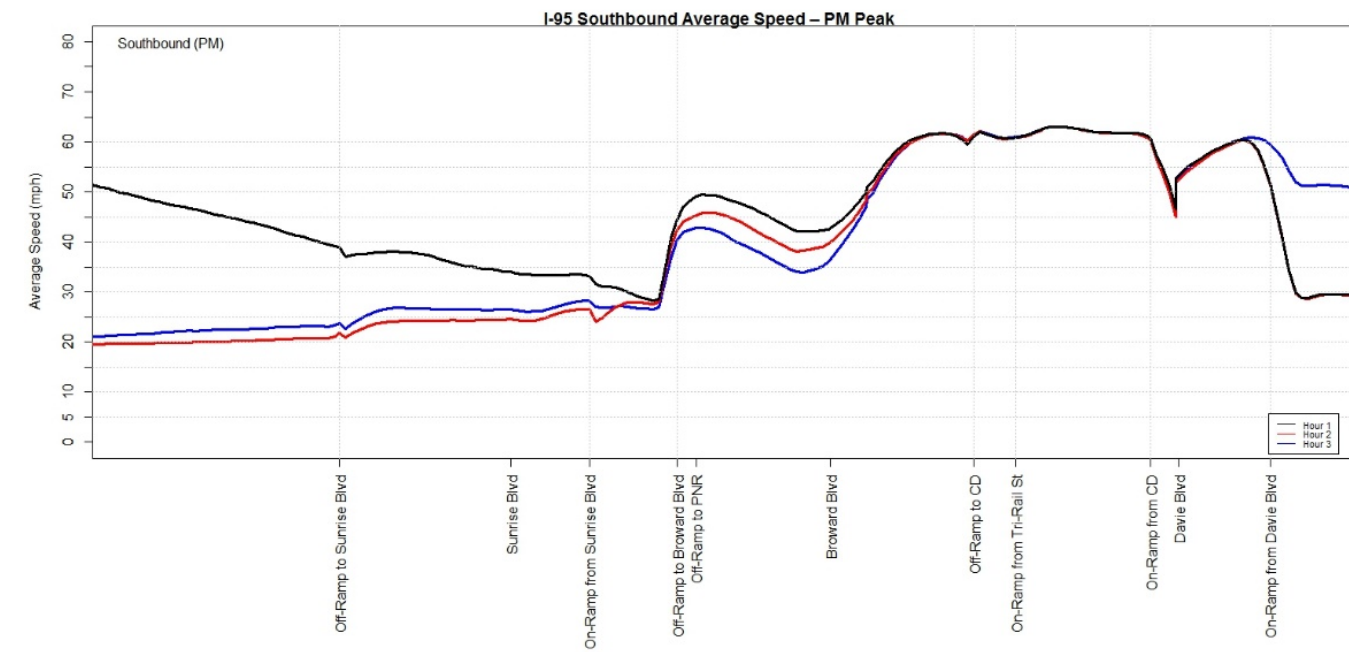
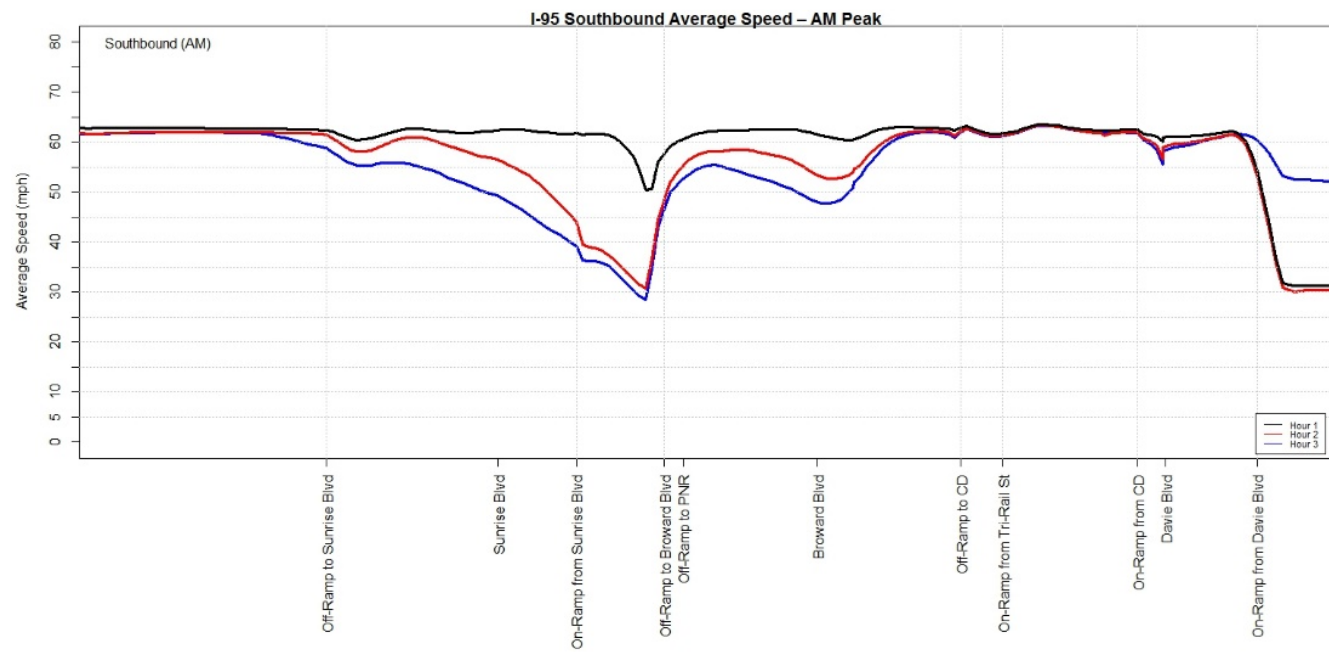


Figure 2-14 | Existing Southbound Average Speed Profiles for AM Peak Hour

Figure 2-16 | Existing Southbound Average Speed Profiles for PM Peak Hour

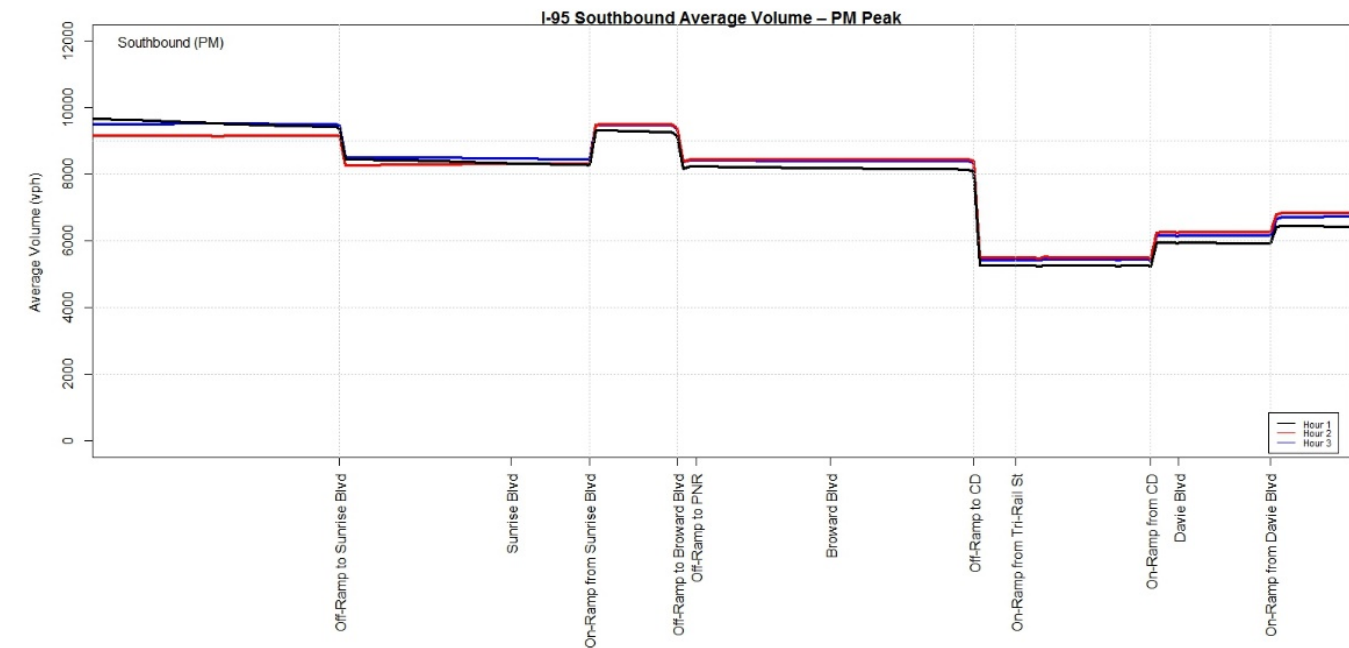
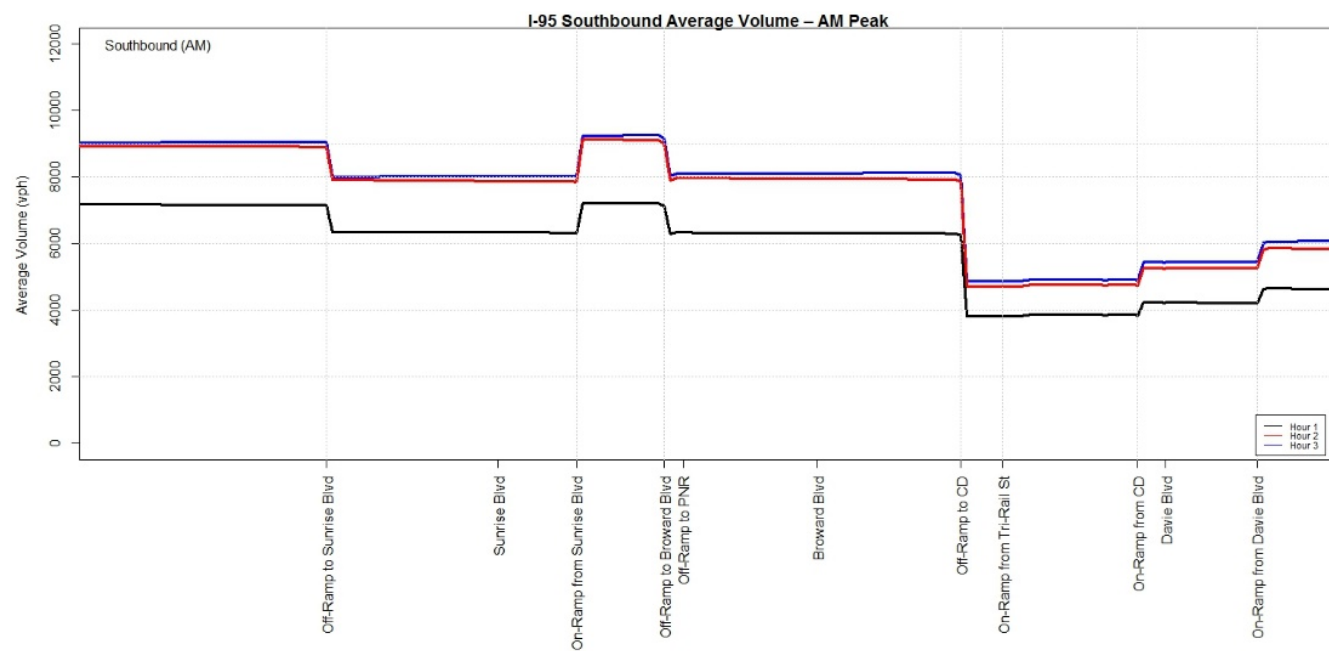


Figure 2-15 | Existing Southbound Volume Profiles for AM Peak Hour

Figure 2-17 | Existing Southbound Volume Profiles for PM Peak Hour

## 2.17 Future Conditions Analysis

### 2.17.1 No-Action 2020 and 2040 Peak Hour Traffic Development

Various traffic forecasting methodologies were evaluated and appropriate growth rates were developed from historical AADTs and SERPM model volumes. After reviewing growth rates from the various traffic forecasting methodologies and considering the residential land use north and south of the study corridor, a compound growth factor of 0.58% was applied to Broward Boulevard. A compound growth factor of 0.50% was applied to Davie Boulevard, all other cross streets, I-95 and the C-D ramps.

The existing peak-to-daily ratios were calculated based on actual field data. The future K factors for AM and PM peak periods were increased to 9.0% (standard K) for the segment with the higher K factor. Other future design year K factors were also adjusted, while maintaining the same differences between the field K factor and the higher K factor at each intersection. The future D factors were adjusted to the range between 50.8% and 67.1%, as recommended in FDOT's 2014 Project Traffic Forecasting Handbook.

AADT volumes from the recently completed I-95 at Sunrise Boulevard Interchange Operational Analysis Report (IOAR) study were used as control totals and the rest of the AADTs for the I-95 mainline were developed by adding or subtracting ramp AADT volumes from the Broward Boulevard or Davie Boulevard interchanges. AADT volumes for 2020 and 2040 were developed in a similar manner. Since traffic counts were not collected for I-95, data from sources such as the 2015 Florida Traffic Information DVD, I-95 ITS detector data, and the I-95 at Broward Boulevard Interchange Concept Development Report (CDR) was obtained and checked for consistency, accuracy, and reasonableness of estimated AADT volumes. Existing Year 2016 AADTs and Future Year 2020 and 2040 AADTs are displayed in **Figure 2-18** through **Figure 2-20**.

Peak hour traffic volumes were estimated using FDOT District 4 TMTOOL (Version 2.0) with the AADT volumes and the design factors. Adjustments were made to ensure volumes are balanced throughout the corridor. AM and PM peak hour traffic volumes are displayed in **Figure 2-21** through **Figure 2-26**.

### 2.17.2 Build 2020 and 2040 Peak Hour Traffic Development

Traffic volumes developed for the No-Action Alternative (as discussed previously) were used to determine the traffic volumes for the Build Alternative. The No-Action traffic volumes were redistributed to establish traffic volumes for the Build alternative. The Build Alternative includes following changes when compared to the No-Action Alternative.

- Broward Boulevard interchange and Sunrise Boulevard interchanges were reconfigured based on the recommendations from the alternative analysis. Additional information regarding the preferred alternative is provided in Chapter 5 of the Systems Interchange Modification Report. The No-Action traffic volumes were redistributed to establish traffic volumes for the reconfigured movements.

- In addition, the Build Alternative for the Broward Boulevard interchange includes direct connect ramps between the 95 Express Lanes and Broward Boulevard. SERPM model was utilized to determine the ramp split percentages between direct connects and the service ramps. These split percentages were applied to the No-Action traffic volumes for the service ramps to obtain traffic volumes for the Broward Boulevard direct connect ramp volumes in the Build Alternative. Split percentages are provided in **Table 2-19**.

**Table 2-19 | SERPM Model Traffic Split Percentages for Broward Blvd Direct Connects**

AM Peak Period				
Direct Connect Location	Direction	EL Split	GP Split	Comments
South of Broward Blvd	Southbound On-Ramp	43%	57%	% of traffic entering into the SB EL lanes from Broward
	Northbound Off-Ramp	35%	65%	% of I-95 traffic exiting to Broward from NB EL lanes
North of Broward Blvd	Southbound Off-Ramp	28%	72%	% of traffic exiting to Broward from SB EL lanes
	Northbound On-Ramp	26%	74%	% of traffic entering into NB EL lanes from Broward
PM Peak Period				
Direct Connect Location	Direction	EL Split	GP Split	Comments
South of Broward Blvd	Southbound On-Ramp	51%	49%	% of traffic entering into the SB EL lanes from Broward
	Northbound Off-Ramp	33%	67%	% of I-95 traffic exiting to Broward from NB EL lanes
North of Broward Blvd	Southbound Off-Ramp	23%	77%	% of traffic exiting to Broward from SB EL lanes
	Northbound On-Ramp	29%	71%	% of traffic entering into NB EL lanes from Broward

The 2020 and 2040 peak hour volumes for the Build Alternative are illustrated in **Figure 2-27** through **Figure 2-32**.

Figure 2-18 | Forecasted AADT for I-95 at Davie Interchange

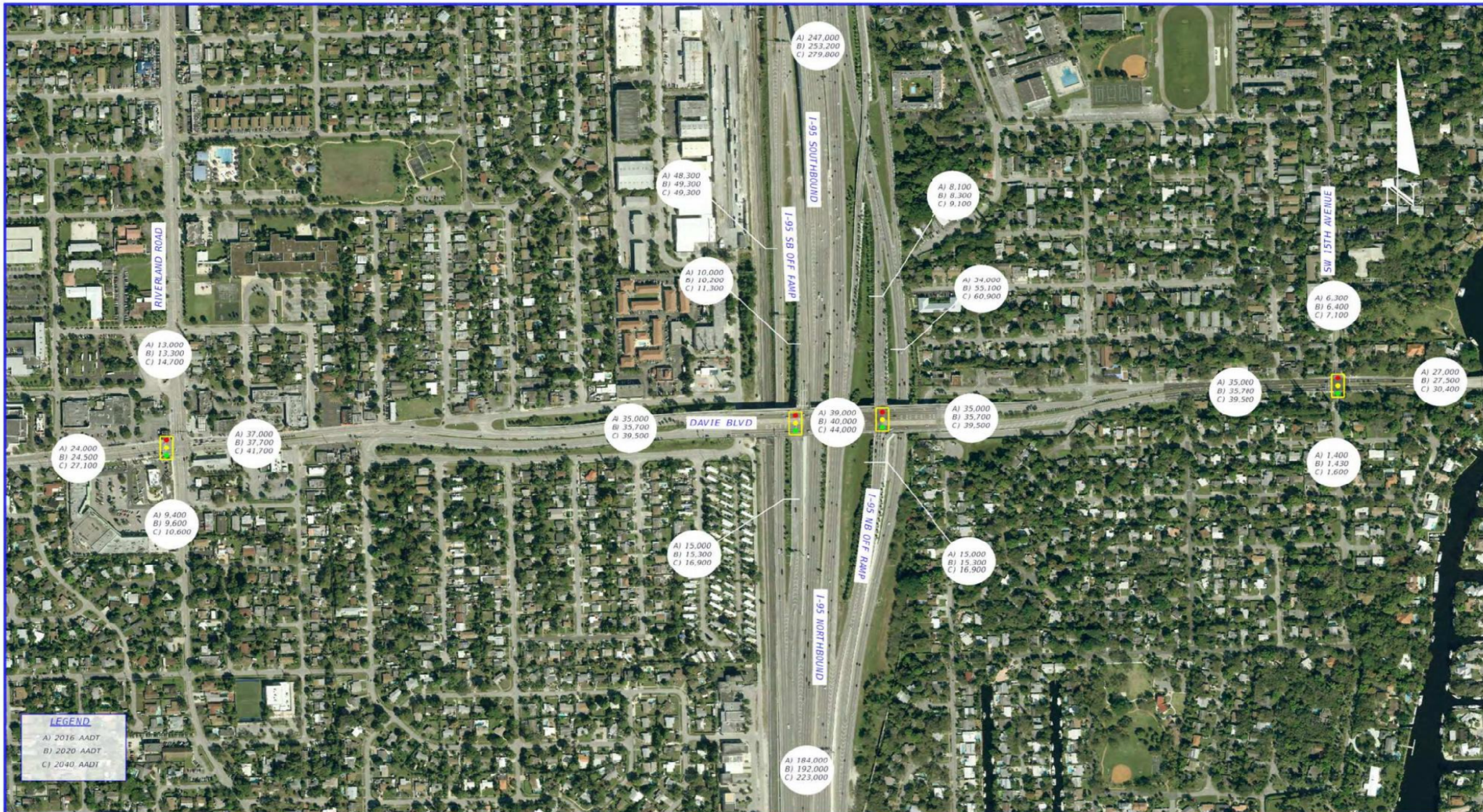


FIGURE 7 FORECASTED FUTURE AADT I-95 AT DAVIE BLVD INTERCHANGE

Figure 2-19 | Forecasted AADT for I-95 at Broward Blvd Interchange

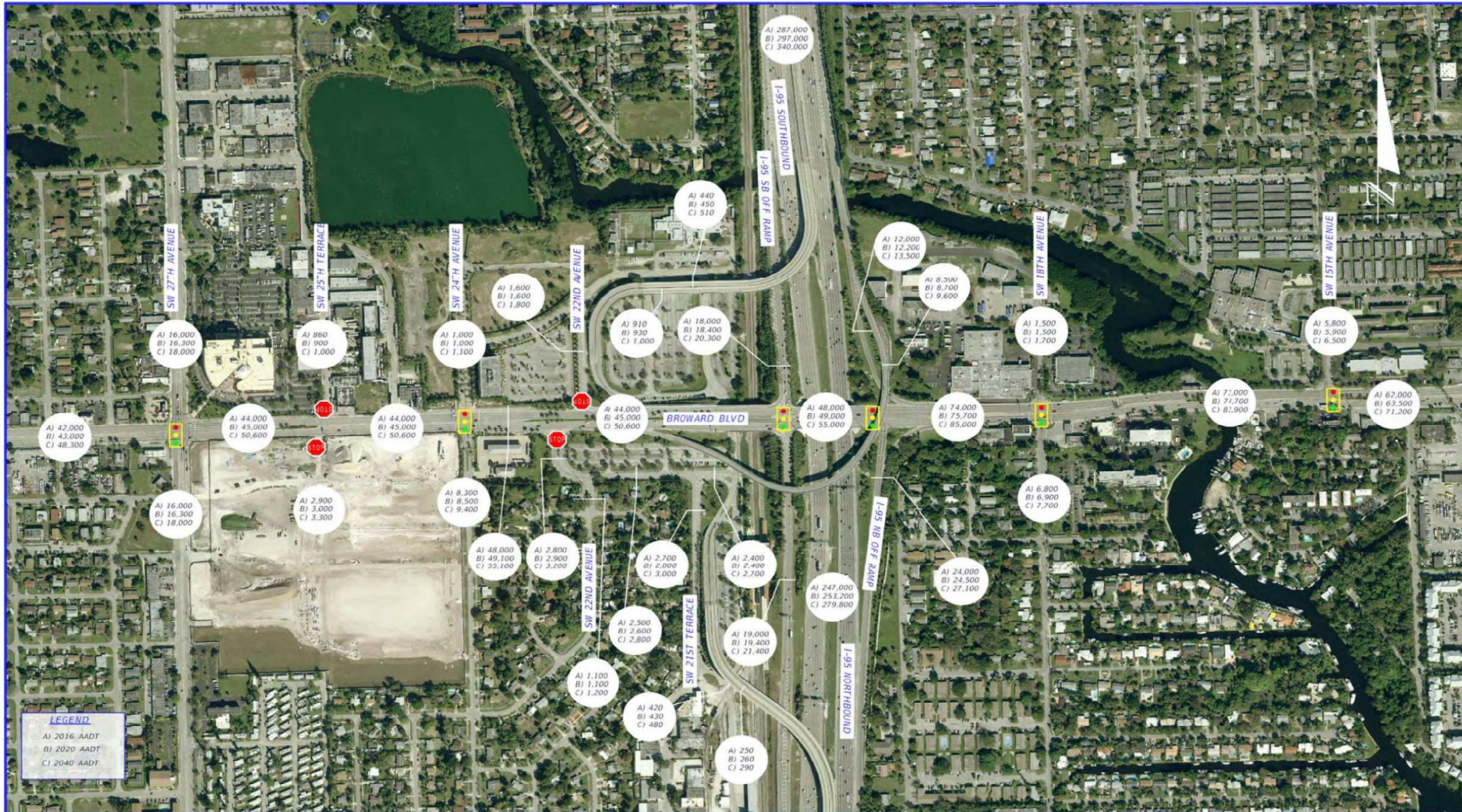


FIGURE 8 FORECASTED FUTURE AADT I-95 AT BROWARD BLVD INTERCHANGE



Figure 2-20 | Forecasted AADT for I-95 at Sunrise Blvd Interchange

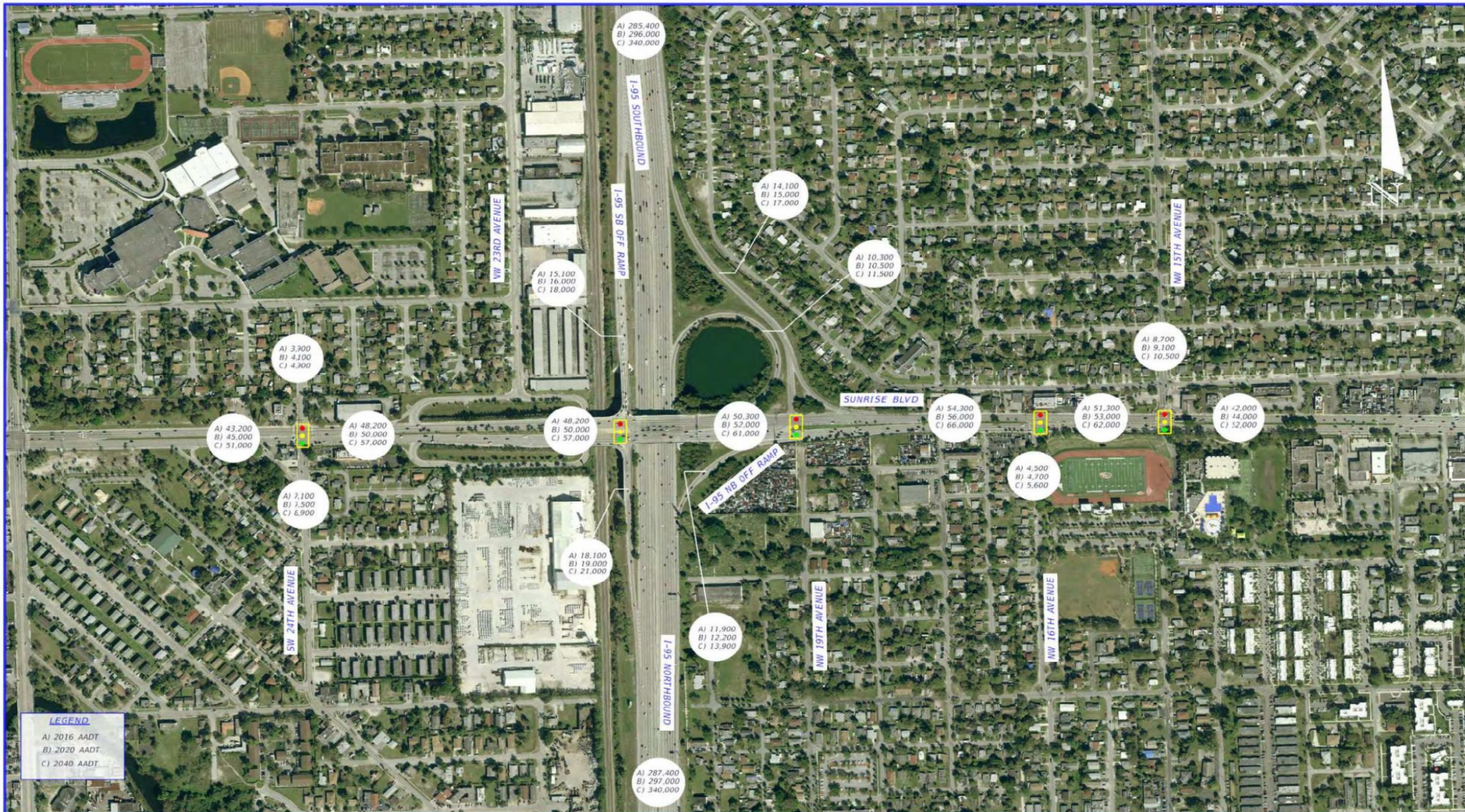


FIGURE 9 FORECASTED FUTURE AADT I-95 AT SUNRISE BLVD INTERCHANGE



Figure 2-22 | 2020 Peak Hour Traffic Volumes for I-95 at Broward Blvd Interchange

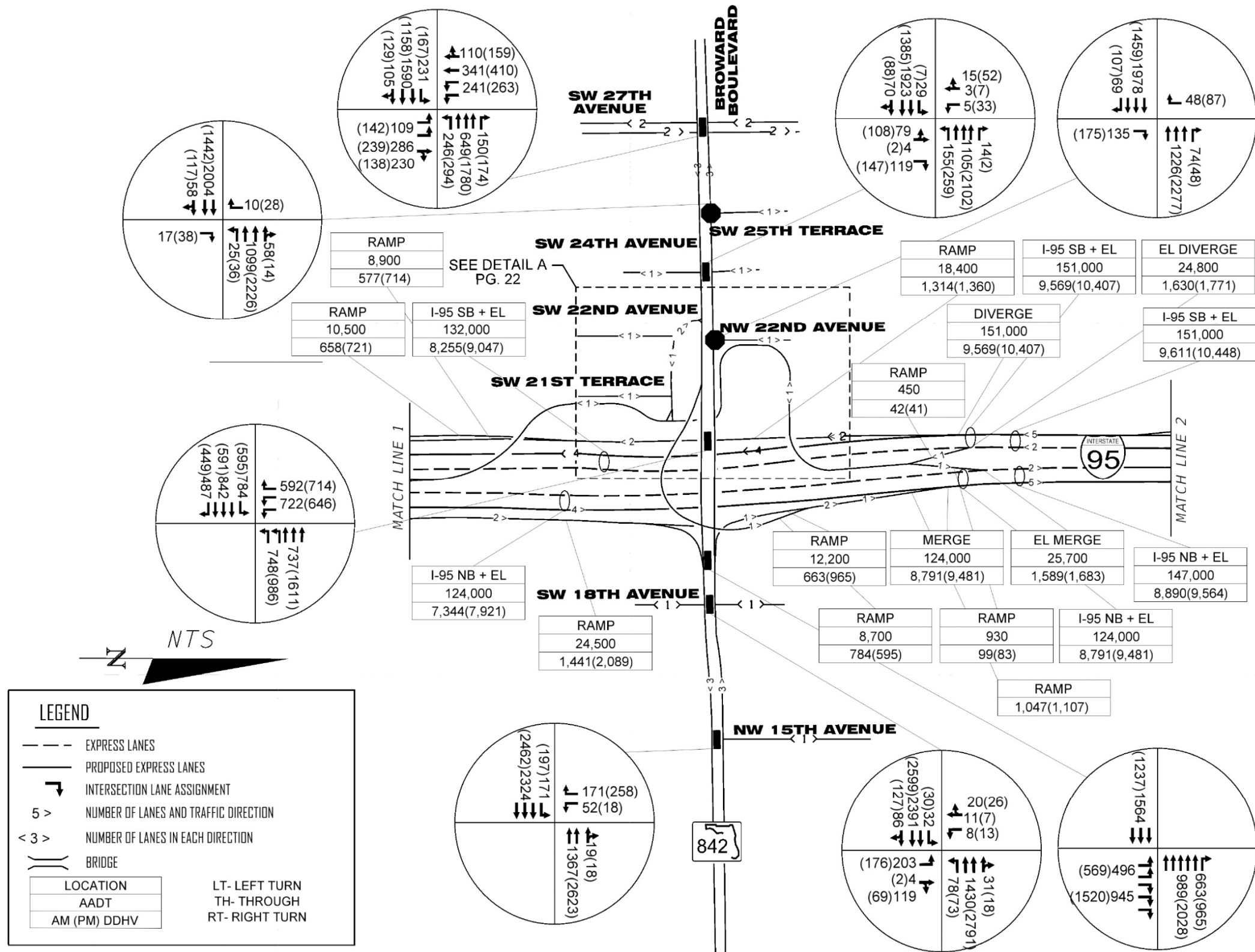


Figure 2-23 | 2020 Peak Hour Traffic Volumes for I-95 at Sunrise Blvd Interchange

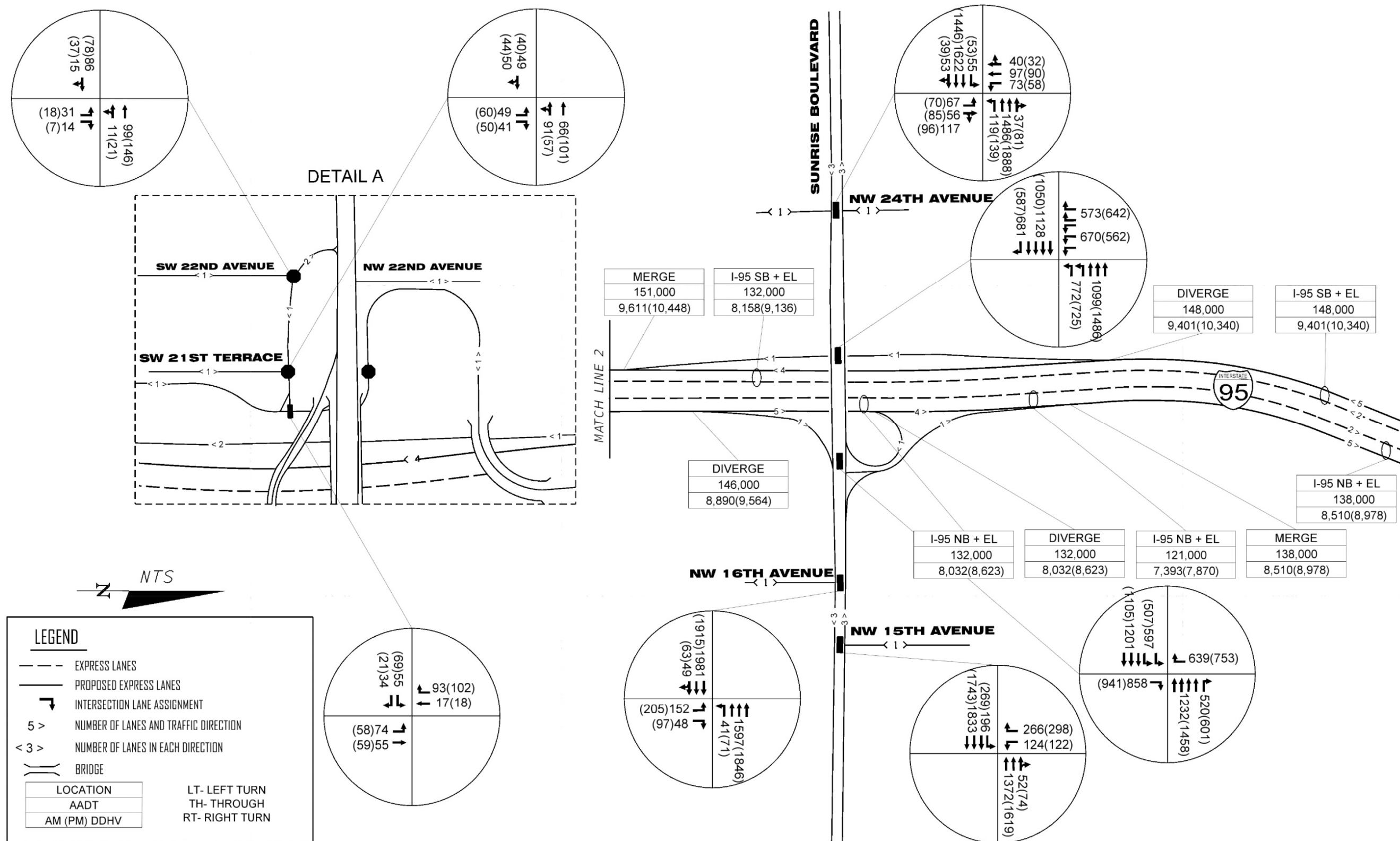


Figure 2-24 | 2040 Peak Hour Traffic Volumes for I-95 at Davie Blvd Interchange

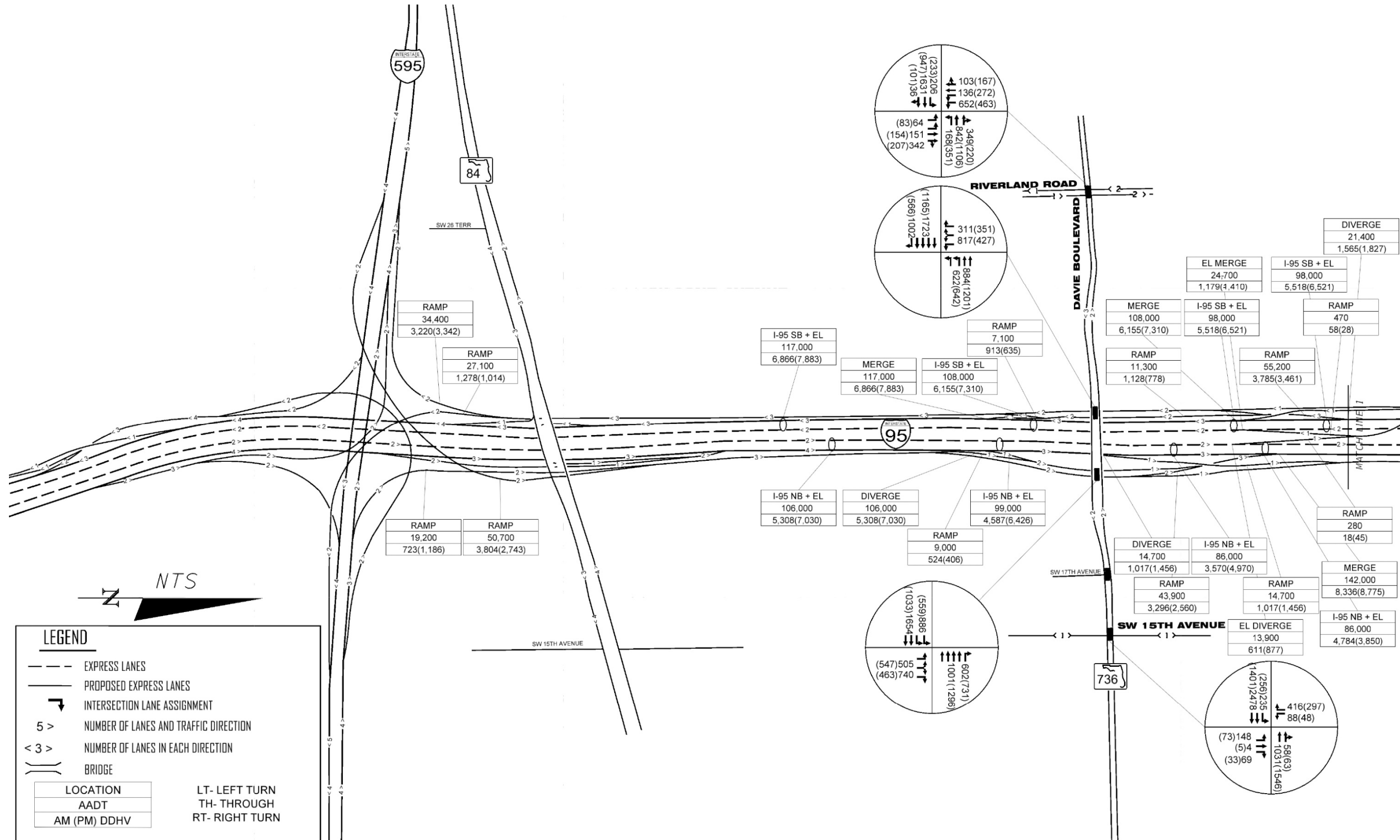


Figure 2-25 | 2040 No-Action Peak Hour Traffic Volumes for I-95 at Broward Blvd Interchange

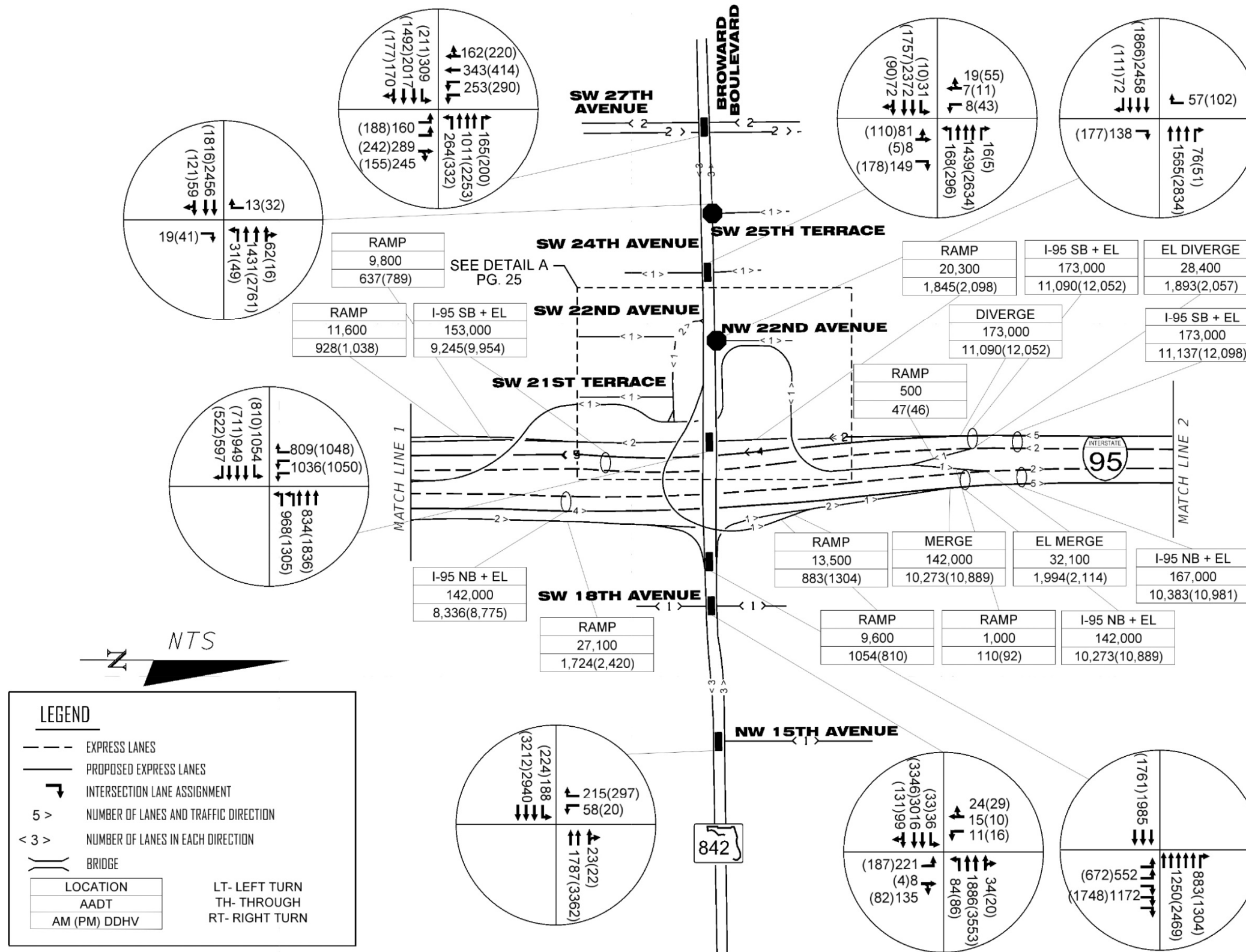


Figure 2-26 | 2040 Peak Hour Traffic Volumes for I-95 at Sunrise Blvd Interchange

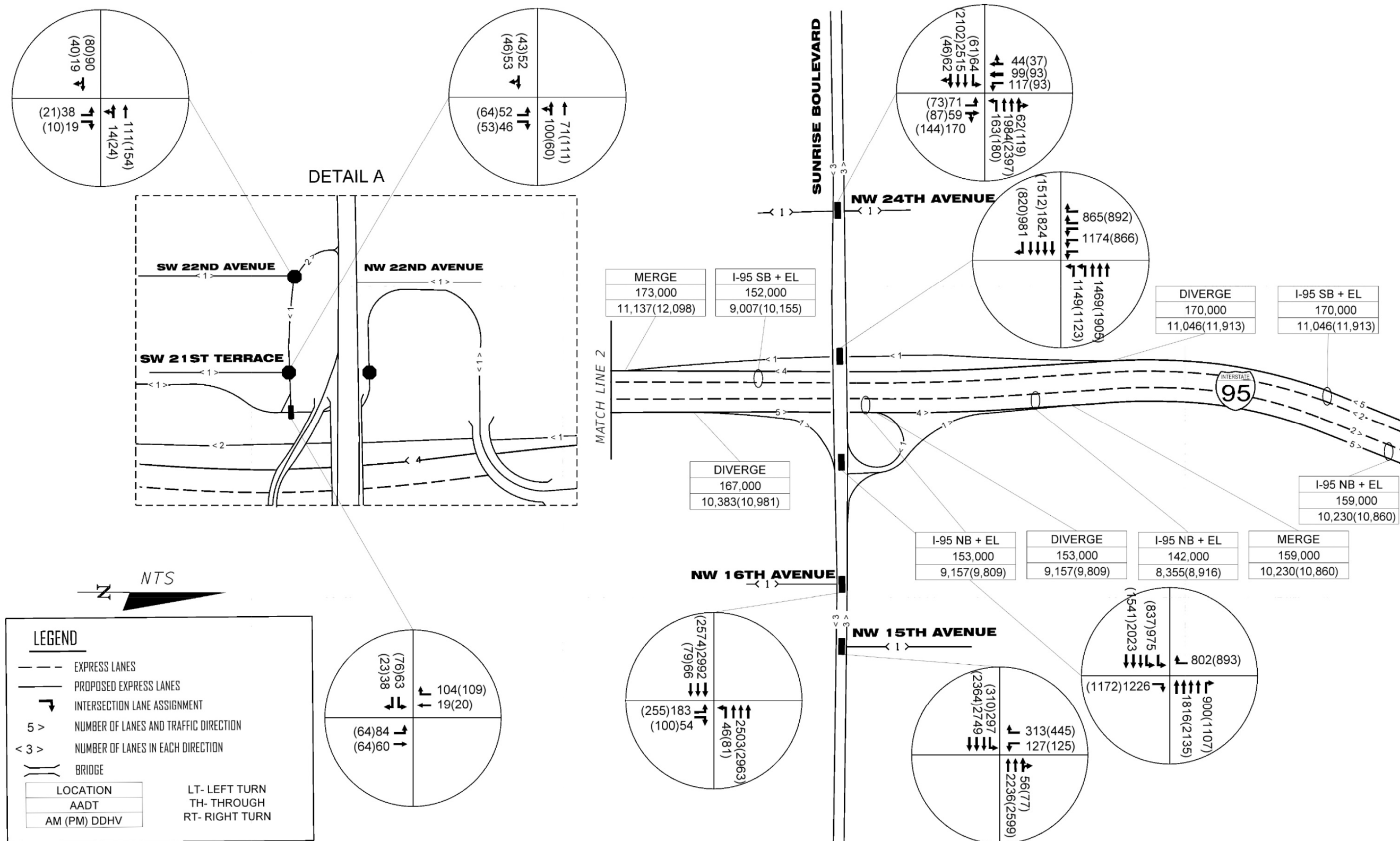


Figure 2-27 | 2020 Peak Hour Traffic Volumes for I-95 at Davie Blvd Interchange

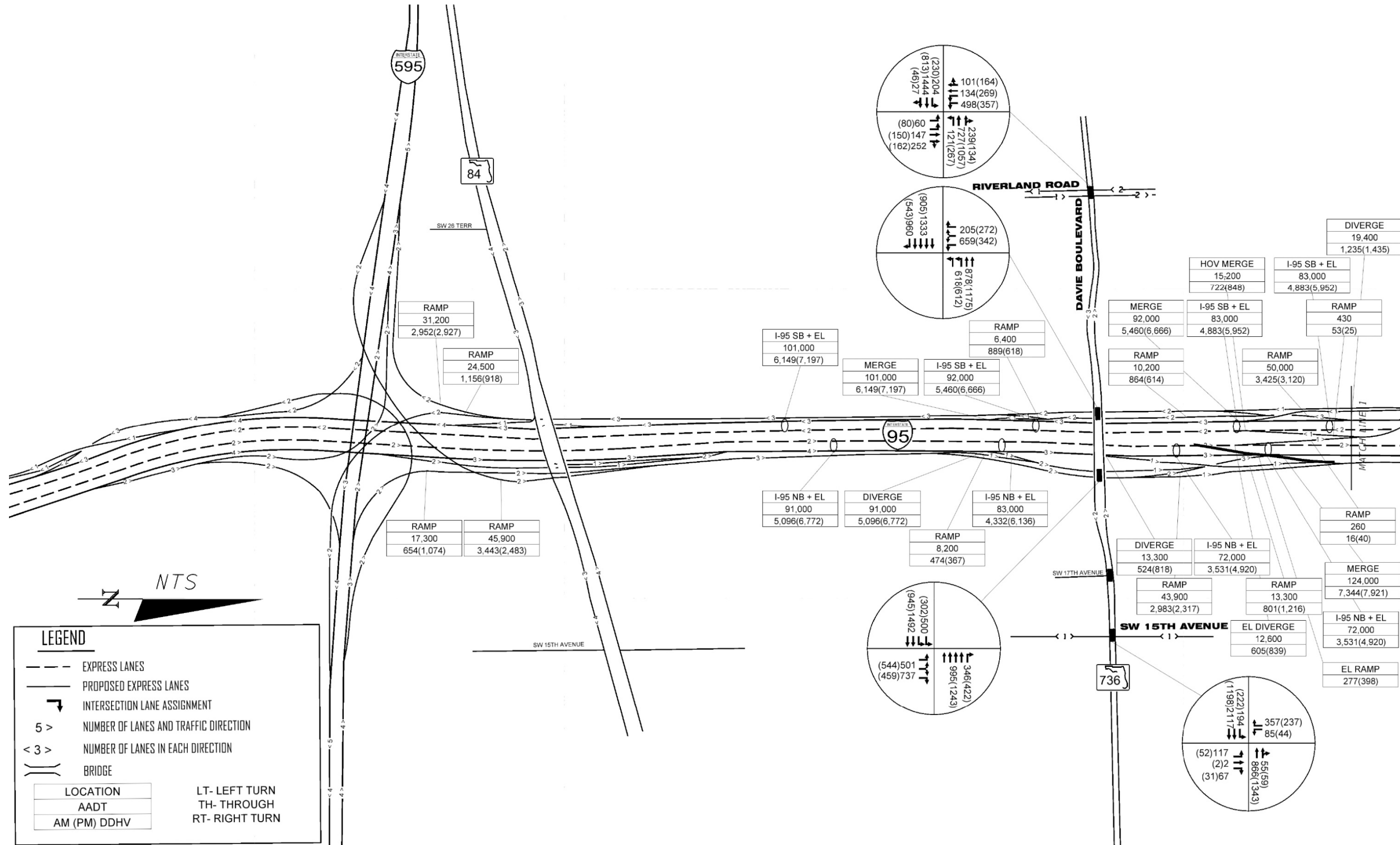




Figure 2-28 | 2020 Peak Hour Traffic Volumes for I-95 at Broward Blvd Interchange

NOTE:  
 THE INTERCHANGE GEOMETRY IS MODIFIED DISPLACED LEFT.

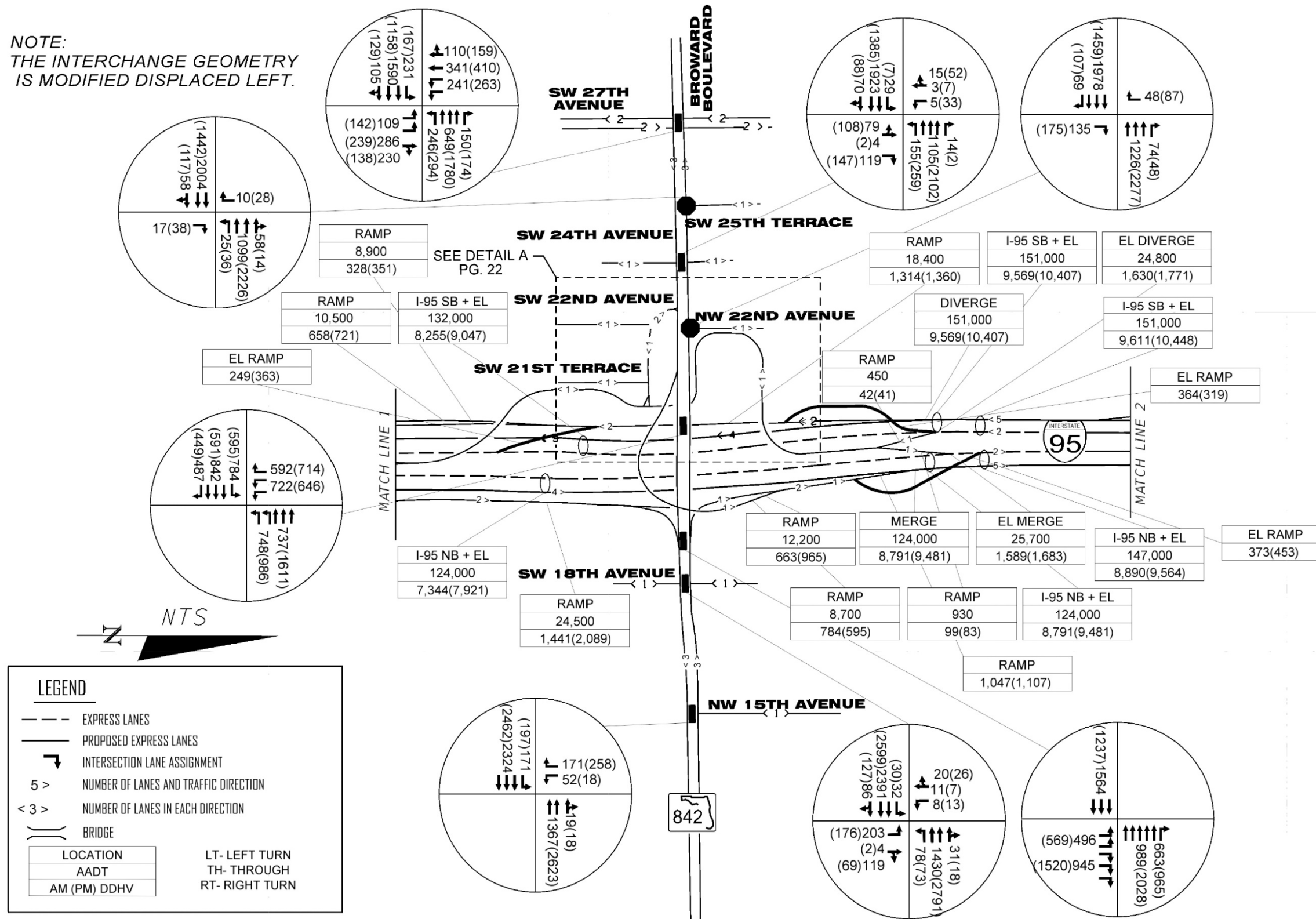


Figure 2-29 | 2020 Peak Hour Traffic Volumes for I-95 at Sunrise Blvd Interchange

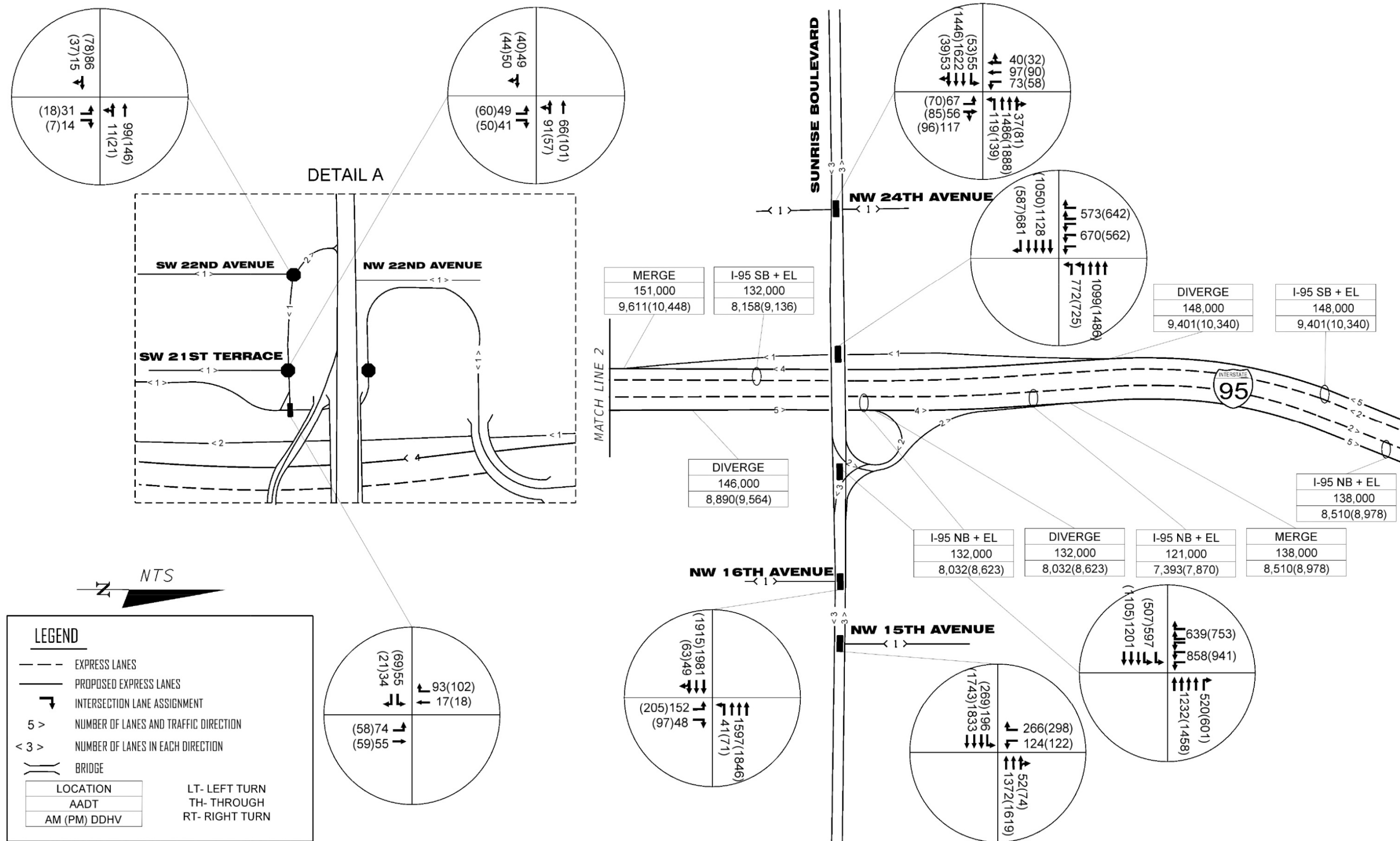


Figure 2-30 | 2040 Peak Hour Traffic Volumes for I-95 at Davie Blvd Interchange

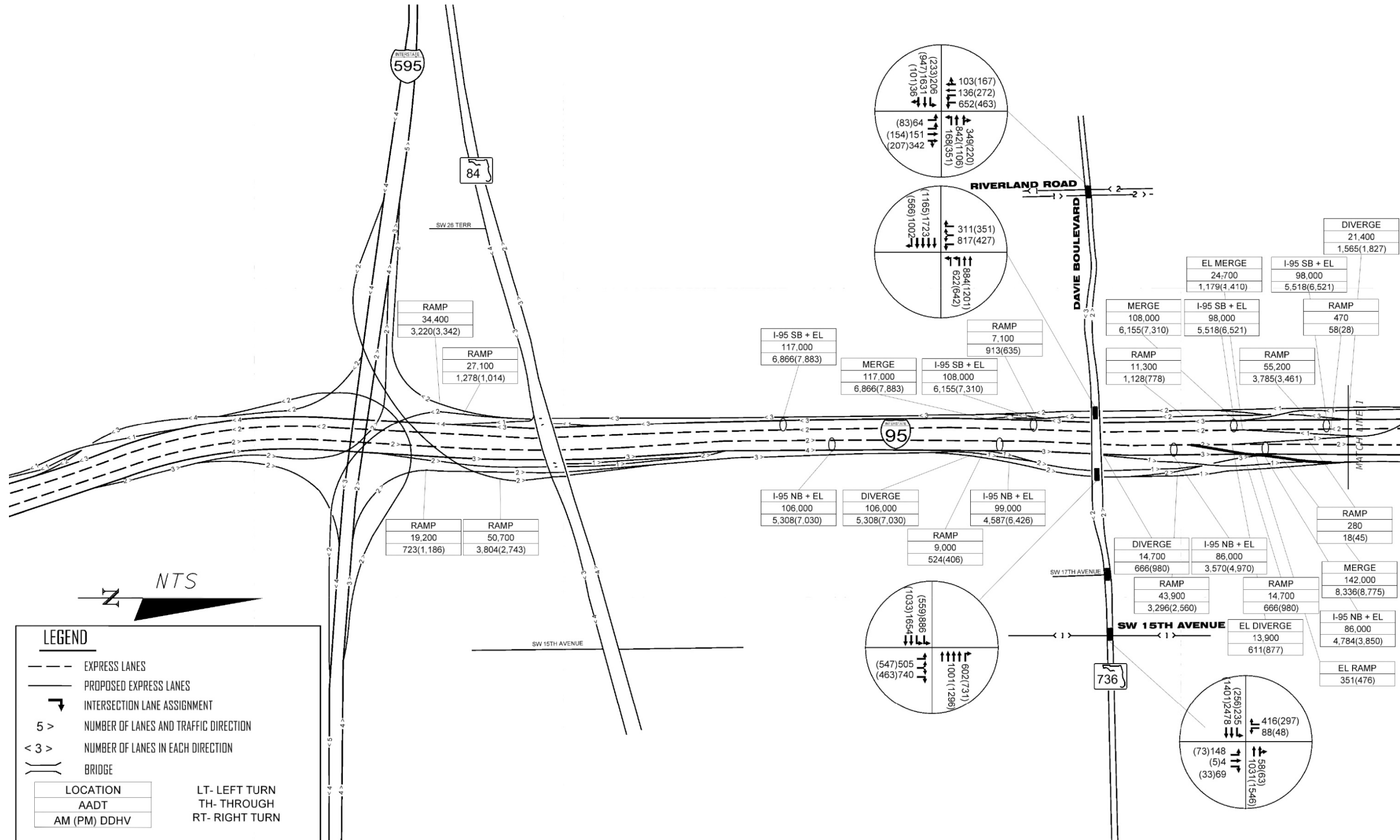


Figure 2-31 | 2040 Peak Hour Traffic Volumes for I-95 at Broward Blvd Interchange

NOTE:  
 THE INTERCHANGE GEOMETRY IS MODIFIED DISPLACED LEFT.

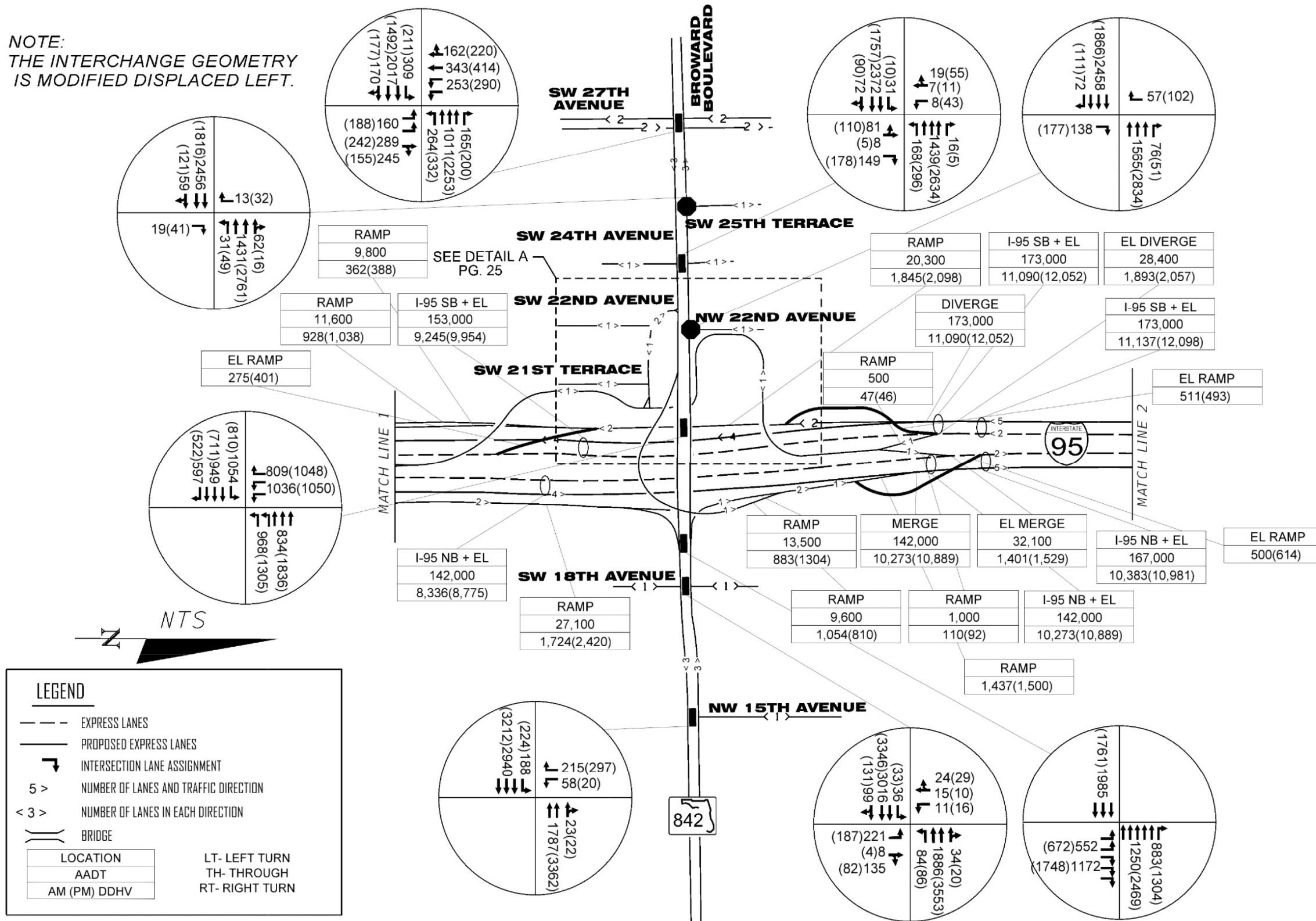
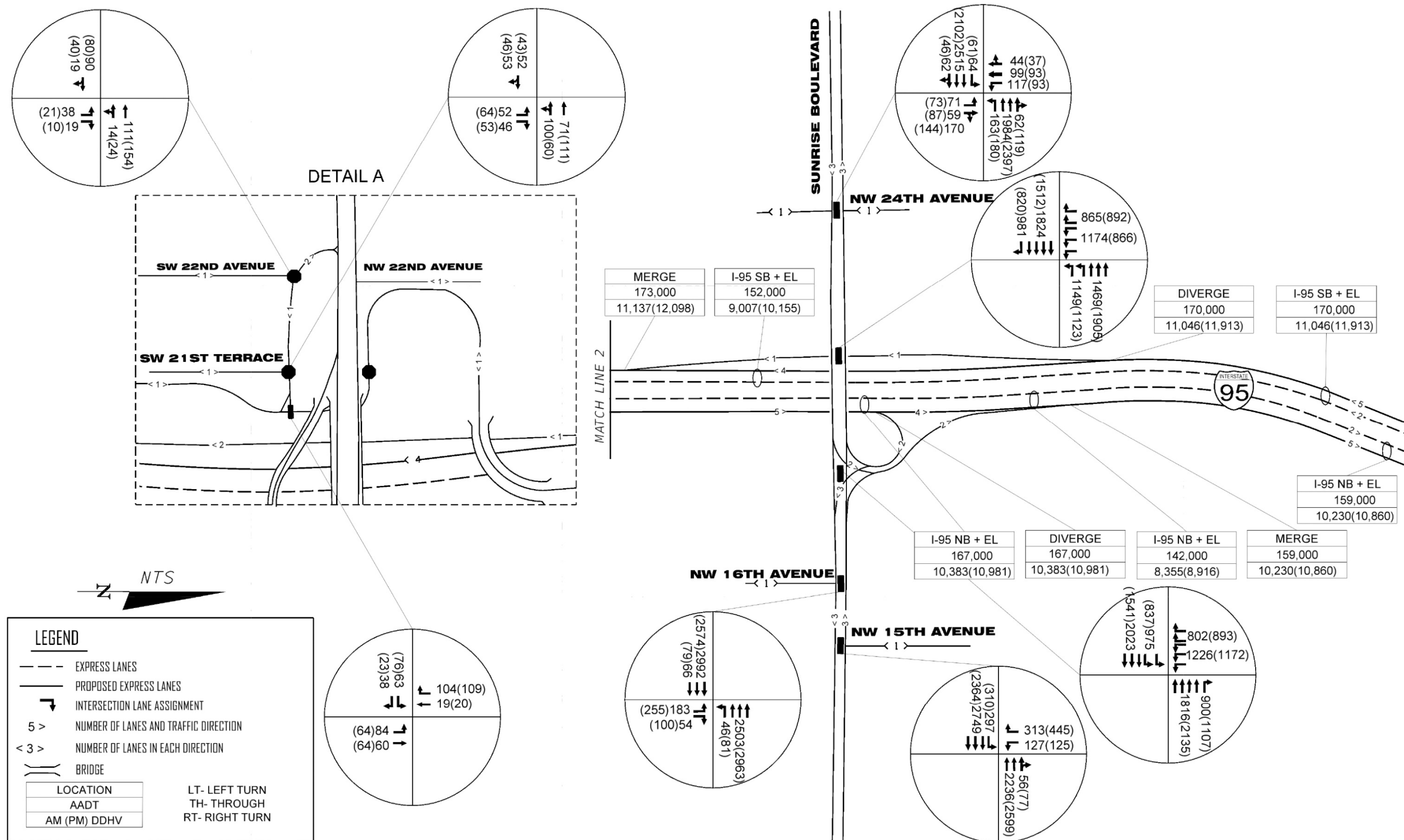


Figure 2-32 | 2040 Peak Hour Traffic Volumes for I-95 at Sunrise Blvd Interchange





## 2.18 Existing ITS Conditions

The existing Intelligent Transportation System (ITS) devices within the study limits on I-95, Broward Blvd., and the Broward Blvd. Park and Ride facility are currently operated, monitored, and managed from the FDOT District Four Regional Transportation Management Centers (RTMC) using the SunGuide software to control and monitor the existing ITS devices. Prior to the opening of the I-95 Express Lanes Phase 3A-1 project, District Six will operate the existing toll amount Dynamic Messaging Signs (T-DMS), lane status DMS (S-DMS) and the closed circuit television (CCTV) cameras that are dedicated to those T-DMS and S-DMS within the study area however all ITS devices are maintained by District Four. District Four operates all other ITS devices within the study area, however upon final acceptance of the I-95 Express Lanes Phase 3A-1 project the District Four RTMC is expected to take over the operations of all ITS devices. Because of this, it is assumed that the FDOT District Four RTMC will operate all of the ITS devices within the study area. A separate Arterial Management Services (AMS) contract operates, manages, and maintains the ITS devices on Broward Blvd however this is also done out of the FDOT District Four RTMC. The following is a description of all the existing ITS devices within the study area and the potential impacts on them for the proposed improvements as part of the Preferred Alternative. Note that the ITS devices on I-95 and in the Broward Boulevard Park and Ride described below are the devices that are to be installed/included as part of the I-95 Express Lanes Phase 3A-1 project.

## 3.0 Design Controls and Criteria

### 3.1 Design Controls

The project controls that were used in the alternatives development are shown in **Tables 3-1 to 3-2**.

**Table 3-1 | Project Design Controls: Broward Blvd**

DESIGN CONTROL	VALUE	SOURCE
Functional Classification	Urban Principal Arterial	Straight Line Diagram
Context Class Classification	C:4 Urban General	
Design Speed	45 mph	2018 FDM (Table 201.4.1)

**Table 3-2 | Project Design Controls: I-95**

DESIGN CONTROL	VALUE	SOURCE
Functional Classification	Urban Principal Arterial	Straight Line Diagram
Design Speed	65 mph 70 mph (SIS Facility)	2018 FDM (Table 201.4.1)

**Table 3-3 | Project Design Controls: I-95 Ingress/Egress Ramps**

DESIGN CONTROL	VALUE	SOURCE
Design Speed	30 mph for Loop Ramps and Semi-Direct Connections. 35 mph for Outer Cloverleaf Connections 40 mph for Intermediate Portions of Long Ramps 50 mph for Direct Connections	2018 FDM (Section 201.4.1.1)



## 3.2 Design Criteria

The design criteria utilized in the preliminary design of the alternatives for this project are in conformance with the following publications and shown in **Tables 3-4 to 3-6**.

- Florida Design Manual (2018), Florida Department of Transportation, Part 1 and 2
- Drainage Manual, Florida Department of Transportation
- Structures Manual, Florida Department of Transportation
- Standard Plans for Road and Bridge Construction, Florida Department of Transportation

**Table 3-4 | Design Criteria: Broward Blvd**

DESIGN ELEMENT	DESIGN CRITERIA	SOURCE
Lane Width (Minimum)	11 feet	2018 FDM (Table 210.2.1)
Pavement Cross Slopes	2% Min. 3.5% Max.	2018 FDM (Figure 210.2.1)
Median Width	22 feet	2018 FDM (Table 210.3.1)
Border Width (Minimum)	14 feet	2018 FDM (Table 210.7.1)
Minimum Sidewalk Width	6 feet	2018 FDM (Table 222.1.1)
Minimum Bike Lane Width	4 feet	2018 FDM (Section 223.2.1.1)
<b>Horizontal Alignment</b>		
Min. Length of Horizontal Curves	400 feet	2018 FMD (Table 210.8.1)
Max. Deflection Without Curve	1°00'00"	2018 FDM (Section 210.8.1)
<b>Vertical Alignment</b>		
Max Change in Grade Without Curve	0.007	2018 FDM (Table 210.10.2)
Min. Length of Crest Curve	135 feet	2018 FDM (Table 210.10.4)
Min. Length of Sag Curve	135 feet	2018 FDM (Table 210.10.4)
Min. Crest K-value	98	2018 FDM (Table 210.10.3)
Min. Sag K-value	79	2018 FDM (Table 210.10.3)

**Table 3-5 | Design Criteria: I-95 Mainline**

DESIGN CONTROL	VALUE	SOURCE/REMARK
Lane Width (Minimum)	12 feet	2018 FDM (Section 211.2)
	11 feet (SIS Facility)	2018 FDM (Table 210.2.1)
Pavement Cross Slopes	2% Min. 3.5% Max.	2018 FDM (Figure 211.2.1)
Median Width	64 feet (Without Barrier)	2018 FMD (Table 211.3.1)
	26 feet (With Barrier)	
Express Lane Separation	4 feet Min. Buffer	2018 FDM (Figure 211.3.2)
Shoulder Width (Minimum)	12 feet (10 feet paved) Travel Lanes	2018 FDM (Table 211.4.1)
	12 feet Express Lanes	
Vertical Clearance	16.5 feet (Over Roadway)	2018 FDM (Table 260.6.1)
	23.5 feet (Over Railroad)	
	24.25 feet (Over Electrified Railroad)	
Grades	3% Max.	2018 FDM (Table 211.9.1)
Superelevation	10% Max.	2018 FDM (Section 210.9.1)
Border Width (Minimum)	10 feet	2018 FDM (Section 211.6.1)
<b>Horizontal Alignment</b>		
Min. Length of Horizontal Curves	975 feet	2018 FMD (Table 211.7.1)
Max. Deflection Without Curve	0°45'00"	2018 FDM (Section 211.7.1)
Exit Ramp Taper Angle	4° +/-	2018-19 Standard Plans (Index 000-525)
Ramp Entrance Taper Length	1:50	2018-19 Standard Plans (Index 000-525)
Lane Drop Taper	1:50 Min.	AASHTO 2011 (Pg. 10-157)
	1:70 Desirable	

**Table 3-6 | Design Criteria: I-95 Express Lanes Ingress/Egress Ramps and NB/SB Service Interchange Ramps**

DESIGN ELEMENT	DESIGN CRITERIA	SOURCE
Lane Width (Minimum)	15 feet (One Lane) 12 feet (Two or More)	2018 FDM (Section 211.2.1)
Pavement Cross Slopes	2% Min. 3% Max.	2018 FDM (Figure 211.2.1)
Shoulder Width (Minimum)	6 feet (4 paved) 1-Lane Right 6 feet (2 paved) 1-Lane Left 10 feet (8 paved) 2-Lane Non-Interstate Right 8 feet (4 paved) 2-Lane Non-Interstate Left 12 feet (10 paved) 2-Lane Interstate 8 feet (4 paved) 2-Lane Interstate	2018 FDM (Table 211.4.1)
Border Width (Minimum)	10 feet	2018 FDM (Section 211.6.1)
Superelevation	10% Max.	2018 FDM (Section 210.9.1)
Grades	5% Max. (45-50 mph) 6% Max. (35-40 mph) 7% Max. (25-30 mph)	2018 FDM (Table 211.9.1)
Vertical Clearance	16.5 feet (Over Roadway) 23.5 feet (Over Railroad) 24.25 feet (Over Electrified Railroad)	2018 FDM (Table 260.6.1)
<b>Horizontal Alignment</b>		
Min. Length of Horizontal Curves	400 feet	2018 FMD (Table 211.7.1)
Max. Deflection Without Curve	Design speed ≤ 40 mph is 2°00'00" Design speed ≥ 45 mph is 0°45'00"	2018 FDM (Section 211.7.1)
Exit Ramp Taper Angle	4° +/-	2018-19 Standard Plans (Index 000-525)
Ramp Entrance Taper Length	1:50	2018-19 Standard Plans (Index 000-525)
Lane Drop Taper	1:50 Min. 1:70 Desirable	AASHTO 2011 (Pg. 10-157)
<b>Vertical Alignment</b>		
Max Change in Grade Without Curve	30 mph 1.00% 35 mph 0.90% 40 mph 0.80% 45 mph 0.70%	2018 FDM (Table 210.10.2)
Min. Length of Crest Curve	30 mph - 90 feet 35 mph - 105 feet 40 mph - 120 feet 45 mph - 135 feet	2018 FDM (Table 211.9.3)
Min. Length of Sag Curve	30 mph - 90 feet 35 mph - 105 feet 40 mph - 120 feet 45 mph - 135 feet	2018 FDM (Table 211.9.3)
Min. Crest K-value	30 mph 31 35 mph 47 40 mph 70 45 mph 98	2018 FDM (Table 211.9.2)
Min. Sag K-value	30 mph 37 35 mph 49 40 mph 64 45 mph 79	2018 FDM (Table 211.9.2)

## 4.0 Alternatives Analysis

Evaluation of transportation projects to select the most desirable alternative is often based on a wide range of criteria (i.e., traffic operations and safety, environmental impacts, construction costs, drainage impacts, right-of-way costs, etc.) that reflect concerns of all the key stakeholders. As previously defined in Section 1.4.2, three improvement build alternatives were considered for improving traffic operations and safety near the I-95/Broward Blvd. interchange. The following sections summarize the No-Action, and TSM&O alternatives and the evaluation and elimination of alternatives.

### 4.1 No-Action Alternative

I-95 in the study area is a ten-lane facility with four general purpose travel lanes and one HOV lane in each direction. Within the study limits, and at the interchange itself, there are numerous access ramps. The Florida Department of Transportation (FDOT) is currently implementing Phase 3 of the 95 Express Lanes continuing 29 miles north from Stirling Road in Broward County to Linton Boulevard in Palm Beach County. The 95 Express Phase 3A project will convert the existing HOV lane in each direction to dual Express Lanes in each direction and modify the use of these lanes to include managed toll lanes. The resulting typical section becomes a 12-lane facility comprised of 4 General Purpose Lanes and 2 Special Use Lanes in each direction. The No-Action Alternative includes the 95 Express 3A-1 for the I-95 mainline and the IOAR approved improvement for the Sunrise Boulevard west terminal ramp intersection.

### 4.2 TSM&O Alternative

In addition to the No-Action Alternative, The Transportation Systems Management and Operations (TSM&O) Alternative was considered. The TSM&O Alternative incorporates the use of Adaptive Traffic Signal Control (ATSC) and Advanced Transportation Management System (ATMS). ATMS is a system of ITS for the arterials (non-freeway). It includes a Fiber optic Network, CCTV Monitoring, Dynamic Messaging Signs and Speed/Volume Monitoring Devices. The TSM&O Alternative alone does not meet the purpose and need of the project, however all the components of the TSM&O Alternative are included in all of the Build Alternatives.

### 4.3 Evaluation and Elimination of Alternatives

The alternatives matrix is developed to compare the alternatives across the breadth of issues affected by the project. It provides a comparative qualitative and quantitative analysis of alternatives for the project. An evaluation matrix, as shown in **Table 4-1**, was developed to help summarize and compare the impacts associated with each alternative.

Table 4-1 | Alternative Matrix

<b>I-95/Broward Blvd. PD&amp;E Evaluation Matrix</b>						
<b>Evaluation Factors</b>	<b>No Build Alternative</b>	<b>TSM&amp;O</b>	<b>Alt 1 - Tight Diamond</b>	<b>Alt 2A - Displaced Left</b>	<b>Alt 2B - Modified Displaced Left</b>	<b>Alt 3 - Diverging Diamond</b>
Meets Purpose and Need	No	No	Yes	Yes	Yes	Yes
<b>Project Cost (\$ in millions)</b>						
Design Phase (10%)	N/A	\$0.0	\$0.0	\$0.0	\$10.2	\$0.0
Right-of-Way Acquisition	N/A	None	TBD	TBD	TBD	TBD
Construction	N/A				\$102.4	
Construction Engineering and Inspection (CEI) (10%)	N/A	\$0.0	\$0.0	\$0.0	\$10.2	\$0.0
Wetland, Habitat and Species Mitigation	N/A	None	None	None	None	None
Utility Relocation	N/A	N/A	TBD	TBD	TBD	TBD
<b>Social and Economic Environment</b>						
Number of Parcels (Business and Residential)	0	0	TBD*	TBD*	TBD*	TBD*
Number of Relocations (Business and Residential)	0	0	TBD*	TBD*	TBD*	TBD*
Churches, Synagogues, Mosque, Worship Centers	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
Cemeteries	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
Schools	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
Hospitals, Medical Centers	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
<b>Cultural Environment</b>						
Section 4 (f) Impact	N/A	No Impact	Low	Low	Low	Low
Historic Sites and Districts	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
Archaeological Sites	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
Recreation Areas	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
<b>Natural Environment</b>						
Wetlands	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
Protected Species and Habitat	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
Floodplains	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
<b>Physical Environment</b>						
Contamination/Hazardous Waste Sites	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
Noise Receptors	N/A	No Impact	TBD	TBD	TBD	TBD
Water Quality and Water Quantity	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
Air Quality	N/A	No Impact	No Impact	No Impact	No Impact	No Impact
Utilities	N/A	TBD	TBD	TBD	TBD	TBD
Bicycles and Pedestrians	N/A	Low	Medium	Medium	Medium	Medium
Constructability	N/A					
<b>Traffic Operations</b>						
Driver Expectancy	No Impact	No Impact	No Impact	Low	Low	Medium
AM Level of Service (LOS) (SB Ramps/NB Ramps)	F/F	F/F	E/D	C/E	D/B	C/C
PM Level of Service (LOS) (SB Ramps/NB Ramps)	F/F	F/F	F/E	C/F	D/B	C/C
AM Delay (sec) (SB Ramps/NB Ramps)	71/110	TBD	59/47	28/66	45/12	24/23
PM Delay (sec) (SB Ramps/NB Ramps)	126/155	TBD	102/79	31/86	47/14	24/28
AM Exit Ramp Queue (ft.) (SB/NB)	1019/1910		870/1197	354/357	429/413	393/420
PM Exit Ramp Queue (ft.) (SB/NB)	1626/1628		2380/553	335/1427	525/589	653/719
<b>Transit</b>						
Lower Level Circulation	N/A	N/A	Medium	Medium	Medium	Medium
Broward Median Station	No	No	Yes	Yes	Yes	Yes
Accommodation of Broward Blvd. Fixed Transit	No	No	Low	Medium	Low	Medium

\*Determination of R/W impacts pending completion of pond siting process

## 5.0 Public Involvement/Project Coordination

A Public Involvement Plan (PIP) was developed at the beginning of the study with the purpose of outlining the public involvement approach to be taken. The PIP was updated and amended throughout the project development process to incorporate the latest public involvement policies, techniques and comments as they evolved through the life of the project, and to guide the design of special events and study groups that were identified during the course of the study. Public outreach activities were designed to ensure that the public was informed, provided opportunities to comment and ask questions, and so the FDOT could use these comments to guide the study. These outreach activities commenced at the onset of the PD&E Study and continued during the development and evaluation of alternatives and the selection of the Preferred Alternative. Public involvement activities included close coordination and periodic meetings with the City of Fort Lauderdale, Broward County, the Broward MPO, transit agencies that serve the study area, pertinent agencies at the state, county and municipal levels, adjacent property owners, and adjacent neighborhood associations.

### 5.1 MPO Coordination

The initial coordination meeting was held with the MPO staff on September 5, 2017, to present the alternatives under consideration to the MPO prior to the Alternatives Public Workshop. Presentations were made to the Citizens Advisory Committee and Technical Advisory Committee on January 23, 2019 and to the Board on February 14, 2019 for the purpose of reviewing the alternatives evaluated and the Preferred Alternative prior to the public hearing.

### 5.2 Coordination with Elected/Appointed Officials

A kick off meeting for agency and elected officials was held on November 3, 2016 at the City of Fort Lauderdale City Hall. The purpose of the meeting was to inform attendees about the purpose and need for the project, the study area limits, and receive comments about the project. The meeting was attended by three representatives from the City of Fort Lauderdale. They expressed enthusiasm about potential solutions and asked if a parking deck was still a possible option. This led to a discussion about a Broward Blvd. median station at 2nd level for premium transit that could include an elevator to the park-and-ride level (1st level). There was also discussion about replacing the existing Broward Blvd. bridge structures over I-95 and the SFRC to support future light rail. It was noted that the alternatives considered would be include replacement of both existing bridges to accommodate future rail, if warranted. Noted concerns include The Salvation Army's concern about the intersection at Broward Boulevard and NW 18<sup>th</sup> Ave, Riverland residents' sensitivity to noise, and the development coming to the west of I-95 between 21st Avenue and 31st Avenue. The City commented that their bicycle and pedestrian standards should be applied to make this area better.

## 5.3 Public Meetings

The Notice to Proceed with the PD&E Study was issued on May 17, 2016 and the first public meeting was held on November 9, 2016. Three public meetings and two technical charrettes were held prior to the public hearing. The public meetings included a Public Kick-Off Meeting and two Alternatives Public Workshops; a second Alternatives Public Workshop was held due to the occurrence of Hurricane Irma the week prior to the initial Alternatives Public Workshop. The two technical charrettes were held with transportation partners regarding the proposed improvements to the Park-and-Ride lot at the interchange. All of the formal public meetings were advertised in the Sun-Sentinel and notification letters were sent to property owners within 300 feet of the right-of-way, which included over 1,120 addresses. Public notices were also distributed at the Tri-Rail station and placed on cars parked in the Park-and-Ride lot. More details about each of these meetings is provided in this section and public comments received during the meetings are contained in **Appendix C**.

### 5.3.1 Public Kick-Off Meeting

The Public Kick-Off Meeting was held on November 9, 2016, at 5:30 p.m. at the Reverend Samuel Delevoe Memorial Park located at 2520 NW 6 Street, Fort Lauderdale, FL 33311. This park is located immediately adjacent to the study area. The meeting began as an open house at 5:30 where attendees could review information provided on boards (see **Appendix C**) and speak with project team representatives. A formal presentation was given at 6:00 p.m. and a question/comment period followed. The purpose of the meeting was to provide the community an opportunity to learn about the improvements being studied and the PD&E process in general, and to provide an opportunity to raise initial concerns and issues that should be considered as part of the study. More than 25 people attended the meeting and several questions were asked regarding noise abatement, project schedule and cost, and improvements to the Park-and-Ride lot. No written comments were received.

### 5.3.2 Technical Charrettes

The first technical charrette was held on February 14, 2017, from 10 a.m. until 3 p.m. at the FDOT Traffic Management Center located at 2300 W. Commercial Boulevard, Fort Lauderdale, FL 33309. The purpose of this meeting was to review the issues and potential solutions for the Park-and-Ride lot and a potential median transit station on Broward Boulevard. Participants at this meeting were from Broward County, the Broward MPO, the City of Fort Lauderdale, FDOT, Miami-Dade County, the South Florida Regional Transportation Authority, South Florida Commuter Services, and Sun Trolley. A detailed summary of the meeting and a list of attendees is included in **Appendix C**. Key issues raised during this first charrette included pedestrian safety, lower level circulation challenges, and need for improved connection between lower level and Broward Blvd.

The second technical charrette was held on October 2, 2017 from 10:30 a.m. until noon at the HDR Office located at 3250 W. Commercial Blvd, Suite 100, Fort Lauderdale, FL 33309. The purpose of this meeting was to share the Park-and-Ride alternatives developed and receive comments. Participants at this meeting were from the same agencies as the prior meeting. A detailed summary of the meeting and the

list of attendees is included in **Appendix C**. The main issues discussed during this meeting were additional improvements for bicycles and pedestrians within the lot, identification of a bus layover area on the plan, and the circulation needs of the buses.

### 5.3.3 Alternatives Public Workshops

Two Alternatives Public Workshops were held for this project. The first workshop was held on September 14, 2017, at 5:30 p.m. at the Reverend Samuel Delevoe Memorial Park located at 2520 NW 6 Street, Fort Lauderdale, FL 33311. Hurricane Irma impacted South Florida a few days before the scheduled workshop and many areas were still without power. However it was decided to move forward with the workshop since the meeting facility did have power and there was not sufficient time to notify the public of its cancellation. The meeting started as an open house and a formal presentation was given at 6:00 p.m. The primary purpose of the meeting was to provide the public an opportunity to review the alternatives under consideration and to provide comments about the project. Display materials included general information about the PD&E process, project-specific information such as the schedule and Purpose and Need, the mainline and interchange alternatives, noise analysis information, sociocultural resources, and information about the proposed use of the pond in Reverend Samuel Delevoe Memorial Park for drainage. (This proposed use of the pond has since been determined to not be necessary and is no longer a consideration for the project.) Comments received during this workshop were focused on stormwater and the use of the pond in the park. Several representatives from Broward County stated objections to the use of the pond for project drainage. A summary of the meeting and the materials displayed is included in **Appendix C**.

The second Alternatives Public Workshop was held on November 14, 2017, at the same time and in the same location as the first workshop. This workshop followed the same format, starting with an open house followed by a formal presentation, and presented the same materials and information from the workshop in September. Comments received during this workshop were focused on potential right-of-way impacts, damage to landscaping that screens I-95 from the adjacent neighborhoods, and other construction projects in the area. A summary of the questions and comments raised during this workshop is provided in **Appendix C**.

## 5.4 Small Group and Stakeholders Meetings

The project team has held several meetings with staff from the City of Fort Lauderdale regarding this project. There have also been meetings with an adjacent property owner that were tied to the 95 Express project. The project team is planning meetings with adjacent Homeowner Association and/or neighborhood groups prior to the Public Hearing to review the potential visual impacts of the proposed braided ramps on the neighborhoods north of Broward Blvd. **Table 5-1** below provides a summary of the meetings that have been held regarding this project, and it will be updated to include additional outreach that occurs prior to the Public Hearing.



**Table 5-1 | Small Group and Stakeholder Meetings Summary**

Meeting Audience	Meeting Date	Number of Attendees	Issues Discussed
City of Fort Lauderdale	2/17/17	7	Recent or proposed development in the study area and desire to have this project include gateway features (landscaping and signs)
Riverland Developer	3/20/17	3	Use of NW 22 <sup>nd</sup> Ave and Park-and-Ride lot by proposed development
City of Fort Lauderdale	8/28/17	7	Bicycle and pedestrian improvements included in the project, ability to support future transit modes, and gateway features
City of Fort Lauderdale	1/19/18	6	Bicycle and pedestrian improvements, gateway features, and proposed dog park

## 5.5 Public Hearing

The Public Hearing is scheduled for March 18, 2019.

## 6.0 Preferred Alternative

The preferred alternative is the Modified Displaced Left Turn Alternative, Build Alternative 2B. Alternative 2B accommodates all exit ramp queues and achieves LOS D or better at both ramp terminal intersections. Alternative 2B operationally outperforms the other considered alternatives and efficiently moves the future traffic demand through the interchange. Based on the intersection operational analyses, Alternative 2B, the Modified Displaced Left, provides better operations when compared to the other alternatives. Alternative 2B was selected as the Broward Boulevard Interchange Preferred Alternative, data collection and analysis are included in the SIMR. A detailed description of the development of the preferred alternative is included in subsequent sections of this report.

### 6.1 Right-of-Way Needs and Relocation

The proposed improvements of the Preferred Alternative will require acquiring additional R/W in two locations as described in **Table 6-1** and shown in **Figure 6-1**.

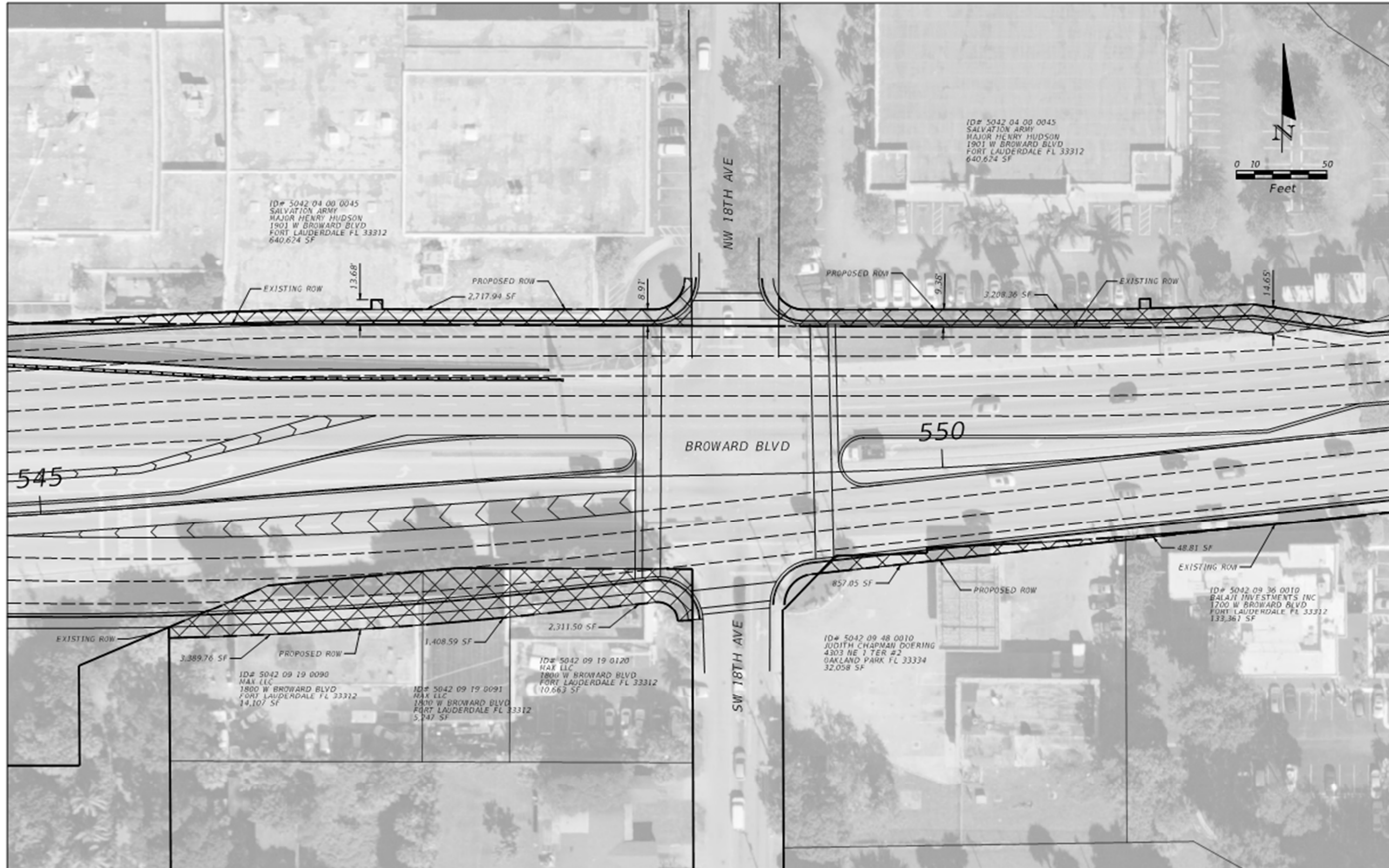
**Table 6-1 | Estimated Right-of-Way Impacts for Preferred Alternative**

Estimated Right-of-Way Impacts for Alternative 2B (Broward Blvd. NW/SW 18th Ave)				
FID	PARCELID	PARCEL USE DESCRIPTION (from Broward County Property Appraiser site)	OWNER NAME	PERMANENT R/W IMPACT AREA (SF)
1	504204000045	CHURCHES	SALVATION ARMY - MAJOR HENRY HUDSON	5,926.30
2	504209190090	OFFICE BUILDINGS, NON-PROFESSIONAL SERVICES BUILDINGS, ONE-STORY	MAX LLC	3,389.76
3	504209190091	OFFICE BUILDINGS, NON-PROFESSIONAL SERVICES BUILDINGS, ONE-STORY	MAX LLC	1,408.59
4	504209190120	OFFICE BUILDINGS, NON-PROFESSIONAL SERVICES BUILDINGS, MULTI-STORY	MAX LLC	2,311.50
5	504209480010	SERVICES STATIONS	DOERING, JUDITH CHAPMAN	857.05
6	504209360010	HOTELS, MOTELS	BALAJI INVESTMENTS INC	48.81

Note: The required R/W for FIDs 2-4 are identified as per the Preliminary Drainage Analysis Report, and the extent of taking from these parcels will be updated following the pond sizing analysis.

Parcels Impacted	6
Total Right of Way (SF)	13,942.01

Figure 6-1 | Right of Way Impacts





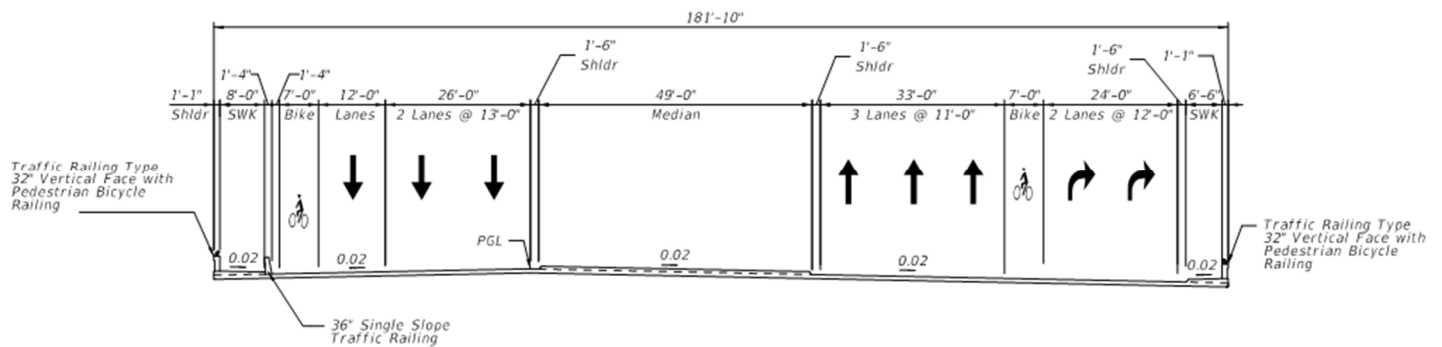
Additionally, the proposed improvements of the Preferred Alternative will require the removal of an encroaching fence onto FDOT right-of-way. The FDOT Parcel (Folio 504204320100) will be used as stormwater conveyance and treatment area and it is located directly east of I-95 between NW 7<sup>th</sup> Place and NW 8<sup>th</sup> Street.

## 6.2 Typical Sections

The proposed Broward Blvd. typical section is a six-lane divided roadway with three varied width (11'-13') lanes, with 7' wide bicycle lanes in each direction, curb & gutter, and 6' wide sidewalks.

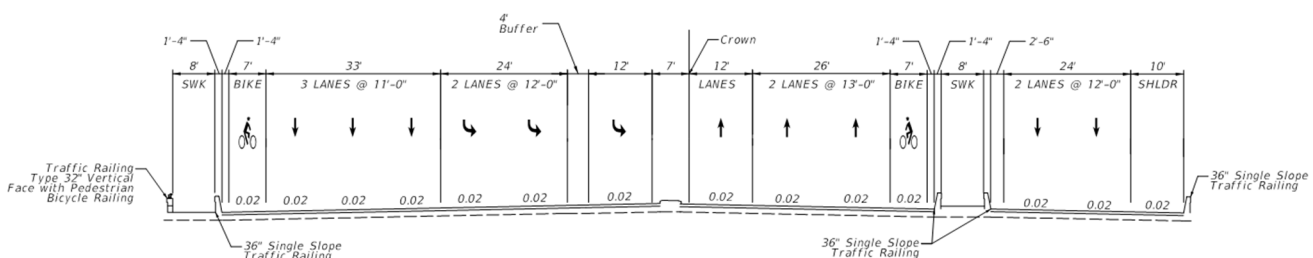
The proposed typical section for the bridge over SW 21st Terrace and the railroad corridor has three varied width (11'-13') through lanes in each direction, two 12' eastbound right turn lanes, with 7' wide bicycle lanes in each direction, a 49' wide median, raised 6' sidewalk on the south side and 8' barrier protected sidewalk along the north side.

**Figure 6-2 | Typical Section: Broward Blvd over SFCR**



The proposed typical section for the bridge over I-95 has three varied width (11'-13') through lanes in each direction, three 12' left turn lanes on the westbound direction, 8' barrier protected sidewalk on the north and south side, and a 7.5' median.

**Figure 6-3 | Typical Section: Broward Blvd over I-95**



## 6.3 Pedestrian Safety

## 6.4 Horizontal and Vertical Geometry

Once the Modified Displaced Left was determined to be the preferred alternative, the PD&E project team worked to further refine the horizontal and vertical geometry of the Modified Displaced Left Alternative.

### 6.4.1 Broward Boulevard

The horizontal geometry of the preferred alternative along Broward Blvd. allows for the addition of necessary turn lanes, wider sidewalks, and full width bicycle lanes to improve the overall operation and safety of the interchange. The vertical geometry of the preferred alternative along Broward Blvd. raises the profile to provide space for a transit connection station underneath Bridge 860257. Details of the horizontal geometry are summarized in **Tables 6-1** and **6-2**, and the vertical geometry is summarized in **Table 6-3**.

**Table 6-2 | Horizontal Geometry: EB Broward Blvd.**

Curve No.	Proposed Geometry				Design Criteria	
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>CURVE 1</b>	45 MPH	2093.00	NC	218.000	400.0	NC
<b>CURVE 2</b>	45 MPH	2100.00	NC	198.000	400.0	NC
<b>CURVE 3</b>	45 MPH	15057.00	NC	516.700	400.0	NC
<b>CURVE 4</b>	45 MPH	2089.00	NC	237.400	400.0	NC
<b>CURVE 5</b>	45 MPH	2096.00	NC	239.80	400.0	NC

**Table 6-3 | Horizontal Geometry: WB Broward Blvd.**

Curve No.	Proposed Geometry				Design Criteria	
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>CURVE 1</b>	45 MPH	2093.00	NC	175.240	400.0	NC
<b>CURVE 2</b>	45 MPH	2089.00	NC	189.800	400.0	NC
<b>CURVE 3</b>	45 MPH	19971.00	NC	251.000	400.0	NC
<b>CURVE 4</b>	45 MPH	24989.00	NC	388.700	400.0	NC
<b>CURVE 5</b>	45 MPH	3186.25	NC	230.90	400.0	NC

**Table 6-4 | Vertical Geometry: Broward Blvd.**

<b>Vertical Geometry Ramp B</b>	
Criteria	Proposed Design Value
Design Speed	45 MPH
Minimum Grade	0.378%
Maximum Grade	5.420%
Vertical Curve Lengths	VC1(sag) - 358' ( $K_{provided} = 79$ )
$K_{crest}$ (required) = 98	VC2(crest) - 576' ( $K_{provided} = 98$ )
$K_{sag}$ (required) = 79	VC3(crest) - 240' ( $K_{provided} = 98$ )
	VC4(sag) - 217' ( $K_{provided} = 79$ )
Clearance over Existing Roadways	16.5'
Clearance over RR	N/A

## 6.4.2 I-95 Mainline

The proposed horizontal geometry provides a shifted alignment of the northbound and southbound sides due to the need to provide space for the proposed express lanes direct connection ingress and egress braids. Details of the horizontal geometry are summarized in **Tables 6-4** and **6-5**. The proposed vertical geometry is to match the existing.

**Table 6-5 | Horizontal Geometry: NB I-95**

Curve No.	Proposed Geometry				Design Criteria	
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>CURVE 1</b>	65 MPH	13100.00	NC	557.400	400.0	NC
<b>CURVE 2</b>	65 MPH	13345.50	NC	2,282.325	400.0	NC
<b>CURVE 3</b>	65 MPH	22000.00	NC	561.260	400.0	NC
<b>CURVE 4</b>	65 MPH	29172.00	NC	1,476.270	400.0	NC
<b>CURVE 5</b>	65 MPH	18928.00	NC	929.910	400.0	NC
<b>CURVE 6</b>	65 MPH	7400.00	0.026	1,003.000	400.0	0.026
<b>CURVE 7</b>	65 MPH	70000.00	NC	1,717.530	400.0	NC
<b>CURVE 8</b>	65 MPH	9795.00	RC	1,332.550	400.0	RC
<b>CURVE 9</b>	65 MPH	13164.00	NC	1119.0	400.0	NC
<b>CURVE 10</b>	65 MPH	13164.00	NC	1,119.00	400.0	NC

**Table 6-6 | Horizontal Geometry: SB I-95**

Curve No.	Proposed Geometry				Design Criteria	
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>CURVE 1</b>	65 MPH	8000.00	0.024	609.300	400.0	0.024
<b>CURVE 2</b>	65 MPH	11471.25	NC	1,439.770	400.0	NC
<b>CURVE 3</b>	65 MPH	13092.00	NC	1,001.000	400.0	NC
<b>CURVE 4</b>	65 MPH	13164.00	NC	1,000.080	400.0	NC
<b>CURVE 5</b>	65 MPH	13164.00	NC	732.88	400.0	NC

### 6.4.3 Ingress/Egress Ramps

There are five proposed ingress/egress ramps that will provide direct connection to and from the Express Lanes and Broward Blvd. The proposed horizontal geometry for each ramp is summarized in **Tables 6-6 to 6-10**.

**Table 6-7 | Horizontal Geometry: Ramp A – Relocated Broward GP Exit**

Curve No.	Proposed Geometry				Design Criteria	
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>CURVE 1</b>	45	1938.00	0.048	452.300	400.0	0.048
<b>CURVE 2</b>	45	3085.00	0.032	442.33	400.0	0.032

**Table 6-8 | Horizontal Geometry: Ramp B – NB Express Lanes Egress**

Curve No.	Proposed Geometry				Design Criteria	
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>CURVE 1</b>	45	15350.00	NC	591.27	400.0	NC
<b>CURVE 2</b>	45	1385.00	0.063	293.46	400.0	0.063
<b>CURVE 3</b>	45	1885.00	0.050	519.88	400.0	0.050



**Table 6-9 | Horizontal Geometry: Ramp C – SB Express Lanes Ingress**

<b>Horizontal Geometry Ramp C</b>						
<b>Curve No.</b>	<b>Proposed Geometry</b>				<b>Design Criteria</b>	
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>CURVE 1</b>	45	9950.00	NC	986.94	400.0	NC
<b>CURVE 2</b>	25	250.00	0.080	229.46	400.0	0.077
<b>CURVE 3</b>	25	250.00	0.030	200.21	400.0	0.030

The horizontal geometry for Ramp C has been optimized in order to attain acceleration and gap acceptance lengths as close as feasible to those suggested by AASHTO Figure 10-69. To provide these acceleration and gap acceptance lengths, an inside shoulder width reduction to 3-ft is required along the southbound express lanes due to a conflicting column of the existing HOV Park-and-Ride access ramps. This shoulder width reduction has been listed in Section 6.6.2 Design Exceptions.

**Table 6-10 | Horizontal Geometry: Ramp D – NB Express Lanes Ingress**

<b>Horizontal Geometry Ramp D</b>						
<b>Curve No.</b>	<b>Proposed Geometry</b>				<b>Design Criteria</b>	
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>CURVE 1</b>	40	1580.00	0.046	506.72	400.0	0.0
<b>CURVE 2</b>	40	1285.00	0.058	420.440	400.0	0.058
<b>CURVE 3</b>	40	15000.00	0.020	337.56	400.0	0.020

**Table 6-11 | Horizontal Geometry: Ramp E – SB Express Lanes Egress**

<b>Curve No.</b>	<b>Existing Curve Parameters</b>				<b>Design Criteria</b>	
	Design Speed (MPH)	Radius (Feet)	Super-elevation (e)	Length (Feet)	FDM (Length)	FDM (e)
<b>CURVE 1</b>	35	1000.00	0.080	276.910	400.0	0.080
<b>CURVE 2</b>	45	1272.125	0.068	307.59	400.0	0.068

The proposed vertical geometry for all ingress/egress ramps are elevated to provide enough vertical clearance for all roads located below; a minimum of 16.5' vertical clearance. Vertical geometry details for each ramp is summarized in **Tables 6-12 to 6-16**.

**Table 6-12 | Vertical Geometry: Ramp A – Relocated Broward GP Exit**

Criteria	Proposed Design Value
Design Speed	45 MPH
Minimum Grade	0.121%
Maximum Grade	4.000%
Vertical Curve Lengths	VC1(sag) - 380' ( $K_{provided} = 98$ )
$K_{crest}$ (required) = 98	VC2(crest) - 1,160' ( $K_{provided} = 153$ )
$K_{sag}$ (required) = 79	
Clearance under Existing Roadways	16.5'
Clearance over RR	N/A

**Table 6-13 | Vertical Geometry: Ramp B – NB Express Lanes Egress**

Criteria	Proposed Design Value
Design Speed	45 MPH
Minimum Grade	0.275%
Maximum Grade	5.000%
Vertical Curve Lengths	VC1(sag) - 358' ( $K_{provided} = 79$ )
$K_{crest}$ (required) = 98	VC2(crest) - 576' ( $K_{provided} = 98$ )
$K_{sag}$ (required) = 79	VC3(crest) - 240' ( $K_{provided} = 98$ )
	VC4(sag) - 217' ( $K_{provided} = 79$ )
Clearance over Existing Roadways	16.5'
Clearance over RR	N/A

**Table 6-14 | Vertical Geometry: Ramp C – SB Express Lanes Ingress**

**Vertical Geometry Ramp C**

Criteria	Proposed Design Value
Design Speed	30 MPH (VC1) 25 MPH (VC2) 30 MPH (VC3 and VC4)
Minimum Grade	-5.850%
Maximum Grade	3.970%
Vertical Curve Lengths	VC1(sag) - 228.20' ( $K_{provided} = 37$ )
$K_{crest}$ (required) = 31, 47	VC2(crest) - 254.07' ( $K_{provided} = 37$ )
$K_{sag}$ (required) = 37, 49	VC3(sag) - 200' ( $K_{provided} = 40$ )
	VC4(crest) - 94' ( $K_{provided} = 34$ )
Clearance over Existing Roadways	16.5'
Clearance over RR	N/A

**Table 6-15 | Vertical Geometry: Ramp D – NB Express Lanes Ingress**

Criteria	Proposed Design Value
Design Speed	40 MPH
Minimum Grade	0.079%
Maximum Grade	5.000%
Vertical Curve Lengths	VC1(sag) - 420' ( $K_{provided} = 64$ )
$K_{crest}$ (required) = 70	VC2(crest) - 820' ( $K_{provided} = 70$ )
$K_{sag}$ (required) = 64	VC3(sag) - 330' ( $K_{provided} = 65$ )
Clearance over Existing Roadways	16.5'
Clearance over RR	N/A

**Table 6-16 | Vertical Geometry: Ramp E – SB Express Lanes Egress**

Criteria	Proposed Design Value
Design Speed	35 MPH (VC1 and VC2) 45 MPH (VC3 and VC4)
Minimum Grade	0.079%
Maximum Grade	5.000%
Vertical Curve Lengths	VC1(sag) - 268' ( $K_{provided} = 49$ )
$K_{crest}$ (required) = 98	VC2(crest) - 334' ( $K_{provided} = 47$ )
$K_{sag}$ (required) = 79	VC3(crest) - 381' ( $K_{provided} = 98$ )
	VC4(sag) - 404' ( $K_{provided} = 79$ )
Clearance over Existing Roadways	16.5'
Clearance over RR	N/A

## 6.5 Access Management

Westbound to southbound access at SW 22<sup>nd</sup> Ave will be provided to bus traffic only by a signalized full median opening.

Access management throughout the rest of the study limits will remain the same.

## 6.6 Design Variations and Exceptions

Design variations necessary for the preferred alternative, both along I-95 and Broward Blvd. include the following:

### 6.6.1 Design Variations

I-95:

- Design Speed
  - Variation required as per 2018 FDM Table 201.4.1 regarding design speed of SIS facilities on the State Highway System, 65 mph provided, 70 mph required
- Shoulder Width
  - Variation required for substandard shoulder width along I-95 mainline, 10-ft provided, 12-ft required
- Horizontal Curve Lengths (ramps)
  - Variation required due to minimum horizontal curve length not met along Ingress/Egress ramps, minimum 200-ft provided, 400-ft required
- Border Width
  - Variation required due to border width not met, minimum 3.17-ft provided, 94-ft required
- Escape Lanes
  - Variation required due to spacing constraints not allowing for escape lanes at proposed egress ramps

**Broward Blvd:**

- Horizontal Curve Length
  - Variation required due to minimum horizontal curve length not met, minimum 175.24-ft provided, 400-ft required
- Bicycle Lane width
  - Variation required due to proposed bicycle lanes transitioning down to match existing east of NW 18th Avenue and stay within the existing right-of-way, minimum 4-ft provided, 7-ft required
- Border Width
  - Variation required due to border width not met, minimum 7-ft provided, 14-ft required
- Median Width
  - Variation required due to minimum median width not met, 16.3-ft provided, 22-ft required
- Shoulder Width
  - Variation for NB to WB exit ramp, 2.5-ft provided, 10-ft required
- Vertical Clearance
  - Variation for Broward Blvd bridge over South Florida Rail Corridor 23'-8" provided, 24'-3" required for potential future electrification

## 6.6.2 Design Exceptions

I-95:

- Lane Width
  - Exception for lane width consistent with 3A-1 design within the PD&E study limits, 11-ft provided, 12-ft required
- Shoulder Width
  - Exception for shoulder width consistent with 3A-1 design within the PD&E study limits, 7-ft provided, 12-ft required
  - Exception for shoulder width along southbound 95 express lanes required to provide the greatest possible merging length for Ramp C connection to SB 95 Express, 3-ft provided, 12-ft required

## 6.7 Lighting

The existing lighting conditions as constructed by I-95 Express phase 3A-1 will be maintained in the proposed improvements.

## 6.8 Utilities

The preferred alternative can possibly impact the distribution overhead line crossing I-95 approximately 650' north of Davie Blvd. and a high voltage electrical transmission line crossing I-95 over the NW 6<sup>th</sup>. Underground utilities may be impacted by drainage modifications, new signal mast arms, and overhead sign structures. Resurfacing will also impact existing manholes located within the pavement. Coordination during the design phase will be required with the utility owners.

## 6.9 Preliminary Drainage Analysis

### 6.9.1 Proposed Drainage Systems

The proposed drainage design consists of closed collection and conveyance drainage systems interconnected by piping to modified existing stormwater treatment facilities and French drains to collect, convey, treat, and attenuate stormwater runoff for the controlling design storm events. The proposed treatment facilities, consisting of wet and dry ponds, swales and French Drain have been determined based on an analysis of various factors which is discussed in Section 7.0 of the Preliminary Drainage Report. The proposed stormwater management facility type is based on the facility type that provides the most practical, cost-effective solution for the Department to achieve the treatment and attenuation permitting requirements associated with the proposed improvements, while also minimizing impacts to the public. The recommended drainage design and stormwater management facility type is discussed later in the following sections.

## 6.9.2 Stormwater Management System Design

### 6.9.2.1 Project Datum

The vertical datum used in this report and calculations is NAVD 88. The datum shift was determined using the National Geodetic Survey VERTCON online tool.

The datum shift used to convert NGVD 29 to NAVD 88 within the study area is summarized below.

**Table 6-17 | Datum Conversion from NGVD 29 to NAVD 88**

Location	Latitude	Longitude	Shift (ft.)
Broward Boulevard	26° 07' 18" N	80° 10' 55" W	(-)1.58

### 6.9.2.2 Control Elevations

#### 6.9.2.2.1 Tailwater Elevations

The SFWMD Technical Memorandum “An Atlas of Eastern Broward County Surface Water Management Basins” was referenced in determining the controlling tailwater elevation(s) of the North and South Forks of the New River. Since the project lies to the east of SFWMD control structures, the canals are tidally controlled, and have no maintained elevation. Accordingly, existing SFWMD permit documentation was referenced in order to determine the average high water (tailwater) elevations of the canals. Based on existing permits for the various drainage systems with the project limits, the tailwater elevations are constant for all systems defined for the project. The average high water elevation of the North Fork of the New River and the South Fork of the New River (C-11) Canal was determined to be 2.00 ft. NGVD (0.42 ft NAVD). In the Preliminary Drainage Report, refer to Figure 8 of Appendix A for the SFWMD Technical Memorandum, and to Appendix H for existing permit documentation.

#### 6.9.2.2.2 Seasonal High Groundwater Table

Although no in-situ geotechnical data has been provided by FDOT for this project, preliminary research was performed to determine the seasonal high groundwater table elevation (SHGWT) within the study limits. Specifically, the average high water data for the adjacent North and South Forks of the New River, which control and influence groundwater table elevations throughout the project area, was used to determine the assumed SHGWT elevation of 2.00 ft. NGVD (0.42 ft. NAVD). The assumed SHGWT elevation is consistent with existing permits for the various drainage systems within the project limits, as well as existing permits for adjacent properties.

### 6.9.2.3 Roadway Base Protection

FDOT has established the following criterion for base protection of roads:

- Freeways and Rural Multilane Mainline facilities shall provide a 3-ft clearance for the roadway base course above the base clearance water elevation (i.e. seasonal high ground water table,

SHGWT). Using a base clearance water elevation (SHGWT) of 2.00 ft. NGVD (0.42 ft. NAVD), the minimum roadway base elevation allowable for the project along I-95 mainline is 5.00 ft. NGVD (3.42 ft. NAVD).

- Ramps shall provide a 2-ft. clearance for the roadway base course above the base clearance water elevation (SHGWT). Using a base clearance water elevation (SHGWT) of 2.00 ft. NGVD (0.42 ft. NAVD), the minimum roadway base elevation allowable for the ramps is 4.00 ft. NGVD (2.42 ft. NAVD).
- All other facilities shall provide a 1-ft. clearance for the roadway base course above the base clearance water elevation (SHGWT). Using a base clearance water elevation (SHGWT) of 2.00 ft. NGVD (0.42 ft. NAVD), the minimum roadway base elevation allowable for all other facilities is 3.00 ft. NGVD (1.42 ft. NAVD).

#### 6.9.2.4 Conceptual Drainage Design Recommendations

Based on the proposed roadway improvements, the existing dry detention swales and ponds will be impacted and reduced by roadway widening and new ramps along I-95. However, the portions of select stormwater management facilities that will remain, will be modified, expanded, deepened, have their side slopes steepened, and/or improved with retaining wall in lieu of embankment in order to accommodate the increased runoff from the roadway and new ramps, as well as any loss of existing storage. Existing control structures for Broward Boulevard and the Park & Ride drainage systems will remain in place, with a new structure proposed to control the two ponds on either side of Broward Boulevard. All control structures for the I-95 drainage systems will be modified. All existing outfalls will remain in place, and will continue to function as in the existing condition. AdICPR hydrologic and hydraulic models demonstrate that pre-vs-post discharge requirements are met, and that peak stages are not increased by the project.

The proposed stormwater management facilities meet FDOT drainage criteria, as well as SFWMD permit (water quality and quantity) criteria. Refer to the Appendix C from the Preliminary Drainage Report for the Post-Development Drainage Maps for the preferred interchange design, Post-Development Land-Use Tables included in Appendices D through Appendix G from the Preliminary Drainage Report for each system, as well as pre-development and post-development curve number calculations and area breakdowns. The peak discharge rates and peak stages for the 10-year – 24-hour, 25-year – 72-hour, and 100-year – 24-hour design storms are shown in the Drainage System Summary Tables, for each System included in Appendices D through G from the Preliminary Drainage Report for each system.

### 6.10 Structures

#### 6.10.1 Horizontal and Vertical Clearance

The primary function of vertical clearance to structures going over roadways or railroads consists of providing safe passage to tall design vehicles and rail cars beneath these structures. The FDOT Florida Design Manual (FDM) specifies that the highest point on the roadway below a bridge structure must

measure a minimum of 16.5-ft to the lowest point (low member) beneath the structure. This includes provisions for a future underpass resurfacing of 6 inches over the existing pavement elevation. For railroad underpasses, a minimum 23.5-ft vertical clearance is recommended which includes allowance for 12-in. of railroad track adjustments. The South Florida Rail Corridor (SFRC) however, has a greater clearance requirement set at 24.25-ft for electrified rail facilities.

AASHTO requires a minimum vertical clearance of 16-ft for structures passing over roadways including auxiliary lanes and the usable width of shoulders. Further guidance allows a minimum vertical clearance of 14-ft in highly urbanized areas provided there is an alternate facility with the minimum 16-ft clearance. For railroad underpasses, AASHTO recommends a minimum vertical clearance of 23-ft.

The vertical clearance for all the bridges along Broward Boulevard meet the design criteria. Coordination during the design phase will be required with SFRC.

The horizontal clearance underneath the existing bridges is the lateral distance from the roadway edge of travel lane to the bridge abutment or piers. The horizontal clearance requirements for most roadside features and objects are based on providing the required clear zone. Both the FDOT FDM and AASHTO require bridge piers and abutment walls to be placed outside the clear zone unless shielded by a crash worthy barrier. For roadways over railroads, the FDOT PPM requires 18-ft horizontal clearance with crash walls or 25-ft if no crash walls are provided from the centerline of the outside tracks to the face of pier cap, bent cap, or any other adjacent structure.

The bridge over I-95 is adequately protected by barrier walls at the outside piers and guardrails at the median pier. The minimum horizontal clearance for the bridges over the railroad tracks is approximately 15-ft. which is less than the required 18-ft clearance with crash walls. This existing horizontal clearance deficiency may have been documented during construction of the crash walls and a design variation obtained.

## **6.10.2 Broward Blvd. over SFRTA RR and Access Road to Park and Ride Facility**

### **6.10.2.1 Bridge Analysis**

The proposed improvements require the bridge width be increased to accommodate the proposed new roadway typical section. Major modifications to the under route are also proposed for the bus terminal facility. Widening the existing bridge is not a viable option due to the deficient vertical and horizontal clearances, the age of the structure, and the proposed improvements beneath, therefore, replacement is the only viable and reasonable option for this alternative.

This bridge is proposed to be replaced to facilitate the installation of the bus terminal facility beneath the elevated roadway. The bridge will span over the transit access facility as well as the access road and the existing S.C.L. railroad tracks and right-of-way.



### 6.10.2.2 Proposed Bridge Configuration

Based on the Preferred Alternative, PD&E Preliminary Concept Plans were prepared to illustrate the proposed bridge configuration at each crossing. Additionally, the Concept Plans include typical sections and construction phasing plans for each bridge.

The new bridge structure is approximately 415-ft long consisting of 4 spans ranging in lengths from 90-ft to 120-ft. The substructure consists of vertical face MSE wall type abutments and multi-column piers. All substructure units are anticipated to be parallel and situated 90° from the centerline of construction. The locations of the bridge abutments are dictated by the proximity of the sidewalk and bus U-Turn roadway on the west side and the Railroad right-of-Way on the east end. The piers are situated within proposed traffic islands and positioned to honor the FDM requirements of six feet to the edge of travel lane.

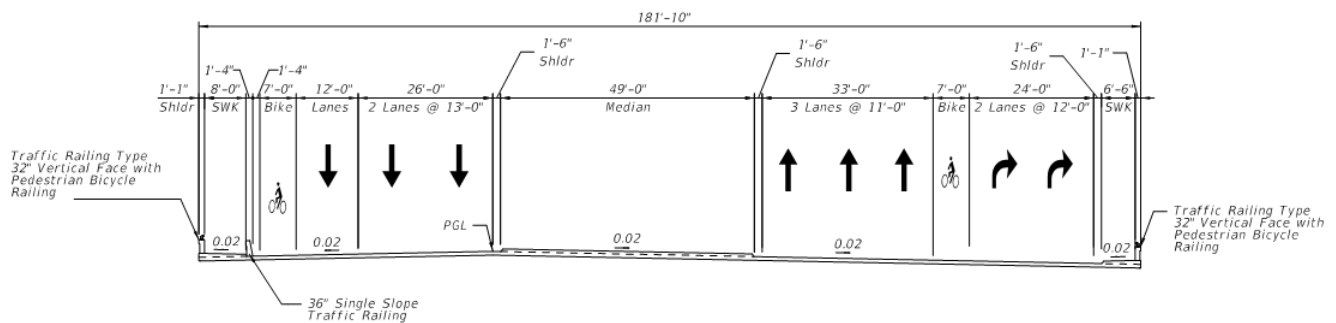
The bridge deck width carries the proposed typical section and varies from 159'-10" to 181"-10" to accommodate the eastbound taper for the I-95 SB on-ramp.

The vertical clearance beneath the bus terminal facility is 14-ft under the pier caps to allow for unobstructed passage of the buses circulating through the facility. The access roadway clearance exceeds the minimum requirement of 16.5-ft and over the railroad track corridor the vertical clearance is 23.67-ft, exceeding the required 23.5-ft for railroad underpasses only. The horizontal clearance meets the criteria requirements for the roadway and railroad corridor. Within the transit facility, standard traffic barrier walls are proposed for the columns adjacent to the edge of pavement without sufficient lateral clearance.

The vertical geometry has been set to achieve the vertical clearances mentioned above as well as meet the existing grades on Broward Boulevard and connections to I-95. The horizontal geometry has been set based on minimizing right-of-way impacts and maintaining adequate bridge width to carry the existing traffic during the phased construction of the proposed new bridge.

The proposed typical section accommodates 3 through lanes, a bike lane and raised sidewalks in the eastbound and westbound directions, as well as 2 lanes eastbound for the access ramps to I-95. The bridge also accommodates a 49-ft raised median for the future bus bay that will connect passengers vertically to the bus terminal facility below. **Figure 6-4** shows the proposed bridge typical section for Broward Boulevard over the SFRTA RR and Access Road to the Park and Ride Facility.

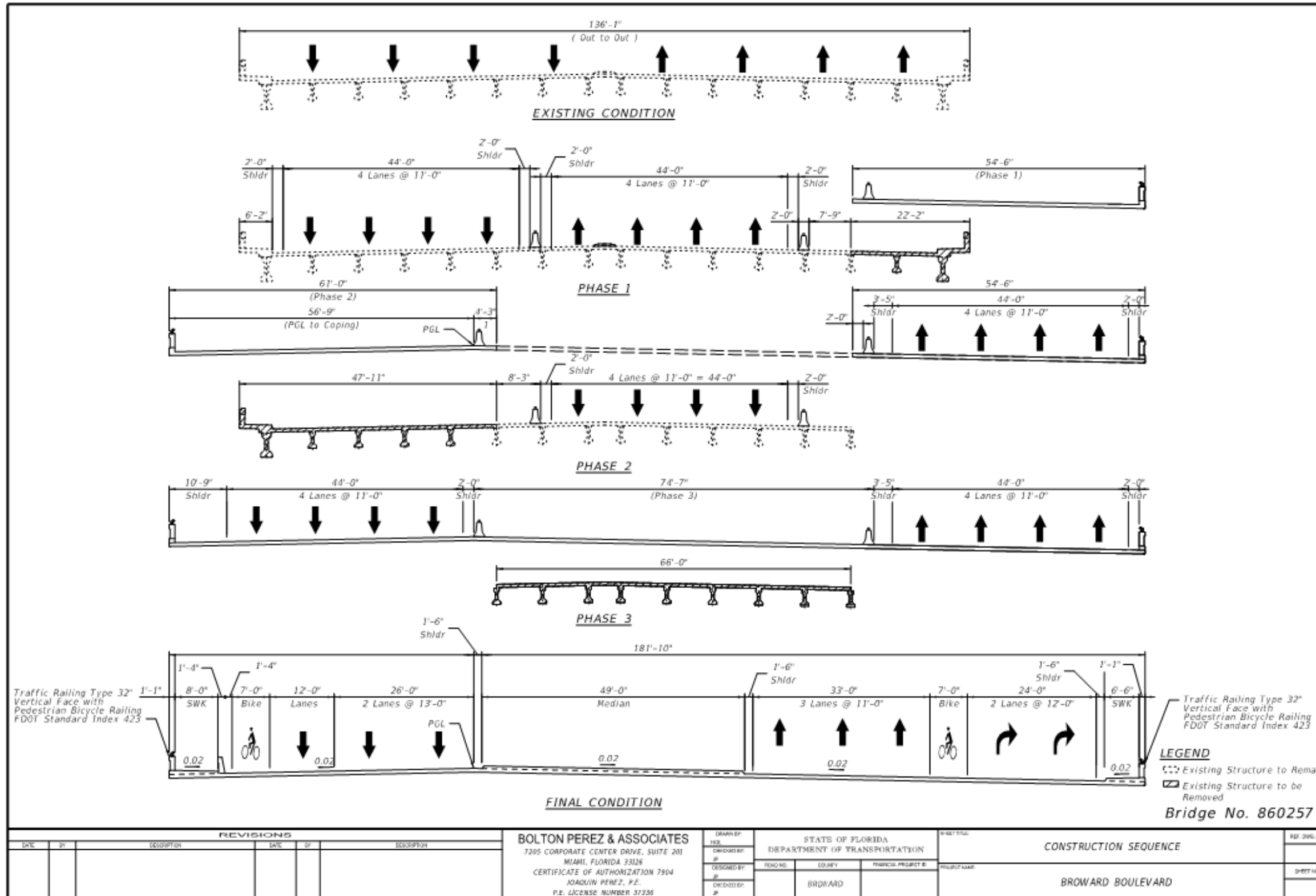
Figure 6-4 | Typical Section: Bridge over SFRTA RR



### 6.10.2.3 Construction Sequence

The existing bridge is proposed to be removed in phases and disposed of during construction of the new bridge. Coordination is on-going with the Department for the location where the demolished bridge debris will be deposited. The bridge replacement will be constructed in three phases while accommodating the existing traffic during the entire reconstruction. During Phase 1 the existing traffic will be shifted to the north on the existing bridge while partially removing a portion of the south side to accommodate construction of a portion of the new bridge. During Phase 2, the eastbound traffic is shifted south to the newly completed portion of the new bridge. The westbound traffic is shifted south on the existing bridge and a portion of the existing bridge on the north side is removed to accommodate construction of the new bridge on the north side. During Phase 3 the westbound traffic is shifted north to the newly completed portion of the new bridge. The remaining center portion of the existing bridge is then removed and the new bridge is completed. In the final phase, the raised sidewalks, intermediate traffic railing and raised median are built, and the new lanes striped delineating the new traffic pattern and bicycle lanes.

Figure 6-5 | Construction Sequence





### 6.10.3 Broward Boulevard over I-95

The proposed improvements require the bridge width be increased to accommodate the proposed new roadway typical section. Major modifications to the under route are also proposed for the new I-95 Express Lanes. Widening the existing bridge is not a viable option due to the required horizontal clearance required for the Express Lanes and the proposed improvements beneath, therefore, replacement is the only viable and reasonable option for this alternative.

This bridge is proposed to be replaced to accommodate the new Express Lanes beneath and the proposed wider bridge typical section. The bridge will span over I-95 and the new Express Lane facility.

#### 6.10.3.1 Proposed Bridge Configuration

The new bridge structure is approximately 276-ft long consisting of 2 spans of 138-ft long each. The substructure consists of vertical face MSE wall type abutments and multi-column piers. All substructure units are anticipated to be parallel and situated approximately 90° to the tangent of the horizontal curved alignment. The locations of the bridge abutments are dictated by the proximity of the roadway shoulders and traffic railing barrier on both the east and west side of the bridge. The pier is situated within the grass median shielded by traffic railing barriers or guardrail in accordance with the FDM requirements of clear zone criteria.

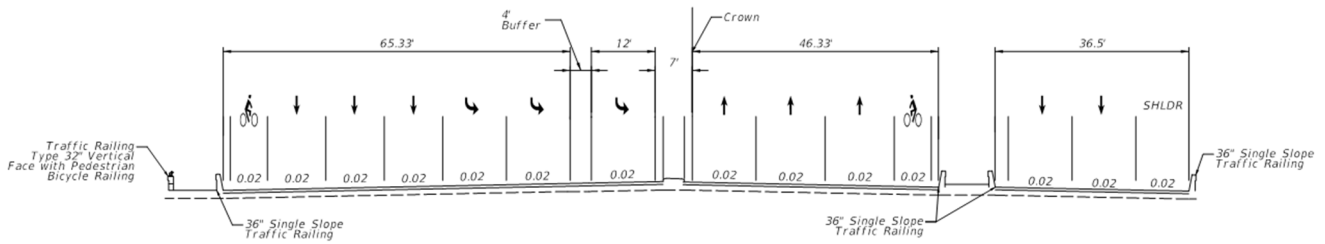
The bridge deck width carries the proposed typical section and varies from 180'-1" to 198'-10" to accommodate the westbound left turn movement to the I-95 SB on-ramp.

The vertical clearance to the I-95 mainline roadway beneath is 16.5-ft under the superstructure beams. The horizontal clearance meets the criteria requirements based on providing the appropriate shielding barriers to the substructure elements.

The vertical geometry has been set to achieve the vertical clearances mentioned above as well as meet the existing grades on Broward Boulevard and connections to and from I-95. The horizontal geometry has been set based on minimizing right-of-way impacts and maintaining adequate bridge width to carry the existing traffic during the phased construction of the proposed new bridge.

The proposed typical section accommodates 3 through lanes, a bike lane and raised sidewalks in the eastbound and westbound directions, as well as 2 lanes westbound to accommodate the northbound to westbound off-ramp from I-95. The bridge also accommodates a variable width raised median separating the westbound and eastbound traffic. **Figure 6-6** shows the proposed bridge typical section for Broward Boulevard over I-95.

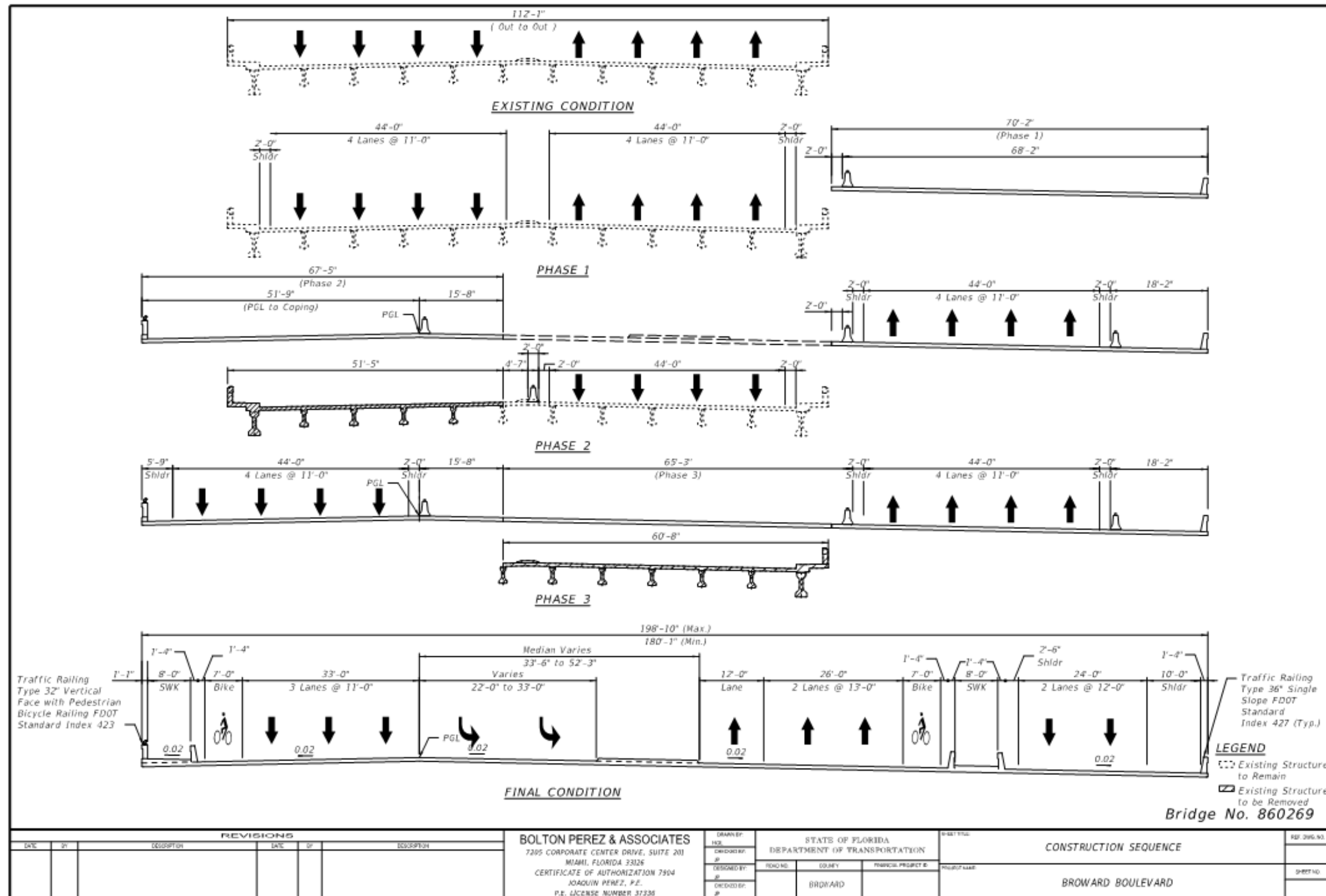
Figure 6-6 | Typical Section: Bridge Over I-95



### 6.10.3.2 Construction Sequence

The existing bridge is proposed to be removed in phases and disposed of during construction of the new bridge. Coordination is on-going with the Department for the location where the demolished bridge debris will be deposited. The bridge replacement will be constructed in three phases while accommodating the existing traffic during the entire reconstruction. During Phase 1 the existing traffic will remain on the existing bridge while a portion of the new bridge on the south side is built. During Phase 2, the eastbound traffic is shifted south to the newly completed portion of the new bridge. The westbound traffic is shifted south on the existing bridge and a portion of the existing bridge on the north side is removed to accommodate construction of the new bridge on the north side. During Phase 3 the westbound traffic is shifted north to the newly completed portion of the new bridge. The remaining portion of the existing bridge is then removed and the new bridge is completed. In the final phase, the raised sidewalks, intermediate traffic railing and raised median are built, and the new lanes striped delineating the new traffic pattern and bicycle lanes.

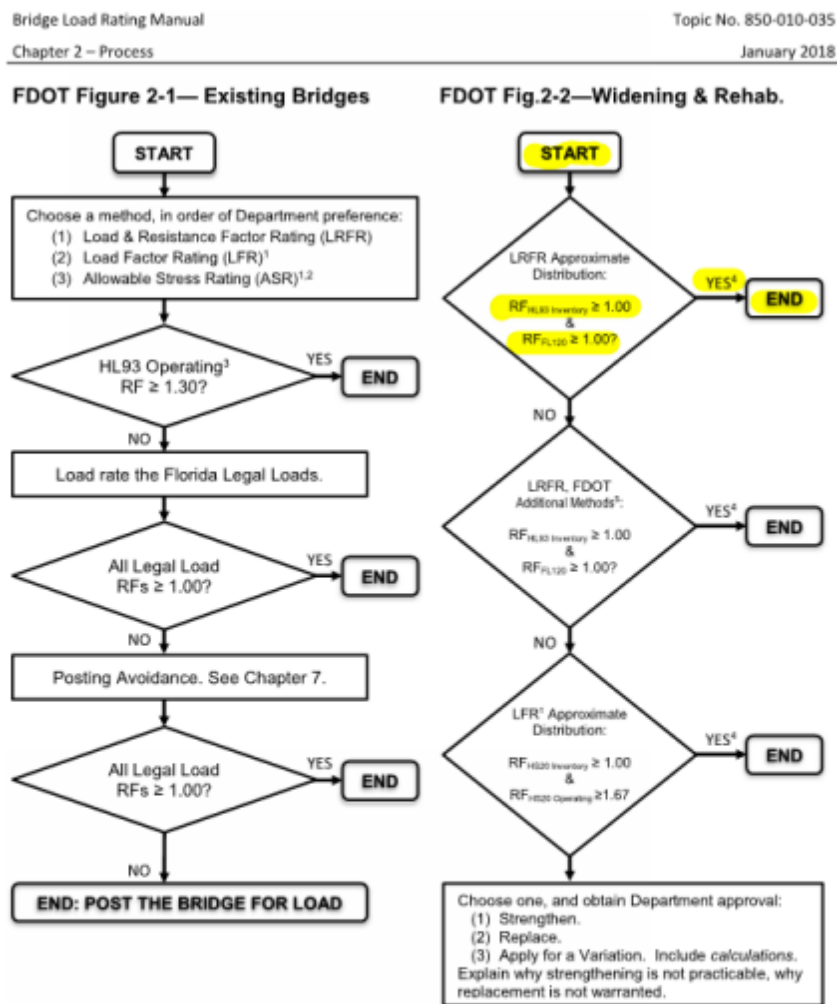
Figure 6-7 | Construction Sequence



### 6.10.4 I-95 over NW 6th Street (Sistrunk Blvd) Bridge Widening

The I-95 over NW 6th Street bridge widening is proposed in the Northbound and Southbound directions. This would be a second widening following widening being performed as part of the I-95 Phase 3A-1 project. Since widening was possible in the Phase 3A-1 project in accordance with the FDOT Bridge Load Rating Manual flowchart (Figure 6-8), a future widening should not be an issue. The loading rating data shows the controlling rating to be the permit truck at 1.0 and a HL-93 inventory of 1.04. The widening portion would be supported on Florida-I 36 beams in order to avoid lowering the vertical clearance of the bridge.

Figure 6-8 | FDOT Bridge Load Rating Manual Flowchart





## 6.10.5 Ingress/Egress Ramps

### 6.10.5.1 Ramp B

This ramp is a four-span double steel box girder bridge. The typical section consists of steel box girders with an overall superstructure height of 7'. The deck width is 29'-8" and includes two 36" Single-Slope traffic railings. The bridge contains end bents at the beginning and end of the bridge as well as three interior supports. Due to potential vertical clearance issues, piers 2, 3 and 4 are shown as integral. Pier 3 is an integral straddle bent due to limited room for pier placement while the braided ramp crosses over I-95.

### 6.10.5.2 Ramp C

This ramp is a two-span steel plate girder bridge. The typical section consists of steel plate girders with an overall superstructure height of 6'. The deck width is 30'-0" and includes two 42" Single-Slope traffic railings. The bridge contains end bents at the beginning and end of the bridge as well as an interior support in the median of I-95. The interior support is shown as a traditional pier since it does not interfere with the required 16'-6" required vertical clearance.

### 6.10.5.3 Ramp D

This ramp is a three-span double steel box girder bridge. The typical section consists of steel box girders with an overall superstructure height of 7.5'. The deck width is 30'-0" and includes two 42" Single-Slope traffic railings. The bridge contains end bents at the beginning and end of the bridge as well as two interior supports. Due to potential vertical clearance issues, pier 2 is shown as an integral straddle bent. Pier 3 may have sufficient clearance to act as a non-integral straddle bent as well as provide a more economical option. Both interior supports are straddle bents due to limited room for pier placement while the braided ramp crosses over I-95.

### 6.10.5.4 Ramp E

This ramp is a six-span double steel box girder bridge. The typical section consists of steel box girders with an overall superstructure height of 7.5'. The deck width is 30'-0" and includes two 42" Single-Slope traffic railings. The bridge contains end bents at the beginning and end of the bridge as well as five interior supports. Due to potential vertical clearance issues, piers 3, 4 and 5 are shown as integral. Piers 3 and 4 are straddle bents due to limited room for pier placement while the braided ramp crosses over I-95.

## 6.10.6 Aesthetics

The bridge Aesthetics Level (Level One or Level Two) will be determined during the final design phase.

## 6.10.7 Potential ITS/TSM&O Features

The proposed ITS improvements will consist of typical ITS devices and will be added to the existing ITS system that is currently connected to the FDOT District Four RTMC. Because of the recent Express Lanes projects the ITS infrastructure on the I-95 freeway mainline within the study area does not require

additional improvements. However below are potential improvements to the existing Transportation System Management & Operations (TSM&O)/ITS systems on Broward Blvd and for the Broward Blvd and Park and Ride:

**Additional/Upgrade CCTV camera locations:** Due to the geometry of Broward Blvd to the east of I-95 and the location of the existing CCTV, it is recommended to install an additional CCTV camera location near the W 18 Avenue intersection to ensure 100% video coverage of this area of Broward Blvd. This CCTV camera shall also be able to view the existing ADMS east of W 18 Avenue for the eastbound direction of travel. Additionally the CCTV camera location near westbound to northbound I-95 shall be upgraded to a high definition (HD), IP-based CCTV camera. The cabinet and cabinet equipment shall also be upgraded.

**Broward Park and Ride Parking Availability System:** A parking availability system will inform motorists of how many parking spaces are available within the Park and Ride facility. The required components for this system include an embedded DMS on a static sign prior to the entrance(s) to the Park and Ride, a type of vehicle detection system to communicate with the DMS sign to track the number of vehicles entering and exiting the facility, and a minimum of two (2) CCTV cameras to monitor the parking spaces within the facility and the embedded DMS. These ITS devices will need to communicate with the District Four RTMC.

**Power Distribution System:** Install a power distribution system for AMS complete with permanent generators and automatic transfer switches (ATS) to supply power to the traffic signal systems as well as the AMS ITS devices within the study limits. The components of this system would include generators, ATS, conduit, service wire, transformers, etc. The generators shall be sized approximately the run the equipment in the instance of a power failure.

**Fiber Optic Communication System:** Upgrade the existing FO backbone to ninety-six (96) strand fiber optic cable (FOC). From a splice vault to the near the bottom of the southbound I-95 off-ramp to a splice vault near W 18 Avenue the existing twelve (12) strand FO backbone shall be replaced with a minimum of one ninety-six (96) strand FOC. The new FOC shall be spliced into the existing ninety-six (96) strand FOC.

## 6.11 Maintenance of Traffic

### 6.11.1 Southbound Express Lanes Egress to Broward Blvd. and Northbound Express Lanes Ingress from Broward Blvd.

The proposed roadway widening of I-95 for the Southbound Express Lanes Egress to Broward Blvd and Northbound Express Lanes Ingress from Broward Blvd will be accomplished in two phases. The existing I-95 traffic lane configuration will remain open throughout the widening. During Phase 1, the existing lanes will be temporarily restriped to shift towards the inside and widening to the outside will occur in both the northbound and southbound directions. During Phase 2, existing traffic lanes will be shifted to the

outside and the Ingress/Egress ramps to enter/exit Broward Blvd from I-95 express will be constructed within the inside of I-95 in both the northbound and southbound directions. As a final phase, milling and resurfacing will occur, and the final striping configuration will be placed

### **6.11.2 Northbound I-95 general purpose lanes to Broward Blvd ramp and Northbound Express Lanes Egress to Broward Blvd ramp**

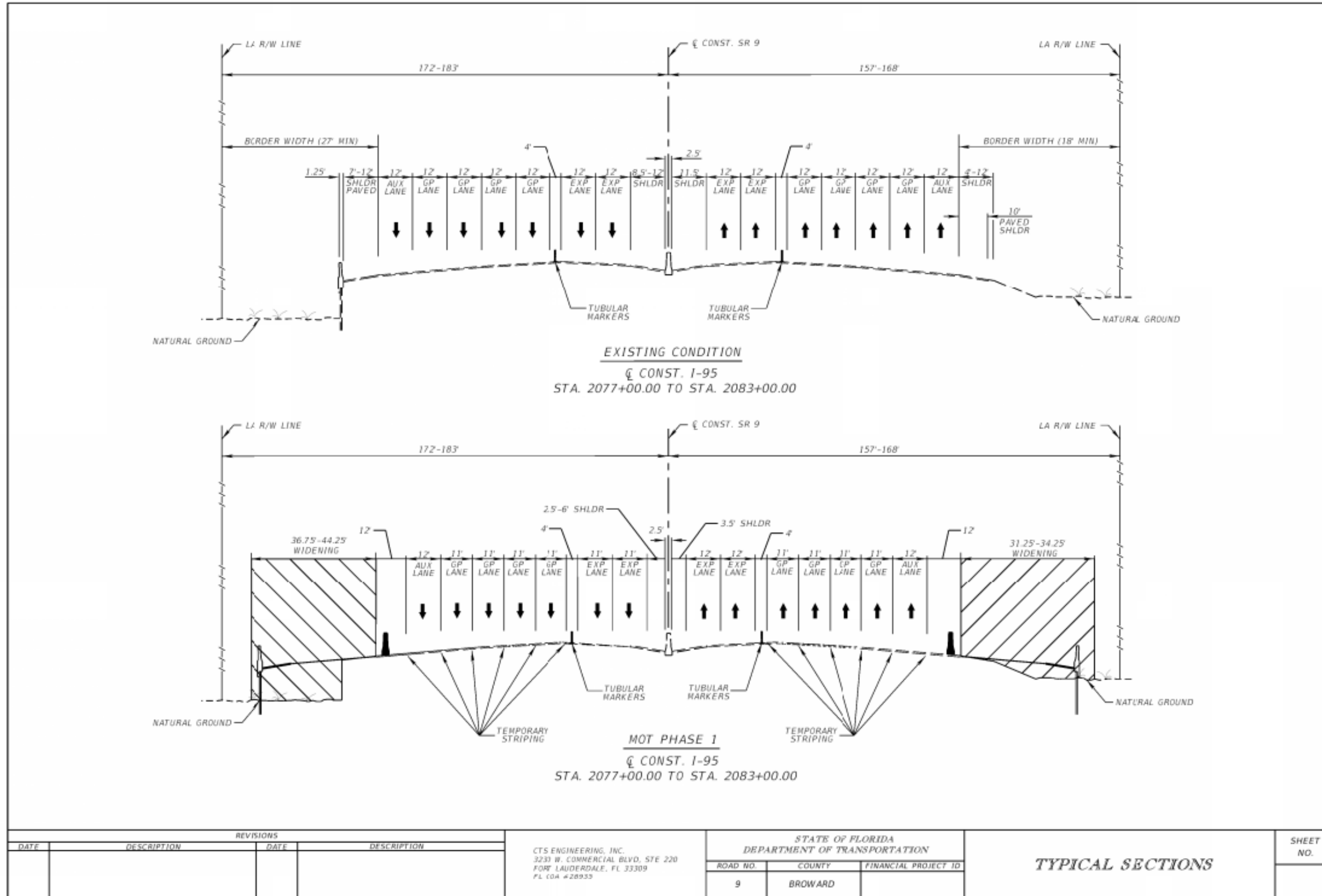
The construction for the northbound I-95 general purpose lanes to Broward Blvd ramp and northbound Express Lanes Egress to Broward Blvd ramp will occur near the overpass with Davie Blvd. During Phase 1 of the construction of these ramps, the northbound general purpose lanes to Broward Blvd ramp will be constructed east of the existing I-95 mainline. During Phase 2, existing traffic lanes will be shifted to the outside and the Northbound I-95 Express Lanes egress ramp to exit to Broward Blvd from I-95 express will be constructed within the inside of northbound I-95. As a final phase, milling and resurfacing will occur, and the final striping configuration will be placed.

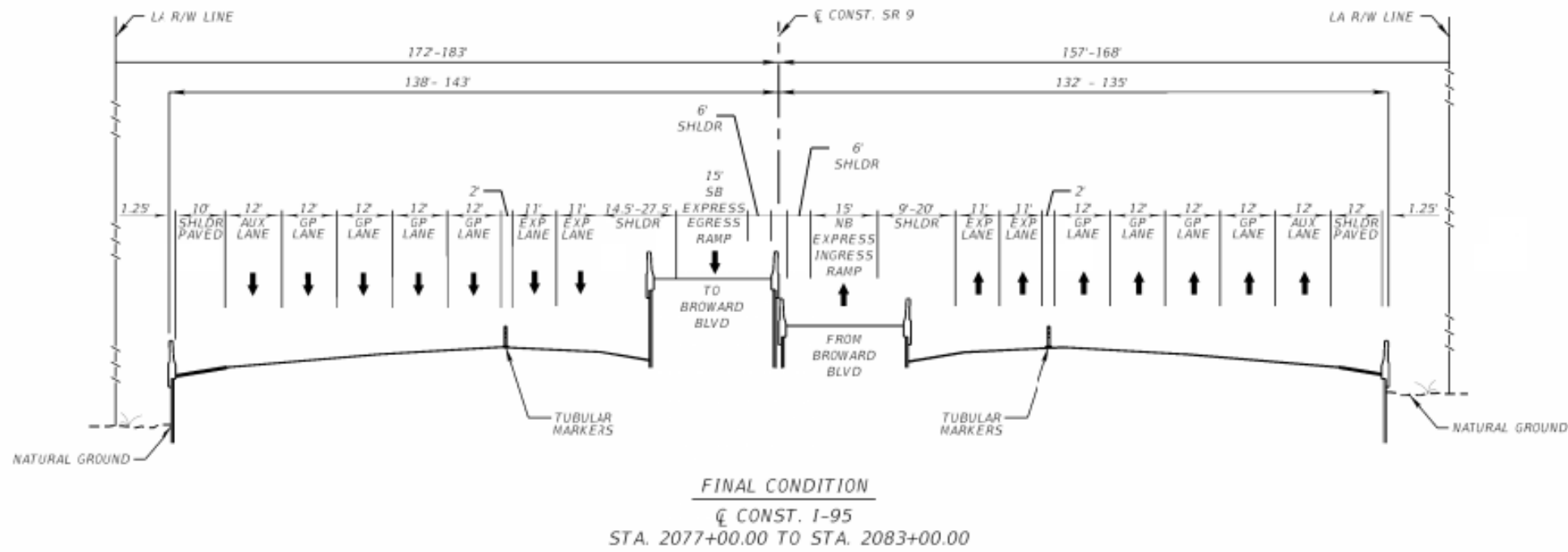
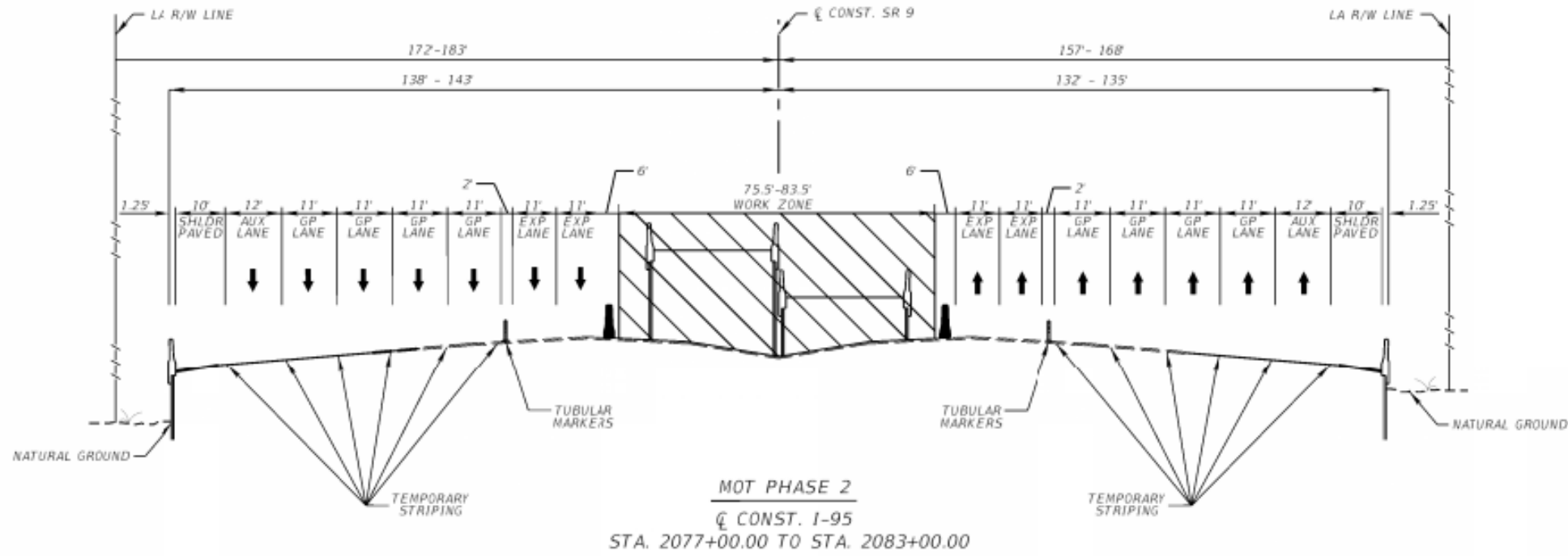
### **6.11.3 Miscellaneous Overhead Structures**

For construction of overhead structures (bridges, sign panels) intermittent detours, lane shifts, lane closures and traffic pacing will be needed for bridge work and span sign structure placement. It is recommended to follow techniques described in the FDM Chapter 240.7.1.1.



Figure 6-9 | Maintenance of Traffic Typical Sections





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

CTS ENGINEERING, INC.  
 3233 W. COMMERCIAL BLVD, STE 220  
 FORT LAUDERDALE, FL 33309  
 FL 004 #28933

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	BROWARD	

**TYPICAL SECTIONS**

SHEET NO.

## 6.12 Cost Estimates

A construction cost estimate for the preferred alternative was prepared using FDOT's LRE program. The construction cost estimate that was prepared for the Modified Displaced Left Alternative.

## 6.13 Transit Improvements

Broward Blvd.'s elevation over I-95 creates vertical access challenges for transit users, bicyclists, and pedestrians looking to connect with the transit services available in the Park-and-Ride and Transit Station area northwest and southwest of the interchange. The three proposed alternatives for the bridge replacement on the Broward Interchange all include an envelope – approximately 47-49 feet wide – for a future premium median transit stop. The purpose of this median transit station envelope (future project development) is to improve intermodal connectivity between the transit options on Broward Blvd. and the Park and Ride and Tri-Rail/Amtrak stations below. The median transit station envelope would also be able to accommodate fixed rail; in the event that a fixed rail system were to be built along Broward Blvd. Elevators and other access features would allow passengers to transfer vertically between Broward Blvd. and the proposed pedestrian staging area on the lower level. The 95 Express Bus would circulate around the lower level pedestrian staging area and Park-and-Ride lots 1, 2, and 3; northwest of the interchange. A sidewalk would provide direct access between the pedestrian staging area and Park-and-Ride lots 1, 2, and 3. A covered walkway would provide direct access between the pedestrian staging area and Park-and-Ride lot 4, the Tri-Rail/Amtrak station southwest of the interchange, and all bus stops located in front of the rail station.

## 6.14 Value Engineering Review

A Value Engineering review was conducted during the week of January 22, 2018 through January 26, 2018. For more information on the outcome of this review, refer to **Appendix D** – VE Report.

## 7.0 List of Technical Reports Completed for the Project

- Air Quality Technical Memorandum
- Contamination Screening Evaluation Report
- Cultural Resource Assessment Survey
- Natural Resources Evaluation
- Noise Study Report
- Systems Interchange Modification Report
- Preliminary Drainage Analysis Report

# Appendix A

## Concept Plans



# Appendix B

## Typical Section Package

# Appendix C

## Public Meetings Documentation

# Appendix D

VE Report

# Appendix E

## Transit Maps

# Appendix A

## Concept Plans

CONCEPT PLANS COMPONENTS

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

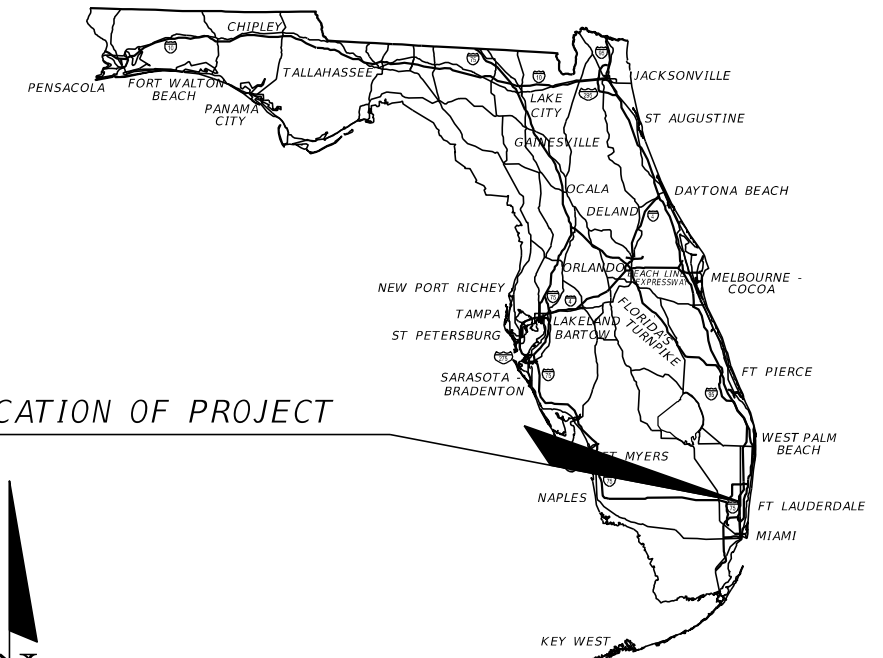
CONCEPT PLANS

FINANCIAL PROJECT ID 435513-1-22-02

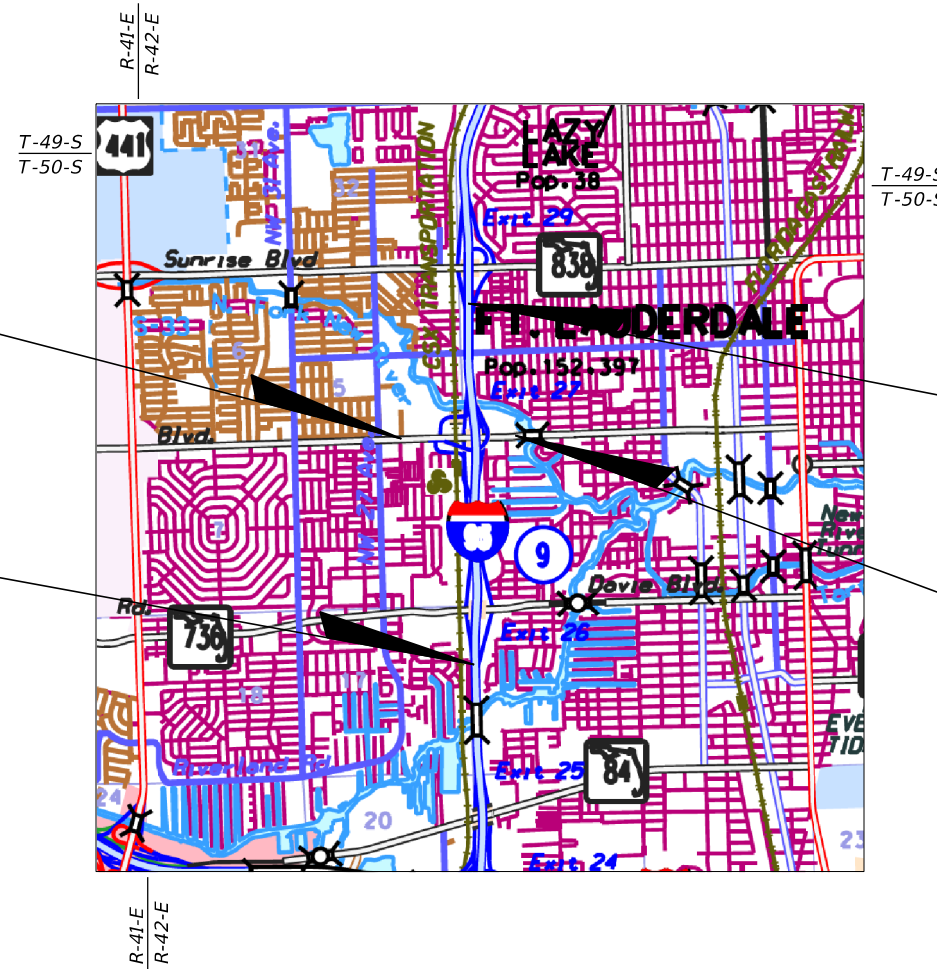
BROWARD COUNTY (86100)  
STATE ROAD NO. 842/BROWARD BLVD. (86006000)  
STATE ROAD NO. 9/I-95 (86070000)

INDEX OF CONCEPT PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2 TO 13	CONCEPT PLANS
14 TO 18	SIGNING MASTER PLAN
19 TO 20	MAINTENANCE OF TRAFFIC
TS-1 TO TS-1	BROWARD BLVD BRIDGES TYPICAL SECTIONS
TS-3	INGRESS/EGRESS RAMP TYPICAL SECTION
B-1 TO B-2	BROWARD BLVD BRIDGES PLAN AND ELEVATION SHEETS
B1-1 TO B4-2	INGRESS/EGRESS RAMP PLAN AND ELEVATION SHEETS



LOCATION OF PROJECT



BEGIN PROJECT  
BROWARD BLVD FROM  
WEST OF 24TH AVE.

BEGIN PROJECT  
I-95 FROM SOUTH  
OF DAVIE BLVD.

END PROJECT  
I-95 FROM TO SOUTH  
OF SUNRISE BLVD.

END PROJECT  
BROWARD BLVD TO EAST  
OF NW/SW 18TH AVE.

ROADWAY PLANS

ENGINEER OF RECORD:

GUILLERMO J. SUERO, P.E.  
HDR ENGINEERING, INC.  
3250 W. COMMERCIAL BLVD, SUITE 100  
FT. LAUDERDALE, FLORIDA 33309

FDOT PROJECT MANAGER:

ANSON SONNETT, P.E.

GOVERNING DESIGN STANDARDS:

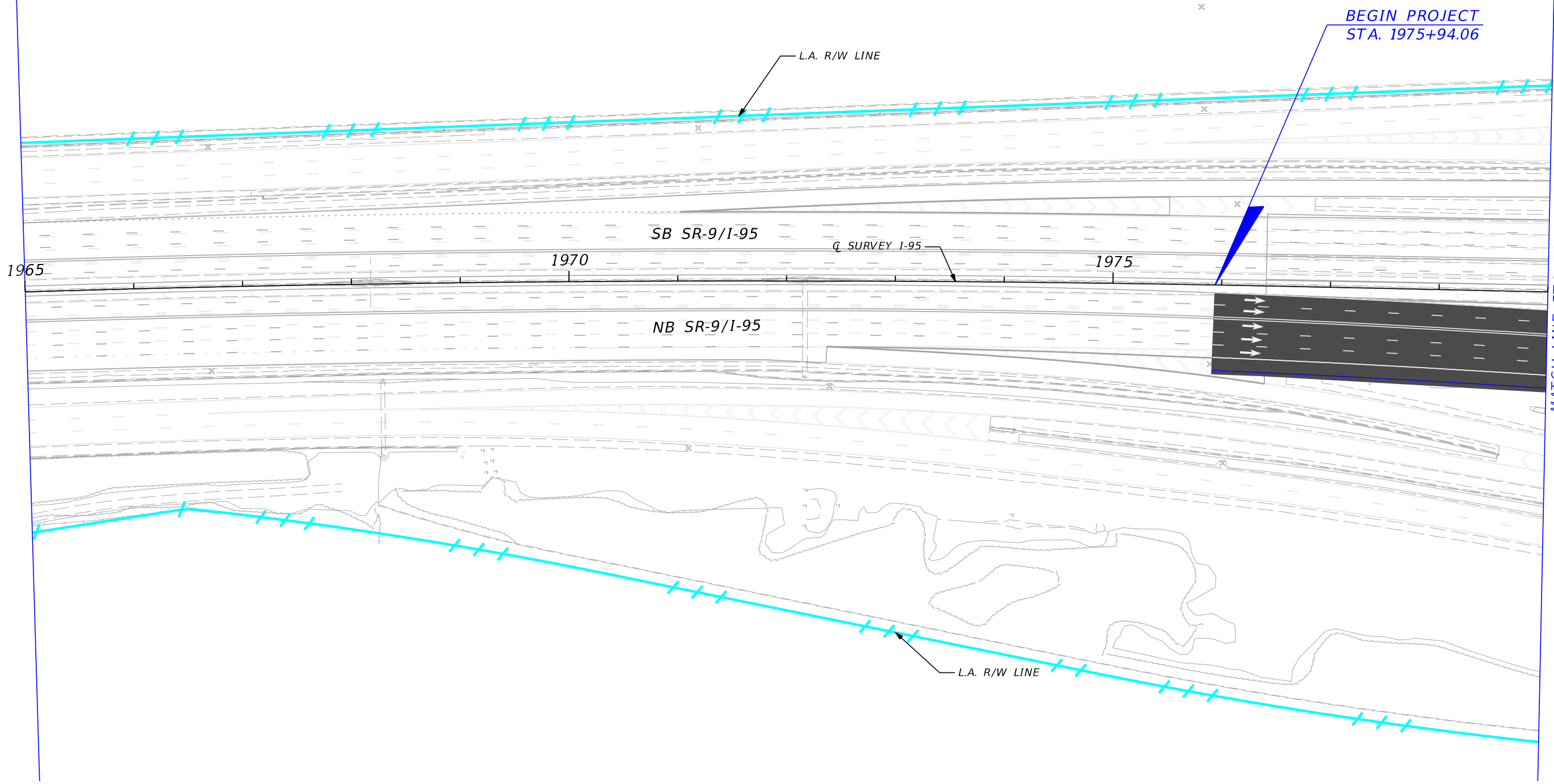
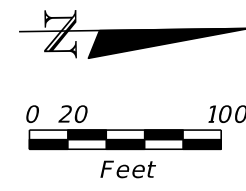
Florida Department of Transportation, FY2018-19 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website: <http://fdot.gov/design/standardplans>

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, July 2018 Standard Specifications for Road and Bridge Construction at the following website: <http://www.fdot.gov/programmanagement/Implemented/SpecBooks>

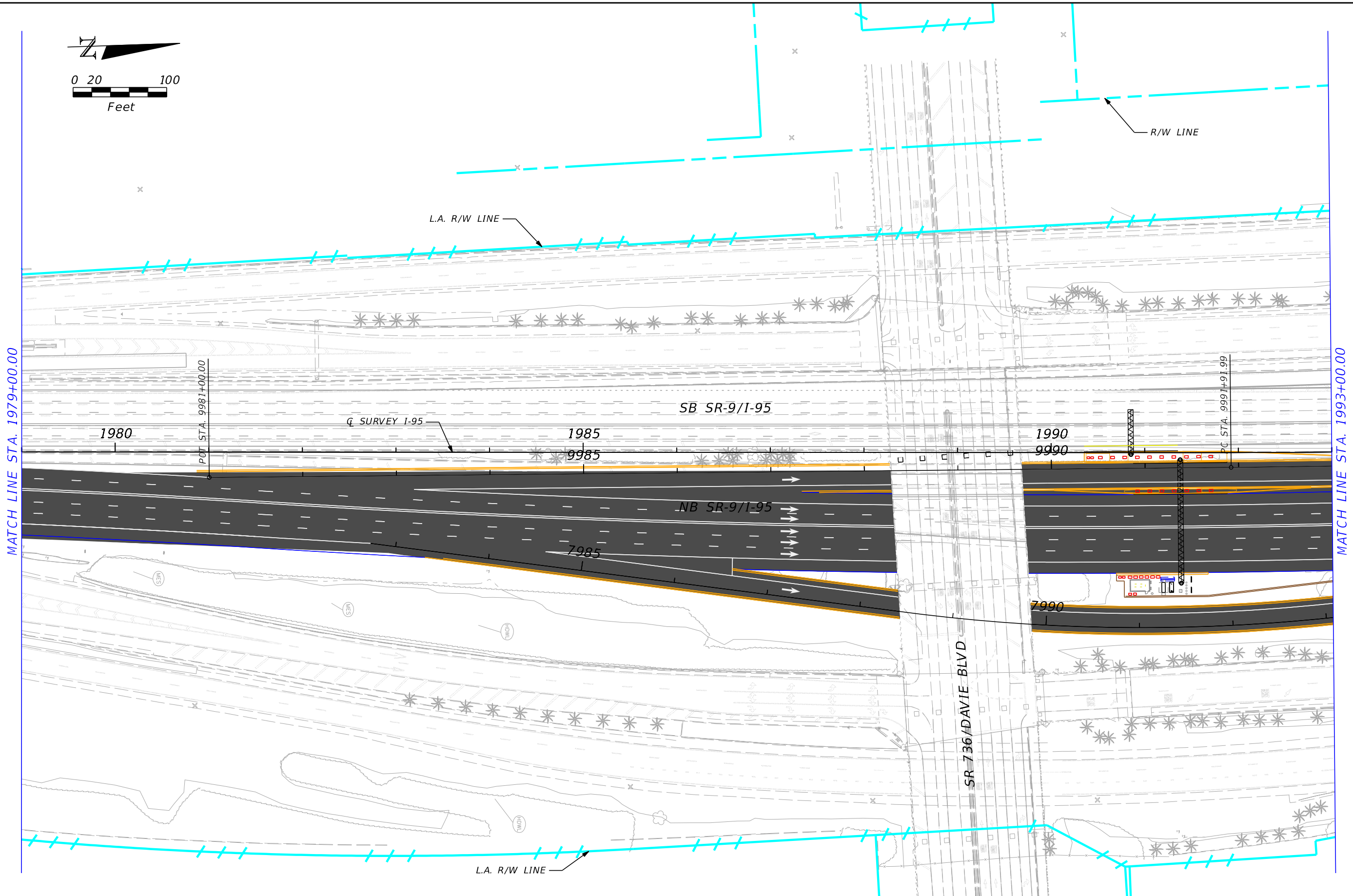
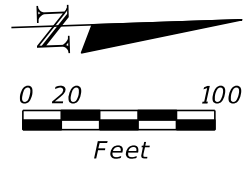
CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
		1



MATCH LINE STA. 1979+00.00

REVISIONS				GUILLERMO J. SUERO, P.E. P.E. LICENSE NUMBER 49224 HDR Engineering, Inc. 3250 W. Commercial Blvd, Suite 100 Ft. Lauderdale, FL 33309 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		2
					842	BROWARD	435513-1-22-02		

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

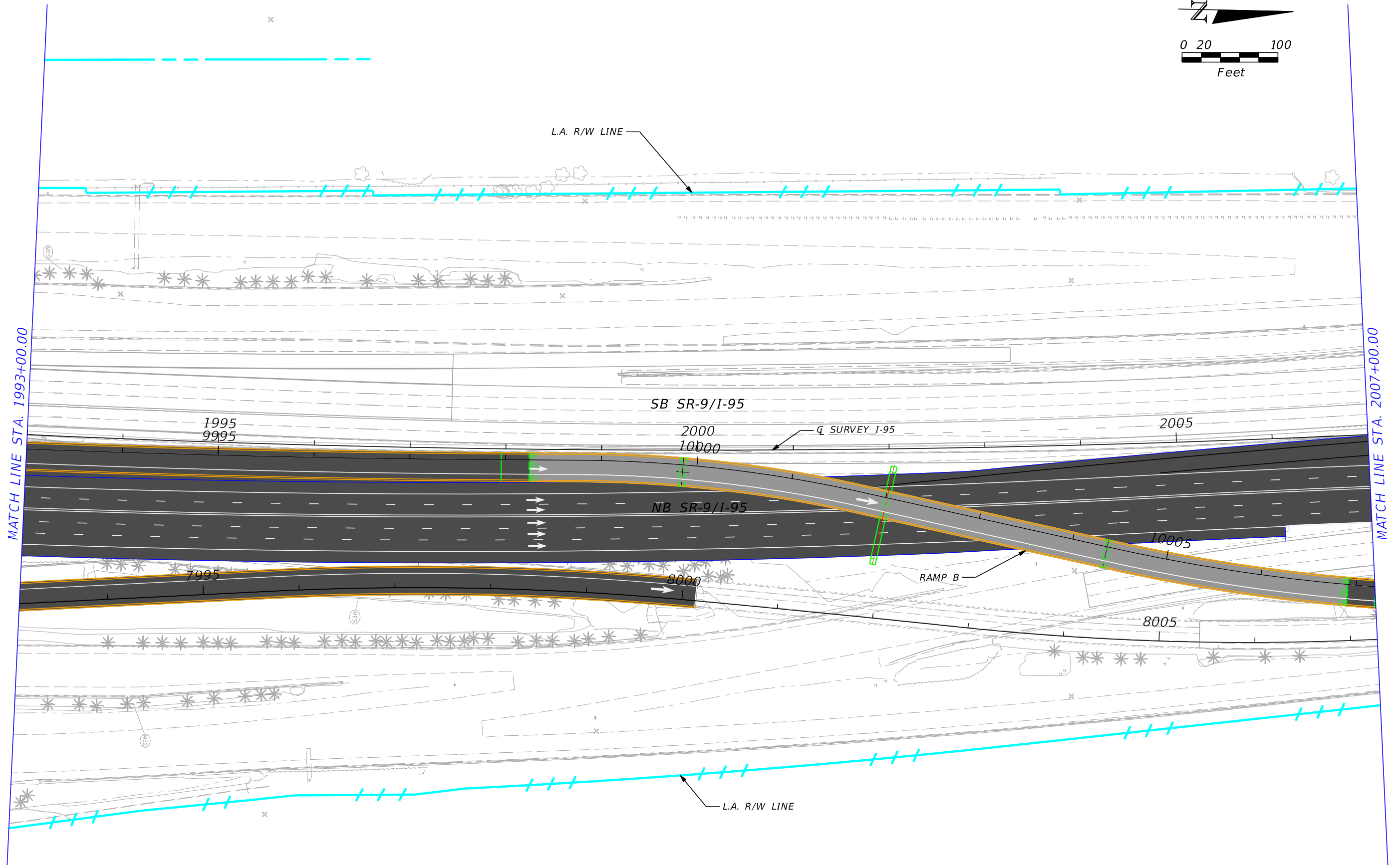
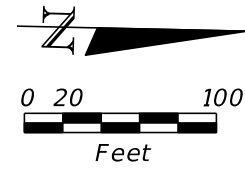


MATCH LINE STA. 1979+00.00

MATCH LINE STA. 1993+00.00

REVISIONS				GUILLERMO J. SUERO, P.E. P.E. LICENSE NUMBER 49224 HDR Engineering, Inc. 3250 W. Commercial Blvd, Suite 100 Ft. Lauderdale, FL 33309 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>CONCEPT PLANS</b>	SHEET NO. 3
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					842	BROWARD	435513-1-22-02		





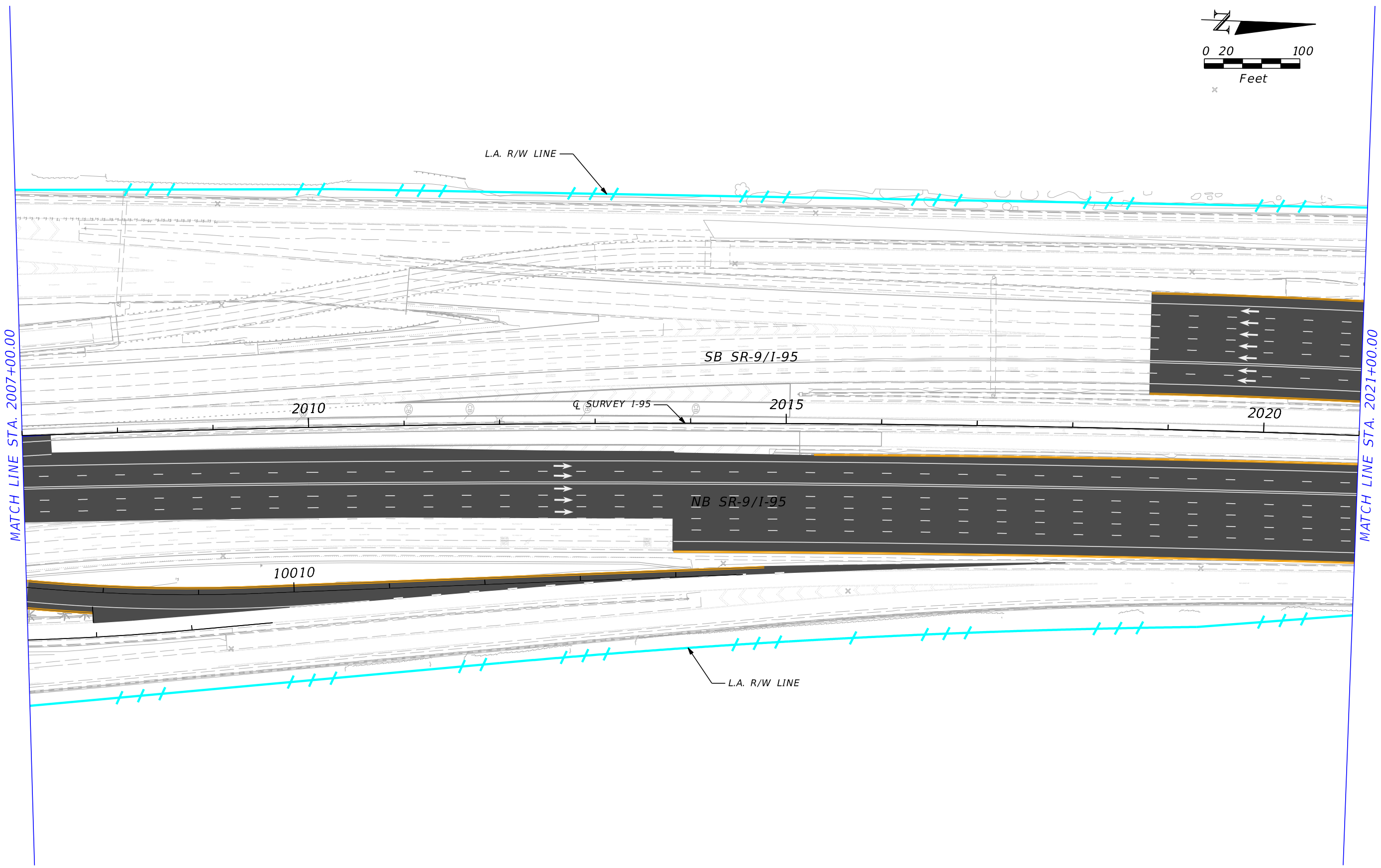
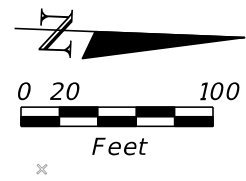
MATCH LINE STA. 1993+00.00

MATCH LINE STA. 2007+00.00

REVISIONS				GUILLERMO J. SUERO, P.E. P.E. LICENSE NUMBER 49224 HDR Engineering, Inc. 3250 W. Commercial Blvd, Suite 100 Ft. Lauderdale, FL 33309 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.  4
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					842	BROWARD	435513-1-22-02	

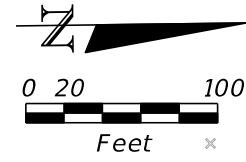
**CONCEPT PLANS**

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

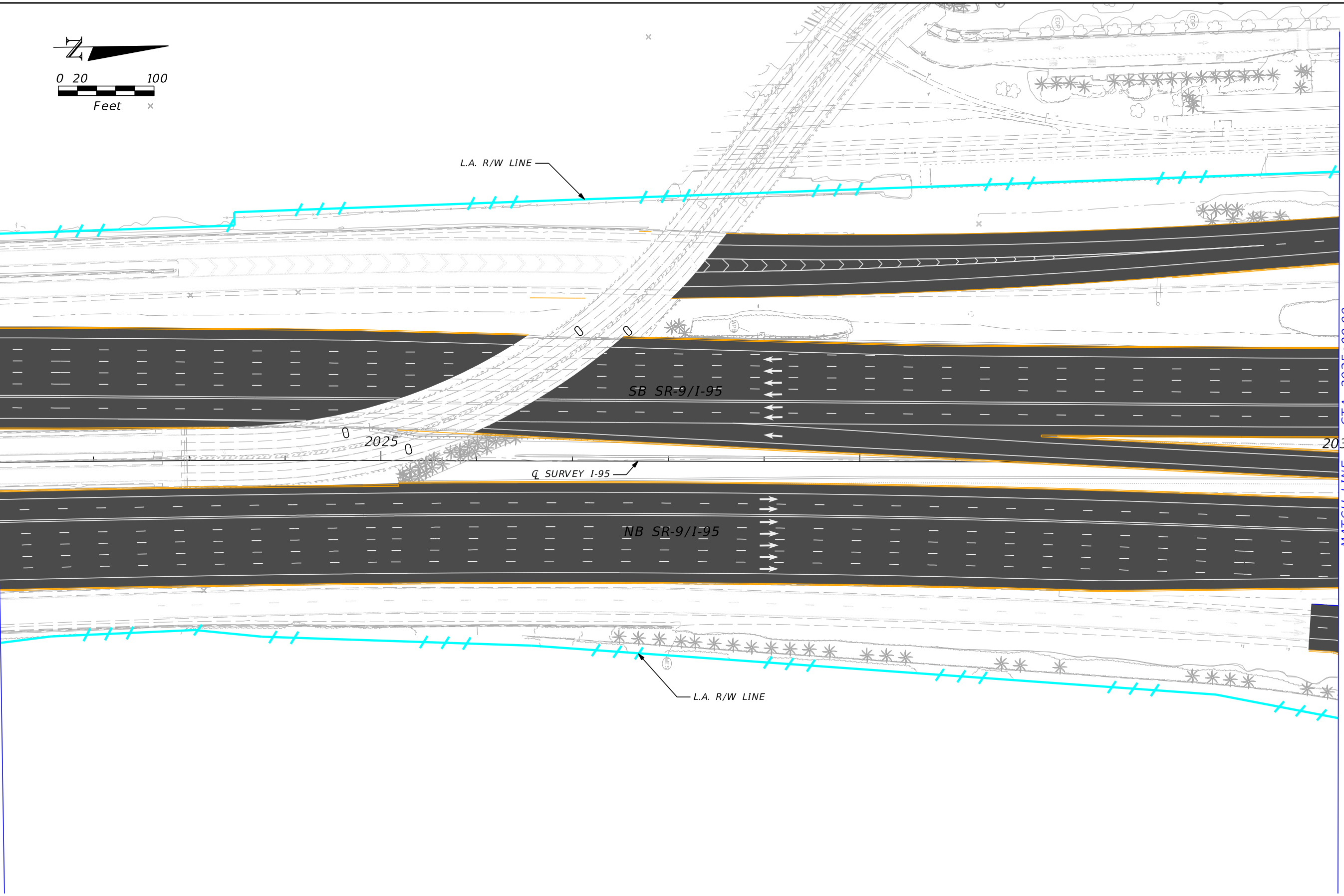


REVISIONS				GUILLERMO J. SUERO, P.E. P.E. LICENSE NUMBER 49224 HDR Engineering, Inc. 3250 W. Commercial Blvd, Suite 100 Ft. Lauderdale, FL 33309 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.  5
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
				842	BROWARD	435513-1-22-02	<b>CONCEPT PLANS</b>	

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



MATCH LINE STA. 2021+00.00



MATCH LINE STA. 2035+00.00

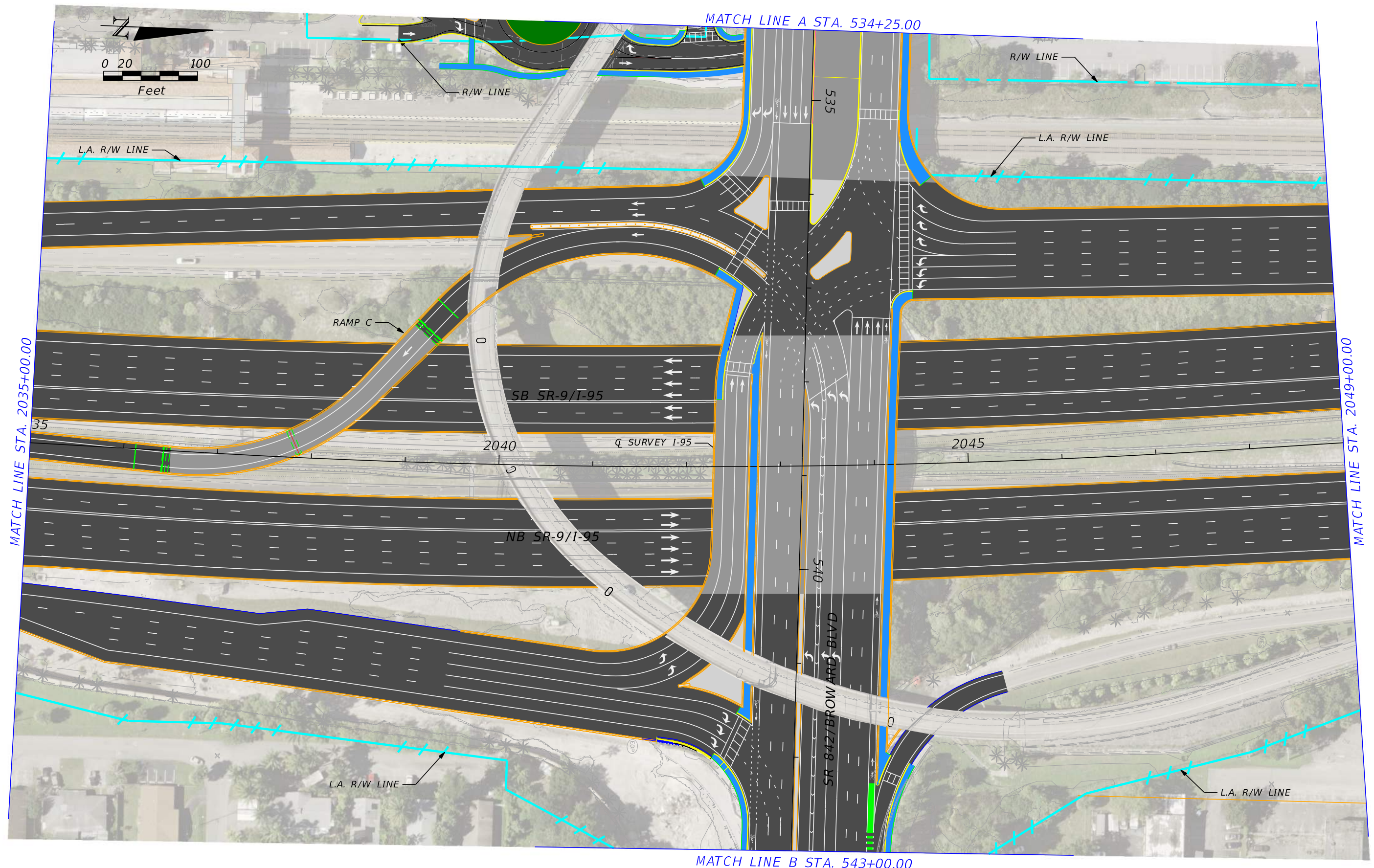
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

GUILLERMO J. SUERO, P.E.  
 P.E. LICENSE NUMBER 49224  
 HDR Engineering, Inc.  
 3250 W. Commercial Blvd, Suite 100  
 Ft. Lauderdale, FL 33309  
 CERTIFICATE OF AUTHORIZATION 4213

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
842	BROWARD	435513-1-22-02

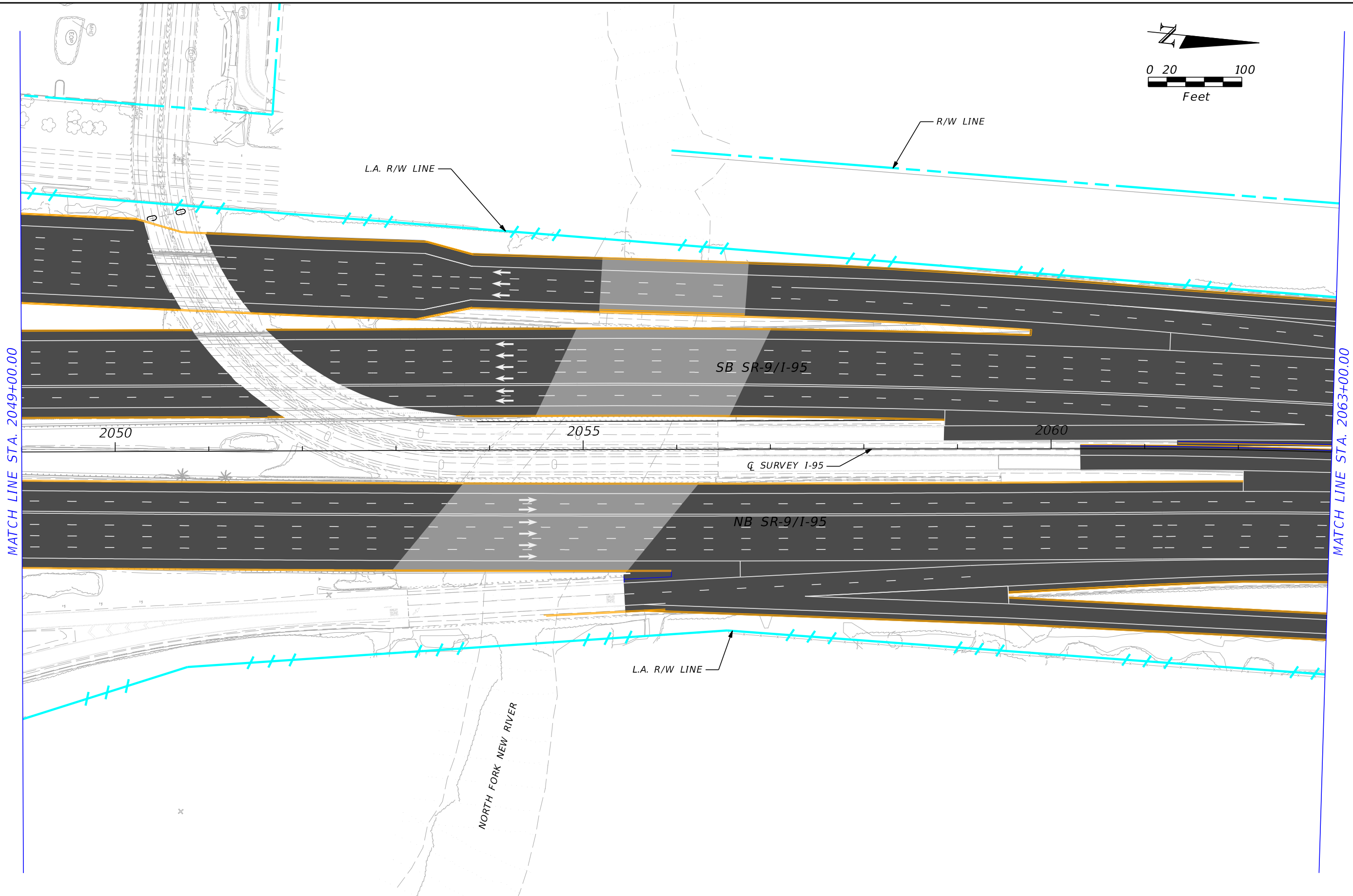
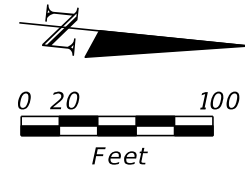
CONCEPT PLANS

SHEET NO.  
6



THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS				GUILLERMO J. SUERO, P.E. P.E. LICENSE NUMBER 49224 HDR Engineering, Inc. 3250 W. Commercial Blvd, Suite 100 Ft. Lauderdale, FL 33309 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<h2 style="margin: 0;">CONCEPT PLANS</h2>	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		7
					842	BROWARD	435513-1-22-02		



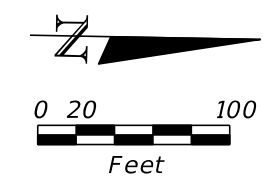
MATCH LINE STA. 2049+00.00

MATCH LINE STA. 2063+00.00

REVISIONS				GUILLERMO J. SUERO, P.E. P.E. LICENSE NUMBER 49224 HDR Engineering, Inc. 3250 W. Commercial Blvd, Suite 100 Ft. Lauderdale, FL 33309 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.  8
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					842	BROWARD	435513-1-22-02	

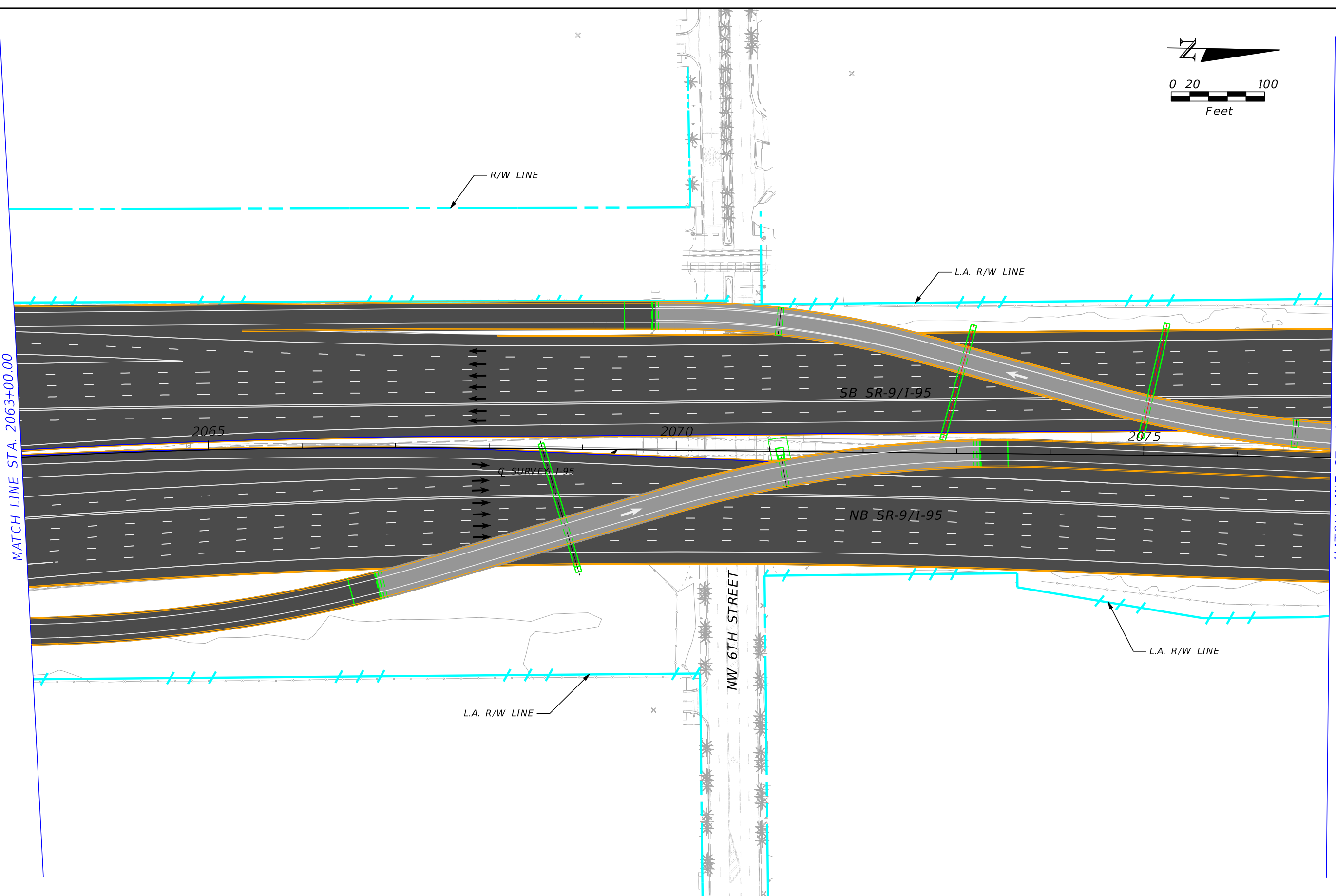
*CONCEPT PLANS*

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



MATCH LINE STA. 2063+00.00

MATCH LINE STA. 2077+00.00



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

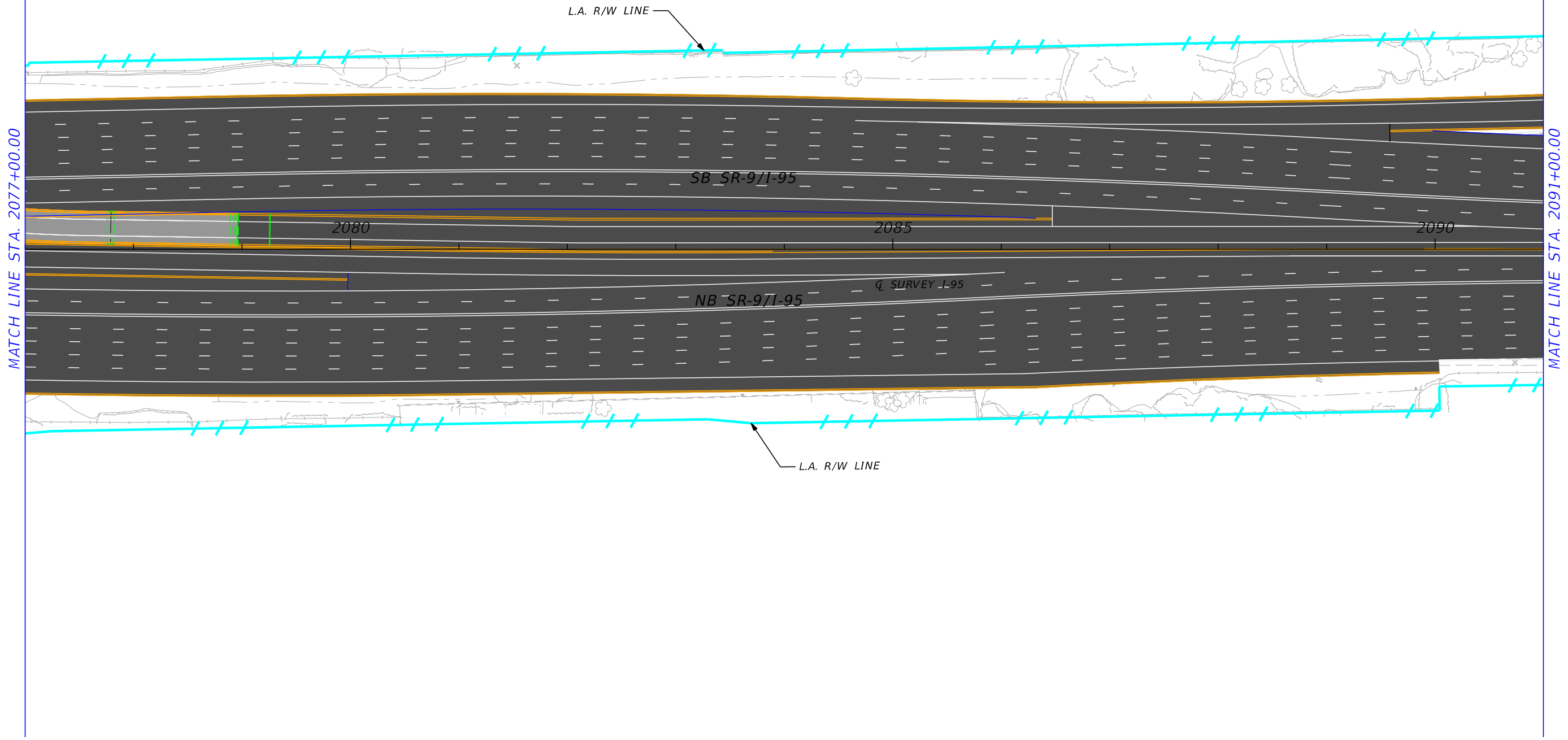
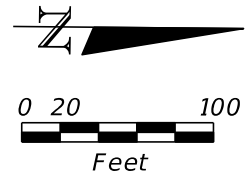
GUILLERMO J. SUERO, P.E.  
 P.E. LICENSE NUMBER 49224  
 HDR Engineering, Inc.  
 3250 W. Commercial Blvd, Suite 100  
 Ft. Lauderdale, FL 33309  
 CERTIFICATE OF AUTHORIZATION 4213

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
842	BROWARD	435513-1-22-02

CONCEPT PLANS

SHEET NO.  
9

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

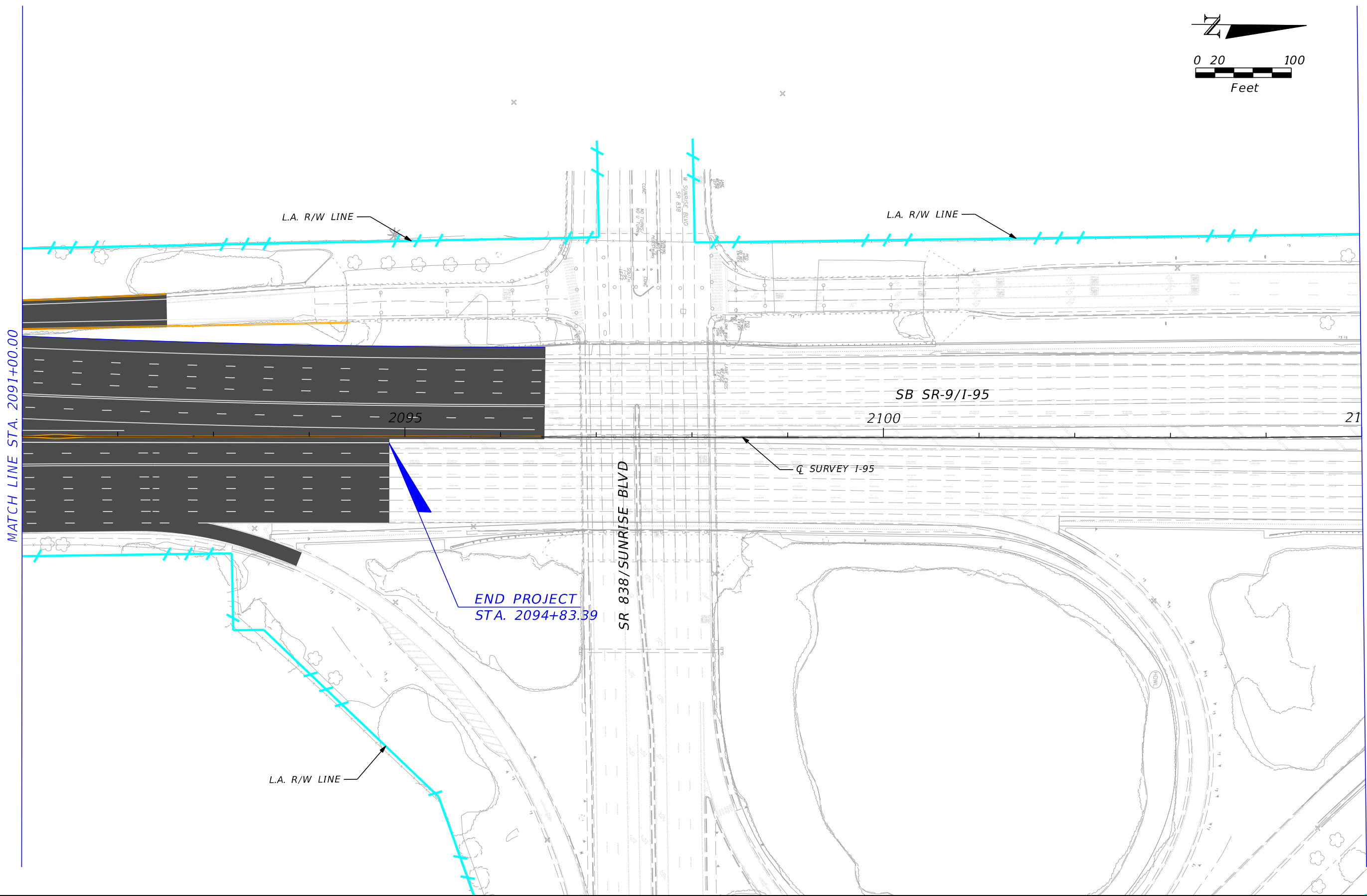
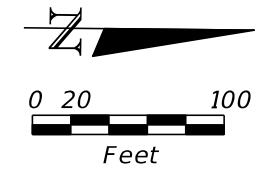


MATCH LINE STA. 2077+00.00

MATCH LINE STA. 2091+00.00

REVISIONS				GUILLERMO J. SUERO, P.E. P.E. LICENSE NUMBER 49224 HDR Engineering, Inc. 3250 W. Commercial Blvd, Suite 100 Ft. Lauderdale, FL 33309 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>CONCEPT PLANS</b>	SHEET NO.  10
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					842	BROWARD	435513-1-22-02		

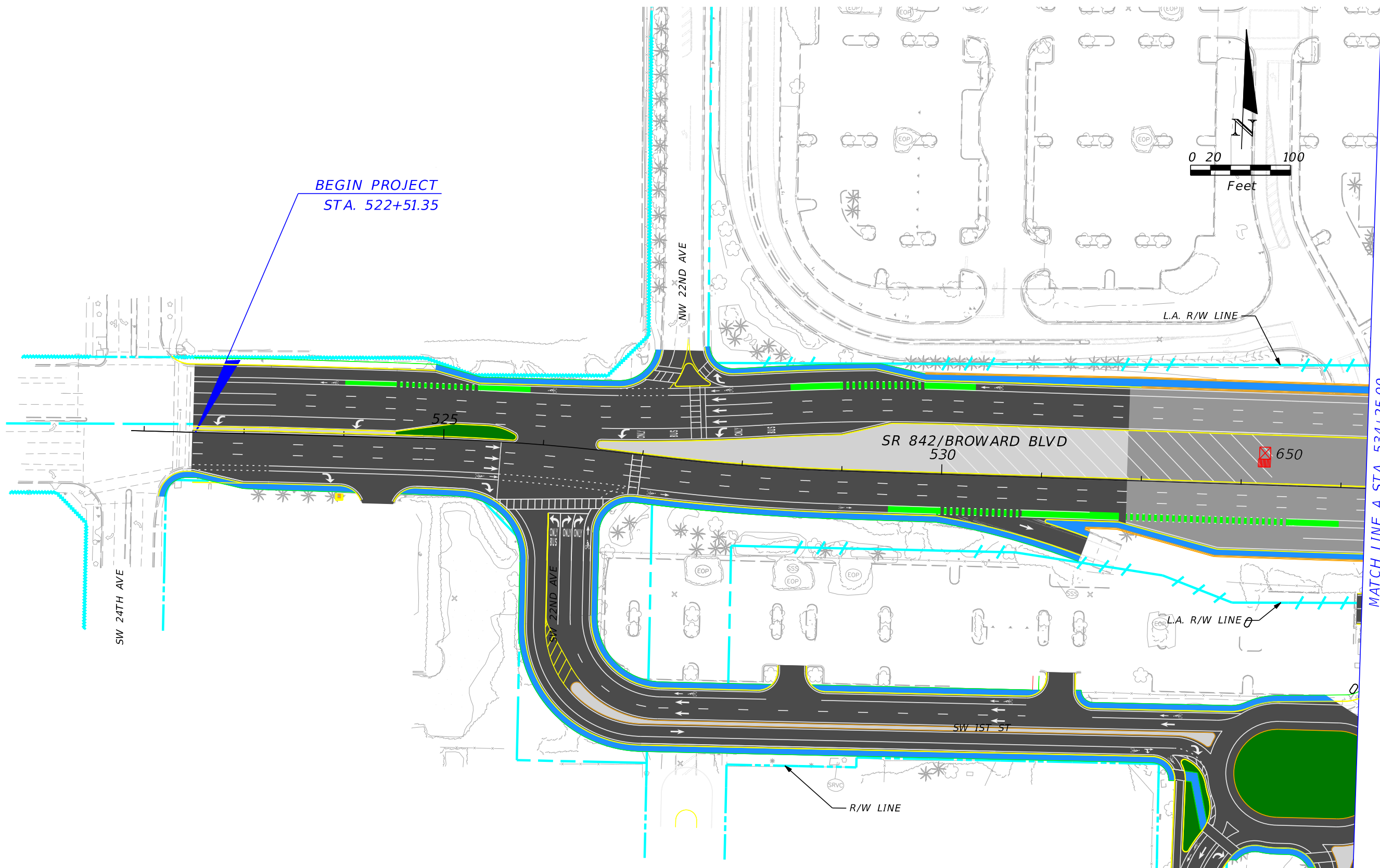
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



REVISIONS				GUILLERMO J. SUERO, P.E. P.E. LICENSE NUMBER 49224 HDR Engineering, Inc. 3250 W. Commercial Blvd, Suite 100 Ft. Lauderdale, FL 33309 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>CONCEPT PLANS</b>	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					842	BROWARD	435513-1-22-02		11

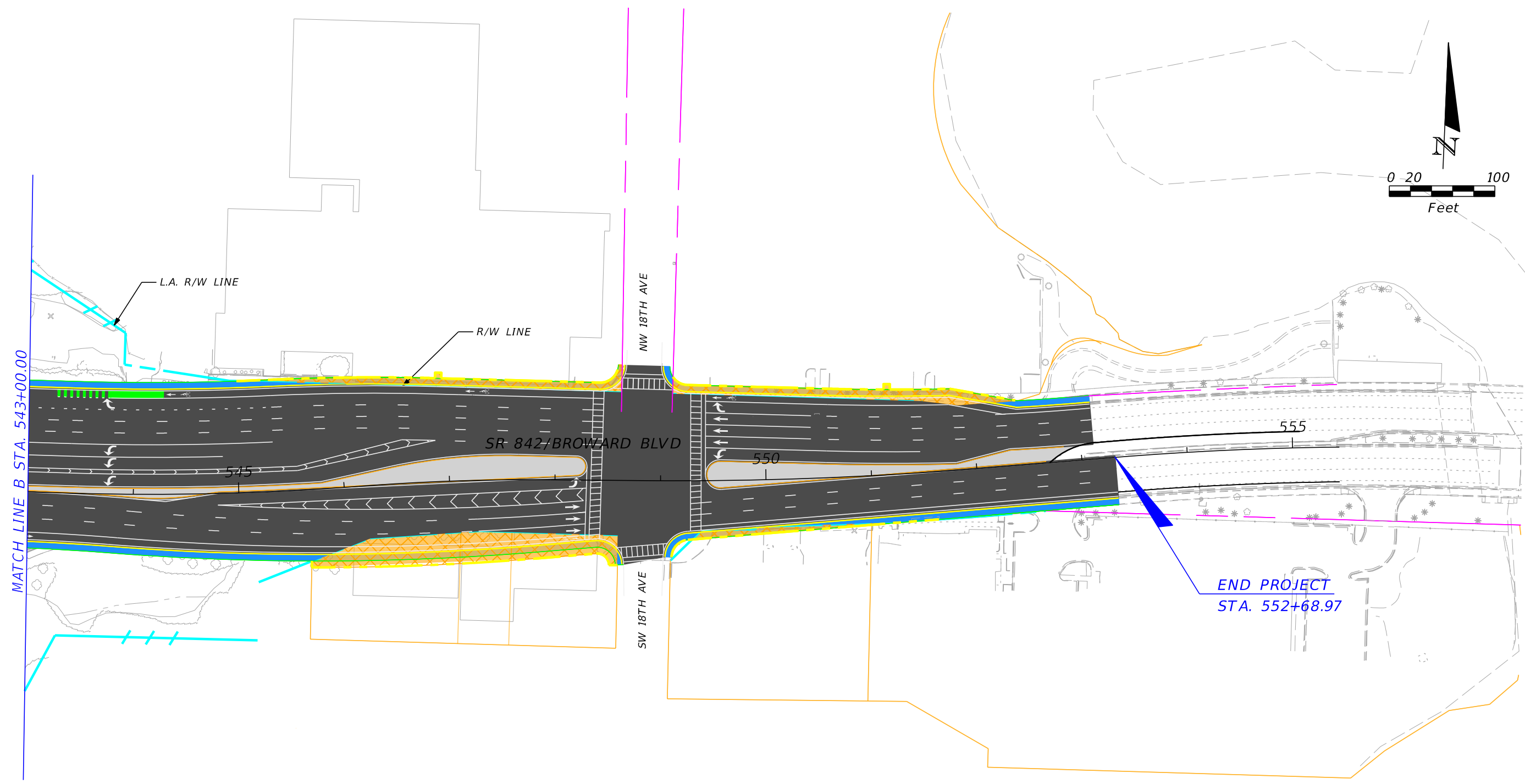
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.





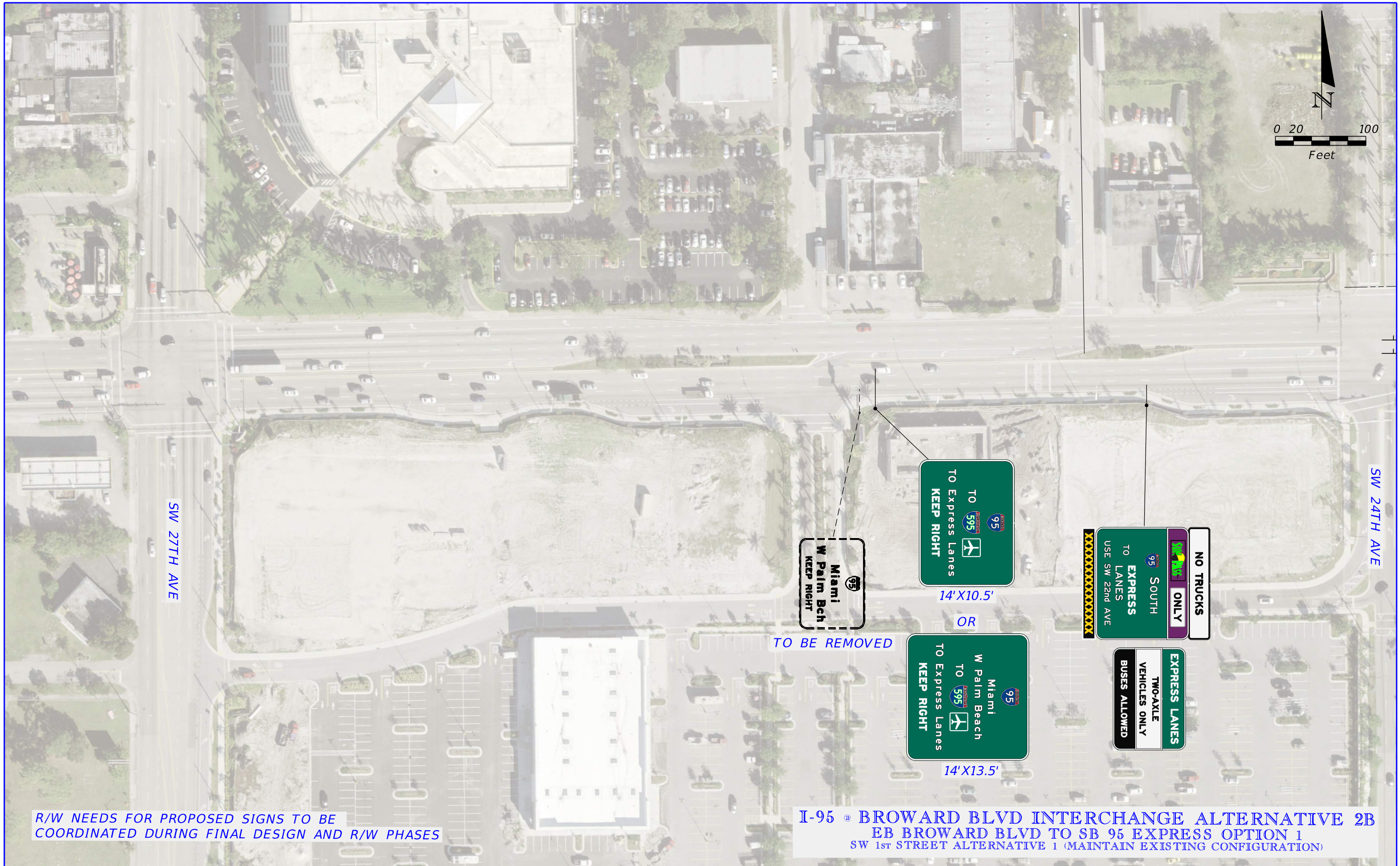
MATCH LINE A STA. 534+25.00

REVISIONS				GUILLERMO J. SUERO, P.E. P.E. LICENSE NUMBER 49224 HDR Engineering, Inc. 3250 W. Commercial Blvd, Suite 100 Ft. Lauderdale, FL 33309 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.  12
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
				842	BROWARD	435513-1-22-02	<b>CONCEPT PLANS</b>	



THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS				GUILLERMO J. SUERO, P.E. P.E. LICENSE NUMBER 49224 HDR Engineering, Inc. 3250 W. Commercial Blvd, Suite 100 Ft. Lauderdale, FL 33309 CERTIFICATE OF AUTHORIZATION 4213	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO.  13
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
				842	BROWARD	435513-1-22-02	CONCEPT PLANS	

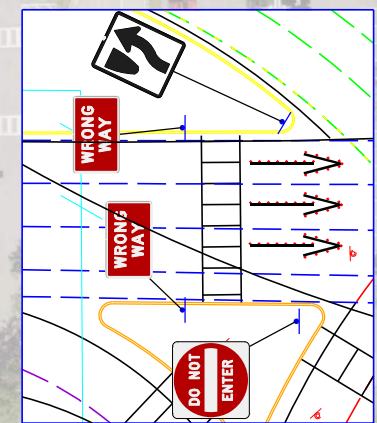
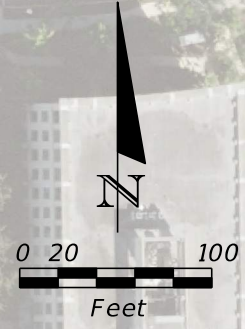


R/W NEEDS FOR PROPOSED SIGNS TO BE COORDINATED DURING FINAL DESIGN AND R/W PHASES

**I-95 @ BROWARD BLVD INTERCHANGE ALTERNATIVE 2B**  
**EB BROWARD BLVD TO SB 95 EXPRESS OPTION 1**  
**SW 1st STREET ALTERNATIVE 1 (MAINTAIN EXISTING CONFIGURATION)**

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			BROWARD BLVD PD&E SIGNING MASTER PLAN	SHEET NO. 14
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				842	BROWARD	435513-1-22-02		

MATCHLINE STA. 522+03.69

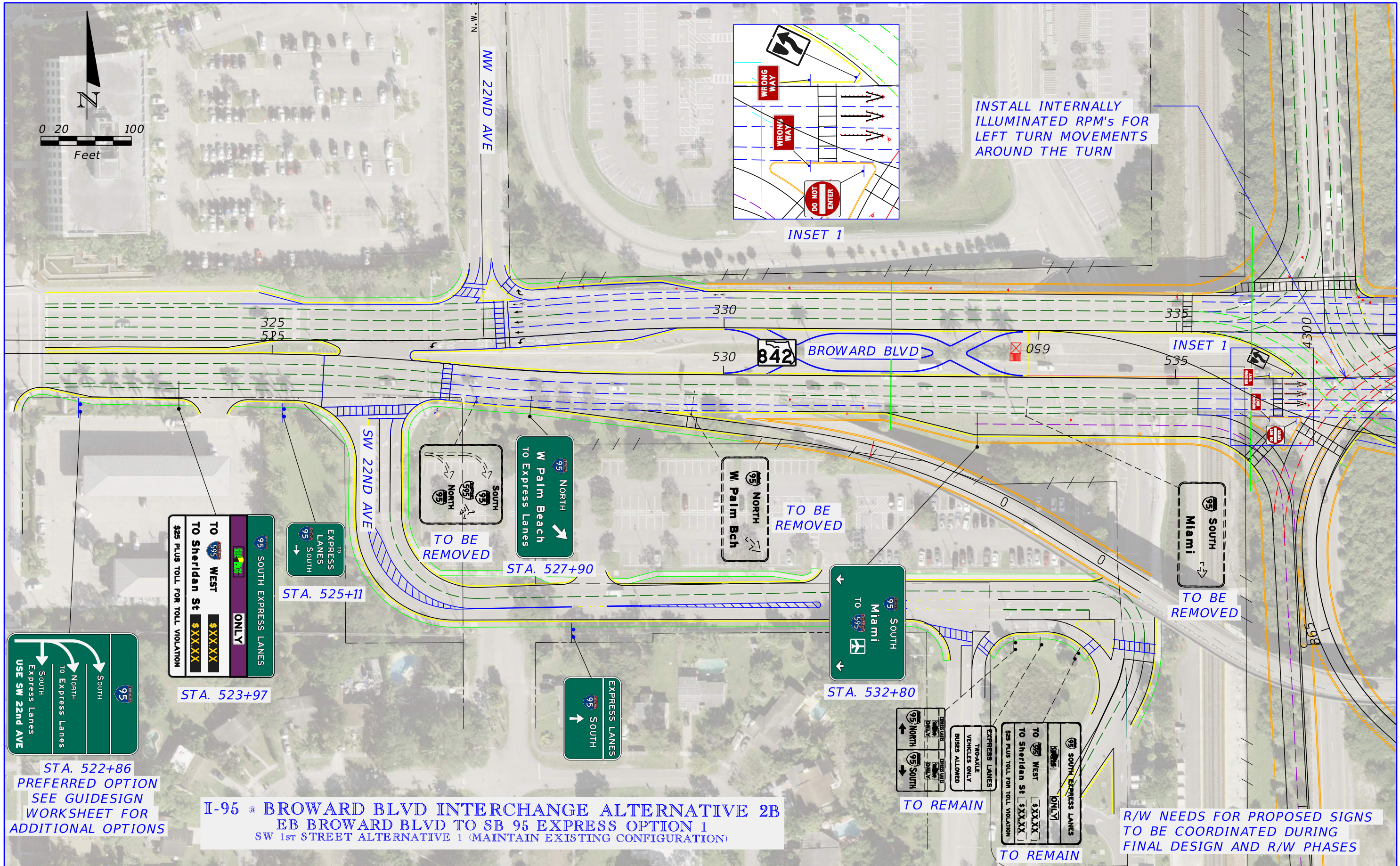


INSET 1

INSTALL INTERNALLY ILLUMINATED RPM'S FOR LEFT TURN MOVEMENTS AROUND THE TURN

MATCHLINE STA. 522+03.69

MATCHLINE STA. 537+44.54



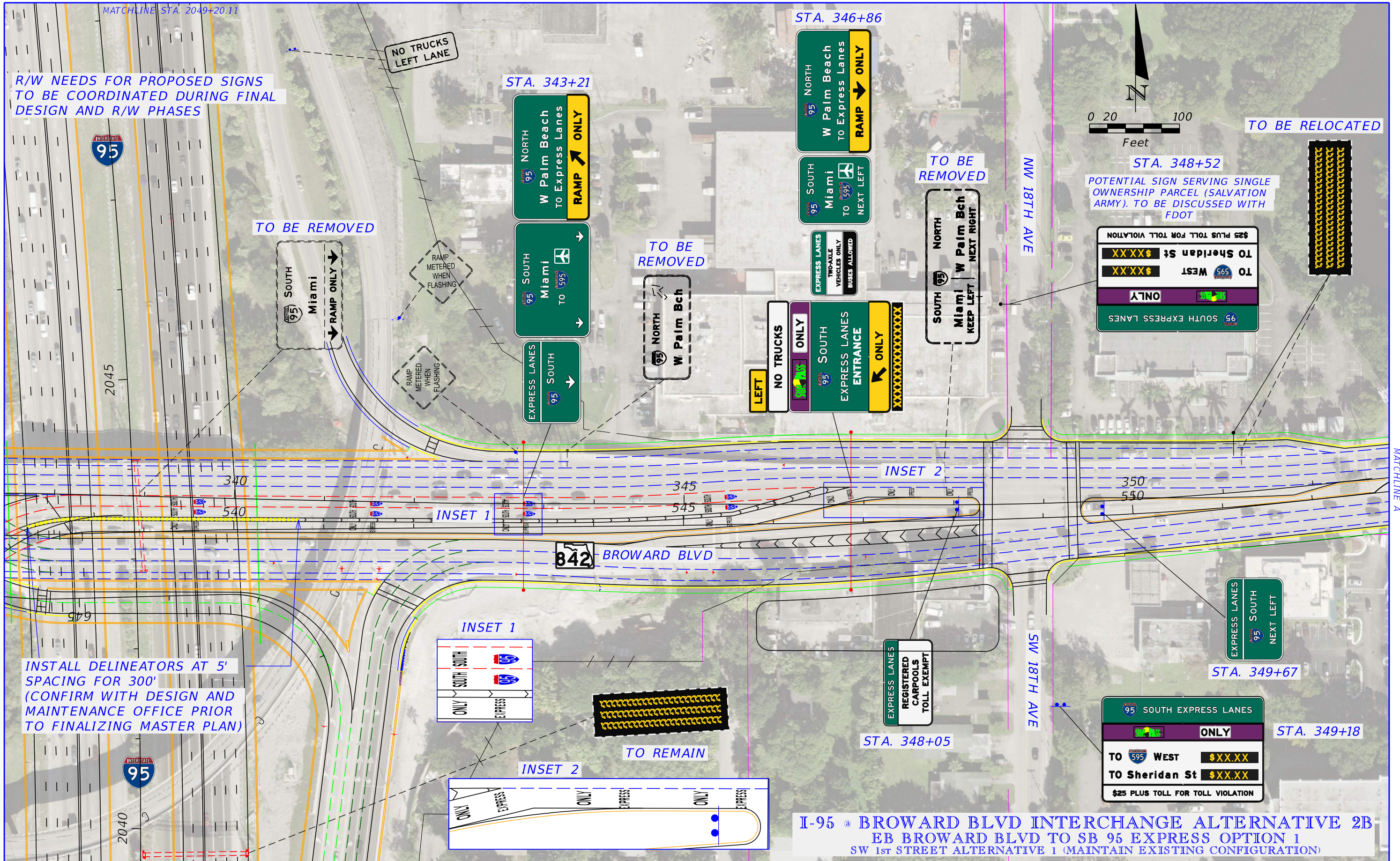
**I-95 @ BROWARD BLVD INTERCHANGE ALTERNATIVE 2B**  
**EB BROWARD BLVD TO SB 95 EXPRESS OPTION 1**  
 SW 1st STREET ALTERNATIVE 1 (MAINTAIN EXISTING CONFIGURATION)

STA. 522+86  
 PREFERRED OPTION  
 SEE GUIDESIGN  
 WORKSHEET FOR  
 ADDITIONAL OPTIONS

R/W NEEDS FOR PROPOSED SIGNS  
 TO BE COORDINATED DURING  
 FINAL DESIGN AND R/W PHASES

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		SHEET NO.
DATE	DESCRIPTION	ROAD NO.	COUNTY	
		842	BROWARD	15

FINANCIAL PROJECT ID		<b>BROWARD BLVD PD&amp;E</b> <b>SIGNING MASTER PLAN</b>
435513-1-22-02		



R/W NEEDS FOR PROPOSED SIGNS TO BE COORDINATED DURING FINAL DESIGN AND R/W PHASES

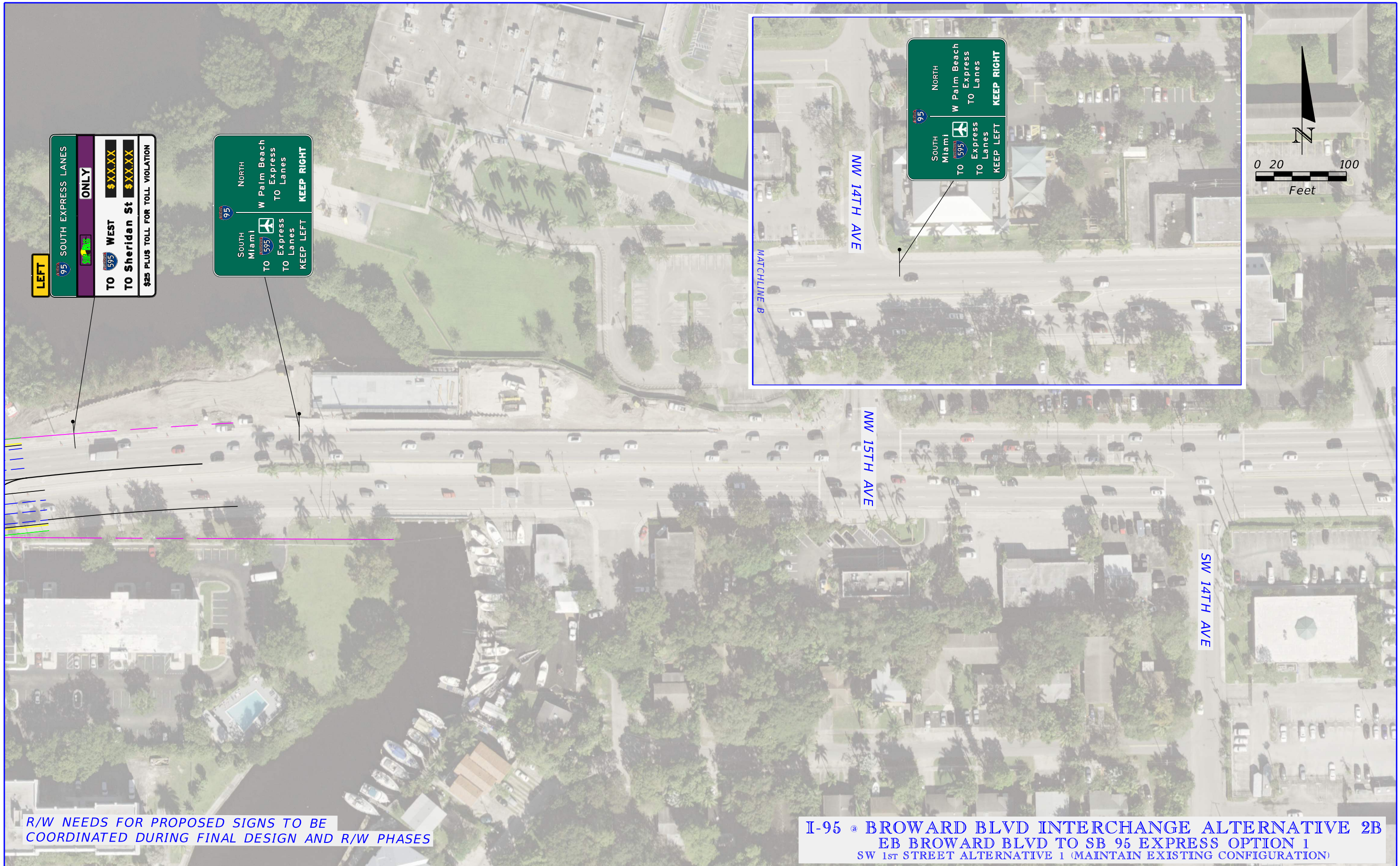


TO BE RELOCATED  
 STA. 348+52  
 POTENTIAL SIGN SERVING SINGLE OWNERSHIP PARCEL (SALVATION ARMY). TO BE DISCUSSED WITH FDOT

INSTALL DELINEATORS AT 5' SPACING FOR 300' (CONFIRM WITH DESIGN AND MAINTENANCE OFFICE PRIOR TO FINALIZING MASTER PLAN)

I-95 @ BROWARD BLVD INTERCHANGE ALTERNATIVE 2B  
 EB BROWARD BLVD TO SB 95 EXPRESS OPTION 1  
 SW 1st STREET ALTERNATIVE 1 (MAINTAIN EXISTING CONFIGURATION)

REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		BROWARD BLVD PD&E SIGNING MASTER PLAN	SHEET NO. 16
DATE	DESCRIPTION	ROAD NO.	COUNTY		
		842	BROWARD		
				FINANCIAL PROJECT ID 435513-1-22-02	



**LEFT**

**95 SOUTH EXPRESS LANES ONLY**

**TO WEST TO Sheridan St \$XXXX \$25 PLUS TOLL FOR TOLL VIOLATION**

**95 SOUTH Miami TO Express Lanes KEEP LEFT**

**95 NORTH W Palm Beach TO Express Lanes KEEP RIGHT**

**95 SOUTH Miami TO Express Lanes KEEP LEFT**

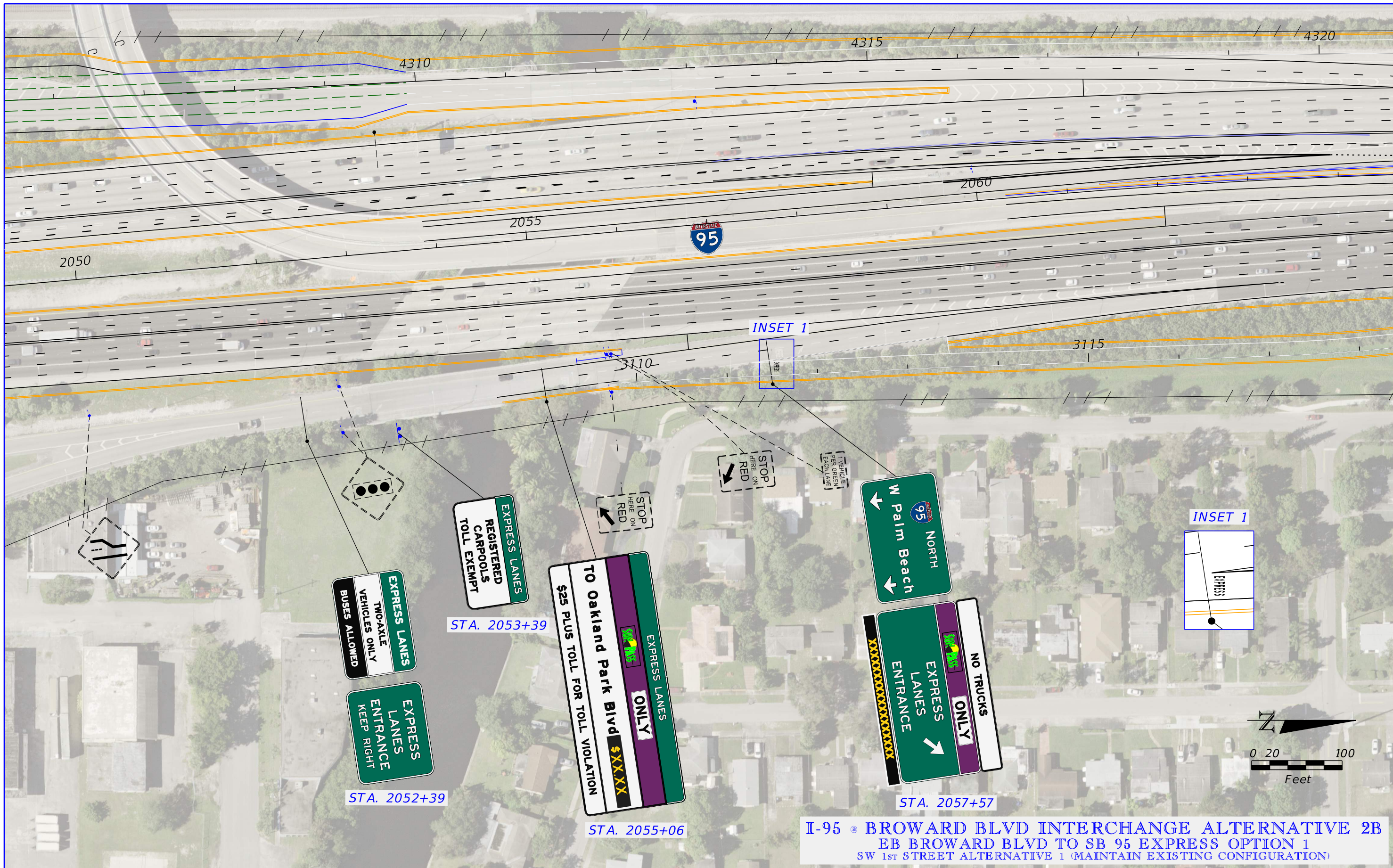
**95 NORTH W Palm Beach TO Express Lanes KEEP RIGHT**

R/W NEEDS FOR PROPOSED SIGNS TO BE COORDINATED DURING FINAL DESIGN AND R/W PHASES

**I-95 @ BROWARD BLVD INTERCHANGE ALTERNATIVE 2B**  
**EB BROWARD BLVD TO SB 95 EXPRESS OPTION 1**  
**SW 1ST STREET ALTERNATIVE 1 (MAINTAIN EXISTING CONFIGURATION)**

REVISIONS		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>BROWARD BLVD PD&amp;E SIGNING MASTER PLAN</b>	SHEET NO.  17
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				842	BROWARD	435513-1-22-02		

MATCHLINE STA. 2049+20.11



**I-95 @ BROWARD BLVD INTERCHANGE ALTERNATIVE 2B**  
**EB BROWARD BLVD TO SB 95 EXPRESS OPTION 1**  
**SW 1st STREET ALTERNATIVE 1 (MAINTAIN EXISTING CONFIGURATION)**

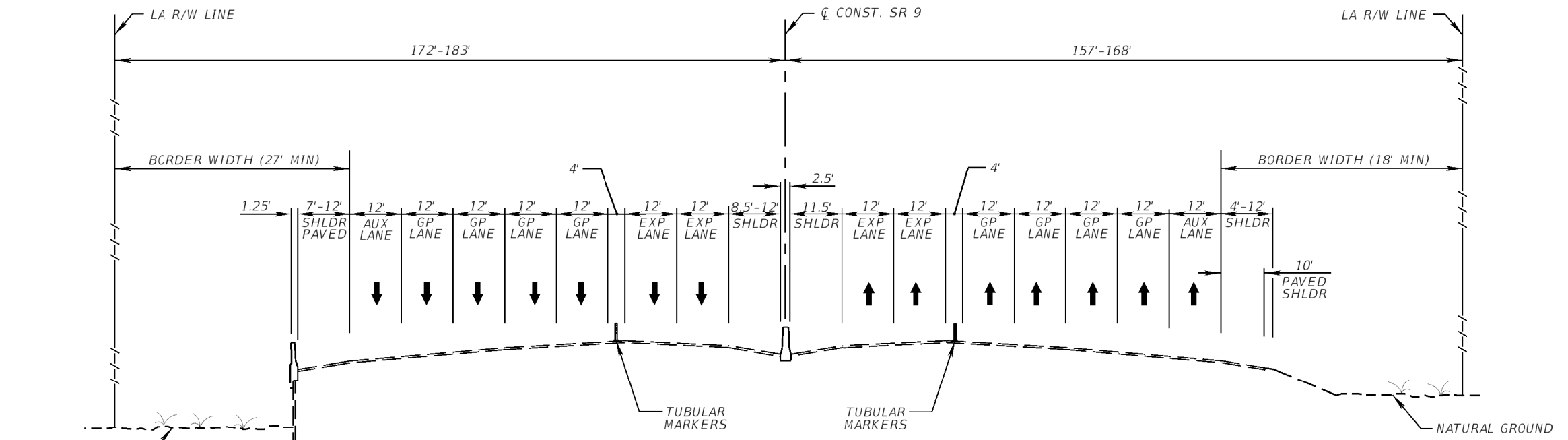
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

--

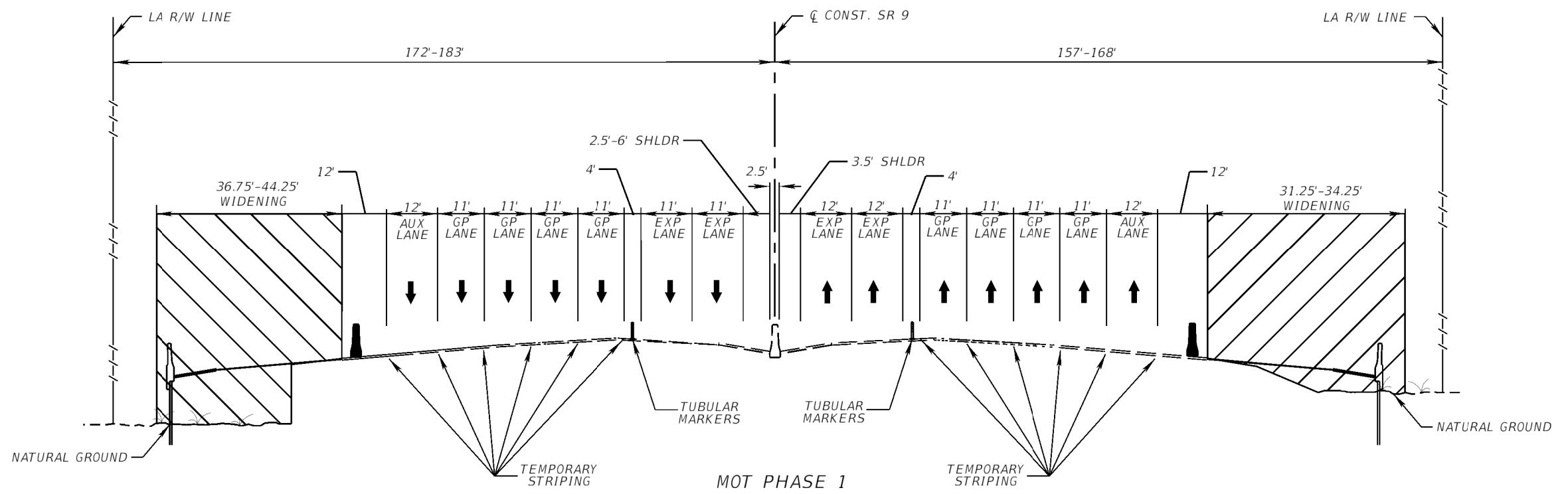
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
842	BROWARD	435513-1-22-02

<b>BROWARD BLVD PD&amp;E</b> <b>SIGNING MASTER PLAN</b>	
--	--

SHEET NO.
18



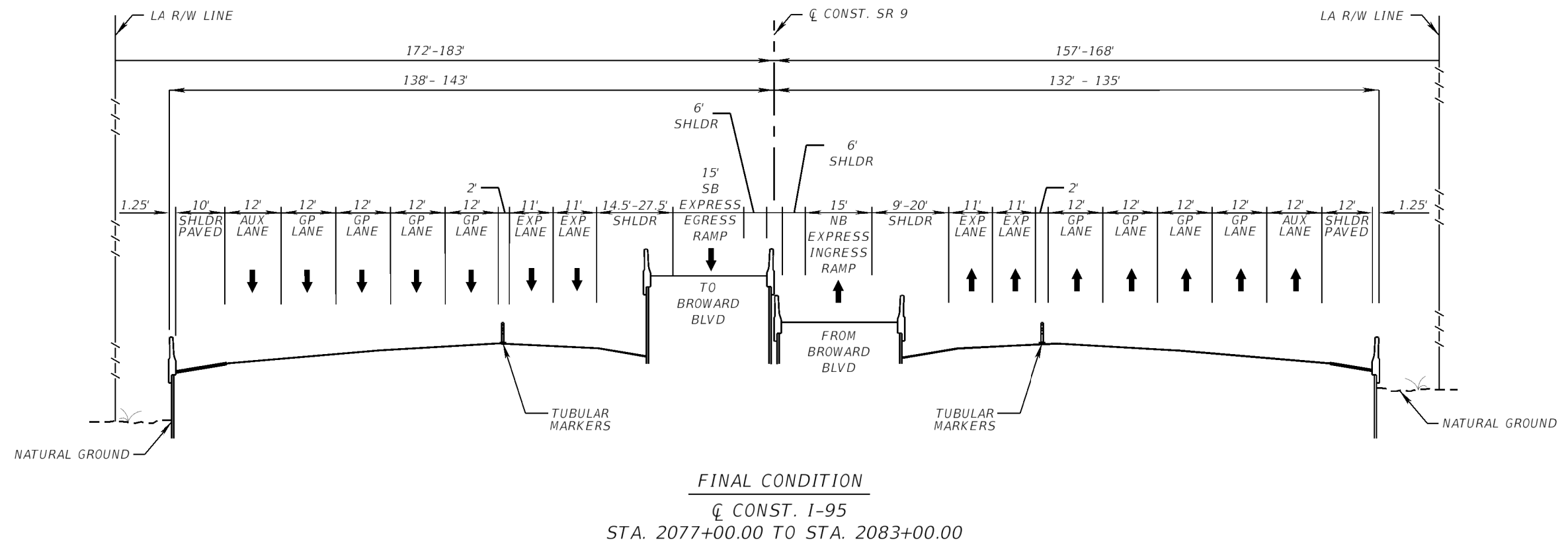
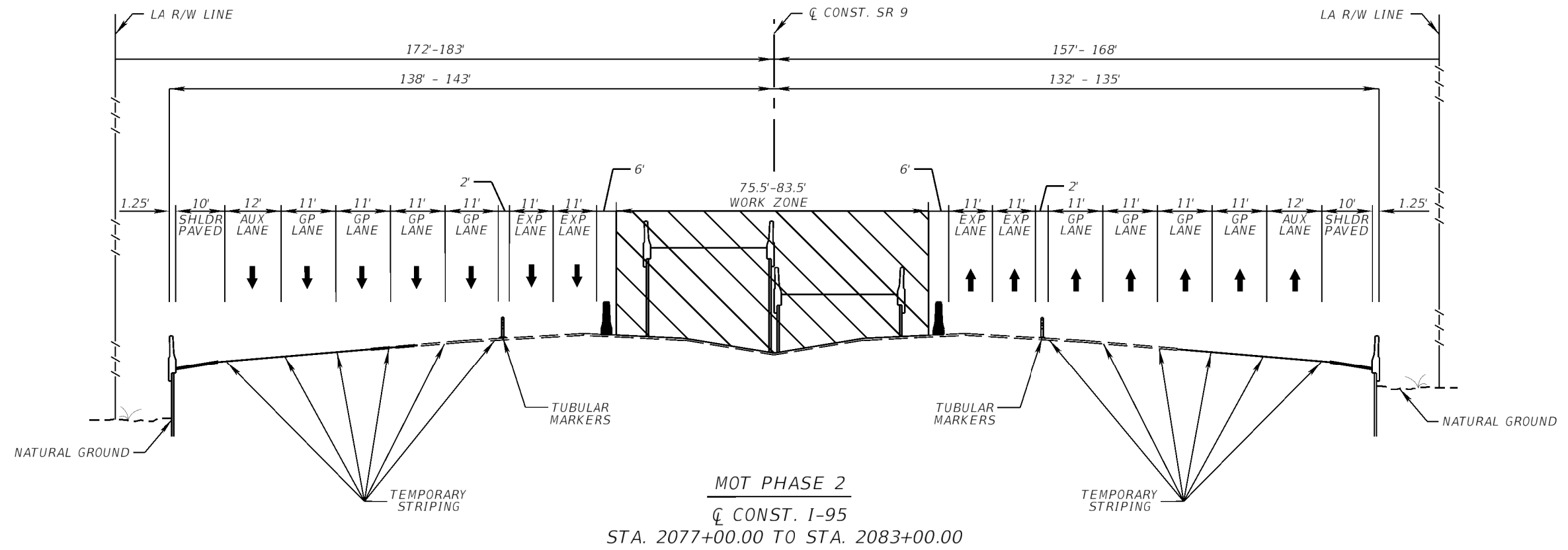
**EXISTING CONDITION**  
 ☒ CONST. I-95  
 STA. 2077+00.00 TO STA. 2083+00.00



**MOT PHASE 1**  
 ☒ CONST. I-95  
 STA. 2077+00.00 TO STA. 2083+00.00

REVISIONS				CTS ENGINEERING, INC. 3230 W. COMMERCIAL BLVD, STE 220 FORT LAUDERDALE, FL 33309 FL COA #28935	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			<b>TYPICAL SECTIONS</b>	SHEET NO. 19
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
						9	BROWARD		





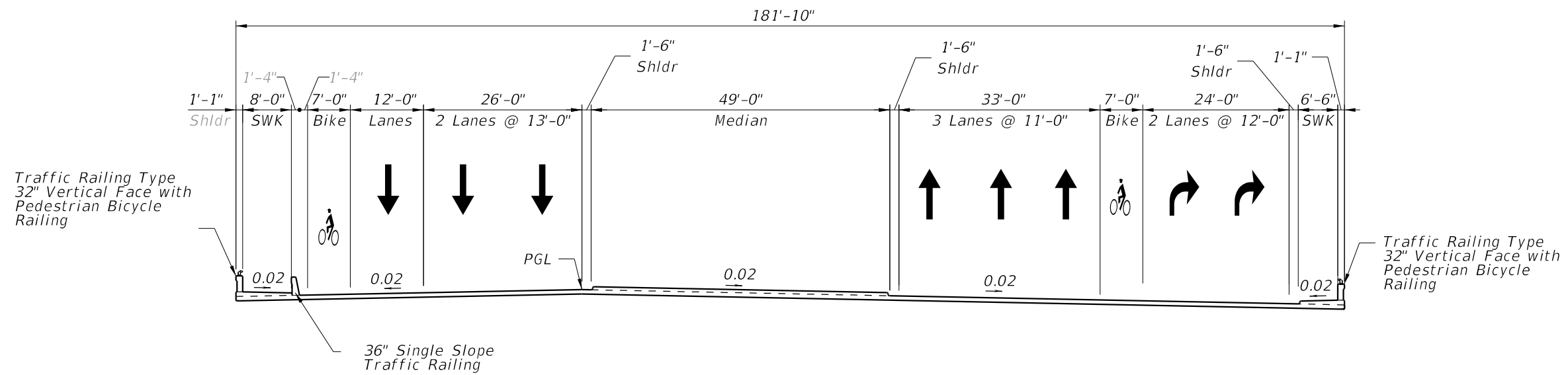
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

CTS ENGINEERING, INC.  
 3230 W. COMMERCIAL BLVD, STE 220  
 FORT LAUDERDALE, FL 33309  
 FL COA #28935

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
9	BROWARD	

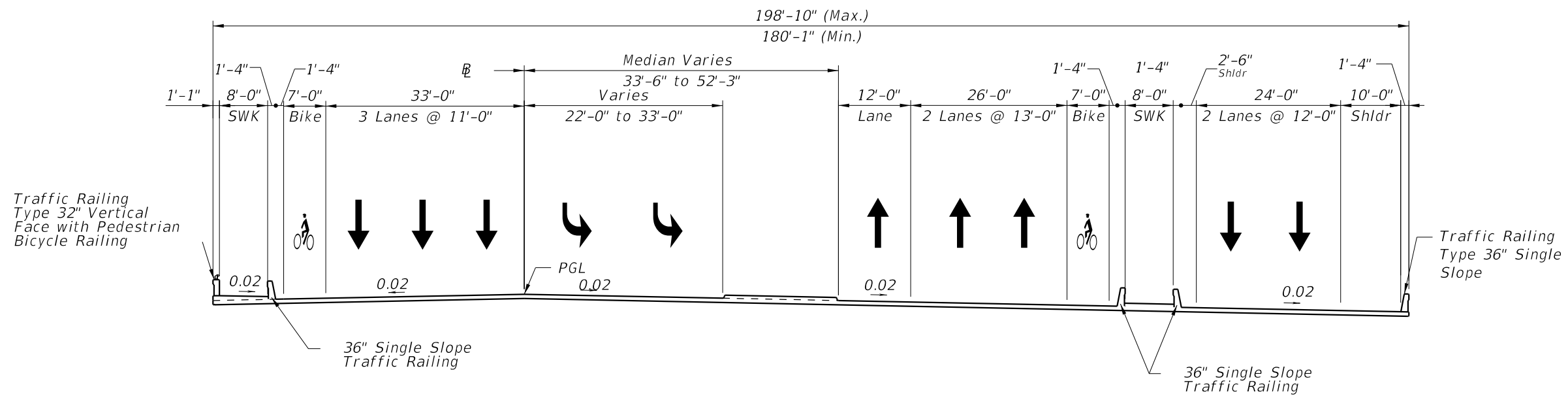
**TYPICAL SECTIONS**

SHEET NO.  
20



BROWARD BOULEVARD OVER SFRTA RR

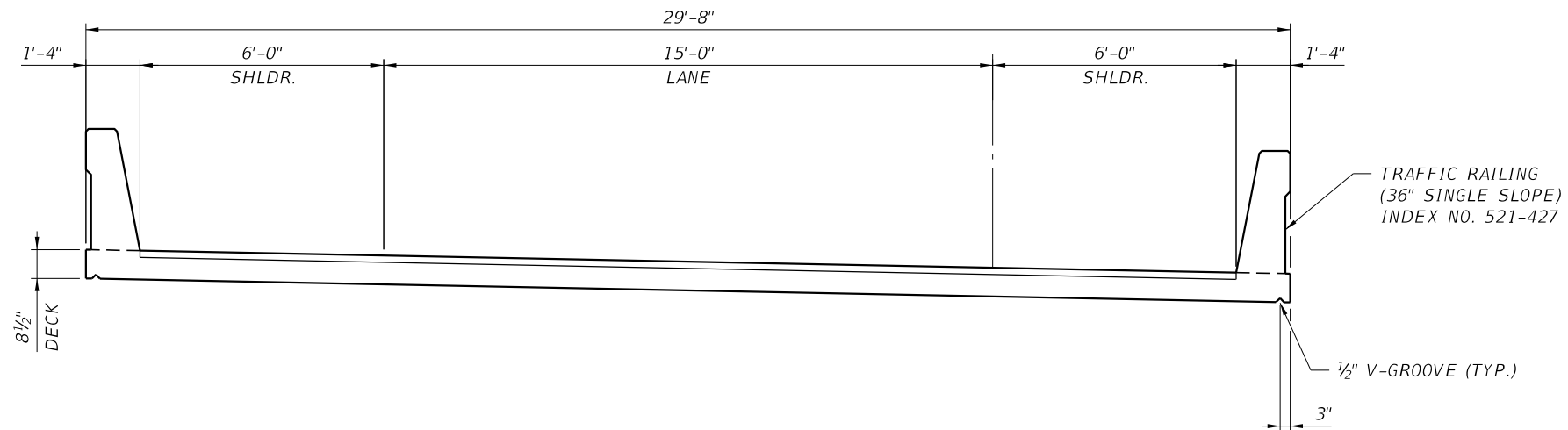
REVISIONS						<b>BOLTON PEREZ &amp; ASSOCIATES</b> 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904 JOAQUIN PEREZ, P.E. P.E. LICENSE NUMBER 37336	DRAWN BY: HOL CHECKED BY: JP DESIGNED BY: JP CHECKED BY: JP	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE:  <b>TYPICAL SECTION</b>  BROWARD BOULEVARD	REF. DWG. NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION			ROAD NO.	COUNTY	FINANCIAL PROJECT ID		SHEET NO.
							BROWARD			TS-1		



BROWARD BOULEVARD OVER I-95

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS						BOLTON PEREZ & ASSOCIATES 7205 CORPORATE CENTER DRIVE, SUITE 201 MIAMI, FLORIDA 33126 CERTIFICATE OF AUTHORIZATION 7904 JOAQUIN PEREZ, P.E. P.E. LICENSE NUMBER 37336	DRAWN BY: HOL CHECKED BY: JP DESIGNED BY: JP CHECKED BY: JP	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE:  TYPICAL SECTION	REF. DWG. NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION			ROAD NO.	COUNTY	FINANCIAL PROJECT ID		

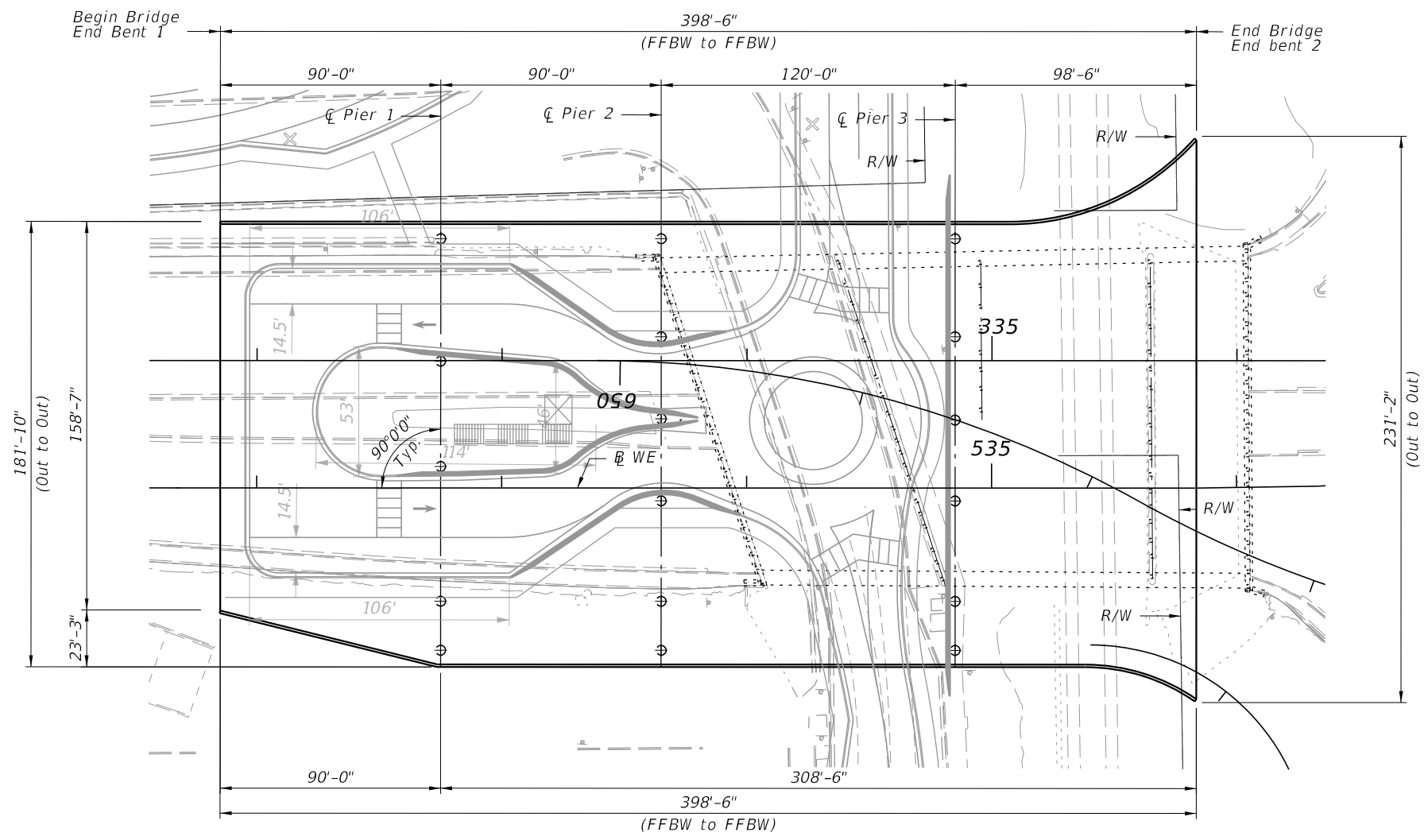


TYPICAL SECTION

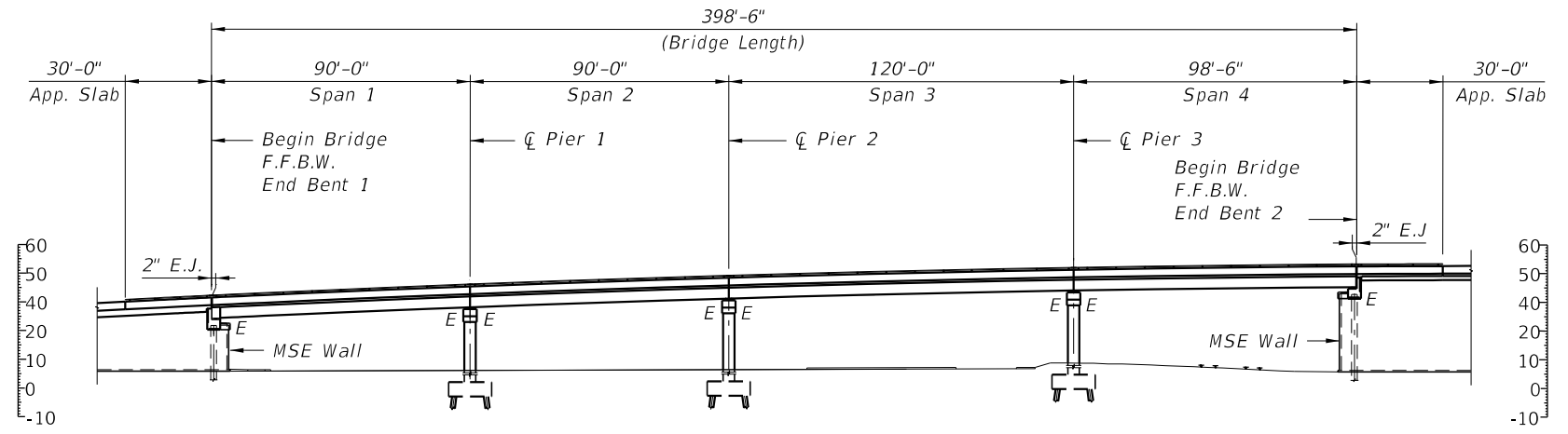
RAMP B  
 RAMP C  
 RAMP D  
 RAMP E

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS						John Danielsen, P.E. P.E. LICENSE NUMBER 41875 HDR Engineering, Inc. 3250 West Commercial Blvd, Suite 100 Fort Lauderdale, FL 33309-3459 CERTIFICATE OF AUTHORIZATION 4213	DRAWN BY:	STATE OF FLORIDA			SHEET TITLE:	REF. DWG. NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		TC	DEPARTMENT OF TRANSPORTATION			TYPICAL SECTION	
							DESIGNED BY:	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	PROJECT NAME:	SHEET NO.
							JJC	SR 9	BROWARD	435512-1-22-02	SR-9/I-95 @ SR-842/BROWARD BOULEVARD INTERCHANGE IMPROVEMENTS	TS-3
							CHECKED BY:					



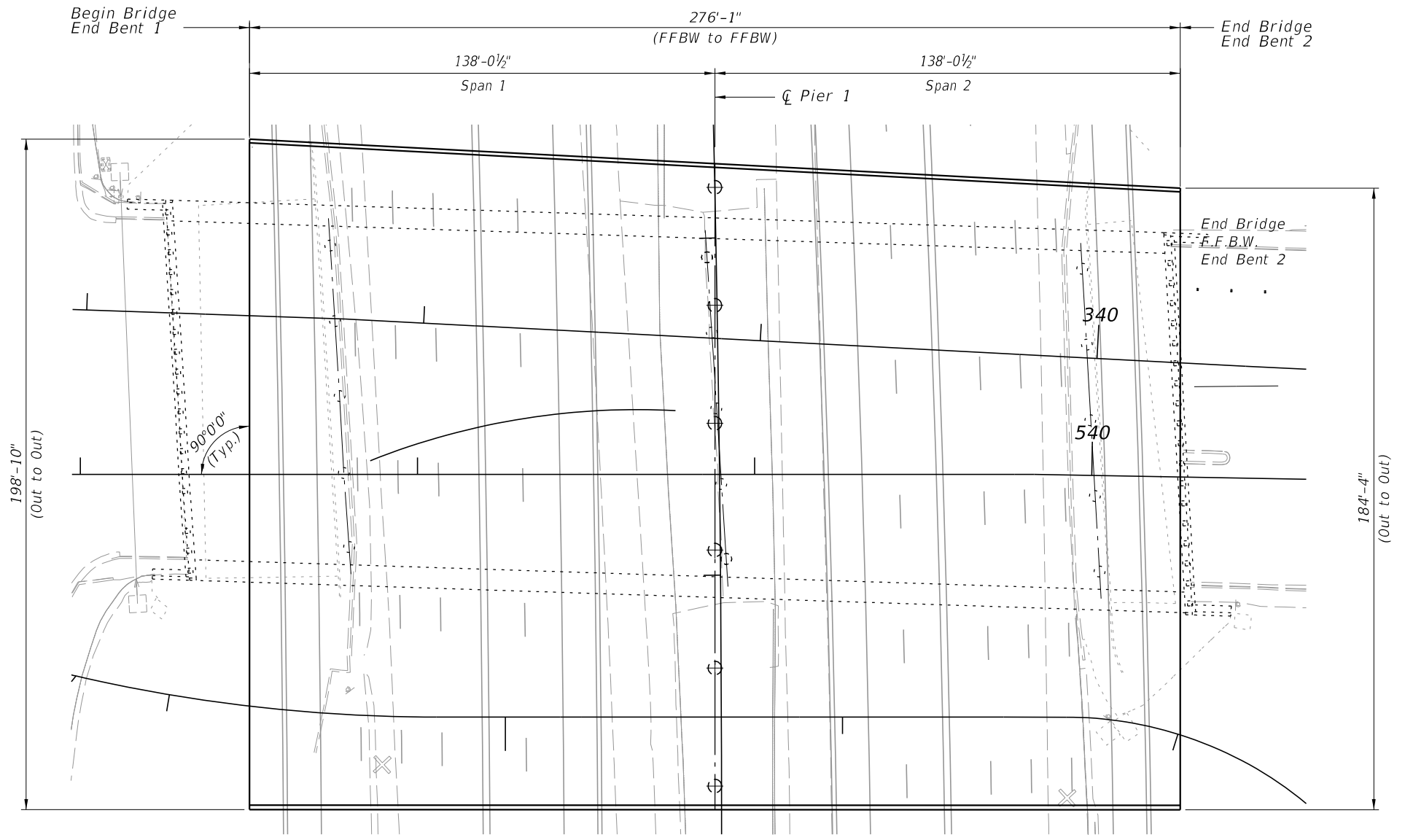
PLAN



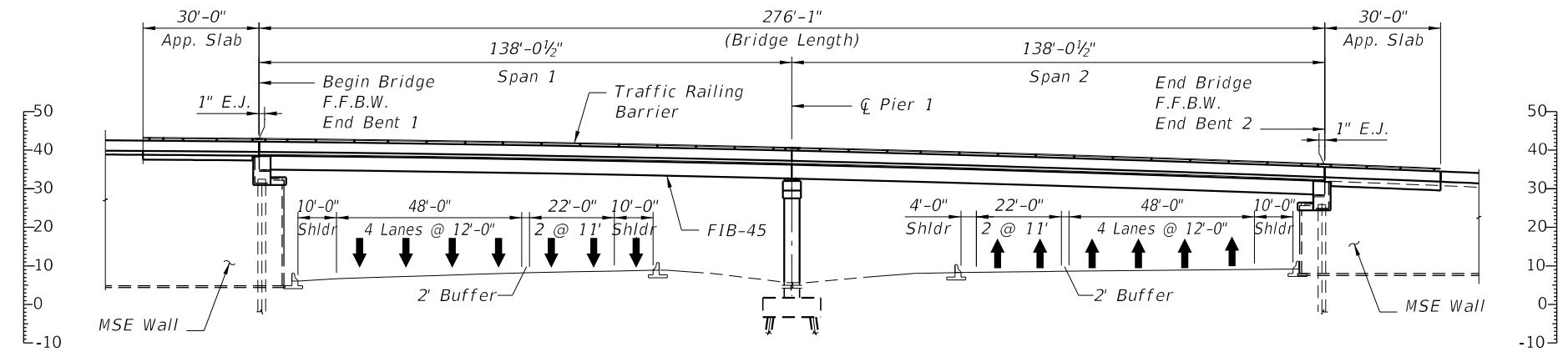
ELEVATION

Bridge No. 860257

REVISIONS						DRAWN BY: HOL	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE: PLAN ELEVATION	REF. DWG. NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
						JP		BROWARD		BROWARD BOULEVARD	B-1



PLAN



ELEVATION

Bridge No. 860269

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

**BOLTON PEREZ & ASSOCIATES**  
 7205 CORPORATE CENTER DRIVE, SUITE 201  
 MIAMI, FLORIDA 33126  
 CERTIFICATE OF AUTHORIZATION 7904  
 JOAQUIN PEREZ, P.E.  
 P.E. LICENSE NUMBER 37336

DRAWN BY: HOL  
 CHECKED BY: JP  
 DESIGNED BY: JP  
 CHECKED BY: JP

STATE OF FLORIDA  
 DEPARTMENT OF TRANSPORTATION

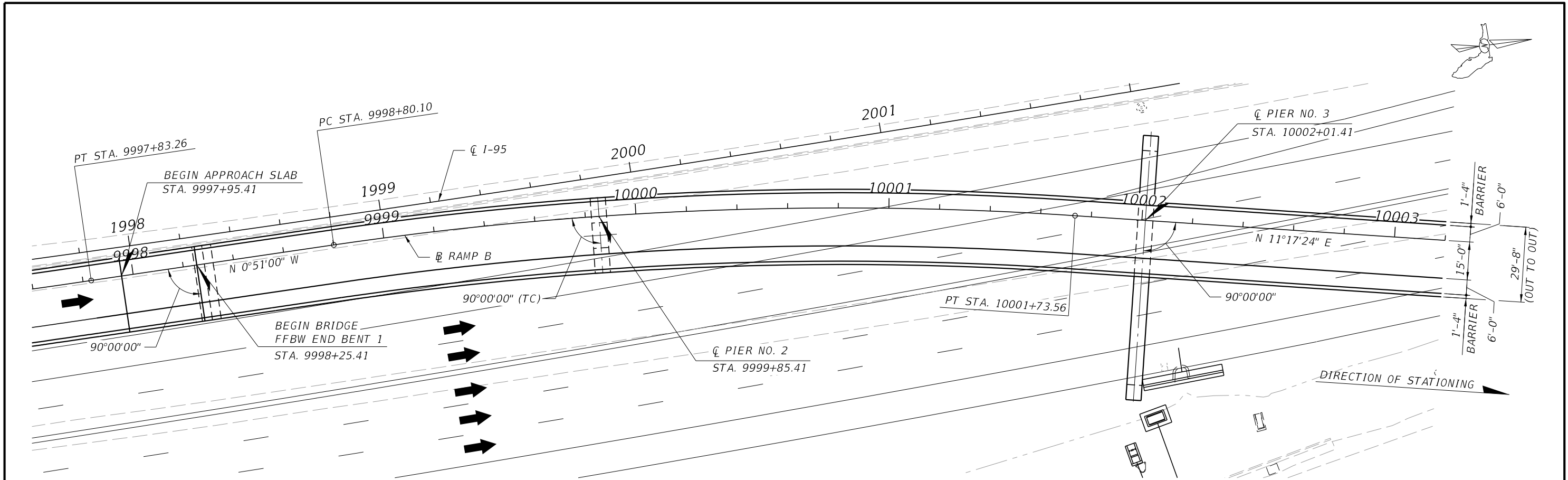
ROAD NO. COUNTY FINANCIAL PROJECT ID

BROWARD

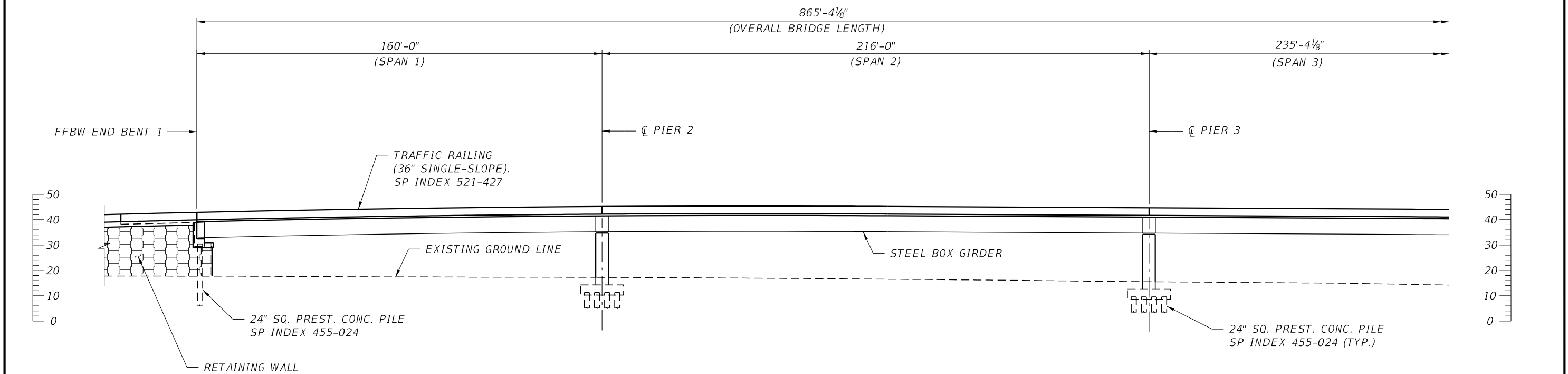
SHEET TITLE: PLAN ELEVATION

PROJECT NAME: BROWARD BOULEVARD

REF. DWG. NO. SHEET NO. B-2



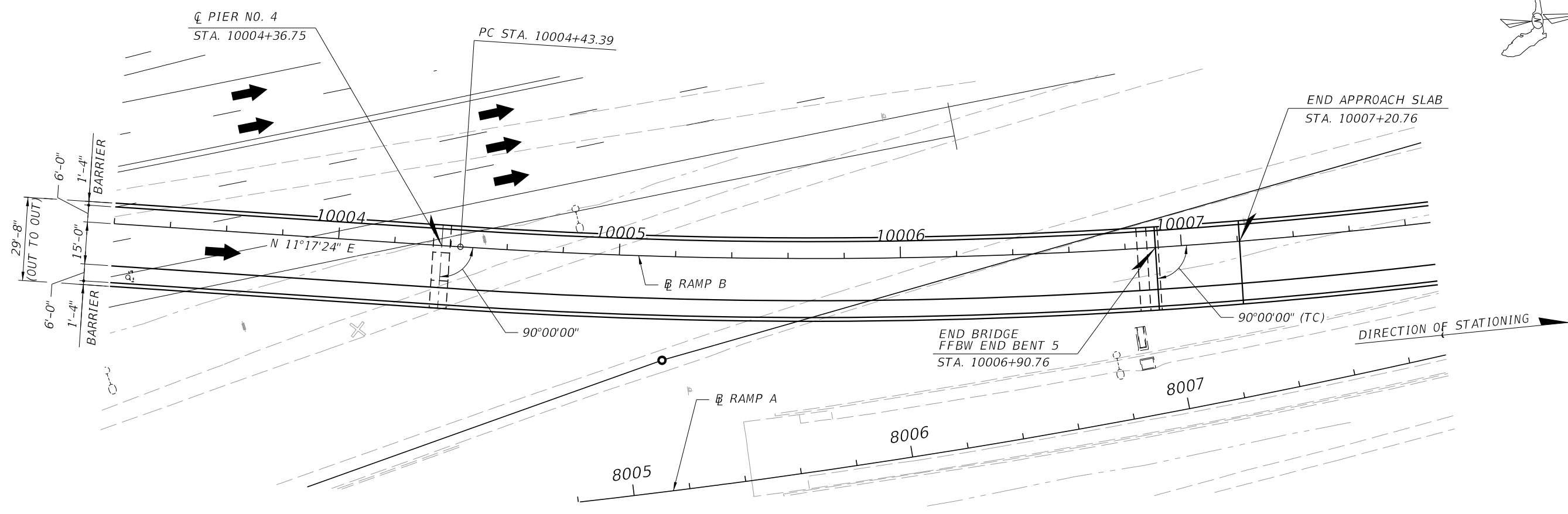
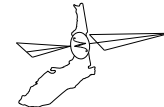
PLAN



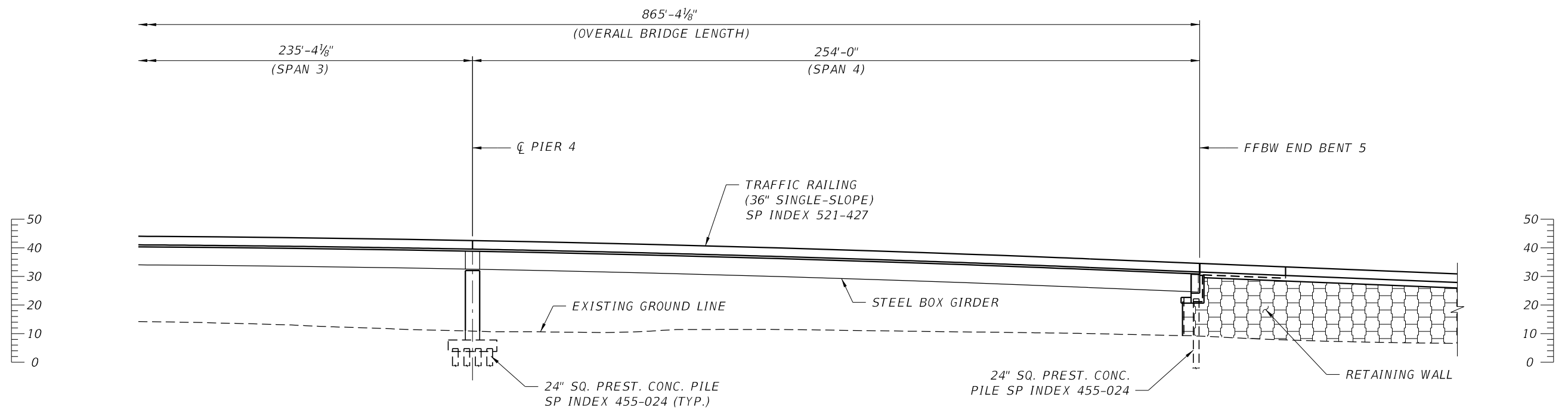
ELEVATION

REVISIONS						John Danielsen, P.E. P.E. LICENSE NUMBER 41875 HDR Engineering, Inc. 3250 West Commercial Blvd, Suite 100 Fort Lauderdale, FL 33309-3459 CERTIFICATE OF AUTHORIZATION 4213	DRAWN BY: CHECKED BY: DESIGNED BY: CHECKED BY:	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE:  RAMP B - PLAN AND ELEVATION (1 OF 2)	REF. DWG. NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION			ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							SR 9	BROWARD	435512-1-22-02	SR-9/I-95 @ SR-842/BROWARD BOULEVARD INTERCHANGE IMPROVEMENTS	B1-1	

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



PLAN

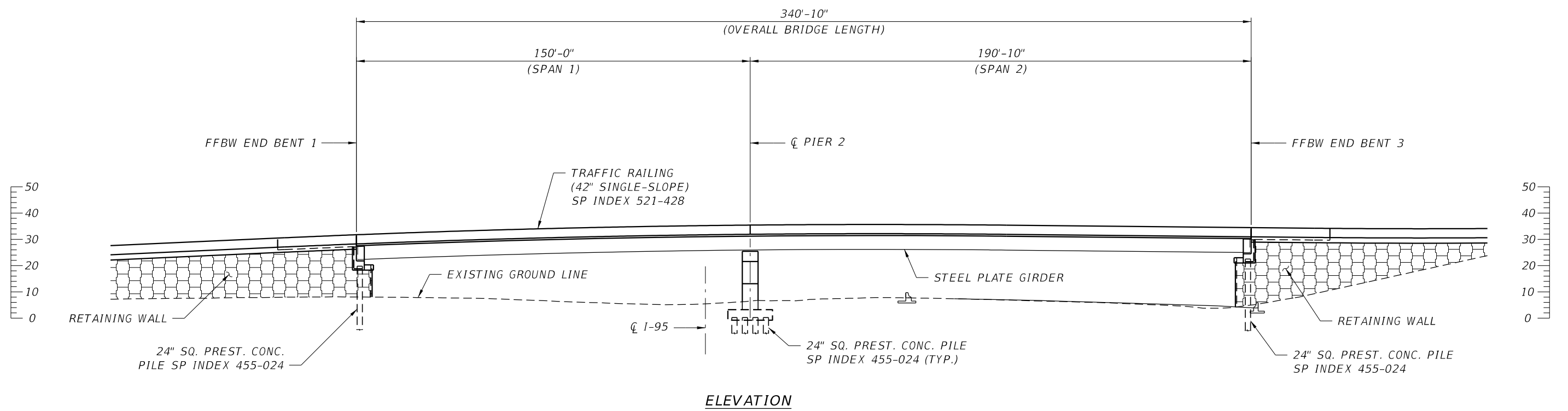
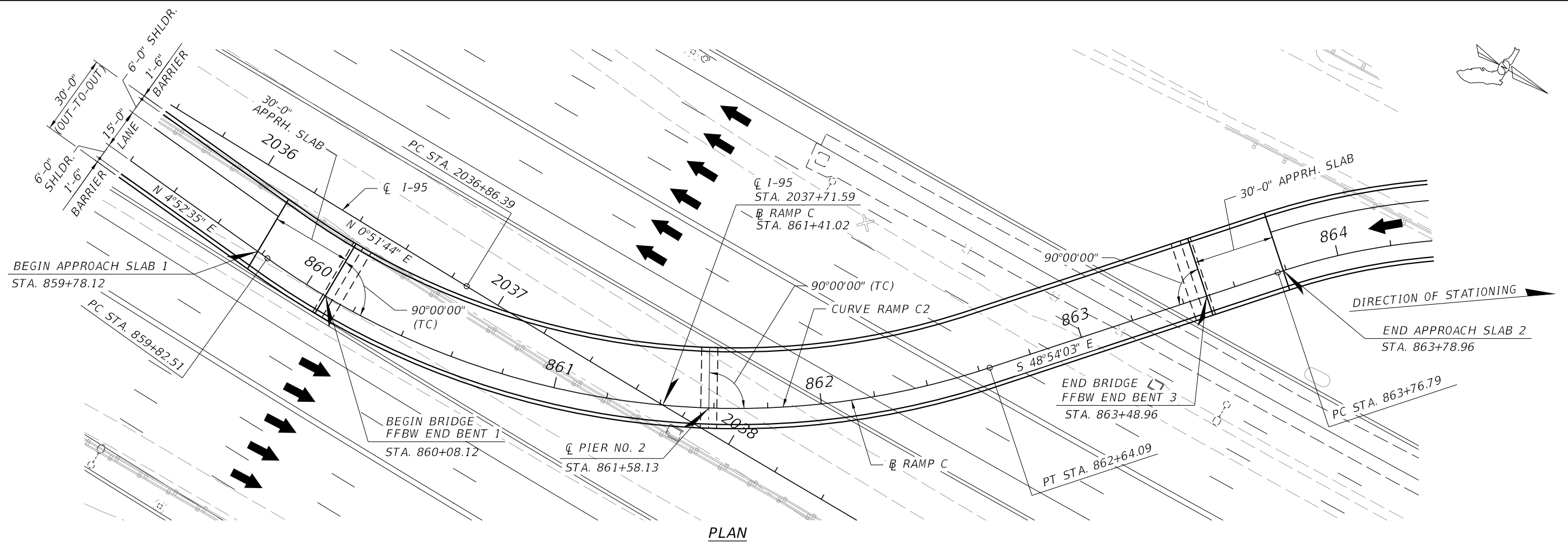
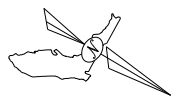


ELEVATION

REVISIONS						John Danielson, P.E. P.E. LICENSE NUMBER 41875 HDR Engineering, Inc. 3250 West Commercial Blvd, Suite 100 Fort Lauderdale, FL 33309-3459 CERTIFICATE OF AUTHORIZATION 4213	DRAWN BY:	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE:	REF. DWG. NO.	
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		CHECKED BY:	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	RAMP B - PLAN AND ELEVATION (2 OF 2)  SR-9/I-95 @ SR-842/BROWARD BOULEVARD INTERCHANGE IMPROVEMENTS	SHEET NO.	
								SR 9	BROWARD	435512-1-22-02			B1-2

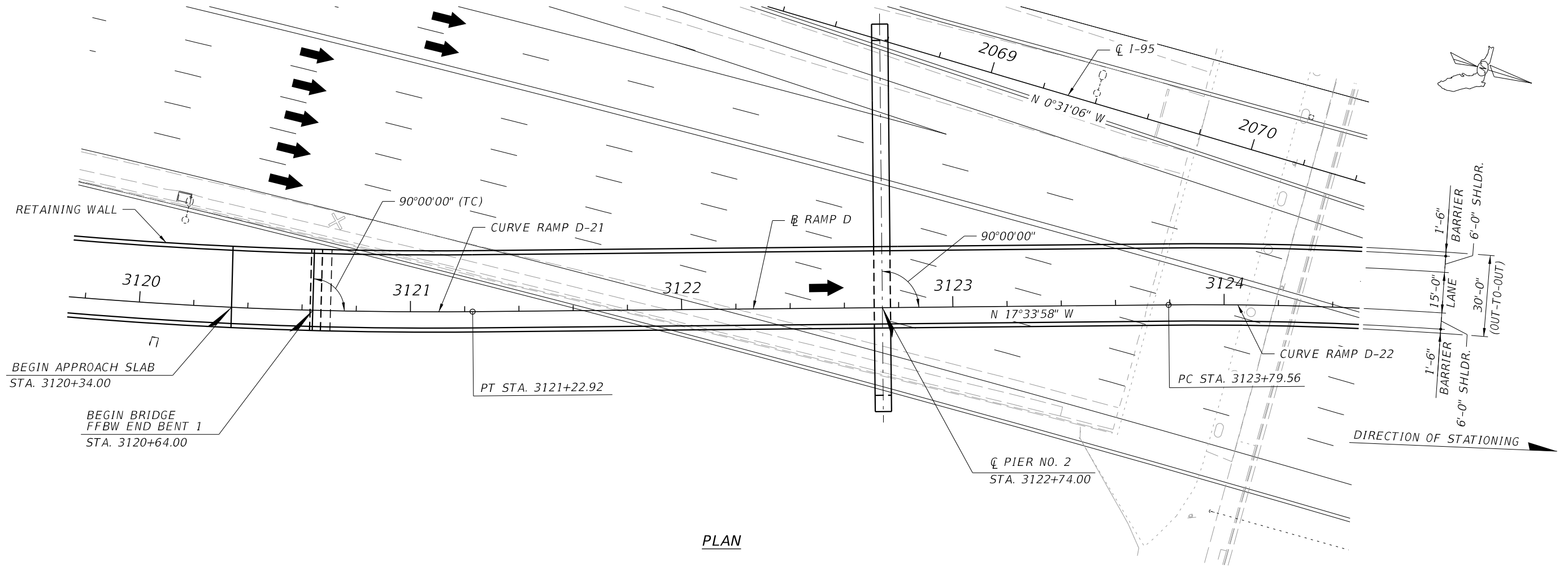
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



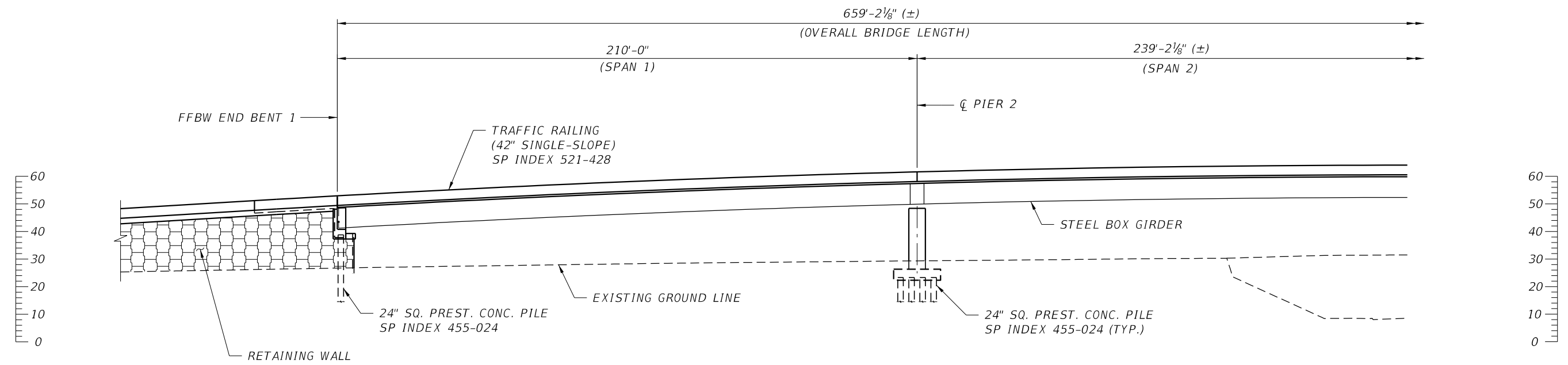


REVISIONS						John Daniels, P.E. P.E. LICENSE NUMBER 41875 HDR Engineering, Inc. 3250 West Commercial Blvd, Suite 100 Fort Lauderdale, FL 33309-3459 CERTIFICATE OF AUTHORIZATION 4213	DRAWN BY: CHECKED BY: DESIGNED BY: CHECKED BY:	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE:  <b>RAMP C - PLAN AND ELEVATION</b>	REF. DWG. NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION			ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							SR 9	BROWARD	435512-1-22-02	SR-9/I-95 @ SR-842/BROWARD BOULEVARD INTERCHANGE IMPROVEMENTS	B2-1	

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



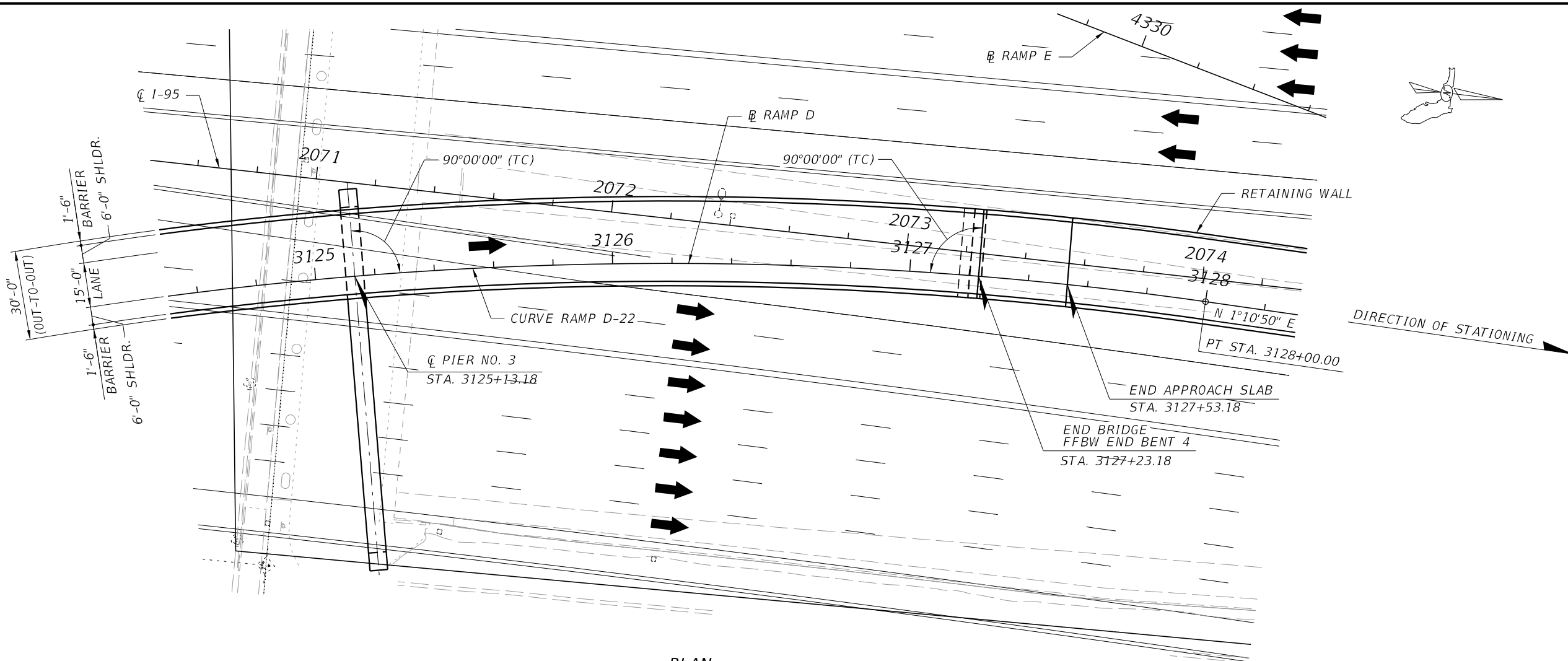
PLAN



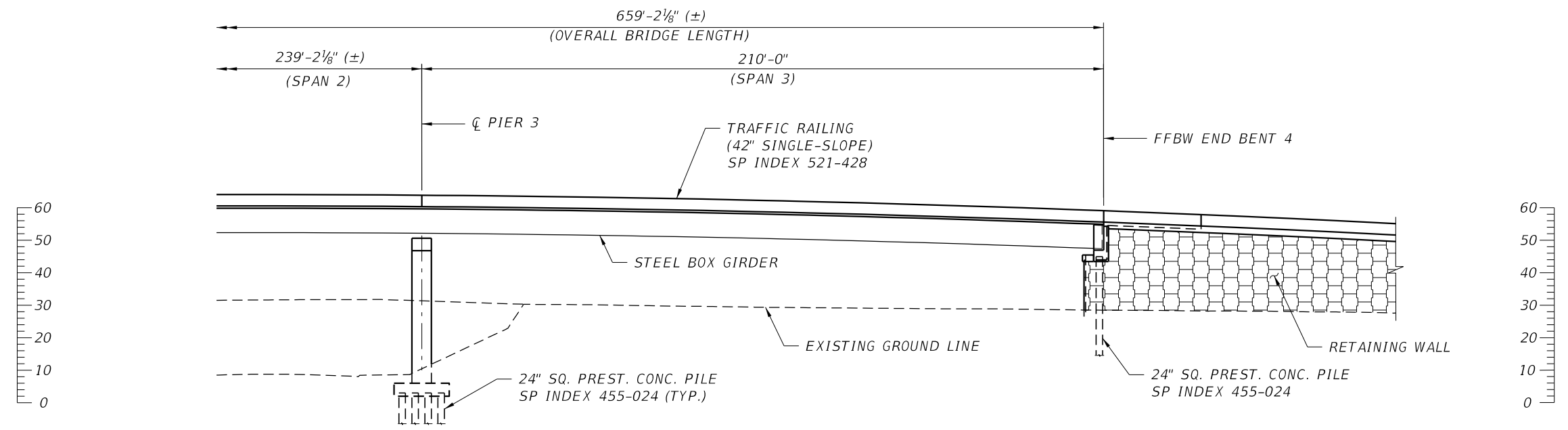
ELEVATION

REVISIONS						John Danielsen, P.E. P.E. LICENSE NUMBER 41875 HDR Engineering, Inc. 3250 West Commercial Blvd, Suite 100 Fort Lauderdale, FL 33309-3459 CERTIFICATE OF AUTHORIZATION 4213	DRAWN BY:	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE:	REF. DWG. NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		CHECKED BY:	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	PROJECT NAME:	SHEET NO.
								SR 9	BROWARD	435512-1-22-02	RAMP D - PLAN AND ELEVATION (1 OF 2)	
											SR-9/I-95 @ SR-842/BROWARD BOULEVARD INTERCHANGE IMPROVEMENTS	B3-1

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



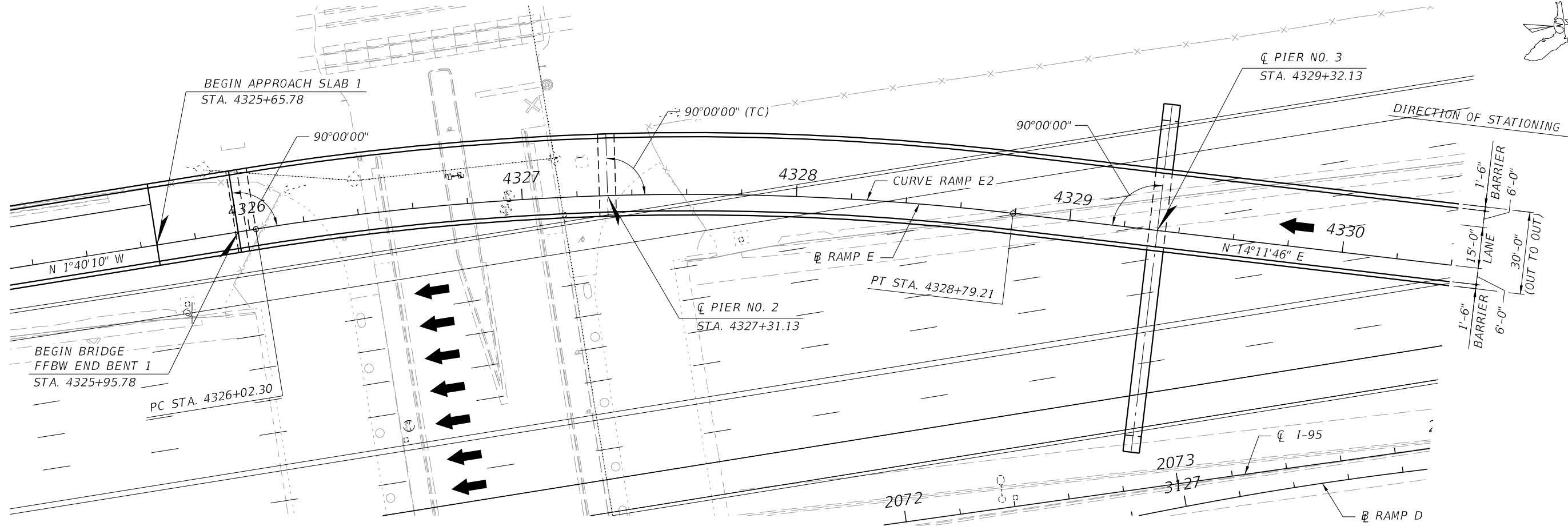
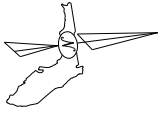
PLAN



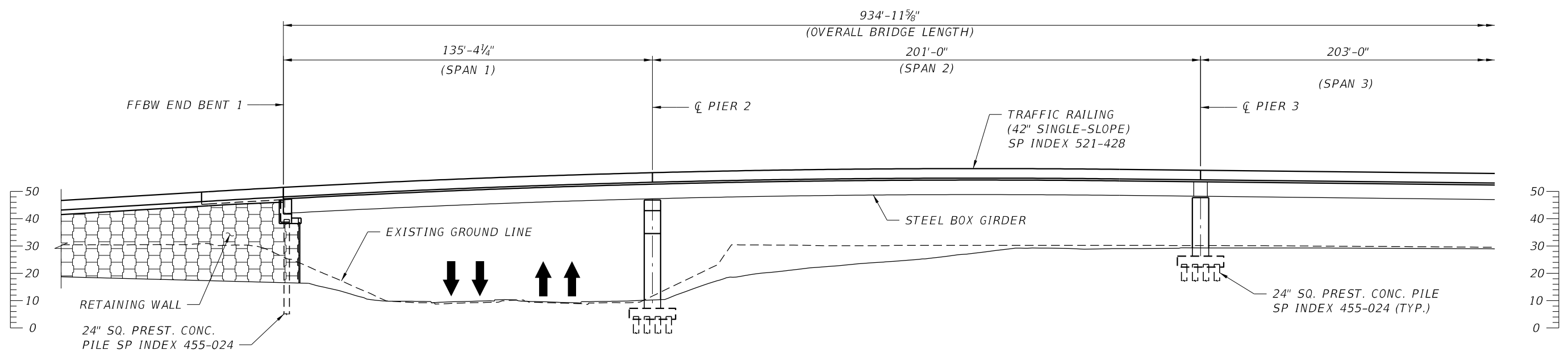
ELEVATION

REVISIONS						John Daniels, P.E. P.E. LICENSE NUMBER 41875 HDR Engineering, Inc. 3250 West Commercial Blvd, Suite 100 Fort Lauderdale, FL 33309-3459 CERTIFICATE OF AUTHORIZATION 4213	DRAWN BY:	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE:	REF. DWG. NO.		
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION		CHECKED BY:	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	RAMP D - PLAN AND ELEVATION (2 OF 2)	SHEET NO. B3-2		
							DESIGNED BY:	SR 9	BROWARD	435512-1-22-02			PROJECT NAME:	SR-9/I-95 @ SR-842/BROWARD BOULEVARD INTERCHANGE IMPROVEMENTS
							CHECKED BY:							

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



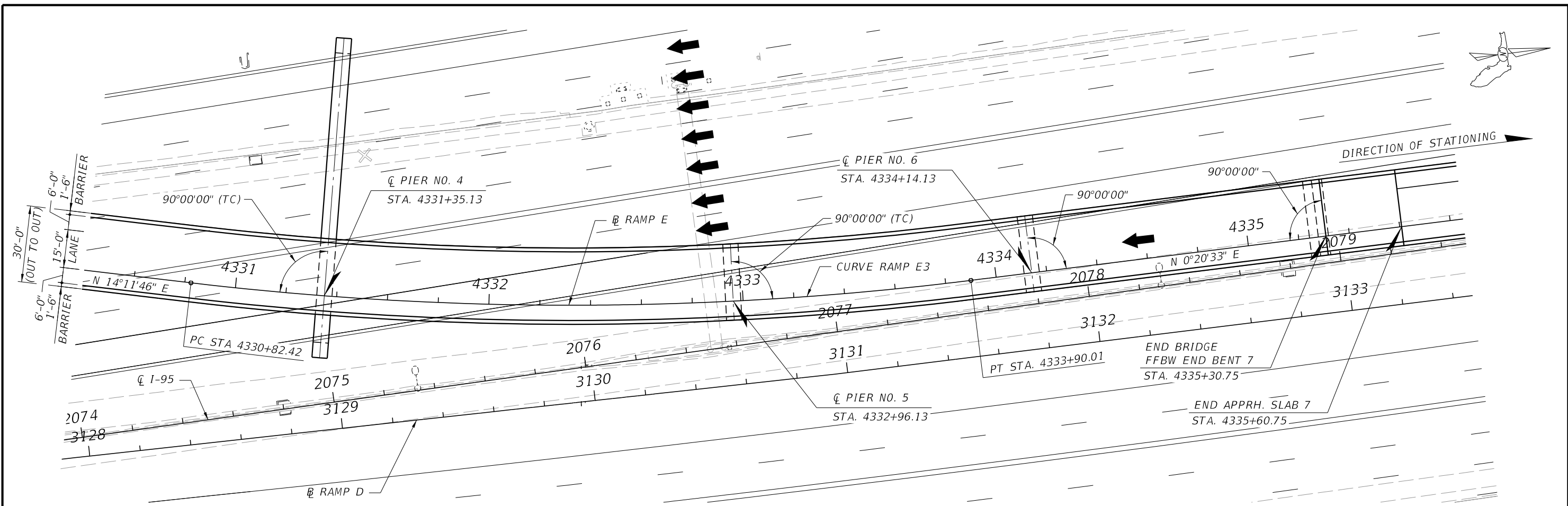
PLAN



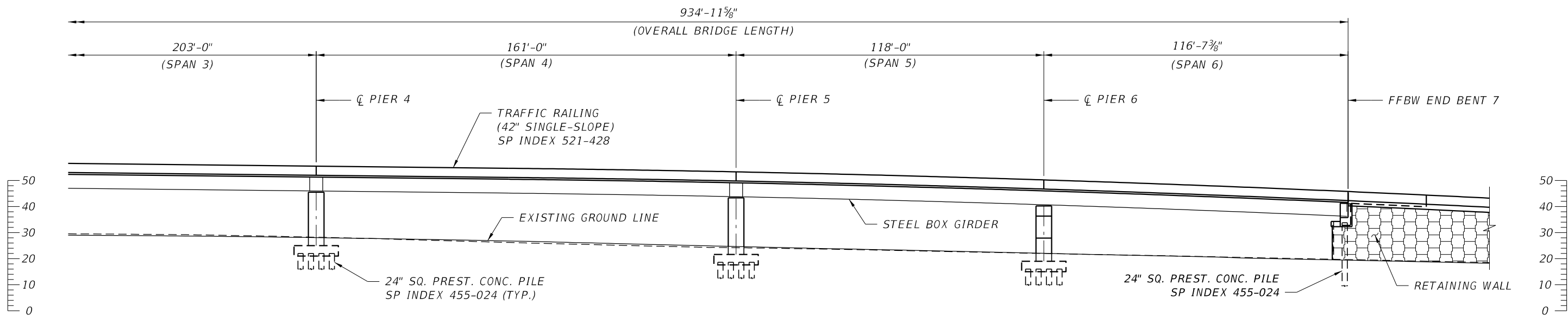
ELEVATION

REVISIONS						John Danielsen, P.E. P.E. LICENSE NUMBER 41875 HDR Engineering, Inc. 3250 West Commercial Blvd, Suite 100 Fort Lauderdale, FL 33309-3459 CERTIFICATE OF AUTHORIZATION 4213	DRAWN BY: CHECKED BY: DESIGNED BY: CHECKED BY:	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET TITLE:  RAMP E - PLAN AND ELEVATION (1 OF 2)	REF. DWG. NO.
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION			ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
							SR 9	BROWARD	435512-1-22-02	SR-9/I-95 @ SR-842/BROWARD BOULEVARD INTERCHANGE IMPROVEMENTS	B4-1	

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.



PLAN



ELEVATION

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

John Danielsen, P.E.  
 P.E. LICENSE NUMBER 41875  
 HDR Engineering, Inc.  
 3250 West Commercial Blvd, Suite 100  
 Fort Lauderdale, FL 33309-3459  
 CERTIFICATE OF AUTHORIZATION 4213

DRAWN BY:	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
CHECKED BY:			
DESIGNED BY:	ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CHECKED BY:	SR 9	BROWARD	435512-1-22-02

SHEET TITLE:	RAMP E - PLAN AND ELEVATION (2 OF 2)		REF. DWG. NO.
PROJECT NAME:	SR-9/I-95 @ SR-842/BROWARD BOULEVARD INTERCHANGE IMPROVEMENTS		SHEET NO.
			B4-2

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

# Appendix B

## Typical Section Package

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

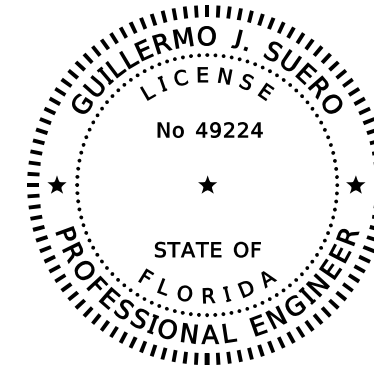
TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 435513-1-22-02

BROWARD COUNTY (86100)  
STATE ROAD NO. 842/BROWARD BLVD. (86006000)  
STATE ROAD NO. 9/I-95 (86070000)

APPROVED BY:

THIS DOCUMENT HAS BEEN DIGITALLY  
SIGNED AND SEALED BY:



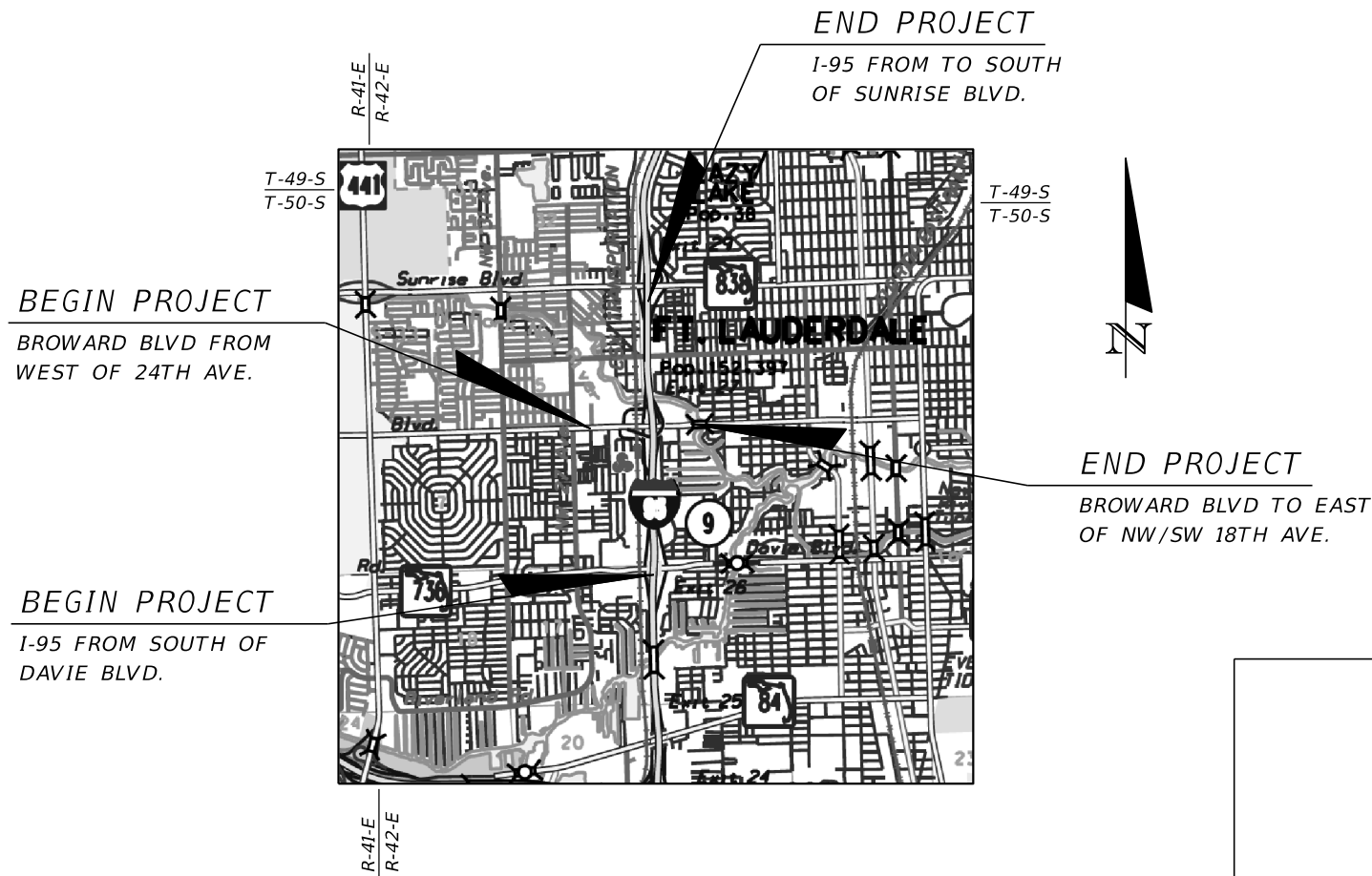
PRINTED COPIES OF THIS DOCUMENT ARE  
NOT CONSIDERED SIGNED AND SEALED.  
THE SIGNATURE MUST BE VERIFIED  
ON THE ELECTRONIC DOCUMENTS.

HDR ENGINEERING, INC.  
3250 W. COMMERCIAL BLVD. SUITE 100  
FT. LAUDERDALE, FLORIDA 33309  
CERTIFICATE OF AUTHORIZATION: 4213  
GUILLERMO J. SUERO, P.E. NO. 49224

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE  
FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

TYPICAL SECTION PACKAGE

SHEET NO	SHEET DESCRIPTION
1	COVER SHEET
2	TYPICAL SECTION No. 1
3	TYPICAL SECTION No. 2
4	TYPICAL SECTION No. 3



TYPICAL SECTION CONCURRENCE

FDOT DISTRICT IV DESIGN ENGINEER

FDOT DISTRICT IV STRUCTURES  
DESIGN ENGINEER

DESIGN SPEED AND POSTED  
SPEED CONCURRENCE:

DESIGN SPEED AND POSTED  
SPEED CONCURRENCE:

FDOT DISTRICT IV TRAFFIC OPERATIONS  
ENGINEER

FDOT DISTRICT IV DESIGN ENGINEER

FDOT DISTRICT INTERMODAL SYSTEMS  
DEVELOPMENT MANAGER

SHEET  
NO.

1

**PROJECT CONTROLS**

**CONTEXT CLASSIFICATION**

- ( ) C1 : NATURAL                      ( ) C3C : SUBURBAN COMM.
- ( ) C2 : RURAL                        (X) C4 : URBAN GENERAL
- ( ) C2T : RURAL TOWN                ( ) C5 : URBAN CENTER
- ( ) C3R : SUBURBAN RES.            ( ) C6 : URBAN CORE
- ( ) N/A : L.A. FACILITY

**FUNCTIONAL CLASSIFICATION**

- ( ) INTERSTATE                        ( ) MAJOR COLLECTOR
- ( ) FREEWAY/EXPWY.                ( ) MINOR COLLECTOR
- (X) PRINCIPAL ARTERIAL            ( ) LOCAL
- ( ) MINOR ARTERIAL

**HIGHWAY SYSTEM**

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

**ACCESS CLASSIFICATION**

- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

**CRITERIA**

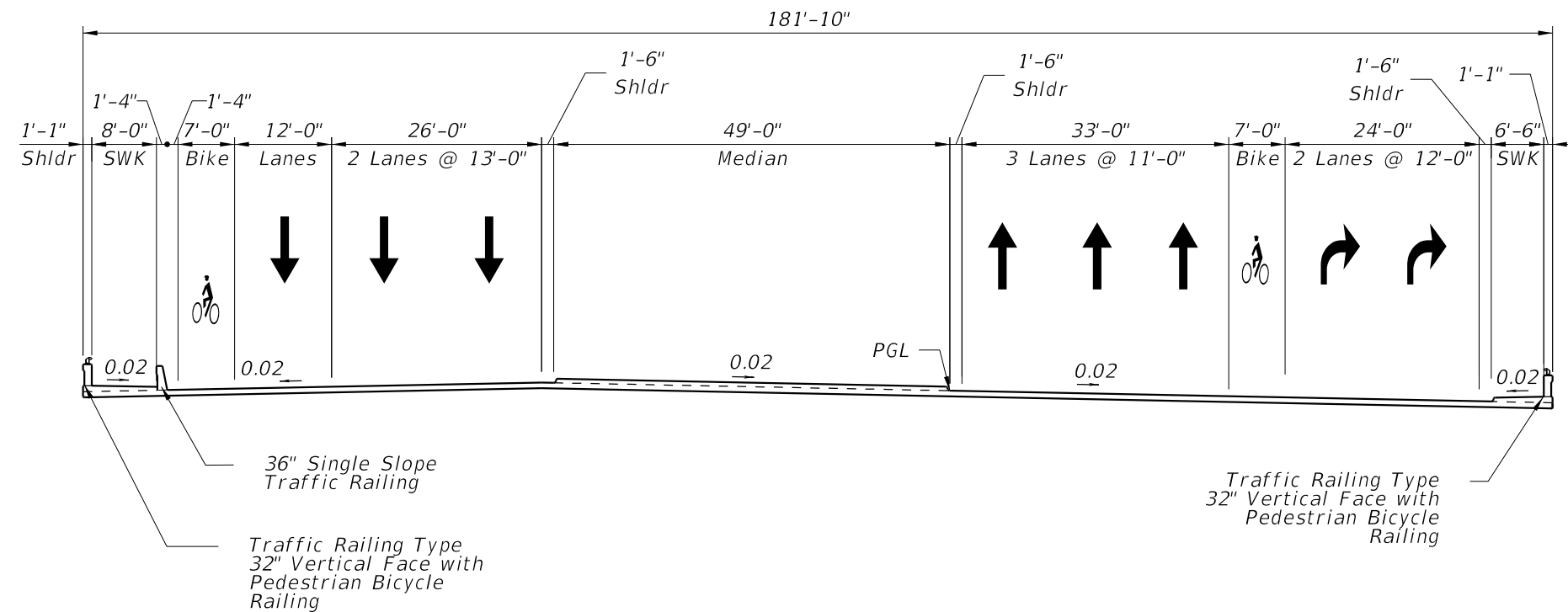
- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

**POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:**

EXCEPTIONS:  
NONE

VARIATIONS:  
HORIZONTAL CURVE LENGTH  
VERTICAL CLEARANCE

**TYPICAL SECTION No.**



**BROWARD BLVD. OVER SOUTH FLORIDA RAIL CORRIDOR**

**TRAFFIC DATA**

CURRENT YEAR = AADT =  
 ESTIMATED OPENING YEAR = AADT =  
 ESTIMATED DESIGN YEAR = AADT =  
 K = % D = % T = % (24 HOUR)  
 DESIGN HOUR T = %  
 DESIGN SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
435513-1-22-02	2



**PROJECT CONTROLS**

**CONTEXT CLASSIFICATION**

- ( ) C1 : NATURAL ( ) C3C : SUBURBAN COMM.
- ( ) C2 : RURAL (X) C4 : URBAN GENERAL
- ( ) C2T : RURAL TOWN ( ) C5 : URBAN CENTER
- ( ) C3R : SUBURBAN RES. ( ) C6 : URBAN CORE
- ( ) N/A : L.A. FACILITY

**FUNCTIONAL CLASSIFICATION**

- ( ) INTERSTATE ( ) MAJOR COLLECTOR
- ( ) FREEWAY/EXPWY. ( ) MINOR COLLECTOR
- (X) PRINCIPAL ARTERIAL ( ) LOCAL
- ( ) MINOR ARTERIAL

**HIGHWAY SYSTEM**

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

**ACCESS CLASSIFICATION**

- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

**CRITERIA**

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

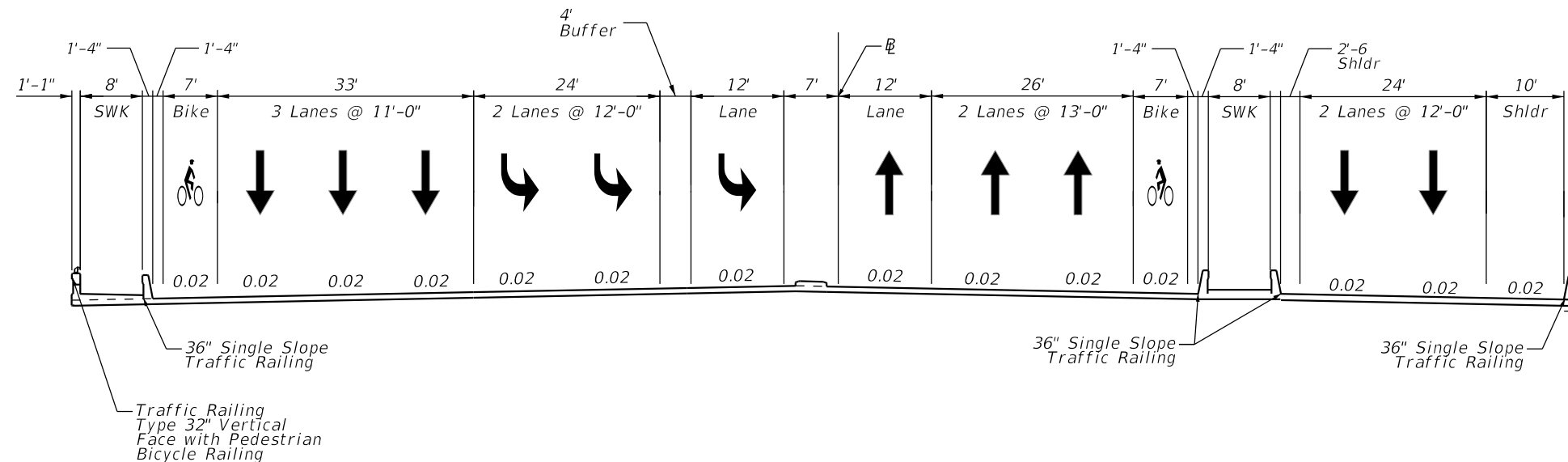
**POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:**

EXCEPTIONS:  
NONE

VARIATIONS:  
HORIZONTAL CURVE LENGTH  
\*RAMP SHOULDER WIDTH

\*CONFIRM RAMP LIMITS VS. BROWARD BLVD LIMITS

**TYPICAL SECTION No.**



BROWARD BLVD. OVER I-95

**TRAFFIC DATA**

CURRENT YEAR = AADT =  
 ESTIMATED OPENING YEAR = AADT =  
 ESTIMATED DESIGN YEAR = AADT =  
 K = % D = % T = % (24 HOUR)  
 DESIGN HOUR T = %  
 DESIGN SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
435513-1-22-02	3

**PROJECT CONTROLS**

CONTEXT CLASSIFICATION

- ( ) C1 : NATURAL            ( ) C3C : SUBURBAN COMM.
- ( ) C2 : RURAL            (X) C4 : URBAN GENERAL
- ( ) C2T : RURAL TOWN    ( ) C5 : URBAN CENTER
- ( ) C3R : SUBURBAN RES. ( ) C6 : URBAN CORE
- ( ) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

- ( ) INTERSTATE            ( ) MAJOR COLLECTOR
- ( ) FREEWAY/EXPWY.    ( ) MINOR COLLECTOR
- (X) PRINCIPAL ARTERIAL   ( ) LOCAL
- ( ) MINOR ARTERIAL

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- ( ) 1 - FREEWAY
- ( ) 2 - RESTRICTIVE w/Service Roads
- ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
- ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
- ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- ( ) 7 - BOTH MEDIAN TYPES

CRITERIA

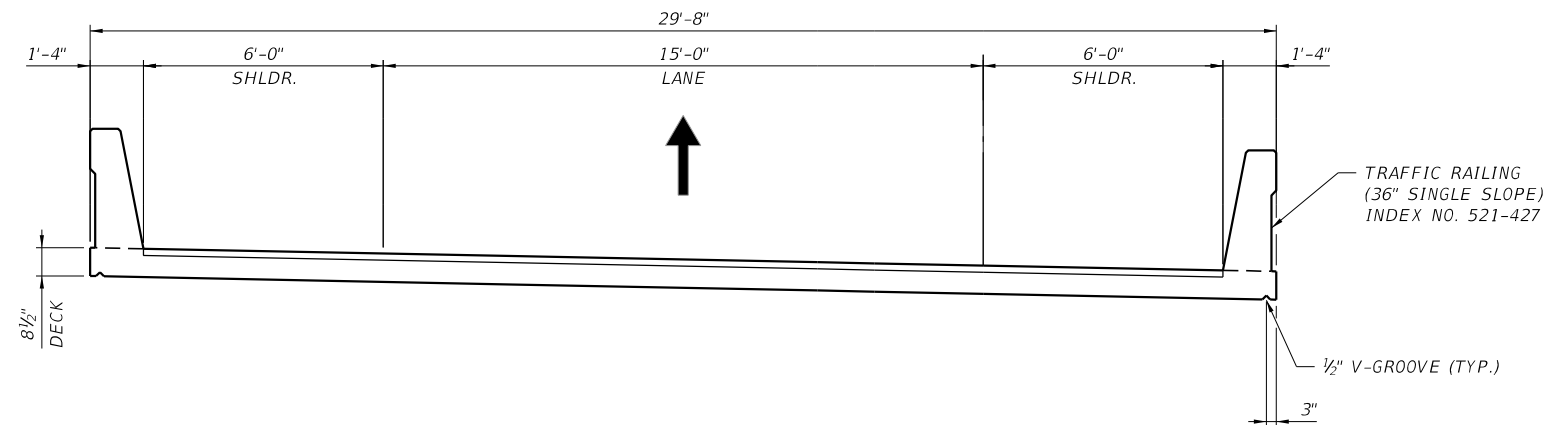
- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

EXCEPTIONS:  
NONE

VARIATIONS:  
HORIZONTAL CURVE LENGTH

**TYPICAL SECTION No.**



TYPICAL SECTION

- RAMP B
- RAMP C
- RAMP D
- RAMP E

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

FINANCIAL PROJECT ID	SHEET NO.
435513-1-22-02	4

# Appendix C

## Public Meetings Documentation

# Appendix D

VE Report

# Value Engineering For Transportation Improvements

## I-95 (SR 9) Interchange at Broward Boulevard



### Value Engineering Study **Draft** Report

FM Number: 435516-1-22-02

Fed. Aid Project: Yes

Project Description: I-95 (SR 9) Interchange at Broward Boulevard

Study Dates: January 22 – 26, 2018

Project Development Phase				Study Identification Number						
PD&E	Design	Other					VE Item No.			
HDR, Inc.								Yr.	Dist.	No.
								17	004	04

This study has been performed in accordance with current applicable FDOT Value Engineering Procedures and Techniques

Richard L. Johnson, CVS No. 20030201, PE No. 38681

February \_\_, 2018

# TABLE OF CONTENTS

<b><u>SECTIONS</u></b>	<b><u>Page</u></b>
1. EXECUTIVE SUMMARY	1
2. VALUE ENGINEERING METHODOLOGY	6
3. WORKSHOP PARTICIPANTS AND PROJECT INFORMATION	8
4. ECONOMIC DATA, COST MODEL AND ESTIMATES	13
5. FUNCTION ANALYSIS AND FAST DIAGRAM	15
6. EVALUATION	17
7. RECOMMENDATIONS	20
APPENDICES	
• Agenda	40
• Sign In Sheets	41-46
• Resolution Memorandum	47-48
• Slide Presentation	49
LIST OF FIGURES	
• Figure 1.1 – 1 Project Location Map	3
• Figure 3.5 – 1 Project Threats Map	10
• Figure 3.5 – 2 Project Opportunities Map	11
• Figure 5.1 – 1 FAST Diagram	16
LIST OF TABLES	
• 1.1 – 1 Preliminary Cost Estimate, PD&E Alternative 2B	4
• 1.4 – 1 Summary of Highest Rated Recommendation	5
• 3.5 – 1 Project Threats Ranking	11
• 3.5 – 2 Project Opportunities Ranking	12
• 4.1 – 1 Preliminary Cost Estimate, PD&E Alternative 2B	14
• 6.1 – 1 Value Engineering Study Ideas	18
• 6.1 – 2 Value Engineering Study Weighted Values	19
• 6.1 – 3 Value Engineering Study Evaluation Scores	19

## 1.1 INTRODUCTION

A Value Engineering (VE) Study was held, during January 22 – 26, 2018, using the VE methodology to improve the I-95 (SR 9) Interchange at Broward Boulevard (SR 842) project. The VE study analyzed value improvements for improving the traffic movements in eastern central Broward County. The purpose of this study is to identify short-term and long-term needs and develop design concepts on Broward Boulevard and I-95, improve interchange operations, and reduce congestion, at the study interchange through the 2040 design year.

The Interchange of I-95 at Broward Boulevard is located between the Sunrise Boulevard Interchange (one mile to the north) and the Davie Boulevard Interchange (one mile to the south). The South Florida Rail Corridor (SFRC)/CSX Railroad is adjacent to and runs parallel along the west side of I-95 in this area. The limits for this report extend from just south of Davie Boulevard to just south of Sunrise Boulevard along I-95 and from NW 24th Ave. to NW 18th Ave. along Broward Boulevard SR-842/Broward Boulevard is a six-lane urban divided roadway with a raised median within the vicinity of the I-95 Interchange. It provides the main entry way to the downtown Fort Lauderdale Central Business District from I-95 and the east-west connection between US-1 and SR-817/University Drive in the City of Plantation.

There is a Park-and-Ride lot located within the interchange area. The Park-and-Ride lot includes the provision of 794 parking spaces throughout five parking lots, Spaces in Lot 5 are designated for Amtrak and Tri-Rail parking only while the spaces in Lots 1-4 are available for any purpose, including car pools and 95 Express Bus. There are no designated bicycle facilities within the Park-and-Ride lot and minimal sidewalk facilities. Access to the Park-and-Ride lots is provided via Broward Boulevard and I-95. Egress and ingress for Broward Boulevard is provided via a series of intersections sometimes requiring drivers coming from the south to circulate through the northern parking areas. Egress and ingress from I-95 is provided via single high occupancy vehicle (HOV) ramps. Broward Boulevard's elevation over I-95 creates vertical access challenges for transit users, bicyclists and pedestrians looking to connect with the transit services available in the Park-and-Ride and Transit Station area northwest and southwest of the interchange. As a result of these challenges and due to its location as the entry way to downtown Fort Lauderdale, this interchange has been the subject of a variety of studies including the City of Fort Lauderdale's Gateway Vision and FDOT's Broward Boulevard Transit Corridor Study. Each of these studies has evaluated these challenges and recommended improvements to the west side of the interchange where connections to Tri-Rail and the 95 Express Bus services are offered.

The project location may be found on **Figure 1.1–1 Project Location Map**. The typical sections and plan and profile drawings for the roadway alternatives were shown on the concept drawings included in the Project Development and Environment (PD&E) documents. By building this project, Broward County and Florida Department of Transportation (FDOT) will improve mobility in the region and the level of service for the I-95 mainline and the Broward Boulevard corridor. The project will provide improved level of service and operations in the area.

**Table 1.1–1 Preliminary Cost Estimate** on page 4 shows the project preliminary estimated construction costs for the improvements for the alternative being studied. The proposed improvements are to enhance regional mobility and level of service in the design year of 2040.

## 1.2 GOALS AND OBJECTIVES

The objective of the study was to identify opportunities and recommend concepts that may improve value in terms of capital cost, constructability, maintenance of traffic, and the basic functional requirements of the project. This report documents the value engineering analysis performed to support decisions related to the planned project alternatives. Additionally, it summarizes existing conditions, documents the purpose and need for the project as well as documents other engineering, environmental, and social data related to PD&E concept.

The basic project functions are to improve level of service for the interchange, avoid spillback, improve connectivity and improve traffic operations within the regional transportation system. As shown in **Section 4**,

the Functional Analysis System Techniques (FAST) Diagram illustrates the functions as determined by the VE team.

### **1.3 RESULTS OF THE STUDY**

The VE team generated 13 ideas during the Creative Ideas phase of the VE Job Plan. The ideas were then evaluated based on the evaluation criteria for this project. The object of this evaluation was to identify ideas with the most promise to achieve savings while preserving functions or improving operations.

The team began the evaluation process of scoring the PD&E documents concept and the individual creative ideas. During this process it was agreed that we had various ideas, but certain ideas having the greatest potential value improvement were carried forward for further development. The remaining ideas either became design suggestions (many specific to a particular component within the project) or were eliminated as duplicate, not appropriate or improbable for acceptance. The VE team ultimately categorized five ideas as recommendations for the designers to consider. The developed ideas either maintain or enhance the required functions while improving overall costs, constructability, minimizing time, minimizing utility conflicts and right-of-way issues, minimizing environmental impacts, as well as addressing regional connectivity issues, aesthetics and drainage. The ideas and how they rated on a weighted scoring evaluation are listed in the table in **Section 6**. Those ideas that were eliminated are shown with strikeout font.

The design suggestions identified by the VE team are shown in **Section 6**. The VE team presents design suggestions 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.

### **1.4 RECOMMENDED ALTERNATIVES**

The recommendations for further consideration are shown in **Table 1.4-1, Summary of Highest Rated Recommendations**. Potential cost savings are shown in present day dollars.

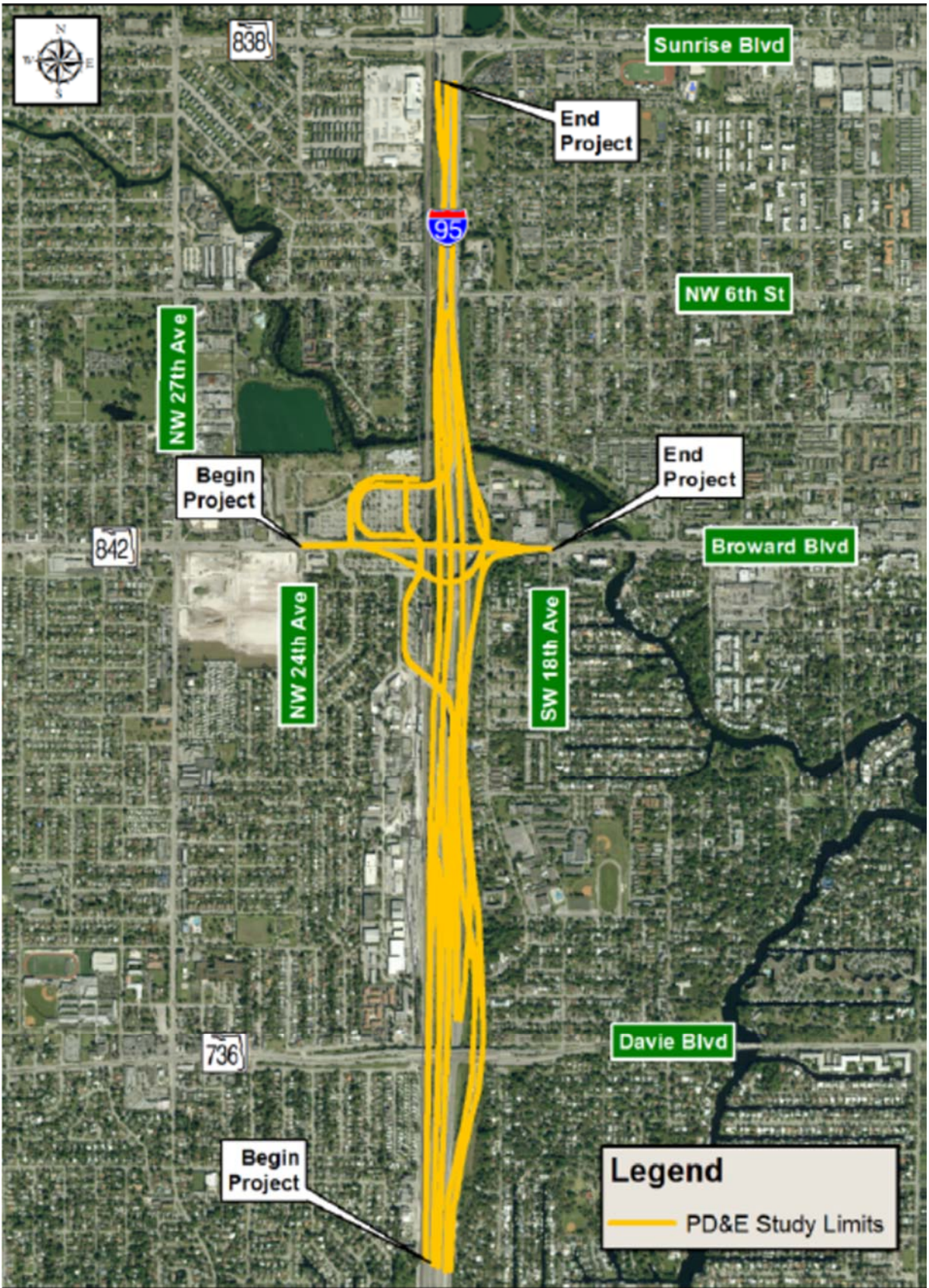
The recommendations in **Table 1.4 – 1** indicate the anticipated initial cost, operation and maintenance cost, future cost and Life Cycle Cost (costs shown indicate initial capital costs as the LCC are similar to the original design) of the proposed recommendations. The Present Worth (PW) Life Cycle Cost also includes the initial cost, and the other above mentioned costs over the anticipated useful life of the facility. Acceptance of these recommendations would improve the value and be incorporated in the design of the facility. These recommendations appear to be the most cost effective way to provide the required functions. Some of the recommendations cannot be taken with others, since some are mutually exclusive recommendations.

### **1.5 MANAGEMENT ACCEPTANCE & IMPLEMENTATION**

Management action on each of the recommendations taken at the subsequent resolution meeting will be included in **Table 1.4 – 1** in the "Management Action" column. The FDOT Project Manager must ensure that all accepted recommendations are implemented and all pending actions are resolved for inclusion in the project design. Close coordination with the District Value Administrator is encouraged to insure timely resolution of management action.



Figure 1.1 – 1  
Project Location Map



**Table 1.1 – 1**  
**Preliminary Cost Estimate**  
**PD&E Alternative 2B**

<b>Construction Item</b>	<b>Total Costs</b>
Earthwork	\$2,133,952.73
Roadway	\$9,060,425.79
Shoulder	\$1,775,496.28
Median	\$169,786.95
Drainage	\$2,879,622.00
Bridges	\$42,849,694.44
Retaining Walls	\$13,418,682.50
Signing	\$1,843,993.06
Lighting	\$1,278,835.01
Signalization	\$494,571.69
Landscaping	\$366,165.46
ITS	\$237,690.30
Architectural	\$5,000,046.33
<b>Total Construction</b>	<b>\$76,508,916.21</b>
MOT (14%)	\$11,411,254.76
<b>Subtotal</b>	<b>\$92,920,217.30</b>
Mobilization (10%)	\$9,292,021.73
Contingency	\$150,000.00
<b>Subtotal</b>	<b>\$102,362,239.03</b>
Right of Way	
Partnering	\$6,000.00
Disputes Review Board	\$66,000.00
<b>Total</b>	<b>\$102,434,239.03</b>

Reference: Preliminary Cost Estimate prepared by HDR, Inc., dated June 1, 2017

**TABLE 1.4 – 1  
SUMMARY OF HIGHEST RATED RECOMMENDATIONS**

		PRESENT WORTH (PW) OF COST (FUTURE COST)		
Rec. No.	Description	Management Action	Comments	Potential Cost Savings (Value Added)
5	Widen the EB Broward Boulevard to NB I-95 and diverge to a ramp SB I-95 to Express lanes and make the Broward Boulevard right turns to only go to the SB I-95 general use lanes. Segregate the triple lefts with one lane with delineators to go to a braided ramp 200 ft. south of Broward Boulevard and the double lefts can only go to the general use lanes			(\$7,738,000)
5A	Maintain the Broward Boulevard right turns to only go to the SB I-95 general use lanes. Segregate the triple lefts with one lane with delineators to go to a braided ramp 200 ft. south of Broward Boulevard and the double lefts can only go to the general use lanes			(\$17,000)
7	Utilize all existing Park' & Ride ramps via a new intersection on Broward Boulevard just south of NW 22nd Ave.; all general use lanes are either egress or ingress for I-95 general use lanes. City to vacate NW 22nd Ave.			\$48,962,000
7A	If Idea No. 7 is accepted, join Sunrise Boulevard to SB I-95 and Broward Boulevard traffic into a C-D roadway to avoid weaving at I-95			(\$2,426,000)
8	Provide a canopy over the Transit station platform			(\$627,000)
10	No sidewalk on the South side, convey all pedestrians along the North sidewalk on Broward Boulevard Adding an accessible ramp along the side of Broward. Widening the existing bike lanes along the south side of Broward			(740,000)

Management Action Legend: A=Accepted, NA=Not Accepted, FS=Further Study

## 2.1 GENERAL

This section describes the value analysis procedure used during the VE study. A systematic approach was used in the VE study and the key procedures involved were organized into three distinct parts: 1) pre-study preparations, 2) VE workshop study, and 3) post-study.

## 2.2 PRE-STUDY PREPARATIONS

Pre-study preparations for the VE effort consisted of scheduling study participants and tasks; reviews of documents; gathering necessary background information on the project; and compiling project data into a cost model. Information relating to the design, construction, and operation of the facility is important as it forms the basis of comparison for the study effort. Information relating to funding, project planning, operating needs, systems evaluations, basis of cost, production scheduling, and construction of the facility was also a part of the analysis.

## 2.3 VE WORKSHOP STUDY

The VE workshop was a five-day effort. During the workshop, the VE job plan was followed. The job plan guided the search for high value areas in the project and included procedures for developing alternative solutions for consideration while at the same time considering efficiency. It includes these phases:

- Information Gathering Phase
- Function Identification and Cost Analysis Phase
- Creative Phase
- Evaluation Phase
- Development Phase
- Presentation and Reporting Phase

### 2.3.1 *Information Phase*

At the beginning of the study, the conditions and decisions that have influenced the development of the project must be reviewed and understood. For this reason, the consultant project manager provided design information about the project to the VE team. Following the presentation, the VE team discussed the project using the documents listed in **Section 3.3**.

### 2.3.2 *Function Identification and Cost Analysis Phase*

Based on the preliminary cost estimate, historical and background data, a cost model was developed for this project organized by major construction elements. It was used to distribute costs by project element in order to serve as a basis for alternative functional categorization. The VE team identified the functions of the various project elements and subsystems and created a Function Analysis System Technique Diagram (FAST) to display the relationships of the functions.

### 2.3.3 *Creative Phase*

This VE study phase involved the creation and listing of ideas. During this phase, the VE team developed as many ideas as possible to provide a creative atmosphere and to help team members to “think outside the box.” Judgment of the ideas was restricted at this point to insure vocal critics did not inhibit creativity. The VE team was looking for a large quantity of ideas and association of ideas.

FDOT and the design team may wish to review the creative design suggestions that are listed in **Section 6**, because they may contain ideas, which can be further evaluated for potential use in the design.

### *2.3.4 Evaluation Phase*

During this phase of the workshop, the VE team judged the ideas generated during the creative phase. Advantages and disadvantages of each idea were discussed and a matrix developed to help determine the highest-ranking ideas. Ideas found to be irrelevant or not worthy of additional study were discarded. Those that represented the greatest potential for cost savings, and function or performance improvement to the project were "carried forward" for further development.

The creative listing was re-evaluated frequently during the process of developing ideas. As the relationship between creative ideas became more clearly defined, their importance and ratings may have changed, or they may have been combined into a single idea. For these reasons, some of the originally high-rated ideas may not have been developed.

### *2.3.5 Development Phase*

During the development phase, each highly rated idea was expanded into a workable solution. The development consisted of a description of the idea, life cycle cost comparisons, where applicable, and a descriptive evaluation of the advantages and disadvantages of the proposed ideas. Each idea was written with a brief narrative to compare the original design to the proposed change. Sketches and design calculations, where appropriate, were also prepared in this part of the study. The developed VE ideas are summarized in the section entitled **Section 7 – Recommendations**.

## **2.4 POST STUDY**

The post-study portion of the VE study includes the draft and final preparation of this Value Engineering Study Report and the discussions and resolution meetings with FDOT personnel. The Planning and Environmental Management team should analyze each alternative and prepare a short response, recommending incorporating the idea into the project, offering modifications before implementation, or presenting reasons for rejection. The VE team is available for consultation after the ideas are reviewed. Please do not hesitate to call on us for clarification or further information for considerations to implement any of the presented ideas.

### *2.4.1 Presentation and Reporting Phase*

The final phase of the VE Study began with the presentation of the ideas on the last day of the VE Study. The VE team screened the VE ideas before draft copies of the report were prepared. The initial VE ideas were arranged in the order indicated to facilitate cross-referencing to the final recommendations for revision to the Contract Documents.

### *2.4.2 Final Report*

The acceptance or rejection of ideas described in this report is subject to FDOT's review and approval. The VE team is available to address any final draft report comments for incorporation into the final report.

**3.1 PARTICIPANTS**

On January 22, 2018, representatives from HDR, Inc., presented an overview of the projects in the PD&E documents for the interchange with I-95 at Broward Boulevard. The purpose of this meeting was to acquaint the study team with the overall project and what the main areas the VE team needed to focus on during this VE study.

The VE facilitator also reviewed and explained the value engineering improvement study agenda. He acquainted the team with the goals for the study based upon the study methodology that would be applied to improve the project. The study team included the following experts who participated in the study:

<b>Participant Name</b>	<b>Role</b>	<b>Affiliation</b>
Claudia Calvo, PE	Drainage	FDOT District 4
William Grey, PE	Construction	FDOT District 4
Rayner Abreu	Right of Way	FDOT District 4
Yenny Soca	Roadway Design	FDOT District 4
Garret O’Brady, EI	Roadway Design	FDOT District 4
Will Isidort, EI	Structures	FDOT District 4
Alberto Sardinas	Structures	FDOT District 4
Brian Bosket	Maintenance	FDOT District 4
Doug Norris, PE	Roadway Design	Stantec
Eugene Khashper	District Value Administrator	FDOT District 4
Rick Johnson, PE, CVS	VE Team Leader	PMA Consultants LLC
Francisco Cruz, PE, AVS, PMP	Assistant VE Team Leader	PMA Consultants LLC

**3.2 PROJECT INFORMATION**

The purpose of the project orientation meeting, on January 22, 2018, in addition to being an integral part of the Information Gathering Phase of the VE study, was to bring the VE team “up-to-speed” regarding the overall project scope.

**3.3 LIST OF VE STUDY MATERIAL REVIEWED**

1. Second Alternatives Public Workshop Presentation, Project Development and Environment (PD&E) Study, SR-9/I-95 @ SR842/Broward Boulevard Interchange Improvements, dated November 14, 2017.
2. Alternatives Public Workshop #2 Summary, Project Development and Environment (PD&E) Study, SR-9/I-95 @ SR842/Broward Boulevard Interchange Improvements, dated November 20, 2017.
3. Broward Boulevard Project Development and Environment (PD&E) Study, Signing and Paving Markings (S&PM), Dual Left, dated December 20, 2017.
4. Broward Boulevard Project Development and Environment (PD&E) Study, Signing and Paving Markings (S&PM), Triple Left, dated December 20, 2017.
5. Draft System Interchange Modification Report, Project Development and Environment (PD&E) Study, SR-9/I-95 @ SR842/Broward Boulevard Interchange, created on December 4, 2017.
6. Riverbend Warehouse Overall Site Plan, prepared by Flynn Engineering Services, PA, Sheet No. C1, plot date January 24, 2017.
7. Risk Register and Pre-Response Results, prepared by HRD, Inc. dated January 16, 2018.
8. FDOT Long Range Estimates, Alternative 2B, prepared by HDR, Inc., dated June 1, 2017.
9. Proposed Interchange Typical Section, prepared by HDR, Inc., undated.

10. Various Exhibit Boards for Alternatives 1, 2a, and 2b, prepared by HDR, Inc., undated.

### **3.4 SUMMARY OF GENERAL PROJECT INPUT - OBJECTIVES, POLICIES, DIRECTIVES, CONSTRAINTS, CONDITIONS & CONSIDERATIONS**

The following is a summary of general project input, including the goals, objectives, directives, policies, constraints, conditions and considerations presented to the study team. Any “element” specific input is indicated by parentheses around the elements, disciplines and interests (i.e., right-of-way, roadway, environmental). Representatives from FDOT and the design team provided a project background, on the first day of the study.

#### *3.4.1 Project Functions, Goals & Objectives (what the project should do as determined at the kickoff meeting and subsequent Workshops):*

- |                           |                                    |
|---------------------------|------------------------------------|
| 1. Improve LOS            | 28. Evaluate Costs                 |
| 2. Increase Capacity      | 29. Identify Constraints           |
| 3. Construct Improvements | 30. Mitigate Impacts               |
| 4. Acquire Property       | 31. Treat Stormwater               |
| 5. Design Project         | 32. Accommodate Utilities          |
| 6. Recommend Solutions    | 33. Satisfy Community              |
| 7. Study Alternatives     | 34. Minimize Environmental Impacts |
| 8. Define Needs           | 35. Manage Access                  |
| 9. Add Lanes              | 36. Anticipate Future Growth       |
| 10. Connect Roadways      | 37. Minimize Costs                 |
| 11. Span Obstacles        | 38. Accommodate Traffic            |
| 12. Reduce Travel-Time    | 39. Ease of Maintenance            |
| 13. Improve Connectivity  | 40. Establish Grade                |
| 14. Maintain Traffic      | 41. Divide Traffic                 |
| 15. Map Property          | 42. Provide Refuge                 |
| 16. Appraise Property     | 43. Control Traffic                |
| 17. Acquire Property      | 44. Redirect Water                 |
| 18. Clear Property        | 45. Reduce Footprint               |
| 19. Certify Property      | 46. Illuminate Roadway             |
| 20. Illuminate Roadway    | 47. Beautify Roadway               |
| 21. Redirect Water        | 48. Inform Drivers                 |
| 22. Prepare Drawings      | 49. Distinguish Area               |
| 23. Provide Refuge        | 50. Start Work                     |
| 24. Inform Public         | 51. Cover Unforseen                |
| 25. Move Traffic          | 52. Develop Relationships          |
| 26. Verify Constraints    | 53. Settle Disputes                |
| 27. Analyze Data          |                                    |

These functions were used by the VE team to create/brainstorm new ideas for potential improvement to the project.

#### *3.4.2 Project Policies & Directives: (documented things the project must or must not do)*

1. The project shall meet economic, engineering design, environmental and social/cultural criteria requirements
2. Meet the goals of the Long Range Transportation Plans for future developments

#### *3.4.3 General Project Constraints: (unchangeable project restrictions)*

1. Tri-Rail and Amtrak Railroad
2. Amtrak Station is eligible for the Historic Registry
3. Reverend Samuel Delevoe Memorial Park is 4(f)
4. Transit envelope on Broward Blvd.

### 3.4.4 General Project Conditions & Considerations:

1. Refer to the PD&E documents and backup documentation prepared by HDR, Inc.

### 3.4.5 Site Review Comments and other observations:

1. Add lanes to the flyovers and diverge to add free flow movements.
2. Add a westbound Broward to a southbound I-95
3. The park and ride ramp geometry don't seem to fit
4. Putting the transit station under Broward requires a large area.
5. Is the C-D system on the east side the best use of the space since it is really an extended exit ramp?

## 3.5 QUALITATIVE RISK ANALYSIS

The team received a copy of the PD&E consultants risk register and prepared a qualitative risk analysis of initial perceived risks that would be addressed during the evaluation and development phases of the study. The risk map below shows what the team believed the occurrence probability might be and the relative impact the risk may have on the project.

The team reviewed 14 potential threats and two opportunities that were identified and mapped each one based on the anticipated impact and probability, an iterative algorithm was run to rank each of the risks as the team perceived them. That ranking on the following pages identify the risks with the highest level of concern regarding the project.

Figure 3.5 – 1 Threats Map

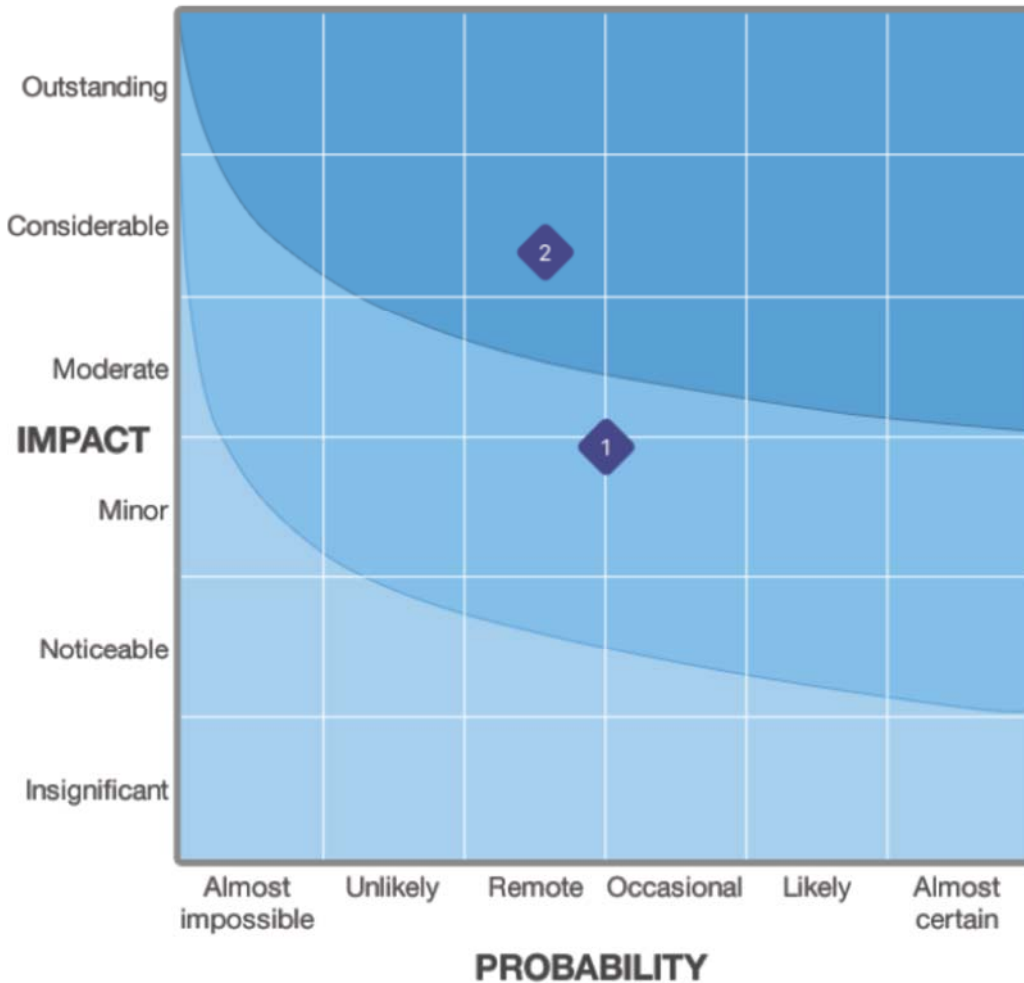




**Table 3.5 – 1 Project Threats Ranking**

Project Risk List		
Risk ID	Description	Severity
1	Weather Related Delays	13.6
2	Interference from other projects	3.1
3	Different Site Conditions	9
4	Changes in Design Standards	12
5	Negative Community Impacts Cause Delays	5.4
6	Unanticipated Cultural and Archaeological Findings	1.5
7	Water Quantity and Quality Issues	1
8	Culvert Replacement	4.2
9	Noise Mitigation	4.7
10	Noise Walls Needed in Different Locations	17
11	Design Constraints Require Additional ROW Related to Drainage	20.7
12	Coordination with Other Agencies	1.2
13	Bridge Unit Cost may be Low	10.8
14	Additional ROW may be needed if the project team decides to modify NW and SW 22nd Ave	7.7

**Figure 3.5 – 2 Opportunities Map**



**Table 3.5 – 1 Project Opportunities Ranking**

<b>Project Opportunity List</b>		
<b>Opp ID</b>	<b>Description</b>	<b>Severity</b>
1	Utilities Cost Programmed are Too Conservative	8.9
2	The use of the HOV ramps for Express Lanes could potentially reduce the traffic volume	11.2

*3.5.1 Options Analysis*

The options developed by the VE Team can generally be characterized in three categories:

- 1) Concepts that can reduce the footprint (right of way)
- 2) Improvements on Preferred Alternative 2B that may minimize costs and satisfy the function to eliminate spillback
- 3) Avoid throw away work due to future planned improvements.

The benefits of reducing the footprint are multifaceted, as the work may be less disruptive to the commercial corridor and residential neighborhoods, will require less roadway reconstruction, has less risk associated with acquiring right of way with contamination issues and is more cost effective due to the lower level of complexity. The VE team and the current PD&E team believe there are multiple viable options to limit the right of way needs for the interchange, roadway and the flyover(s).

Accordingly, much effort was spent by the VE team evaluating and developing options to improve the Alternative 2b concept. Within those recommendations, some can be considered refinements to the plan, and others more substantive to the final condition and the overall cost, schedule and construction complexity of the work. The goal(s) of the alterantives is to address:

- 1) Eliminate the spillback that negatively effects level of service on the I-95 mainline.
- 2) Minimizing construction work areas at the interchange and the impacts on residents and businesses.
- 3) Improve Broward Boulevard traffic operations.
- 4) Improve access to and from NW 22<sup>nd</sup> Avenue.

**4.1 ECONOMIC DATA**

The study team developed economic criteria used for evaluation with information gathered from the PD&E documents. To express costs in a meaningful manner, the cost comparisons associated with alternatives are presented on the basis of total Life Cycle Cost and discounted present worth. Project period interest rates are based on the following parameters:

Year of Analysis:	2017
Economic Planning Life:	20 years starting in 2020
Discount Rate/Interest:	5.00%
Inflation/Escalation Rate:	3.00%

The Preliminary PD&E Cost Estimate was used by the team for the major construction elements and right of way costs were developed by HDR, Inc., and the FDOT Right of Way Estimating team. The VE team had Long Range Estimate (LRE) costs for the Alternative 2B. The cost for the roadway and interchange improvements is \$102,362,239.03 and no right of way costs. Soft cost for partnering sessions and the disputes review board is estimated at \$72,000.

**Table 4.1 – 1**  
**Preliminary Cost Estimate**  
**PD&E Alternative 2B**

Construction Item	Sequence 1	Sequence 2	Sequence 3	Sequence 4	Sequence 5	Sequence 6	Sequence 7	Sequence 8	Sequence 9	Total Costs	Function
Earthwork	\$448,470.00	\$92,256.50	\$174,994.20	\$174,404.90	\$185,391.70	\$148,656.50	\$560,444.11	\$146,584.42	\$202,750.40	\$2,133,952.73	Establish Grade
Roadway	\$885,059.51	\$182,677.11	\$515,073.91	\$322,061.70	\$253,577.91	\$580,158.50	\$3,093,441.97	\$3,228,375.18		\$9,060,425.79	Move Traffic
Shoulder	\$457,578.69	\$69,969.65	\$94,654.74	\$160,317.36	\$105,877.39	\$182,029.25	\$442,284.82	\$262,784.38		\$1,775,496.28	Provide Refuge
Median	\$144,721.42						\$25,065.53			\$169,786.95	Divide Traffic
Drainage	\$497,337.00	\$284,980.00	\$417,830.00	\$528,120.00	\$395,270.00	\$469,270.00	\$116,320.00	\$170,495.00		\$2,879,622.00	Redirect Water
Bridges	\$24,261,506.39		\$5,757,560.28	\$1,258,228.25	\$3,423,977.45	\$6,143,961.48	\$2,004,460.59			\$42,849,694.44	Span Obstacles
Retaining Walls	\$769,897.50	\$1,709,122.50	\$2,239,685.00	\$2,200,798.75	\$2,300,141.25	\$4,199,037.50				\$13,418,682.50	Reduce Footprint
Signing	\$1,349,438.39	\$10,564.54	\$18,118.40	\$20,794.56	\$11,568.10	\$20,565.84	\$390,006.76	\$22,936.47		\$1,843,993.06	Inform Public
Lighting	\$257,767.05	\$74,047.98	\$104,597.88	\$132,724.81	\$96,532.96	\$115,697.97	\$470,615.59	\$26,850.77		\$1,278,835.01	Illuminate Roadway
Signalization	\$494,571.69									\$494,571.69	Control Traffic
Landscaping								\$366,165.46		\$366,165.46	Beautify Roadway
ITS	\$237,690.30									\$237,690.30	Inform Drivers
Architectural								\$5,000,046.33		\$5,000,046.33	Distinguish Area
<b>Total Construction</b>	<b>\$29,804,037.94</b>	<b>\$2,423,618.28</b>	<b>\$9,322,514.41</b>	<b>\$4,797,450.33</b>	<b>\$6,772,336.76</b>	<b>\$11,859,377.04</b>	<b>\$7,102,639.37</b>	<b>\$9,224,238.01</b>	<b>\$202,750.40</b>	<b>\$76,508,916.21</b>	
MOT (14%)	\$4,172,565.31	\$339,306.56	\$1,305,152.02	\$671,643.05	\$948,127.15	\$1,660,312.79	\$994,369.51	\$1,291,393.32	\$28,385.06	\$11,411,254.76	Maintain Traffic
<b>Subtotal</b>	<b>\$33,976,603.25</b>	<b>\$2,762,924.84</b>	<b>\$10,627,666.43</b>	<b>\$5,469,093.38</b>	<b>\$7,720,463.91</b>	<b>\$13,519,689.83</b>	<b>\$8,097,008.88</b>	<b>\$10,515,631.33</b>	<b>\$231,135.46</b>	<b>\$92,920,217.30</b>	
Mobilization (10%)	\$3,397,660.33	\$276,292.48	\$1,062,766.64	\$546,909.34	\$772,046.39	\$1,351,968.98	\$809,700.89	\$1,051,563.13	\$23,113.55	\$9,292,021.73	Start Work
Contingency	\$16,666.67	\$16,666.67	\$16,666.67	\$16,666.67	\$16,666.67	\$16,666.67	\$16,666.67	\$16,666.67	\$16,666.67	\$150,000.00	Cover Unforeseen
<b>Subtotal</b>	<b>\$37,390,930.24</b>	<b>\$3,055,883.99</b>	<b>\$11,707,099.74</b>	<b>\$6,032,669.38</b>	<b>\$8,509,176.96</b>	<b>\$14,888,325.47</b>	<b>\$8,923,376.44</b>	<b>\$11,583,861.13</b>	<b>\$270,915.67</b>	<b>\$102,362,239.03</b>	
Right of Way											Acquire Property
Partnering										\$6,000.00	Develop Relationships
Disputes Review Board										\$66,000.00	Settle Disputes
<b>Total</b>	<b>\$37,390,930.24</b>	<b>\$3,055,883.99</b>	<b>\$11,707,099.74</b>	<b>\$6,032,669.38</b>	<b>\$8,509,176.96</b>	<b>\$14,888,325.47</b>	<b>\$8,923,376.44</b>	<b>\$11,583,861.13</b>	<b>\$270,915.67</b>	<b>\$102,434,239.03</b>	

Reference: Preliminary Cost Estimate, prepared by HDR, Inc., dated June 1, 2017

## **FUNCTION ANALYSIS AND FAST DIAGRAM**

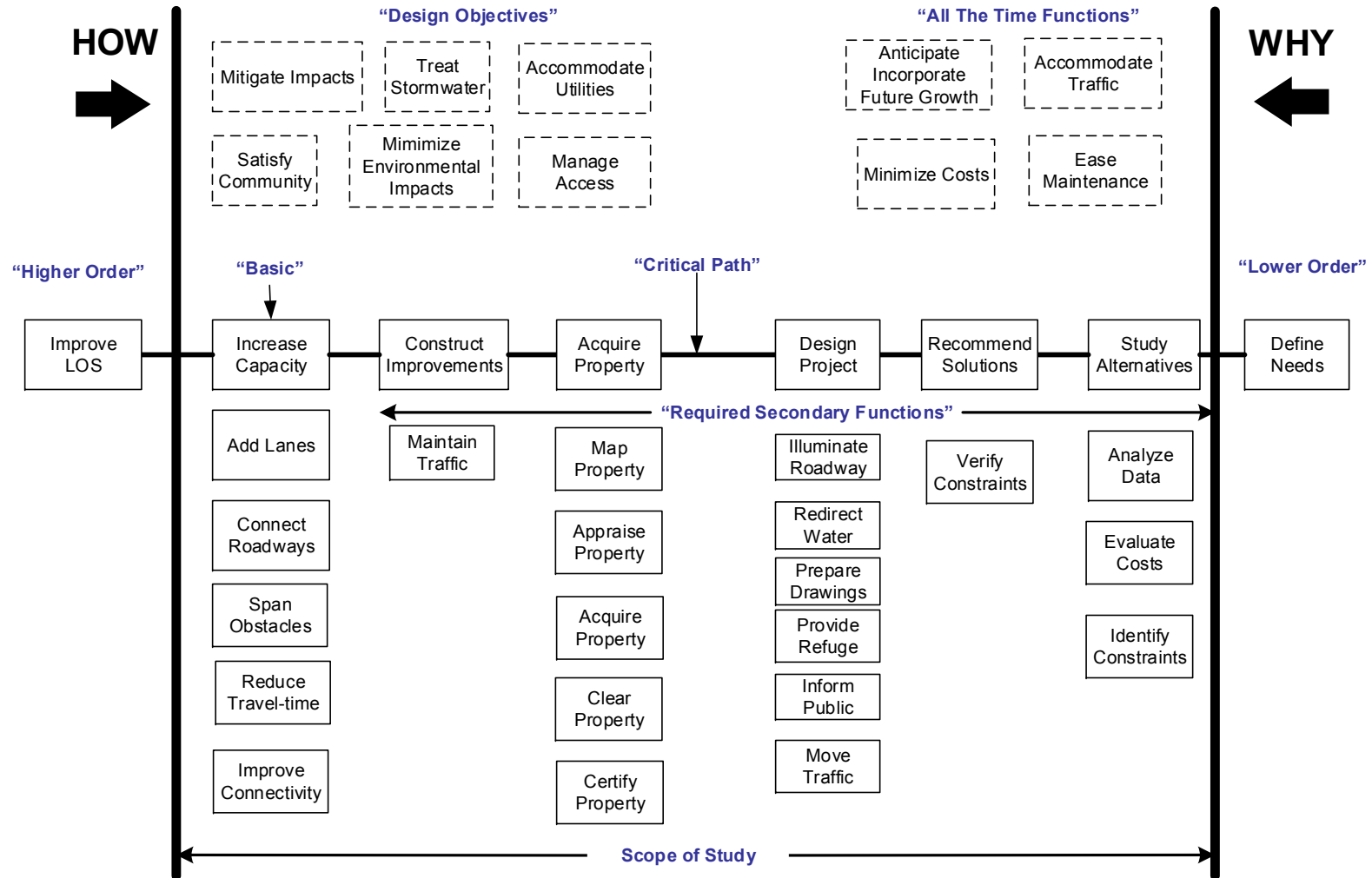
---

This project's function analysis was reviewed and developed by the team to define the requirements for the overall project (and each project element, if required) and to ensure that the VE team had a complete and thorough understanding of the functions (basic and others) needed to satisfy the project requirements. The primary Function Analysis System Technique (FAST) Diagram for the project is included. The development of FAST diagrams help stimulate team members to think in terms of required functions, not just normal solutions, to enhance their creative idea development. The project's primary tasks, the critical path functions, the project's primary basic functions and other required functions that must be satisfied were identified and are indicated in the report.

A function analysis was prepared to determine the basic function of the overall project and each area shown in the cost model. Functional Analysis is a means of evaluating the functions of each element to see if the expenditures for each of those elements actually provide the requirements of the process, or if there are disproportionate amounts of money being proposed to be spent for support functions. These elements add cost to the final product, but have a relatively low worth to the basic function. This creates a high cost-to-worth ratio.

A FAST diagram was developed to identify and display the critical functions path for the overall project. The basic and supporting secondary functions are illustrated on the following FAST Diagram.

**Figure 5.1-1 – FAST Diagram  
I-95 (SR 9) Interchange at Broward Boulevard**



## EVALUATION

During the creative phase the project team generated numerous ideas, alternative proposals and/or recommendations for each required function using conventional brainstorming techniques that are recorded on the following pages. The project team discussed these ideas and determined the evaluation criteria. The VE team identified nine weighted evaluation criteria that included Level of Service, Capital Cost, Environmental Impacts, Stakeholder Acceptance, Right of Way Impacts, Constructability, Future Maintenance, Access Management, and Pedestrian Friendliness. The evaluation criteria were assigned a weighted value from 1 to 9 based on a VE team consensus on the importance of each item. Criteria with the most importance received a 9-weight and the least important received a 1-weight. The ideas were then individually discussed and given a score, on a scale of 1 to 5 with 1 being the least beneficial and 5 most beneficial. The score for each item is multiplied by the weighted criteria value and each multiplication product is added to obtain a total score for the idea.

**Table 6.1 – 1** includes a list of ideas that were generated during the creative phase and each idea's score. **Table 6.1 – 2** illustrates the weighted values for the evaluation criteria and **Table 6.1 – 3** shows the evaluation matrix for idea ranking total scores for all ideas carried forward. The ideas that scored equal to or greater than the original design concept total score were sufficiently rated for further development. The ideas in the table with strike-through were not developed because they were combined with other ideas, not feasible, or were eliminated from consideration for other reasons.

There were a total of 13 creative ideas and 9 that were evaluated and scored. Of the 13 original ideas one was added during development when it was discovered that 7A would be viable if idea number was accepted. A fourteenth idea (No. 5A) was added based on a request at the VE recommendations presentation to consider it. The VE team discussed each of the evaluated ideas with the PD&E project manager during a mid-point review meeting on Wednesday, January 24, 2018. The VE team and the project manager discussed each idea before developing the final group of ideas for final development and analysis.

The write-ups for the developed ideas are in **Section 7**. The tables that follow show the original 13 original ideas and those that scored high enough for development that emerged during the mid-point review, with the ideas that survived the evaluation, analysis and development phases of the study becoming viable recommendations for value improvements. Six ideas were analyzed and developed as viable recommendations for value improvements. During the evaluation process the VE team identified one creative idea as a design suggestion for the PD&E consultants to consider. Ideas that became design suggestions or design questions are designated as "DS" on the evaluation worksheets. The design suggestion identified by the VE team is:

DS-1 Consider some containment system to protect transit passengers from Broward Blvd. traffic

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 the FDOT. Readers are encouraged to review the Creative Idea Listing and Evaluation Worksheets that follow, since they may suggest additional ideas that can be applied to the design or construction.

**TABLE 6.1 –1  
Value Engineering Study Ideas**

<b>Idea No.</b>	<b>I d e a s</b>	<b>LOS</b>	<b>Capital Costs</b>	<b>Environ. Impacts</b>	<b>Stakeholder Acceptance</b>	<b>Construct-ability</b>	<b>Right of Way Impacts</b>	<b>Future Maintenance</b>	<b>Access Management</b>	<b>Pedestrian Friendliness</b>
<b>Original Concept</b>										
	PD&E Alternative	3	3	3	3	3	3	3	3	3
<b>I-95 Ramps/Operation (Move Traffic)</b>										
1	Modify EB to NB Flyover to make it EB to SB into general use lanes and demo the EB to NB portion of the ramp. The Broward Blvd. turns will be Express lanes only and add a braided 200 ft. south. Also, flyover for the WB Broward to SB I-95 general use lanes. An at grade EB to NB left turn will be added as well.	3	1	3	2	2	3	3	4	3.5
2	Add an egress ramp South of Davie Blvd. from the express lanes to the general use lanes 1500 ft. south of the gore for the braided ramp from the general use lanes to the C-D System to allow access to the exit ramp to Broward Blvd.									
3	Add an additional lane going SB towards Davie Blvd. and widen the braided ramp from the C-D lanes to the general use lane and extend the added lane over the general use lanes to the Express lanes landing before Davie Blvd.	3.5	2.75	3	3.5	2	3	2	3	3
4	Widen the EB Broward Blvd. to NB I-95 and diverge to a ramp SB I-95 to Express lanes and make the Broward Blvd. turns to only go to the SB I-95 general use lanes. Add a Broward Blvd. cloverleaf flyover WB to southbound Express lanes.	4.5	1.5	2.5	4	2	3	2	3	3
5	Widen the EB Broward Blvd. to NB I-95 and diverge to a ramp SB I-95 to Express lanes and make the Broward Blvd. right turns to only go to the SB I-95 general use lanes. Segregate the triple lefts with one lane with delineators to go to a braided ramp 200 ft. south of Broward Blvd and the double lefts can only go to the general use lanes	4	2.75	3	3.5	2.5	3	2.5	3	3
6	Add a separate ramp from EB Broward Blvd. to tie into the SB Express ramp by the RR station. EB Broward to SB I-95 right turn only at the ramp. WB Broward Blvd. triple lefts are separated by delineators to SB Express lanes by a braided ramp 200 ft. south of Broward Blvd. The other two left turn lanes are only for SB I-95.	4	2.75	3	3.5	2.75	3	2.5	3	2
7	Utilize all existing Park' & Ride ramps via a new intersection on Broward Blvd. just south of NW 22nd Ave.; all general use lanes are either egress or ingress for I-95 general use lanes. City to vacate NW 22nd Ave.	4	5	3	2.5	4.75	1	4	2.75	3.5
7A	If Idea No. 7 is accepted, join Sunrise Blvd. to SB I-95 and Broward Blvd. traffic into a C-D roadway to avoid weaving at I-95.									
<b>Broward Boulevard Transit Station (Move Traffic)</b>										
8	Provide a canopy over the Transit station platform	3	2.75	3	4	3	3	2.75	3	4
DS-1	Consider some containment system to protect transit passengers from Broward Blvd. traffic									
10	Provide an ADA ramp from the Transit platform to and from the Park & Ride level	3.25	2.5	3	3.5	2.75	3	2.75	3	4
11	No sidewalk on the South side, convey all pedestrians along the North sidewalk on Broward Blvd.	3.5	3	3	3	3	3	3	3	3.25
<b>Broward Boulevard Transit Station (Move Traffic)</b>										
12	Build the Future 95 Express Noise Wall at River Gardens/Sweeting Estates									



**TABLE 6.1 –2**  
**Value Engineering Study Weighted Values**

LOS	Capital Costs	Environ. Impacts	Stakeholder Acceptance	Construct-ability	Right of Way Impacts	Future Maintenance	Access Management	Pedestrian Friendliness
<b>9</b>	<b>7</b>	<b>3</b>	<b>5</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>8</b>

**TABLE 6.1 –3**  
**Value Engineering Study Evaluation Scores**

Idea No.	Ideas	LOS	Capital Costs	Environ. Impacts	Stakeholder Acceptance	Construct-ability	Right of Way Impacts	Future Maintenance	Access Management	Pedestrian Friendliness	TOTAL	FHWA CATEGORIES				
												Safety	Construction	Operations	Environment	Other
<b>Original Concept</b>																
	PD&E Alternative	27	21	9	15	18	3	12	6	24	<b>135</b>					
<b>I-95 Ramps/Operation (Move Traffic)</b>																
5	95 to Express lanes and make the Broward Blvd. right turns to only go to the SB I-95 general use lanes. Segregate the triple lefts with one lane with delineators to go to a braided ramp 200 ft. south of Broward Blvd and the double lefts can only go to the general use lanes	36	19.25	9	17.5	15	3	10	6	24	<b>139.75</b>			X		
7	Utilize all existing Park' & Ride ramps via a new intersection on Broward Blvd. just south of NW 22nd Ave.; all general use lanes are either egress or ingress for I-95 general use lanes. City to vacate NW 22nd Ave.	36	35	9	12.5	28.5	1	16	5.5	28	<b>171.5</b>	X	X	X		
7A	If Idea No. 7 is accepted, join Sunrise Blvd. to SB I-95 and Broward Blvd. traffic into a C-D roadway to avoid weaving at I-95.	0	0	0	0	0	0	0	0	0	<b>0</b>	X		X		
<b>Broward Boulevard Transit Station (Move Traffic)</b>																
8	Provide a canopy over the Transit station platform	27	19.25	9	20	18	3	11	6	32	<b>145.25</b>	X				
10	Provide an ADA ramp from the Transit platform to and from the Park & Ride level	29.3	17.5	9	17.5	16.5	3	11	6	32	<b>141.75</b>	X	X	X		

## **RECOMMENDATIONS**

---

The results of this VE study are shown as individual recommendations developed for each area of the project. These recommendations include a comparison between the VE team's proposal and the designer's original concept. Each proposal consists of a summary of the original design, a description of the proposed change, and a descriptive evaluation of the advantages and disadvantages of the proposed recommendation. Sketches and calculations are shown, if appropriate. The estimated cost comparisons reflect unit prices and quantities on a comparative basis. Value improvement is the primary basis for comparison of competing ideas. To ensure that costs are comparable within the ideas proposed by the VE team, the FDOT Long Range Estimating System cost estimates were used as the pricing basis.

### **7.1 EVALUATION OF RECOMMENDATIONS**

Some of the VE recommendations potential savings are interrelated, if one is accepted another one may or may not need to be added, or acceptance of one may mutually exclude another. The VE team identified potential savings as shown on **Table 1.4 – 1, Summary of Highest Rated Recommendations**. The write-ups for the individual developed ideas are included in this section and are shown in numerical order.

The FDOT and the design team should evaluate and determine whether to accept or not accept each recommendation. The recommendations that are accepted should be identified and listed for documentation purposes. For each idea that will not be accepted, the design team normally documents, in writing, the reason or reasons for the non-acceptance. The design suggestions are for consideration by FDOT and the designers. 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 incorporated by the designers.

### **7.2 CONSIDERATIONS AND ASSUMPTIONS**

In the preparation of this report and the alternatives that follow, the VE study team made some assumptions with respect to conditions that may occur in the future. In addition, the VE study team reviewed the listed project documentation, relying solely upon the information provided by the designer and FDOT, and relying on that information as being true, complete and accurate. This value analysis and report are based on the following considerations, assumptions and conditions:

- The recommendations rendered herein are as of the date of this report. The VE study team or leaders assume no duty to monitor events after the date, or to advise or incorporate into any of the alternatives, any new, previously unknown technology.
- The VE study team or leaders assume that there are no material documents affecting the design or construction costs that the team has not seen. The existence of any such documents will necessarily alter the alternatives contained herein.

The study team or leaders do not warrant the feasibility of these recommendations or the advisability of their implementation. It is solely the responsibility of the designer in accordance with the owner, to explore the technical feasibility and make the determination for implementation.

**RECOMMENDATION No. 5: Widen the EB Broward Boulevard to NB I-95 and diverge to a ramp SB I-95 to Express lanes and make the Broward Boulevard right turns to only go to the SB I-95 general use lanes. Segregate the triple lefts with one lane with delineators to go to a braided ramp 200 ft. south of Broward Boulevard and the double lefts can only go to the general use lanes**

---

**Proposed Concept:**

The PD&E Documents show adding turn lanes at the ramp terminal locations and optimizing the intersection signal timings. Triple left-turn lanes for traffic traveling westbound are proposed for southbound ingress from Broward Boulevard to I-95. Triple right-turn lanes are also proposed for northbound I-95 to eastbound Broward Boulevard. The southbound exit ramp will have double right-turn lanes for westbound Broward Boulevard and triple left turns for eastbound traffic. There are no proposed improvements to the northbound ingress ramps from Broward Boulevard.

North and south of the interchange braided ramps are proposed for access to and from 95 Express with the exception of westbound Broward Boulevard to enter southbound 95 express. The next ingress point is north of Hollywood Boulevard, approximately 7.5 miles south of Broward Boulevard.

**VE Alternative:**

Widen eastbound Broward alongside the existing I-95 northbound entrance and build a bridge to tie-in to the Park & Ride SB I-95 Express entrance. Eastbound Broward Boulevard right turns only go to the southbound I-95 general use lanes. On westbound Broward Boulevard, segregate the left lane of the triple lefts with delineators to go to a braided ramp 200 ft. south of Broward Boulevard and the remaining double lefts can only go to the general use lanes

**Advantages :**

- Improved Level of Service by adding access to southbound I-95 Express from Broward Boulevard
- Express Lane Traffic isolated from general use.

**Disadvantages:**

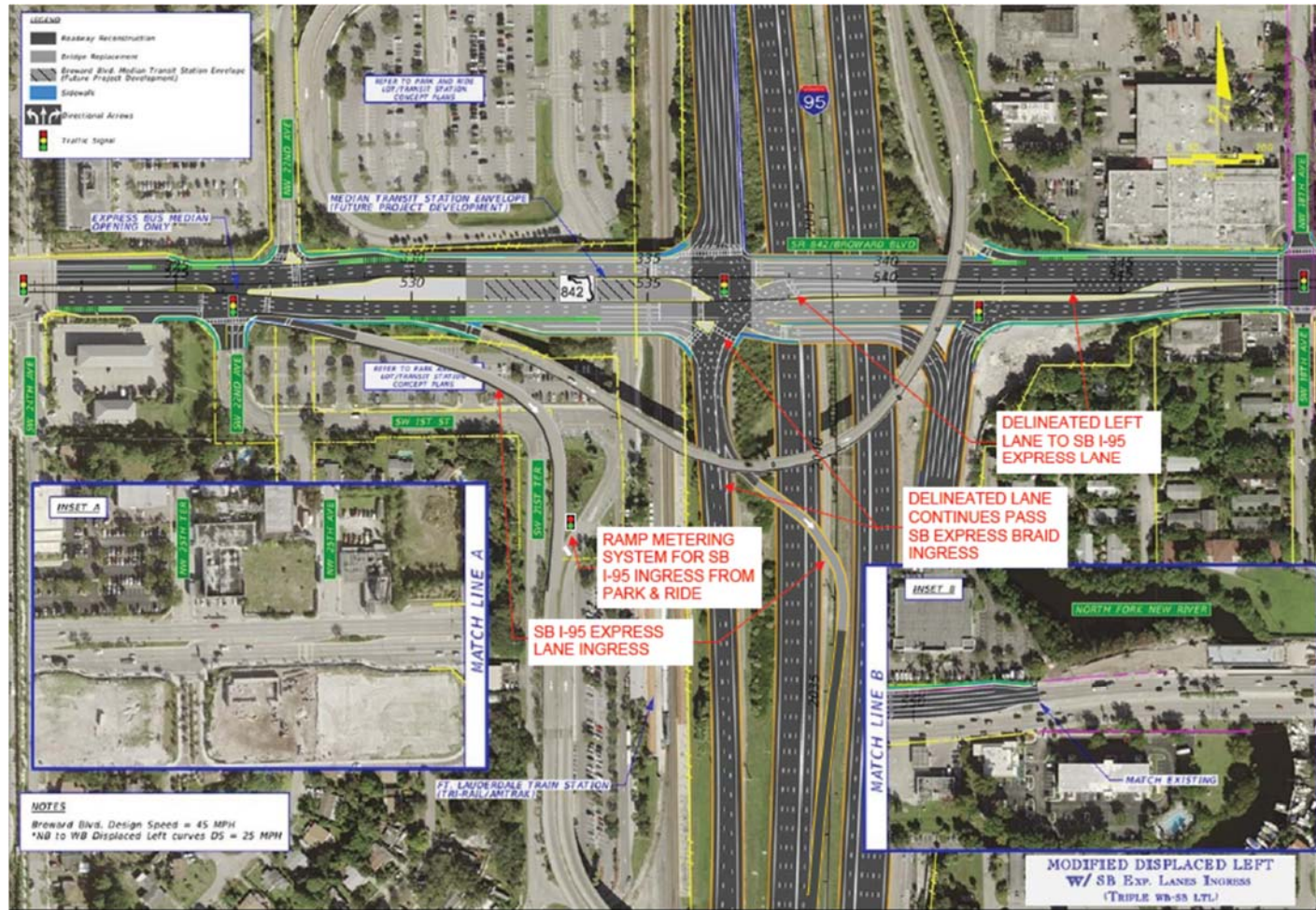
- Increased cost (two bridges to Express Lanes)
- Additional maintenance to new bridges.

**Potential Value Added: (\$7,738,000)**

**Calculations:**

Description	Quantity	Unit	Unit Price	Extended Amount
Delineators	160	EA	\$82.24	\$13,158
Ramp Metering System	1	LS	\$2,000.00	\$2,000
Eastbound to Southbound Ingress	33,286	SF	\$180.13	\$5,995,791
<b>Subtotal</b>				\$6,010,949
MOT (14%)				\$841,533
Mobilization (10%)				\$685,248
			<b>CONSTRUCTION TOTAL</b>	<b>\$7,537,731</b>

**RECOMMENDATION No. 5: Widen the EB Broward Boulevard to NB I-95 and diverge to a ramp SB I-95 to Express lanes and make the Broward Boulevard right turns to only go to the SB I-95 general use lanes. Segregate the triple lefts with one lane with delineators to go to a braided ramp 200 ft. south of Broward Boulevard and the double lefts can only go to the general use lanes**



**RECOMMENDATION No. 5A: Maintain the Broward Boulevard right turns to only go to the SB I-95 general use lanes. Segregate the triple lefts with one lane with delineators to go to a braided ramp 200 ft. south of Broward Boulevard and the double lefts can only go to the general use lanes**

---

**Proposed Concept:**

The PD&E Documents show adding turn lanes at the ramp terminal locations and optimizing the intersection signal timings. Triple left-turn lanes for traffic traveling westbound are proposed for southbound ingress from Broward Boulevard to I-95. Triple right-turn lanes are also proposed for northbound I-95 to eastbound Broward Boulevard. The southbound exit ramp will have double right-turn lanes for westbound Broward Boulevard and triple left turns for eastbound traffic. There are no proposed improvements to the northbound ingress ramps from Broward Boulevard.

North and south of the interchange braided ramps are proposed for access to and from 95 Express with the exception of westbound Broward Boulevard to enter southbound 95 express. The next ingress point is north of Hollywood Boulevard, approximately 7.5 miles south of Broward Boulevard.

**VE Alternative:**

Maintain the eastbound Broward Boulevard right turns only go to the SB I-95 general use lanes. On westbound Broward Boulevard, segregate the left lane of the triple lefts with delineators to direct traffic to a braided ramp 200 ft. south of Broward Boulevard. The remaining double lefts can only go to the general use lanes.

**Advantages:**

- Westbound to southbound express lane traffic isolated from general use.

**Disadvantages:**

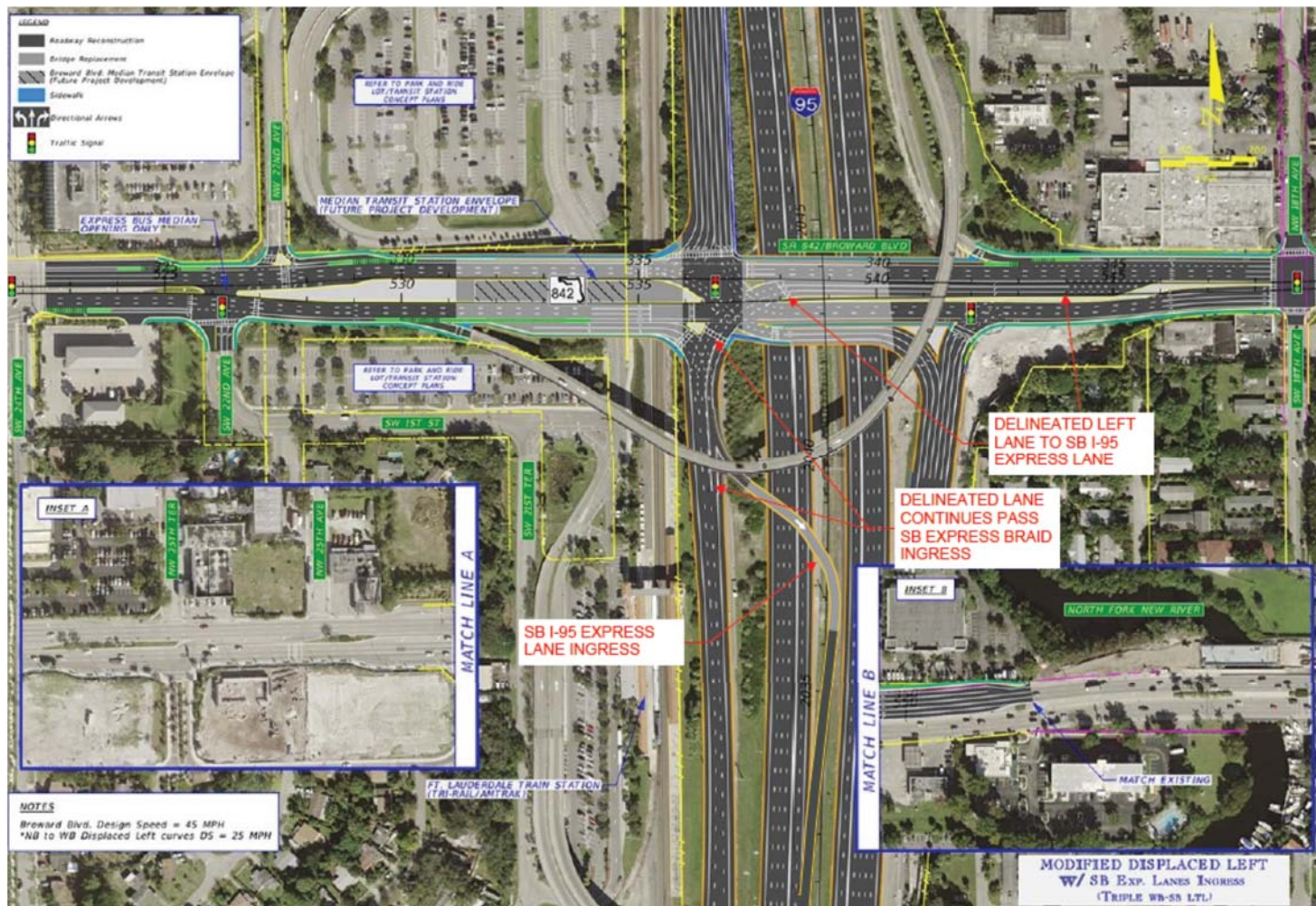
- Increased cost (braid to Express Lanes)
- Additional maintenance for new bridge

**Potential Value Added: (\$17,000)**

**Calculations:**

Description	Quantity	Unit	Unit Price	Extended Amount
Delineators	160	EA	\$82.24	\$13,158
<b>Subtotal</b>				\$13,158
MOT (14%)				\$1,842
Mobilization (10%)				\$1,500
		<b>CONSTRUCTION TOTAL</b>		<b>\$16,501</b>

**RECOMMENDATION No. 5A:** Maintain the Broward Boulevard right turns to only go to the SB I-95 general use lanes. Segregate the triple lefts with one lane with delineators to go to a braided ramp 200 ft. south of Broward Boulevard and the double lefts can only go to the general use lanes



**RECOMMENDATION No. 7: Utilize all existing Park' & Ride ramps via a new intersection on Broward Boulevard just south of NW 22nd Ave.; all general use lanes are either egress or ingress for I-95 general use lanes. City to vacate NW 22nd Ave.**

---

**Proposed Concept:**

The PD&E Documents show adding turn lanes at the ramp terminal locations and optimizing the intersection signal timings. Triple left-turn lanes for traffic traveling westbound are proposed for southbound ingress from Broward Boulevard to I-95. Triple right-turn lanes are also proposed for northbound I-95 to eastbound Broward Boulevard. The southbound exit ramp will have double right-turn lanes for westbound Broward Boulevard and triple left turns for eastbound traffic. There are no proposed improvements to the northbound ingress ramps from Broward Boulevard.

North and south of the interchange braided ramps are proposed for access to and from 95 Express with the exception of westbound Broward Boulevard to enter southbound 95 express. The next ingress point is north of Hollywood Boulevard, approximately 7.5 miles south of Broward Boulevard.

**VE Alternative:**

Instead of new braided ramps use the existing express lane ramps for egress & ingress at Broward Boulevard. This can be accomplished by constructing a new full intersection at NW 22<sup>nd</sup> Avenue and Broward Boulevard and converting NW 22<sup>nd</sup> Avenue to a one-lane right turn only onto westbound Broward Boulevard and be adjacent with signalized northbound ingress and southbound egress ramps at the new intersection. Westbound Broward Boulevard traffic will also have a right turn lane added to provide access to the north Park & Ride lot. On the south side of the new intersection a new connection for SW 1<sup>st</sup> Street will be constructed and will take traffic to and from a roundabout that connects the Park & Ride lots and the ingress for southbound and egress for northbound 95 Express ramps. In the north Park & Ride lot the Bus entrance ramp to 95 Express northbound will be maintained to merge with the ramp from the new intersection.

**Advantages :**

- No need to build new Express Ramps on I-95
- Improve utilization of existing Park & Ride Ramps
- Separates neighborhood traffic from Park & Ride and express lane traffic
- Traffic Circle at corner of SW 1<sup>st</sup> St. at SW 21 Terr. will improve traffic flow.
- Traffic Circle provides opportunity for architectural enhancement and landscaping.
- Shorter construction timeline
- Impact to mainline traffic is greatly reduced.

**Disadvantages:**

- Increase in right of way cost at NW. 22<sup>nd</sup> Ave.
- Residential & public inconvenience during construction.
- 

**Potential Cost Savings: \$41,722,000**

**RECOMMENDATION No. 7: Utilize all existing Park' & Ride ramps via a new intersection on Broward Boulevard just south of NW 22nd Ave.; all general use lanes are either egress or ingress for I-95 general use lanes. City to vacate NW 22nd Ave.**

---

**Calculations:**

Description	Quantity	Unit	Unit Price	Extended Amount
NB General purpose to Broward	-1	LS	\$2,423,618	(\$2,423,618)
SB General purpose to Broward	-1	LS	\$9,322,514	(\$9,322,514)
SB express lane egress braid over I-95	-1	LS	\$11,859,377	(\$11,859,377)
SB express lane ingress braid over I-95	-1	LS	\$7,102,639	(\$7,102,639)
Express To/From North	-1	LS	\$2,909,001	(\$2,909,001)
Express To/From South	-1	LS	\$5,427,855	(\$5,427,855)
<b>Subtotal</b>				<b>(\$39,045,004)</b>
MOT (14%)				(\$5,466,301)
Mobilization (10%)				(\$4,451,131)
			<b>CONSTRUCTION TOTAL</b>	<b>(\$48,962,436)</b>

Potential Right of Way Cost =	\$7,240,000
Potential Construction Savings =	<u>\$48,962,436</u>
Total Potential Savings	\$41,722,436

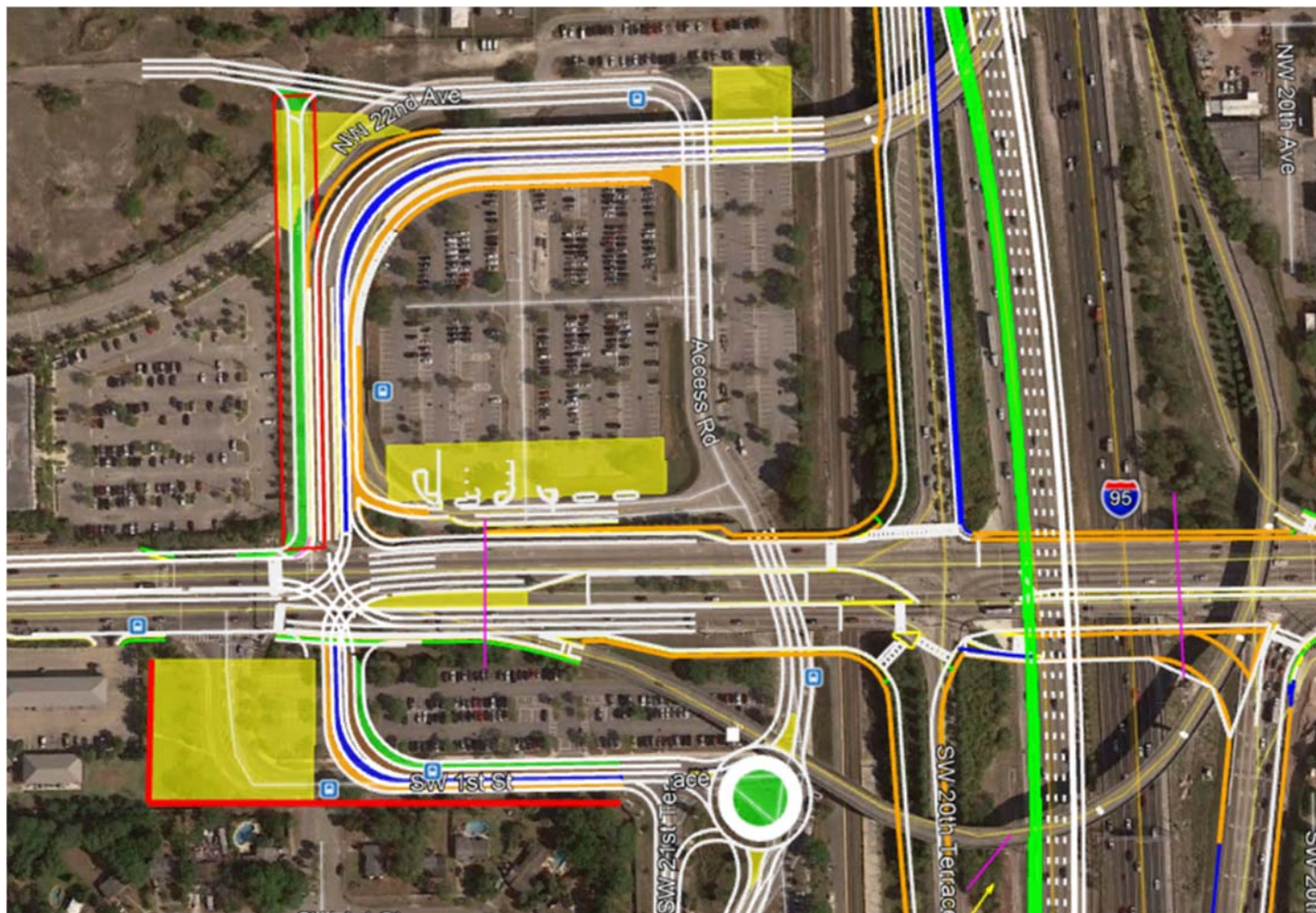


**RECOMMENDATION No. 7: Utilize all existing Park' & Ride ramps via a new intersection on Broward Boulevard just south of NW 22nd Ave.; all general use lanes are either egress or ingress for I-95 general use lanes. City to vacate NW 22nd Ave.**

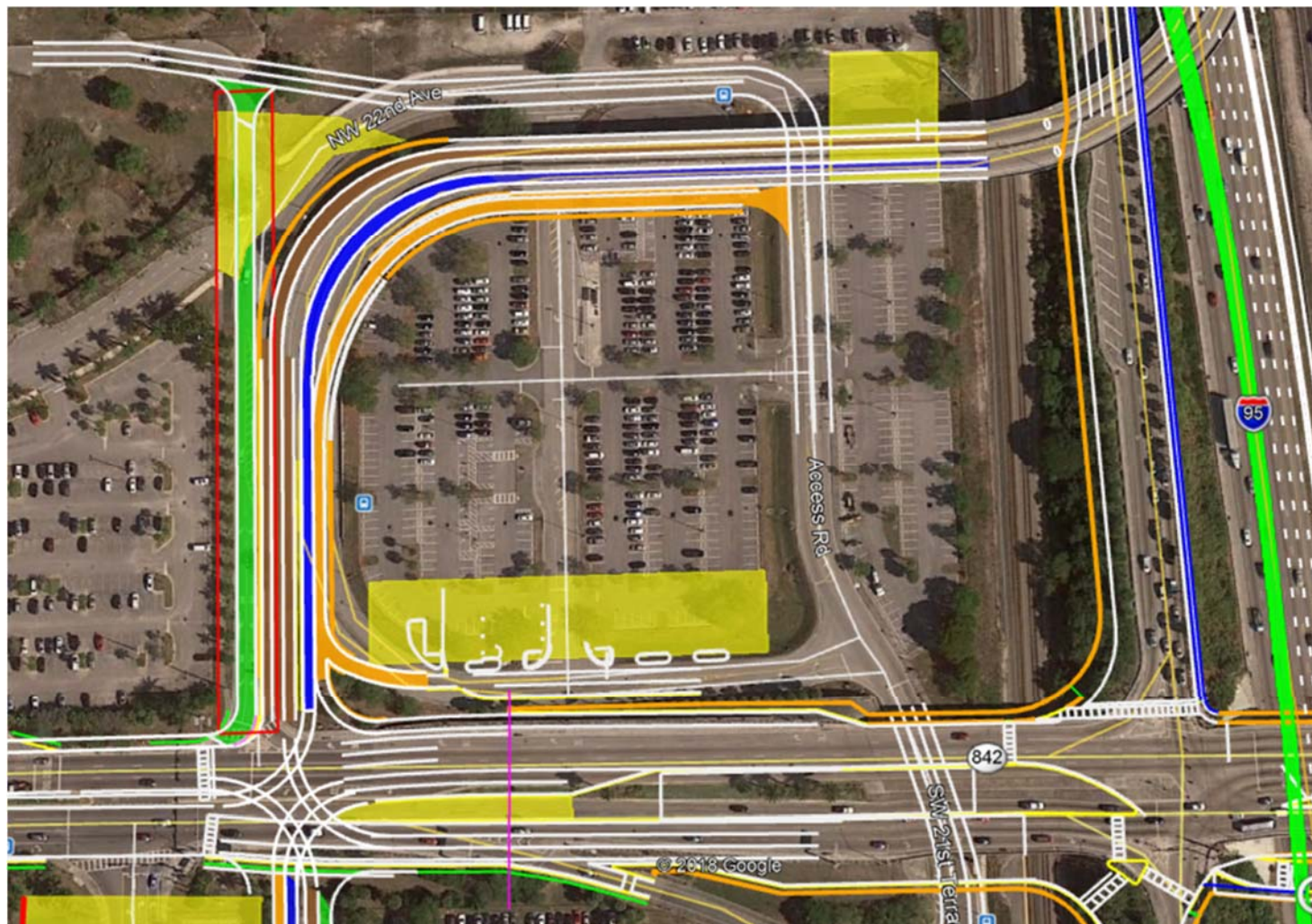
	BASE				CONCEPT	CHANGE		
Sequence 1	\$37,390,930	Broward Blvd			\$ 37,390,930	SAME		
Sequence 2	\$3,055,884	NB General purpose to Broward			\$ -	USE EXISTING BRIDGE		
Sequence 3	\$11,707,100	SB General purpose to Broward			\$ -	USE EXISTING BRIDGE		
Sequence 4	\$6,032,669	NB express lane egress braid over I-95			\$ 2,341,678	TO/FROM NORTH		
Sequence 5	\$8,509,177	NB express lane ingress braid over I-95			\$ 1,667,158	TO/FROM SOUTH		
Sequence 6	\$14,888,325	SB express lane egress braid over I-95			\$ -	USE EXISTING BRIDGE		
Sequence 7	\$8,923,376	SB express lane ingress braid over I-95			\$ -	USE EXISTING BRIDGE		
Sequence 8	\$11,583,861	Park and Ride			\$ 11,583,861	SAME		
Sequence 9	\$270,916	Contingency			\$ 270,916	SAME		
	\$102,362,239				\$ 53,254,542	\$ (49,107,697)		-48%
<b>EXPRESS TO/FROM NORTH</b>								
EARTWORK	700	50	20	\$0.04	\$25,925.93	CY	10	\$259,259
PAVEMEMENT AREA	700	84	1	\$0.11	\$6,533.33	SY		
STABILIZATION					\$6,533.33	SY	5.3	\$34,300
OBG 09					\$6,533.33	SY	16.0	\$104,533
ASPHALT			TON/SY	0.165	\$1,078.00	TON	100.0	\$107,800
FC			TON/SY	0.055	\$59.29	TON	100.0	\$5,929
PAINT				5%		LS		\$12,628
SIGNING						LS	50,000.0	\$50,000
SIGNAL	LENGH	NUMBER	HEIGHT	CONVERSTION		LS		\$250,000
ITS NORTH		1				LS		\$0
RETAINING WALL F SHAPE	700	2	1	1	\$1,400.00	LF	200.0	\$280,000
RETAING WALL SYSTEM	700	2	20	1	\$28,000.00	SF	28.0	\$784,000
SUBTOTAL								\$1,888,450
TCP					\$0.14			\$264,383
MOB					\$0.10			\$188,845
								\$2,341,678
<b>EXPRESS TO/FROM SOUTH</b>								
EARTWORK	1000	1	1	\$0.04	\$37.04	CY	10	\$370
PAVEMEMENT AREA	1000	48	1	\$0.11	\$5,333.33	SY		
STABILIZATION					\$5,333.33	SY	5.3	\$28,000
OBG 09					\$5,333.33	SY	16.0	\$85,333
ASPHALT			TON/SY	0.165	\$880.00	TON	100.0	\$88,000
FC			TON/SY	0.055	\$48.40	TON	100.0	\$4,840
PAINT				5%		LS		\$10,309
SIDEWALK	1300	6	2	\$0.11	\$1,733.33	SY	45.0	\$78,000
SIGNING						LS		\$1,000,000
SIGNAL	LENGH	NUMBER	HEIGHT	CONVERSTION		LS		\$0
ITS NORTH		1				LS	50,000.0	\$50,000
RETAINING WALL F SHAPE	0	0	0	0		LF	200.0	\$0
RETAING WALL SYSTEM	0	0	0	0		SF	28.0	\$0
SUBTOTAL								\$1,344,482
							TOTAL	
TCP					14%			\$188,227
MOB					10%			\$134,448
								\$1,667,158

**RECOMMENDATION No. 7: Utilize all existing Park' & Ride ramps via a new intersection on Broward Boulevard just south of NW 22nd Ave.; all general use lanes are either egress or ingress for I-95 general use lanes. City to vacate NW 22nd Ave.**

---

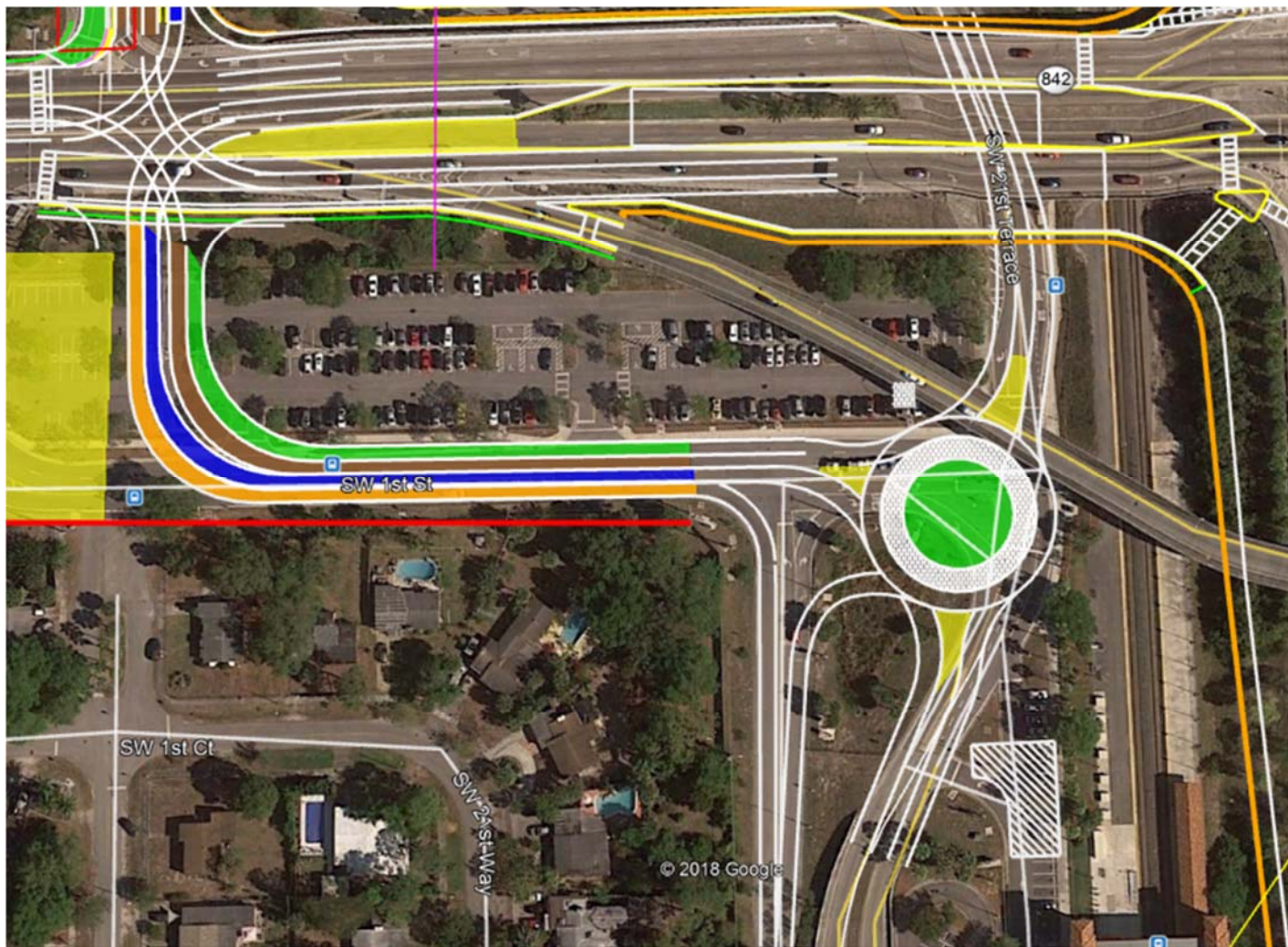


**RECOMMENDATION No. 7: Utilize all existing Park' & Ride ramps via a new intersection on Broward Boulevard just south of NW 22nd Ave.; all general use lanes are either egress or ingress for I-95 general use lanes. City to vacate NW 22nd Ave.**



**RECOMMENDATION No. 7: Utilize all existing Park' & Ride ramps via a new intersection on Broward Boulevard just south of NW 22nd Ave.; all general use lanes are either egress or ingress for I-95 general use lanes. City to vacate NW 22nd Ave.**

---



**RECOMMENDATION No. 7A: If Idea No. 7 is accepted, join Sunrise Boulevard to SB I-95 and Broward Boulevard traffic into a C-D roadway to avoid weaving at I-95**

---

**Proposed Concept:**

The PD&E Documents show adding turn lanes at the ramp terminal locations and optimizing the intersection signal timings. Triple left-turn lanes for traffic traveling westbound are proposed for southbound ingress from Broward Boulevard to I-95. Triple right-turn lanes are also proposed for northbound I-95 to eastbound Broward Boulevard. The southbound exit ramp will have double right-turn lanes for westbound Broward Boulevard and triple left turns for eastbound traffic. There are no proposed improvements to the northbound ingress ramps from Broward Boulevard.

North and south of the interchange braided ramps are proposed for access to and from 95 Express with the exception of westbound Broward Boulevard to enter southbound 95 express. The next ingress point is north of Hollywood Boulevard, approximately 7.5 miles south of Broward Boulevard.

**VE Alternative:**

The VE Alternative recommends combining Sunrise Boulevard to SB I-95 ramp and the exit ramp to Broward Boulevard traffic into a C-D roadway to avoid the weaving on the I-95 mainline.

**Advantages :**

- Eliminates a weave

**Disadvantages:**

- Need to realign the Sunrise ramp
- Need to widen the bridge over NW 6<sup>th</sup> St.
- Adds cost

**Potential Cost Savings: (\$2,426,000)**

**Calculations:**

Description	Quantity	Unit	Unit Price	Extended Amount
Earthwork	1	LS	\$258,617.00	\$258,617
Roadway	1	LS	\$510,384.00	\$510,384
Shoulder	1	LS	\$263,869.00	\$263,869
Bridge	5,000	SF	\$180.30	\$901,500
<b>Subtotal</b>				\$1,934,370
MOT (14%)				\$270,812
Mobilization (10%)				\$220,518
			<b>CONSTRUCTION TOTAL</b>	<b>\$2,425,700</b>

**RECOMMENDATION No. 7A: If Idea No. 7 is accepted, join Sunrise Boulevard to SB I-95 and Broward Boulevard traffic into a C-D roadway to avoid weaving at I-95**

---

**North Half of a new C-D System**



**RECOMMENDATION No. 7A:** If Idea No. 7 is accepted, join Sunrise Boulevard to SB I-95 and Broward Boulevard traffic into a C-D roadway to avoid weaving at I-95

---

**South Half of a new C-D System**



## **RECOMMENDATION No. 8: Provide a canopy over the Transit station platform**

---

### **Proposed Concept:**

The PD&E Documents show adding turn lanes at the ramp terminal locations and optimizing the intersection signal timings. Triple left-turn lanes for traffic traveling westbound are proposed for southbound ingress from Broward Boulevard to I-95. Triple right-turn lanes are also proposed for northbound I-95 to eastbound Broward Boulevard. The southbound exit ramp will have double right-turn lanes for westbound Broward Boulevard and triple left turns for eastbound traffic. There are no proposed improvements to the northbound ingress ramps from Broward Boulevard.

North and south of the interchange braided ramps are proposed for access to and from 95 Express with the exception of westbound Broward Boulevard to enter southbound 95 express. The next ingress point is north of Hollywood Boulevard, approximately 7.5 miles south of Broward Boulevard.

### **VE Alternative:**

Construct a canopy for commuters boarding the bus and the WAVE, heading eastbound or westbound along Broward Boulevard. The canopy will provide shelter and lighting.

### **Advantages :**

- Provides refuge from weather conditions
- Aesthetic feature
- Invites ridership
- Provides additional protection for elevator shaft

### **Disadvantages:**

- Increased cost
- Additional maintenance

**Potential Value Added: (\$627,000)**

### **Calculations:**

<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Price</b>	<b>Extended Amount</b>
Canopy with dynamic signage	1	LS	\$500,000.00	\$500,000
				\$0
<b>Subtotal</b>				\$500,000
MOT (14%)				\$70,000
Mobilization (10%)				\$57,000
			<b>CONSTRUCTION TOTAL</b>	<b>\$627,000</b>



**RECOMMENDATION No. 8: Provide a canopy over the Transit station platform**

---



**RECOMMENDATION No. 10: No sidewalk on the South side, convey all pedestrians along the North sidewalk on Broward Boulevard Adding an accessible ramp along the side of Broward. Widening the existing bike lanes along the south side of Broward**

---

**Proposed Concept:**

The PD&E Documents show adding turn lanes at the ramp terminal locations and optimizing the intersection signal timings. Triple left-turn lanes for traffic traveling westbound are proposed for southbound ingress from Broward Boulevard to I-95. Triple right-turn lanes are also proposed for northbound I-95 to eastbound Broward Boulevard. The southbound exit ramp will have double right-turn lanes for westbound Broward Boulevard and triple left turns for eastbound traffic. There are no proposed improvements to the northbound ingress ramps from Broward Boulevard.

North and south of the interchange braided ramps are proposed for access to and from 95 Express with the exception of westbound Broward Boulevard to enter southbound 95 express. The next ingress point is north of Hollywood Boulevard, approximately 7.5 miles south of Broward Boulevard.

**VE Alternative:**

- 1.1 Construct an accessible ramp along the north side of Broward Boulevard. Beginning from the ground level next to the park n ride lot, riding up along the MSE wall at a 1:10 slope. Leading up to an opening to give access to Broward Boulevard
- 1.2 Construct an ADA spiral ramp from the access road under Broward Boulevard up to the top level of Broward Boulevard

**Advantages :**

- Better access (ADA)
- Increase inter-modal connection
- Improve safety

**Disadvantages:**

- Could possibly limit widening in the future for the bridge.
- Increases Cost
- Increases Maintenance

**Potential Value Added: (\$740,000)**

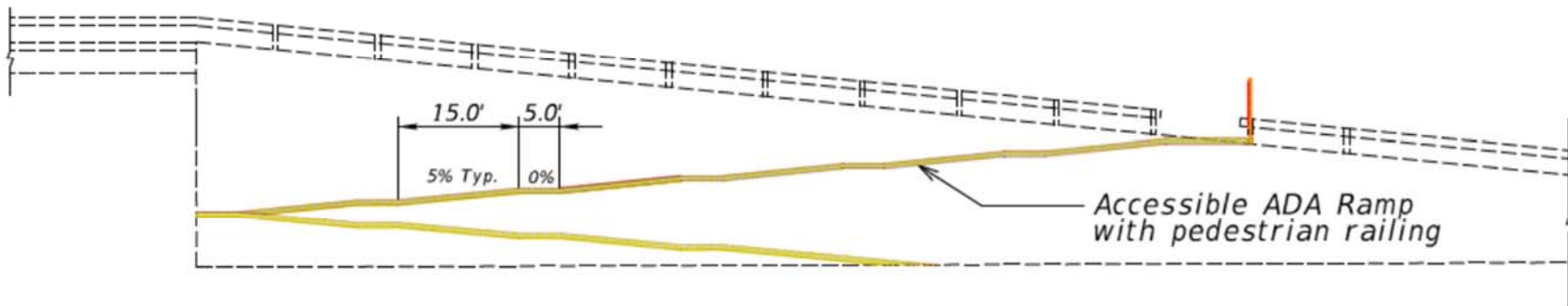
**Calculations:**

Description	Quantity	Unit	Unit Price	Extended Amount
Accessible Ramp 515-2-213	1	LF	\$60.50	\$61
Detecable Warning Sign 527-2	2	SF	\$26.98	\$54
Reinforce Cement Concrete Pavement	1	SY	\$74.45	\$74
Deck Concrete	737	CY	\$700.00	\$515,900
Steel Piling-18" Pipe Pile	825	LF	\$90.00	\$74,250
<b>Subtotal</b>				\$590,339
MOT (14%)				\$82,647
Mobilization (10%)				\$67,299
			<b>CONSTRUCTION TOTAL</b>	<b>\$740,285</b>

**RECOMMENDATION No. 10: No sidewalk on the South side, convey all pedestrians along the North sidewalk on Broward Boulevard  
Adding an accessible ramp along the side of Broward. Widening the existing bike lanes along the south side of Broward**

---

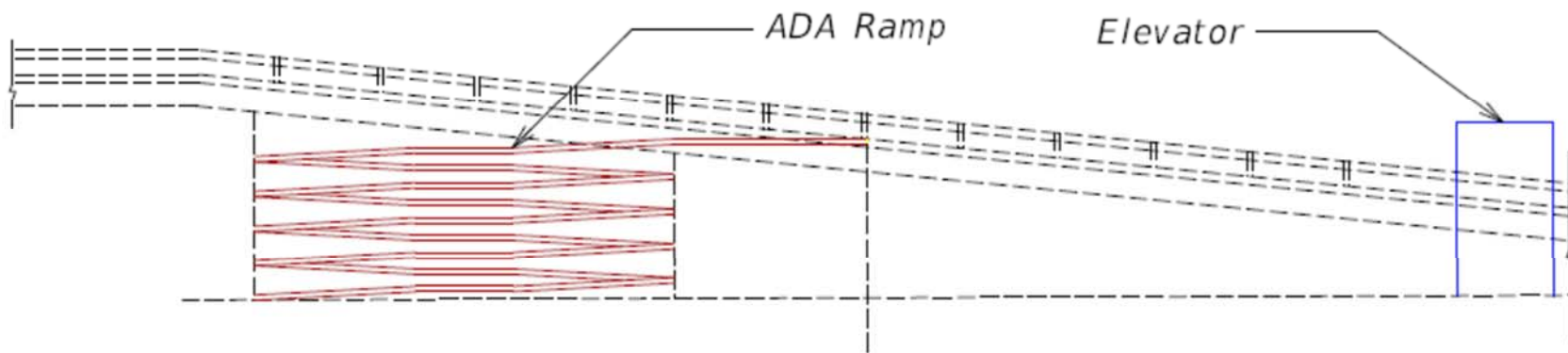
**ADA Ramp on the north side of Broward Boulevard**



**RECOMMENDATION No. 10: No sidewalk on the South side, convey all pedestrians along the North sidewalk on Broward Boulevard  
Adding an accessible ramp along the side of Broward. Widening the existing bike lanes along the south side of Broward**

---

**ADA Ramp under the Transit Platform on Broward Boulevard**



# APPENDICES

Agenda  
Sign In Sheets  
Resolution Memorandum  
Slide Presentation

## Agenda

### **Broward Boulevard and I-95 Ultimate Interchange January 22 – 26, 2018**

Day One (D4 Auditorium)	Kickoff Intro by VE Team Leader	8:30 am – 8:45 am
	Designer Orientation	8:45 am – 9:45 am
	Questions for Designers	9:45 am – 11:00 am
	Travel to Site	11:00 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Site Review	1:00 pm – 2:45pm
	Return to FTL	2:45 pm – 3:15 pm
	Summarize Site Review & Constraints	3:15 pm – 5:00 pm
Day Two (Comfort Inn)	Cost Model & Function Analysis	8:00 am –9:00 am
	FAST Diagram	9:00 am – 9:30 am
	Intro to Creative Thinking	10:00 am – 10:15 am
	Creative Idea Listing/Function	10:15 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Creative/Evaluation/Function	1:00 pm – 5:00 pm
Day Three (Comfort Inn)	Evaluation Phase	8:00 am – 12:00 pm
	Lunch	12:00 pm – 1:00 pm
	Begin Development Phase	1:00 pm – 2:00 pm
	Mid-point review and determine economic factors	2:00 pm – 3:00 pm
	Continue Development Phase	3:00 pm – 5:00 pm
Day Four (Comfort Inn)	Continue Development	8:00 am – 5:00 pm
Day Five (D4 Auditorium)	Finish Development/Prepare Oral Presentation	8:00 am – 10:00 pm
	Oral Presentation to FDOT/others	10:00 am – 12:00 pm
	Begin Draft Value Engineering Report	1:00 pm – 5:00 pm

# FLORIDA DEPARTMENT OF TRANSPORTATION

## VALUE ENGINEERING KICKOFF I-95 at Broward Boulevard

January 22, 2018

### SIGN IN SHEET

Name	Representing	Phone Number	Email Address	User ID
Claudia Calvo	FDOT Drainage	(954)777-4476	claudia.calvo@dot.state.fl.us	RD453CC
BRIAN BOSKET	FDOT CONTRACTS	954 934-4082	BRIAN.BOSKET@dot.state.fl.us	MT491BB
Jenny O. Coca	FDOT Roadway	954-777-4193	Jenny.coca@dot.state.fl.us	Rd452YS
Ray Abreu	FDOT	954-777-4253	Raynier.Abreu@dot...	RW455RA
Will Isidort	FDOT	954 777 4844	will.isidort@dot.state.fl.us	ST458WI
Garrett O'Brady	FDOT Roadway	954-777-4190	Garrett.Obrady@dot.state.fl.us	LD452GO
Eugene Khashper	Utilities	954-777-4128	eugene.khashper@dot.state.fl.us	rd446EK
Lynn Kelley	FDOT PLEMO	x4334	Lynn.Kelley	PL430
ALBERTO SORDINOS	FDOT SM	x4175	ALBERTO.SORDINOS	
William Grey	FDOT BOP Cont.	x7511	william.grey@dot.state.fl.us	cn412WA
Khaliah French	FDOT OMD	(954)677 7898		
Scott Thurman	FDOT PM	954 777 4135	Scott.Thurman@dot.state.fl.us	RD452ST
Francisco Cruz	PMA VETeam	813-408-4030	FCRUB@pmaconsultants.com	
Rick Johnson	"	321-217-5182	rjohnson@pmaconsultants.com	

# FLORIDA DEPARTMENT OF TRANSPORTATION

## VALUE ENGINEERING MID-POINT REVIEW

### I-95 at Broward Boulevard

January 24, 2018

#### SIGN IN SHEET

Name	Representing	Phone Number	Email Address	User ID
Claudia Calvo	Drainage	(954) 777-4476	claudia.calvo@dot.state.fl.us	Rd453CC
Reynier Abreu	R/W	* 9253	Reynier.Abreu@dot..	RW455RA
Yenny O. Soca	roadway Design	954-777-4193	yenny.soca@dot.state.fl.us	Rd452US
Garrett O'Brady	roadway Design	954-777-4390	garrett.obrady@dot.state.fl.us	Ld452go
Will Isidort	FDOT-STRUCT	954-777-4448	will.isidort@dot.state.fl.us	ST458Wi
ALBERTO SARDINAS	FDOT-STRUCT. MINT.	* 4175	ALBERTO.SARDINAS@DOT.STATE.FL.US	
BRIAN BOSKET	FDOT-CONTRACTS	954 934-4082	BRIAN.BOSKET@dot.state.fl.us	MT491BB
William Grey	FDOT BOPS	* 7511	william.grey@dot.state.fl.us	Cr412Wg
Doug Norris	STARTER	<del>954</del> 561-716-6602	doug.norris@startec.com	
Francisco Cruz	PMA Consultants	813-408-4030	fcruz@PMAconsultants.com	
Scott Thurman	FDOT	954 777 4135	Scott.Thurman@dot.state.fl.us	
Will Suero	MOR	954-668-5223	Will.Suero@MORINC.com	
Eugene Khashper	HDAL	954-258-4845	eugene.khashper@hdalinc.com	
Eugene Khashper	FDOT Utilities	954-777-4128	eugene.khashper@dot.state.fl.us	rd446ek
ALAN MRUICA	FDOT TRAFF	954-777-4317	ALAN.MRUICA@DOT.STATE.FL.US	KUMAAAA



**FLORIDA DEPARTMENT OF TRANSPORTATION**

**VALUE ENGINEERING STUDY PRESENTATION**

**I-95 at Broward Boulevard**

**January 26, 2018**

**SIGN IN SHEET**

Name	Representing	Phone Number	Email Address	User ID
Alberto Sardinias	FDOT	X 4175	ALBERTO.SARDINIAS@dot.state.fl.us	
Claudia Calvo	FDOT	X 4476	claudia.calvo@dot.state.fl.us	Rd453
Raynier Abreu	FDOT	X 4253	Raynier.Abreu@dot.state.fl.us	RW455RA
Yenny O. Soca	FDOT	X 4193	Yenny.Soca@dot.state.fl.us	
Garrett O'Brady	FDOT	X 4397	garrett.obrady@dot.state.fl.us	LD452CC
BRIAN BOSKET	FDOT	954 934-4082	Brian.Basket@dot.state.fl.us	MT491BB
William Gray	FDOT	X 7511	William.Gray@dot.state.fl.us	CA712WG
Francisco Cruz	PMA	813-408-4030	fcruz@PMAConsultants.com	
Eugene Khashper	FDOT Utilities	954-777-4128	eugene.khashper@dot.state.fl.us	rd446ek
Will Suero	HDR	954-668-5223	will.suero@HDRINC.com	
William Leidy	HDR	954-233-4941	william.leidy@hdrinc.com	
Steve Fisher	FDOT	954-777-4246	stephen.fisher@dot.state.fl.us	RW455RF
JOHN DANIELSEN	HDR	954 270 9765	JOHN.DANIELSEN@HDRINC.COM	
Emilio Comarals	HDR	954-258-4845	ecomaral@hdrinc.com	

**FLORIDA DEPARTMENT OF TRANSPORTATION**

**VALUE ENGINEERING STUDY PRESENTATION**

**I-95 at Broward Boulevard**

**January 26, 2018**

**SIGN IN SHEET**

Name	Representing	Phone Number	Email Address	User ID
Tim Brock	FDOT	954-777-4125	Tim.Brock@dot.state.fl.us	
Jeff Roberts	FDOT	954-777-4648	JEFFREY.ROBERTS@DOT.STATE.FL.US	
Ron Kareiva	" "	" 777-4441	ronald.kareiva@dot.state.fl.us	
S. Thurman	FDOT	4135	Scott.Turman@dot.state.fl.us	
Andy Amoedo	ROW FDOT		Andy.Amoedo@dot.state.fl.us	
Cristian Jensen	R/W FDOT	4231	Cristian.Jensen@dot.state.fl.us	
James Paule	FDOT	4204	james.paule@dot...	
James Hughes	FDOT	x4419	james.hughes@dot...	
Michael Kim	FDOT	x# 9010	Michael.Kim@dot.state.fl.us	
Newton Wilson	FDOT	x4411		
Howard Webb	"	4435		
PAUL Lampkin	Const.	4384		
JOHN OLSON	FDOT DESIGN	4452	JOHN.OLSON@DOT...	
COLLEEN	FDOT			
Dash Miller	R/W	4237	Dash.Miller	
Kinda Cadet	In house	4206		

**FLORIDA DEPARTMENT OF TRANSPORTATION**

**VALUE ENGINEERING STUDY PRESENTATION**

**I-95 at Broward Boulevard**

**January 26, 2018**

**SIGN IN SHEET**

Name	Representing	Phone Number	Email Address	User ID
JULY JIMENEZ	FDOT	X 4415	july.jimenez@dot.state.fl.us	rd452JR
Donnie Webster	FDOT RAW	4238	donnie.webster@dot...	PL4355dw
CHRISTOPHER CHAND	FDOT MAINT	7539		
Matt Casardi	FDOT	X 7038	matthungcasardi@dot.state.fl.us	PL415KCB
Robert Lopez	FDOT	4425	Robert.Lopez@dot.state.fl.us	RD452R
Binod Basnet	FDOT	4146	binod.basnet@dot.state.fl.us	
Alia Chanel	FDOT	4472	alia.chanel@dot.state.fl.us	
STANDEA DAVIS	FDOT	7896	stendra.davis@dot.state.fl.us	PL430SD
Hui Shi	FDOT	X 4457		
Wilson Metellus	FDOT	4467		
Steve Eskin	FDOT	4445		
Ann Kowaluk	FDOT	4325		
Bodley Barthelmy	FDOT	7169	bodley.barthelmy@dot.state.fl.us	
Henry Oaikheua	FDOT	X 4445		

**FLORIDA DEPARTMENT OF TRANSPORTATION**

**VALUE ENGINEERING STUDY PRESENTATION**

**I-95 at Broward Boulevard**

**January 26, 2018**

**SIGN IN SHEET**

Name	Representing	Phone Number	Email Address	User ID
Marwood, Don	R/W	4238	Don. Marwood @ ...	
Vanita Saini	FDOT-Design	4468	Vanita.Saini@dot...	
MARK PLASS	Development	4399	Mark.Plass...	T046ZMP
WILLIAM NASS	Structures	4643	WILLIAM.NASS@...	ST458WN
ROBERTO BETANLIVAT	DRAINAGE	4453	ROBERTO.BETANLIVAT@...	
Kevin Lopez	FDOT	4457	Kevin A. Lopez @ ...	
Ana Torres	R/W	4255		
FRANCIS LEWIS	FDOT-BOPS	7663	Francis.Lewis@dot.state.fl.us	FN412FL
Tony Conde	FAOT-R/W		Tony.Conde@dot.state.fl.us	
Cesar Martinez	FDOT-PLANO	7653	cesar.martinez ...	
Victor Ramos	FDOT R/W	4257	VICTOR.RAMOS@DOT.STATE.FL.US	RN455
Martez Alcan	DMD	4445		MT410MA
Juliet Ashbourne	Utility	4126	Juliet.Ashbourne@dot.state.fl.us	RD446JA
John Rodemeyer	R/W			
ISTVAN VIRAK	FDOT	4369	ISTVAN.VIRAK@DOT.STATE.FL.US	



*Florida Department of Transportation*


3400 West Commercial Boulevard  
Fort Lauderdale, FL 33309

RICK SCOTT  
GOVERNOR

MIKE DEW  
SECRETARY

Date: November 20, 2017

To: Steven C. Braun, P.E. District Design Engineer

From: Stacy L. Miller, P.E. Director of Transportation Development 

Copies: John Olson, P.E., James Hughes, P.E., Anson Sonnett, P.E., VE Team Members

Subject: **Value Engineering Study Responses**



# SLIDE PRESENTATION

# Appendix E

## Transit Maps



For more details on our fares please  
visit our web site at  
[broward.org/bct](http://broward.org/bct) or call  
customer service: 954.357.8400.

### Reading A Timetable - It's Easy

1. The map shows the exact bus route.
2. Major route intersections are called time points.  
Time points are shown with the symbol □.
3. The timetable lists major time points for bus route.  
Listed under time points are scheduled departure times.
4. Reading from left to right, indicates the time for each bus trip.
5. The bus picks up and drops off riders at all BCT bus stop signs along the route where there is a Broward County bus stop sign.
6. Arrive at the bus stop five minutes early. Buses operate as close to published timetables as traffic conditions allow.

**Not paying your fare is a crime per  
Florida Statute 812.015.  
Violation constitutes a misdemeanor,  
punishable by jail time and/or a fine.**

Information: 954.357.8400

Hearing-speech impaired/TTY:  
954.357.8302

This publication can be made  
available in alternative formats upon  
request by contacting 954-357-8400  
or TTY 954-357-8302.



This symbol is used on bus stop signs  
to indicate accessible bus stops.



BOARD OF COUNTY COMMISSIONERS

*An equal opportunity employer and provider of services.*

13,000 copies of this public document were promulgated at a gross cost of \$572.00, or \$.044 per copy to inform the public about the Transit Division's schedule and route information. Reprinted 5/18

# ROUTE 9 All Week Schedule

Effective 1/18/15



Young Circle to Broward Central Terminal



Real Time Bus Information  
[MyRide.Broward.org](http://MyRide.Broward.org)



954-357-8400  
[Broward.org/BCT](http://Broward.org/BCT)

There are additional bus stops in between those listed.

# MONDAY-FRIDAY

## SOUTHBOUND

To Young Circle

BROWARD CENTRAL TERMINAL	BROWARD BLVD & 31 AVE	RIVERLAND RD & US 441	BCC CENTRAL CAMPUS	JOHNSON ST & US 441	YOUNG CIRCLE
6	5	4	3	2	1
	5:25a	5:41a	5:50a	6:14a	6:33a
6:00a	6:09a	6:25a	6:34a	7:02a	7:21a
6:55a	7:05a	7:22a	7:32a	8:00a	8:19a
7:40a	7:52a	8:08a	8:19a	8:47a	9:06a
8:30a	8:42a	8:58a	9:07a	9:31a	9:49a
9:15a	9:27a	9:41a	9:50a	10:14a	10:32a
10:00a	10:12a	10:26a	10:35a	10:59a	11:17a
10:50a	11:02a	11:16a	11:27a	11:49a	12:07p
11:35a	11:47a	12:01p	12:12p	12:34p	12:52p
12:20p	12:32p	12:46p	12:57p	1:19p	1:38p
1:05p	1:17p	1:31p	1:42p	2:08p	2:28p
1:55p	2:07p	2:21p	2:31p	2:53p	3:12p
2:40p	2:52p	3:06p	3:16p	3:38p	3:58p
3:30p	3:42p	3:56p	4:08p	4:34p	4:54p
4:20p	4:34p	4:48p	5:00p	5:25p	5:43p
5:10p	5:24p	5:38p	5:50p	6:14p	6:32p
6:00p	6:14p	6:28p	6:40p	7:04p	7:22p
6:50p	7:04p	7:18p	7:30p	7:53p	8:10p
7:30p	7:41p	7:55p	8:06p	8:27p	8:43p
8:15p	8:25p	8:38p	8:49p	9:07p	9:23p G
9:00p	9:10p	9:24p	9:35p	9:51p	10:07p G

## NORTHBOUND

To Broward Central Terminal

YOUNG CIRCLE	JOHNSON ST & US 441	BCC CENTRAL CAMPUS	RIVERLAND RD & US 441	BROWARD BLVD & 31 AVE	BROWARD CENTRAL TERMINAL
1	2	3	4	5	6
			5:25a	5:40a	5:53a
			6:15a	6:30a	6:43a
6:00a	6:21a	6:44a	6:54a	7:09a	7:22a
6:50a	7:11a	7:34a	7:44a	7:59a	8:16a
7:40a	8:03a	8:27a	8:37a	8:52a	9:06a
8:30a	8:53a	9:15a	9:24a	9:38a	9:50a
9:20a	9:41a	10:02a	10:11a	10:25a	10:37a
10:00a	10:21a	10:43a	10:53a	11:07a	11:19a
10:45a	11:07a	11:29a	11:39a	11:53a	12:05p
11:30a	11:52a	12:14p	12:24p	12:38p	12:50p
12:20p	12:42p	1:04p	1:14p	1:28p	1:40p
1:05p	1:27p	1:49p	1:59p	2:13p	2:25p
1:50p	2:12p	2:34p	2:44p	2:58p	3:12p
2:40p	3:02p	3:26p	3:39p	3:55p	4:09p
3:30p	3:54p	4:18p	4:31p	4:44p	4:56p
4:15p	4:40p	5:05p	5:19p	5:32p	5:44p
5:05p	5:32p	5:57p	6:11p	6:24p	6:36p
5:55p	6:22p	6:47p	6:56p	7:09p	7:19p
6:45p	7:05p	7:26p	7:35p	7:48p	7:58p
7:35p	7:55p	8:16p	8:25p	8:38p	8:48p
8:25p	8:45p	9:06p	9:15p	9:28p	9:38pG
9:00p	9:20p	9:41p	9:50p	10:03p	10:13pG

NUMBERS IN BOXES REFER TO TIME POINTS ON MAP

Times with the letter "G" after them indicate bus returns to garage.

# SATURDAY

## SOUTHBOUND

To Young Circle

BROWARD CENTRAL TERMINAL	BROWARD BLVD & 31 AVE	RIVERLAND RD & US 441	BCC CENTRAL CAMPUS	JOHNSON ST & US 441	YOUNG CIRCLE
6	5	4	3	2	1
			5:50a	6:12a	6:28a
6:05a	6:14a	6:28a	6:36a	6:58a	7:14a
7:05a	7:14a	7:28a	7:36a	7:58a	8:14a
8:05a	8:14a	8:28a	8:36a	8:58a	9:15a
9:05a	9:16a	9:31a	9:39a	10:01a	10:18a
10:05a	10:16a	10:31a	10:39a	11:03a	11:23a
11:05a	11:16a	11:31a	11:39a	12:03p	12:23p
12:05p	12:16p	12:31p	12:39p	1:03p	1:23p
1:05p	1:16p	1:31p	1:39p	2:03p	2:23p
2:05p	2:16p	2:31p	2:39p	3:03p	3:23p
3:05p	3:16p	3:31p	3:39p	4:03p	4:23p
4:05p	4:15p	4:30p	4:37p	5:02p	5:22p
5:05p	5:15p	5:30p	5:37p	6:02p	6:19p
6:05p	6:15p	6:30p	6:37p	7:00p	7:17p
7:05p	7:15p	7:30p	7:37p	8:00p	8:17p
8:05p	8:15p	8:30p	8:37p	9:00p	9:17pG
9:05p	9:15p	9:30p	9:37p	10:00p	10:17pG

## NORTHBOUND

To Broward Central Terminal

YOUNG CIRCLE	JOHNSON ST & US 441	BCC CENTRAL CAMPUS	RIVERLAND RD & US 441	BROWARD BLVD & 31 AVE	BROWARD CENTRAL TERMINAL
1	2	3	4	5	6
			6:35a	6:48a	7:00a
6:35a	6:54a	7:16a	7:24a	7:38a	7:50a
7:35a	7:54a	8:18a	8:25a	8:39a	8:51a
8:35a	8:54a	9:17a	9:24a	9:39a	9:51a
9:35a	9:55a	10:18a	10:25a	10:39a	10:51a
10:35a	10:55a	11:18a	11:26a	11:40a	11:52a
11:35a	11:55a	12:19p	12:26p	12:39p	12:53p
12:35p	12:54p	1:18p	1:25p	1:39p	1:52p
1:35p	1:55p	2:20p	2:26p	2:40p	2:53p
2:35p	2:55p	3:20p	3:26p	3:40p	3:52p
3:35p	3:55p	4:18p	4:25p	4:36p	4:47p
4:35p	4:55p	5:18p	5:25p	5:38p	5:50p
5:35p	5:55p	6:18p	6:25p	6:38p	6:50p
6:35p	6:55p	7:18p	7:25p	7:38p	7:50p
7:35p	7:55p	8:18p	8:24p	8:38p	8:48p
8:35p	8:55p	9:19p	9:25p	9:39p	9:49pG

# SUNDAY

## SOUTHBOUND

To Young Circle

6	5	4	3	2	1
9:00a	9:10a	9:24a	9:32a	9:53a	10:08a
10:00a	10:09a	10:25a	10:34a	10:55a	11:10a
11:00a	11:09a	11:25a	11:34a	11:55a	12:10p
12:00p	12:09p	12:25p	12:34p	12:55p	1:13p
1:00p	1:11p	1:25p	1:34p	1:54p	2:11p
2:00p	2:10p	2:24p	2:34p	2:54p	3:09p
3:00p	3:10p	3:24p	3:34p	3:54p	4:09p
4:00p	4:10p	4:24p	4:34p	4:54p	5:08p
5:00p	5:09p	5:23p	5:33p	5:54p	6:08p
6:00p	6:09p	6:23p	6:33p	6:54p	7:09pG
7:00p	7:10p	7:25p	7:35p	7:55p	8:10pG

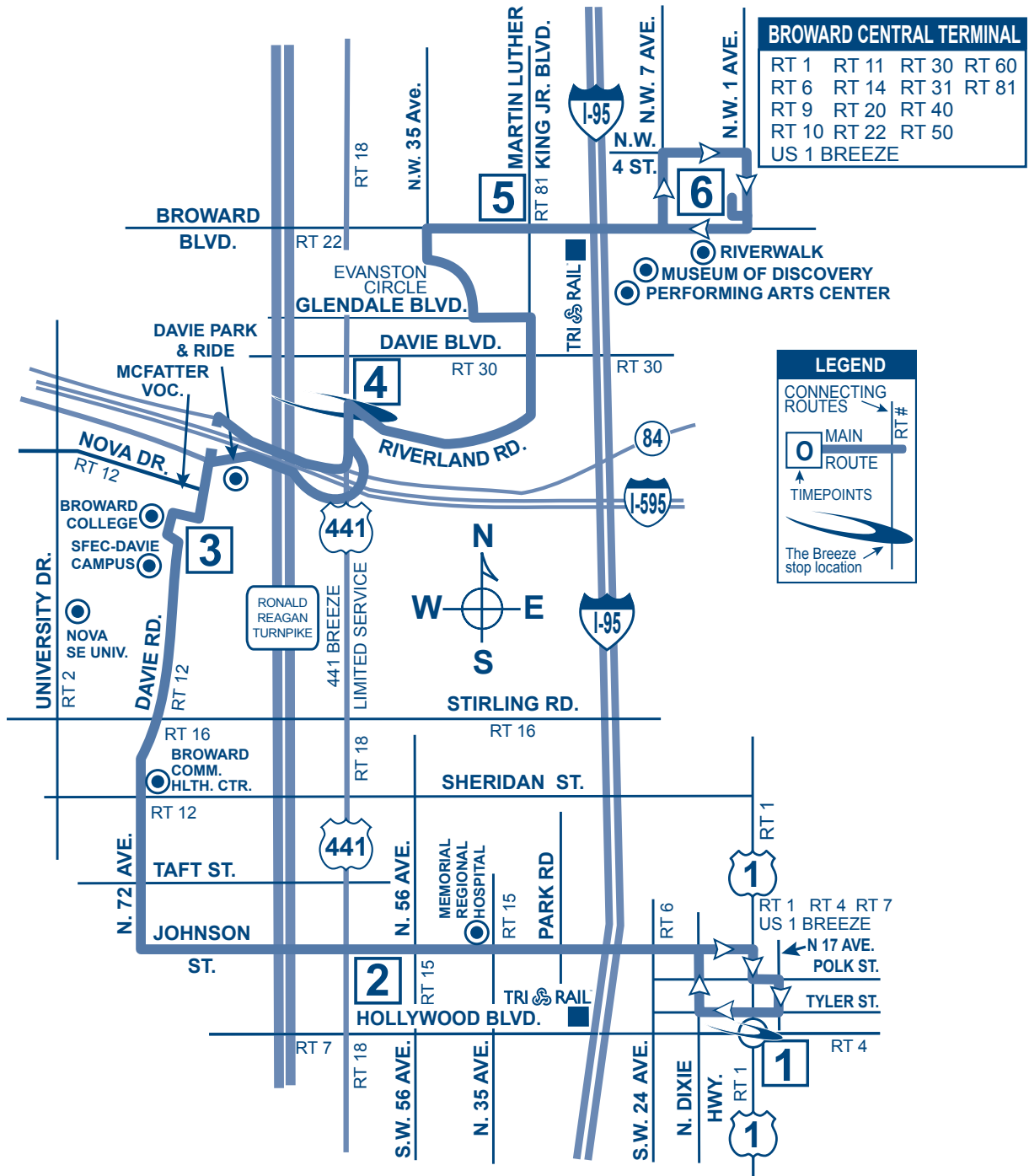
## NORTHBOUND

To Broward Central Terminal

1	2	3	4	5	6
8:30a	8:49a	9:11a	9:18a	9:31a	9:40a
9:30a	9:49a	10:09a	10:16a	10:28a	10:37a
10:30a	10:49a	11:11a	11:18a	11:29a	11:38a
11:30a	11:49a	12:11p	12:18p	12:29p	12:38p
12:30p	12:49p	1:11p	1:18p	1:29p	1:38p
1:30p	1:49p	2:11p	2:18p	2:29p	2:38p
2:30p	2:49p	3:11p	3:18p	3:29p	3:37p
3:30p	3:50p	4:12p	4:18p	4:29p	4:37p
4:30p	4:50p	5:12p	5:19p	5:30p	5:38p
5:30p	5:50p	6:12p	6:19p	6:30p	6:38p
6:30p	6:50p	7:12p	7:19p	7:30p	7:38pG

# ROUTE 9

Young Circle to Broward Central Terminal



## POINTS OF INTEREST

- Broward Community Health Center-South
- Memorial Regional Hospital
- Broward College
- McFatter Vocational
- Davie Park & Ride
- Nova Southeastern University
- South Florida Education Center
- Broward Center for the Performing Arts
- Museum of Discovery and Science
- Riverwalk Historical District

## Customer Service

Monday - Friday.....7 am - 7:45 pm  
Saturday, Sunday and Holidays.....8:30 am - 4:45 pm

Transit Operations Agents help with:

- Trip planning
- Routes, times and transfer information
- Identifying Bus Pass sales locations
- Special event information

Lost and Found: 954-357-8400, Monday, Tuesday, Thursday and Friday, 9:00 am - 4:00 pm

## Holiday Bus Service

Sunday bus service is provided on the following observed holidays:

New Year's Day	Labor Day	Memorial Day
Independence Day	Thanksgiving Day	Christmas Day

## Fares

Exact fare, dollar bill or coins required. Operators do not carry change.

Fares are: Regular, Premium Express, Senior/Youth/Disabled/Medicare.\* Children (under 40 inches ride FREE)

## Fare Deals

All Day Bus Pass offers unlimited rides on all routes. On sale aboard all BCT buses.

NOTE: Other cost saving passes cannot be purchased on BCT buses, but are available at the Central Bus Terminal and at authorized distributors.

**10 Ride Pass:** 10 Rides any time, any day. Expires after the tenth ride is taken.

**7 Day Pass:** Unlimited rides for seven consecutive days. Starts on the first day card is used. Expires after the seventh day.

**31 Day Adult Pass:** Unlimited rides for 31 consecutive days. Starts on the first day card is used.

**31 Day Reduced Pass:** Youth\*, Seniors\*, Disabled\*, Medicare\*, College Student\*. Unlimited rides for 31 consecutive days. Starts on the first day card is used.

**\*\*Premium Express 10 Ride Pass:** 10 rides any time, any day. Expires after tenth ride is taken.

**\*\*Premium Express 31 Day Pass:** Unlimited rides for 31 consecutive days. Starts on the first day card is used.

Bus Passes are not redeemable, refundable or transferrable. Damaged cards are invalid. Lost, stolen or damaged cards will not be replaced.

\*NOTICE: Proof of age is required for Youth fare (18 years or younger) and for Senior fare (65 years or older). For College Student Bus Pass, a college photo ID card is required. For Disabled and Medicare fare, proof of disability (Medicare card) and photo I.D. is required. Eligible Senior fare patrons are encouraged to acquire their BCT Reduced Fare Photo ID cards.

\*\* Premium Bus Pass can be purchased online at Broward.org/BCT and at select Broward County library locations.

## PROTECTIONS OF TITLE VI OF THE CIVIL RIGHTS ACT OF 1964 AS AMENDED

Any person(s) or group(s) who believes that they have been subjected to discrimination because of race, color, or national origin, under any transit program or activity provided by Broward County Transit (BCT), may call 954-357-8481 to file a Title VI discrimination complaint or write to Broward County Transit Division, Compliance Manager, 1 N. University Drive, Suite 3100A, Plantation, FL 33324.



**WHEN IT COMES TO OUR SAFETY,  
WE CAN ALWAYS USE AN EXTRA PAIR OF EYES  
AND EARS.  
BE ALERT.  
CALL 954-357-LOOK (5665). TELL US.**

## TRANSFER POLICY - EFFECTIVE 7/10/11

### TRANSFERS BETWEEN REGULAR BCT BUS SERVICE AND BCT EXPRESS BUS SERVICE

Passengers using any BCT bus pass and transferring from a regular BCT route, to an Express bus route, must pay a \$1.00 upgrade fee. Passengers with a Premium bus pass do not have to pay the \$1.00 upgrade fee.

Passengers paying with cash, on a regular BCT bus route, will not be able to transfer to an Express bus route without paying the full premium fare when boarding the Express bus.

Passengers using an All-Day bus pass will be required to pay the \$1.00 upgrade fee when boarding Express buses.

### PREMIUM BUS PASS CUSTOMERS

The BCT 31-Day Premium Bus Pass is acceptable on all BCT regular bus routes.

### TRANSFERS FROM BCT TO OTHER SOUTH FLORIDA TRANSIT SYSTEMS

When boarding a BCT bus, passenger pays the appropriate BCT fare and may request a transfer from the bus operator if transferring to Miami-Dade Transit (MDT), Palm Tran or Tri-Rail.

### TRANSFERS TO BCT FROM OTHER SOUTH FLORIDA TRANSIT SYSTEMS

When transferring from MDT, Palm Tran and Tri-Rail to BCT regular fixed-route bus service, passenger pays \$.50 with a transfer issued by MDT or Palm Tran and proof of fare payment such as Easy Card and receipt issued by Tri-Rail. Tri-Rail passengers boarding BCT at any locations other than at a Tri-Rail station will be required to pay the full fare.

### TRANSFERS BETWEEN OTHER SOUTH FLORIDA TRANSIT SYSTEMS AND PREMIUM EXPRESS BUS SERVICE

Transfers to MDT or Tri-Rail from Premium Express Service, a transfer is issued and passenger must pay appropriate MDT or Tri-Rail fare.

Transfer from MDT or Tri-Rail to Premium Express Service, a \$.50 transfer fee is required with the appropriate transfer from MDT or Tri-Rail.

The Premium Express Service does not connect with Palm Tran.

The Easy Card issued by MDT and Tri-Rail is not accepted as payment on any BCT bus.

For more details on our fares please  
visit our web site at  
[Broward.org/BCT](http://Broward.org/BCT) or  
call customer service: 954.357.8400.

### Reading A Timetable - It's Easy

1. The map shows the exact bus route.
2. Major route intersections are called time points.  
Time points are shown with the symbol □.
3. The timetable lists major time points for bus route.  
Listed under time points are scheduled departure times.
4. Reading from left to right, indicates the time for each bus trip.
5. The bus picks up and drops off riders at all BCT bus stop signs along the route where there is a Broward County bus stop sign.
6. Arrive at the bus stop five minutes early. Buses operate as close to published timetables as traffic conditions allow.

**Not paying your fare is a crime per  
Florida Statute 812.015.  
Violation constitutes a misdemeanor,  
punishable by jail time and/or a fine.**

Information: 954.357.8400

Hearing-speech impaired/TTY:  
954.357.8302

This publication can be made  
available in alternative formats upon  
request by contacting 954-357-8400  
or TTY 954-357-8302.



This symbol is used on bus stop signs  
to indicate accessible bus stops.



BROWARD COUNTY  
BOARD OF COUNTY COMMISSIONERS

*An equal opportunity employer and provider of services.*

15,000 copies of this public document were promulgated at a gross cost of \$660.00, or \$.044 per copy to inform the public about the Transit Division's schedule and route information. Reprinted 1/18

# ROUTE 22 Weekday Schedule

Effective 10/9/16



Sawgrass Mills Mall (Green Toad Entrance) to  
Broward Central Terminal  
via Broward Boulevard



Real Time Bus Information  
[MyRide.Broward.org](http://MyRide.Broward.org)



954-357-8400  
[Broward.org/BCT](http://Broward.org/BCT)

# MONDAY - FRIDAY

There are additional bus stops in between those listed.

## EASTBOUND

To Broward Central Terminal

SAWGRASS MILLS MALL	BROWARD BLVD & FLAMINGO RD	WEST REGIONAL TERMINAL	WESTFIELD MALL	BROWARD BLVD & US 441	FT. LAUDERDALE TRI-RAIL STATION	BROWARD CENTRAL TERMINAL
1	2	3	4	5	6	7
		5:00a		5:15a	5:25a	5:35a
		5:30a		5:45a	5:55a	6:05a
5:35a	5:47a	6:00a		6:15a	6:25a	6:35a
		6:15a		6:30a	6:40a	6:50a
6:05a	6:17a	6:30a		6:45a	6:55a	7:07a
		6:45a		7:00a	7:11a	7:25a
6:30a	6:42a	6:55a	7:02a	7:16a	7:27a	7:41a
		7:10a	7:17a	7:31a	7:42a	7:56a
7:00a	7:13a	7:25a	7:32a	7:46a	7:57a	8:11a
		7:40a	7:47a	8:01a	8:12a	8:26a
7:30a	7:43a	7:55a	8:02a	8:16a	8:27a	8:41a
		8:10a	8:17a	8:31a	8:42a	8:56a
8:00a	8:13a	8:25a	8:32a	8:46a	8:57a	9:10a
		8:40a	8:47a	9:01a	9:11a	9:24a
8:30a	8:43a	8:55a	9:02a	9:15a	9:25a	9:38a
		9:10a	9:17a	9:30a	9:40a	9:53a
9:00a	9:12a	9:25a	9:32a	9:45a	9:55a	10:08a
		9:40a	9:47a	10:00a	10:10a	10:23a
9:30a	9:42a	9:55a	10:02a	10:15a	10:25a	10:38a
		10:10a	10:17a	10:30a	10:40a	10:53a
10:00a	10:12a	10:25a	10:32a	10:45a	10:55a	11:08a
		10:40a	10:47a	11:00a	11:10a	11:23a
10:30a	10:42a	10:55a	11:02a	11:15a	11:25a	11:38a
		11:10a	11:17a	11:30a	11:40a	11:53a
11:00a	11:12a	11:25a	11:32a	11:45a	11:55a	12:08p
		11:40a	11:47a	12:00p	12:10p	12:23p
11:30a	11:42a	11:55a	12:02p	12:15p	12:25p	12:38p
		12:10p	12:17p	12:30p	12:40p	12:53p
12:00p	12:12p	12:25p	12:32p	12:45p	12:55p	1:08p
		12:40p	12:47p	1:00p	1:10p	1:23p
12:30p	12:42p	12:55p	1:02p	1:15p	1:25p	1:38p
		1:10p	1:17p	1:30p	1:40p	1:53p
1:00p	1:12p	1:25p	1:32p	1:45p	1:55p	2:08p
		1:40p	1:47p	2:00p	2:10p	2:23p
1:30p	1:42p	1:55p	2:02p	2:15p	2:25p	2:38p
		2:10p	2:17p	2:30p	2:40p	2:53p
2:00p	2:12p	2:25p	2:32p	2:45p	2:55p	3:08p
		2:40p	2:47p	3:00p	3:10p	3:23p
2:30p	2:42p	2:55p	3:02p	3:15p	3:25p	3:38p
		3:10p	3:17p	3:30p	3:40p	3:53p
3:00p	3:12p	3:25p	3:32p	3:45p	3:55p	4:09p
		3:40p	3:47p	4:00p	4:11p	4:25p
3:30p	3:42p	3:55p	4:02p	4:16p	4:27p	4:41p
		4:10p	4:17p	4:31p	4:42p	4:56p

## WESTBOUND

To Sawgrass Mills Mall

BROWARD CENTRAL TERMINAL	FT. LAUDERDALE TRI-RAIL STATION	BROWARD BLVD & US 441	WESTFIELD MALL	WEST REGIONAL TERMINAL	BROWARD BLVD & FLAMINGO RD	SAWGRASS MILLS MALL
7	6	5	4	3	2	1
5:20a	5:30a	5:40a		5:55a	6:04a	6:15a
5:35a	5:45a	5:55a		6:10a		
5:50a	6:00a	6:10a		6:25a	6:34a	6:45a
6:05a	6:15a	6:25a		6:40a		
6:20a	6:30a	6:40a		6:55a	7:04a	7:15a
6:35a	6:48a	6:59a	7:13a	7:20a	7:29a	7:40a
6:50a	7:03a	7:14a	7:28a	7:35a		
7:05a	7:18a	7:29a	7:43a	7:50a	7:59a	8:10a
7:20a	7:33a	7:44a	7:58a	8:05a		
7:35a	7:48a	7:59a	8:13a	8:20a	8:29a	8:40a
7:50a	8:03a	8:14a	8:28a	8:35a		
8:05a	8:18a	8:29a	8:43a	8:50a	8:59a	9:10a
8:20a	8:33a	8:44a	8:58a	9:05a		
8:35a	8:48a	8:59a	9:13a	9:20a	9:29a	9:40a
8:50a	9:03a	9:14a	9:28a	9:35a		
9:05a	9:18a	9:29a	9:43a	9:50a	9:59a	10:10a
9:20a	9:33a	9:44a	9:58a	10:05a		
9:35a	9:48a	9:59a	10:13a	10:20a	10:29a	10:40a
9:50a	10:03a	10:14a	10:28a	10:35a		
10:05a	10:18a	10:29a	10:43a	10:50a	10:59a	11:10a
10:20a	10:33a	10:44a	10:58a	11:05a		
10:35a	10:48a	10:59a	11:13a	11:20a	11:29a	11:40a
10:50a	11:03a	11:14a	11:28a	11:35a		
11:05a	11:18a	11:29a	11:43a	11:50a	11:59a	12:10p
11:20a	11:33a	11:44a	11:58a	12:05p		
11:35a	11:48a	11:59a	12:13p	12:20p	12:29p	12:40p
11:50a	12:03p	12:14p	12:28p	12:35p		
12:05p	12:18p	12:29p	12:43p	12:50p	12:59p	1:10p
12:20p	12:33p	12:44p	12:58p	1:05p		
12:35p	12:48p	12:59p	1:13p	1:20p	1:29p	1:40p
12:50p	1:03p	1:14p	1:28p	1:35p		
1:05p	1:18p	1:29p	1:43p	1:50p	1:59p	2:10p
1:20p	1:33p	1:44p	1:58p	2:05p		
1:35p	1:48p	1:59p	2:13p	2:20p	2:29p	2:40p
1:50p	2:03p	2:14p	2:28p	2:35p		
2:05p	2:18p	2:29p	2:43p	2:50p	2:59p	3:10p
2:20p	2:33p	2:44p	2:58p	3:05p		
2:35p	2:48p	2:59p	3:13p	3:20p	3:29p	3:40p
2:50p	3:03p	3:14p	3:28p	3:35p		
3:05p	3:18p	3:29p	3:43p	3:50p	3:59p	4:10p
3:20p	3:33p	3:44p	3:58p	4:05p		
3:35p	3:48p	3:59p	4:13p	4:21p	4:31p	4:42p
3:50p	4:03p	4:15p	4:30p	4:37p		
4:05p	4:19p	4:31p	4:46p	4:53p	5:03p	5:14p

### NUMBERS IN BOXES REFER TO TIME POINTS ON MAP

Times with the letter "G" before them indicate bus returns to garage. To ensure reliable and safe connections for our customers, all trips with the "W" note will NOT depart terminal until directed by either the terminal supervisor or radio.

*Times continue on next page*

# MONDAY - FRIDAY

There are additional bus stops in between those listed.

## EASTBOUND

To Broward Central Terminal

## WESTBOUND

To Sawgrass Mills Mall

SAWGRASS MILLS MALL	BROWARD BLVD & FLAMINGO RD	WEST REGIONAL TERMINAL	WESTFIELD MALL	BROWARD BLVD & US 441	FT. LAUDERDALE TRI-RAIL STATION	BROWARD CENTRAL TERMINAL	BROWARD CENTRAL TERMINAL	FT. LAUDERDALE TRI-RAIL STATION	BROWARD BLVD & US 441	WESTFIELD MALL	WEST REGIONAL TERMINAL	BROWARD BLVD & FLAMINGO RD	SAWGRASS MILLS MALL
1	2	3	4	5	6	7	7	6	5	4	3	2	1
4:00p	4:13p	4:25p	4:32p	4:46p	4:57p	5:11p	4:20p	4:34p	4:46p	5:01p	5:08p		
		4:40p	4:47p	5:01p	5:12p	5:26p	4:35p	4:49p	5:01p	5:16p	5:23p	5:33p	5:44p
4:30p	4:43p	4:55p	5:02p	5:16p	5:27p	5:41p	4:50p	5:04p	5:16p	5:31p	5:38p		
		5:10p	5:17p	5:31p	5:42p	5:56p	5:05p	5:19p	5:31p	5:46p	5:53p	6:03p	6:14p
5:00p	5:13p	5:25p	5:32p	5:46p	5:57p	6:10p	5:20p	5:34p	5:46p	6:01p	6:08p		
		5:40p	5:47p	6:01p	6:11p	6:24p	5:35p	5:49p	6:01p	6:16p	6:25p	6:34p	6:45p
5:30p	5:43p	5:55p	6:02p	6:15p	6:25p	6:38p	5:50p	6:04p	6:15p	6:29p	6:36p		
		6:10p	6:17p	6:30p	6:40p	6:55p G	6:05p	6:18p	6:29p	6:43p	6:50p	6:59p	7:10p G
6:00p	6:12p	6:25p	6:32p	6:45p	6:55p	7:08p	6:20p	6:33p	6:44p	6:58p	7:05p G		
		6:40p	6:47p	7:00p	7:10p	7:25p G	6:35p	6:48p	6:59p	7:13p	7:20p	7:29p	7:40p
6:30p	6:42p	6:55p	7:02p	7:15p	7:25p	7:38p	6:55p	7:08p	7:19p	7:33p	7:40p G		
7:00p	7:12p	7:25p	7:32p	7:45p	7:55p	8:06p	7:15p	7:28p	7:39p	7:53p	8:00p	8:09p	8:20p
7:40p	7:52p	8:05p	8:12p	8:25p	8:35p	8:45p	7:45p	7:58p	8:09p	8:23p	8:30p	8:39p	8:50p
8:20p	8:32p	8:45p	8:52p	9:05p	9:15p	9:25p	8:20p	8:30p	8:40p	8:53p	9:00p	9:09p	9:20p
9:00p	9:12p	9:25p	9:32p	9:45p	9:55p	10:05p	9:00p	9:10p	9:20p	9:33p	9:40p	9:49p	10:00p
9:40p	9:52p	10:05p	10:12p	10:25p	10:35p	10:45p	9:40p	9:50p	10:00p	10:13p	10:20p	10:29p	10:40p
10:20p	10:32p	10:45p		11:00p		11:15p G	10:20p	10:30p	10:40p		10:55p G		
11:00p	11:12p	11:25p		11:40p		11:55p G	11:05p W		11:20p		11:35p G		

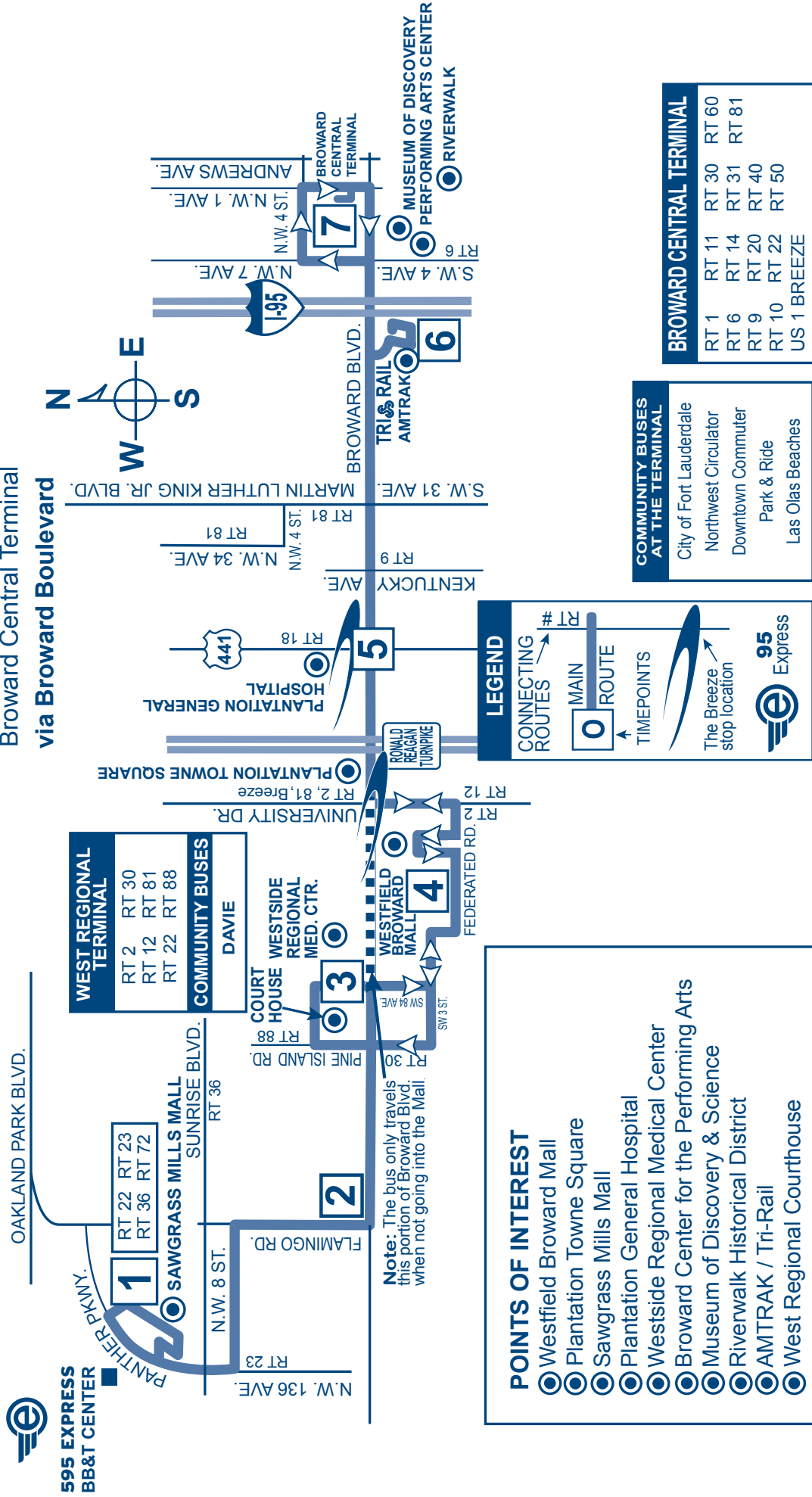
### NUMBERS IN BOXES REFER TO TIME POINTS ON MAP

Times with the letter "G" before them indicate bus returns to garage. To ensure reliable and safe connections for our customers, all trips with the "W" note will NOT depart terminal until directed by either the terminal supervisor or radio.



# ROUTE 22

Sawgrass Mills Mall (Green Toad Entrance) to  
Broward Central Terminal  
via **Broward Boulevard**



For more details on our fares please  
visit our web site at  
[broward.org/bct](http://broward.org/bct) or call  
customer service: 954.357.8400.

### Reading A Timetable - It's Easy

1. The map shows the exact bus route.
2. Major route intersections are called time points. Time points are shown with the symbol □.
3. The timetable lists major time points for bus route. Listed under time points are scheduled departure times.
4. Reading from left to right, indicates the time for each bus trip.
5. The bus picks up and drops off riders at all BCT bus stop signs along the route where there is a Broward County bus stop sign.
6. Arrive at the bus stop five minutes early. Buses operate as close to published timetables as traffic conditions allow.

**Not paying your fare is a crime per  
Florida Statute 812.015.  
Violation constitutes a misdemeanor,  
punishable by jail time and/or a fine.**

Information: 954.357.8400

Hearing-speech impaired/TTY:  
954.357.8302

This publication can be made available in  
alternative formats upon request by contacting  
954-357-8400 or TTY 954-357-8302.



This symbol is used on bus stop signs to  
indicate accessible bus stops.



BROWARD COUNTY  
BOARD OF COUNTY COMMISSIONERS

*An equal opportunity employer and provider of services.*

10,000 copies of this public document were promulgated at a gross cost of \$460.00, or \$.046 per copy to inform the public about the Transit Division's schedule and route information. Reprinted 1/18

# ROUTE 22 Weekend Schedule

Effective 1/19/14



Sawgrass Mills Mall (Green Toad Entrance) to  
Broward Central Terminal  
via Broward Boulevard



Real Time Bus Information  
[MyRide.Broward.org](http://MyRide.Broward.org)



954-357-8400  
[Broward.org/BCT](http://Broward.org/BCT)

# SATURDAY

There are additional bus stops in between those listed.

## EASTBOUND

To Broward Central Terminal

## WESTBOUND

To Sawgrass Mills Mall

SAWGRASS MILLS MALL	BROWARD BLVD & FLAMINGO RD	WEST REGIONAL TERMINAL	WESTFIELD MALL	BROWARD BLVD & US 441	FT. LAUDERDALE TRI-RAIL STATION	BROWARD CENTRAL TERMINAL	BROWARD CENTRAL TERMINAL	FT. LAUDERDALE TRI-RAIL STATION	BROWARD BLVD & US 441	WESTFIELD MALL	WEST REGIONAL TERMINAL	BROWARD BLVD & FLAMINGO RD	SAWGRASS MILLS MALL
1	2	3	4	5	6	7	7	6	5	4	3	2	1
		5:25a		5:40a		5:55a	5:45a		6:00a		6:15a	6:24a	6:35a
		5:55a		6:10a		6:25a	6:10a	6:20a	6:30a		6:45a	6:54a	7:05a
		6:20a		6:35a	6:45a	6:55a	6:35a	6:45a	6:55a	7:08a	7:15a	7:24a	7:35a
		6:45a		7:00a	7:10a	7:20a	7:05a	7:15a	7:25a	7:38a	7:45a	7:54a	8:05a
6:50a	7:02a	7:15a	7:22a	7:35a	7:45a	7:55a	7:35a	7:45a	7:55a	8:08a	8:15a	8:24a	8:35a
7:20a	7:32a	7:45a	7:52a	8:05a	8:15a	8:25a	8:05a	8:15a	8:25a	8:38a	8:45a	8:54a	9:05a
7:50a	8:02a	8:15a	8:22a	8:35a	8:45a	8:55a	8:35a	8:45a	8:55a	9:08a	9:15a	9:24a	9:35a
8:20a	8:32a	8:45a	8:52a	9:05a	9:15a	9:25a	9:05a	9:15a	9:25a	9:38a	9:45a	9:54a	10:05a
8:50a	9:02a	9:15a	9:22a	9:35a	9:45a	9:55a	9:35a	9:45a	9:55a	10:08a	10:15a	10:24a	10:35a
9:20a	9:32a	9:45a	9:52a	10:05a	10:15a	10:25a	10:05a	10:15a	10:25a	10:38a	10:45a	10:54a	11:05a
9:50a	10:02a	10:15a	10:22a	10:35a	10:45a	10:55a	10:35a	10:45a	10:55a	11:08a	11:15a	11:24a	11:35a
10:20a	10:32a	10:45a	10:52a	11:05a	11:15a	11:25a	11:05a	11:15a	11:25a	11:38a	11:45a	11:54a	12:05p
10:50a	11:02a	11:15a	11:22a	11:35a	11:45a	11:55a	11:35a	11:45a	11:55a	12:08p	12:15p	12:24p	12:35p
11:20a	11:32a	11:45a	11:52a	12:05p	12:15p	12:25p	12:05p	12:15p	12:25p	12:38p	12:45p	12:54p	1:05p
11:50a	12:02p	12:15p	12:22p	12:35p	12:45p	12:55p	12:35p	12:45p	12:55p	1:08p	1:15p	1:24p	1:35p
12:20p	12:32p	12:45p	12:52p	1:05p	1:15p	1:25p	1:05p	1:15p	1:25p	1:38p	1:45p	1:54p	2:05p
12:50p	1:02p	1:15p	1:22p	1:35p	1:45p	1:55p	1:35p	1:45p	1:55p	2:08p	2:15p	2:24p	2:35p
1:20p	1:32p	1:45p	1:52p	2:05p	2:15p	2:25p	2:05p	2:15p	2:25p	2:38p	2:45p	2:54p	3:05p
1:50p	2:02p	2:15p	2:22p	2:35p	2:45p	2:55p	2:35p	2:45p	2:55p	3:08p	3:15p	3:24p	3:35p
2:20p	2:32p	2:45p	2:52p	3:05p	3:15p	3:25p	3:05p	3:15p	3:25p	3:38p	3:45p	3:54p	4:05p
2:50p	3:02p	3:15p	3:22p	3:35p	3:45p	3:55p	3:35p	3:45p	3:55p	4:08p	4:15p	4:24p	4:35p
3:20p	3:32p	3:45p	3:52p	4:05p	4:15p	4:25p	4:05p	4:15p	4:25p	4:38p	4:45p	4:54p	5:05p
3:50p	4:02p	4:15p	4:22p	4:35p	4:45p	4:55p	4:35p	4:45p	4:55p	5:08p	5:15p	5:24p	5:35p
4:20p	4:32p	4:45p	4:52p	5:05p	5:15p	5:25p	5:05p	5:15p	5:25p	5:38p	5:45p	5:54p	6:05p
4:50p	5:02p	5:15p	5:22p	5:35p	5:45p	5:55p	5:35p	5:45p	5:55p	6:08p	6:15p	6:24p	6:35p
5:20p	5:32p	5:45p	5:52p	6:05p	6:15p	6:25p	6:05p	6:15p	6:25p	6:38p	6:45p	6:54p	7:05p
5:50p	6:02p	6:15p	6:22p	6:35p	6:45p	6:55p	6:35p	6:45p	6:55p	7:08p	7:15p	7:24p	7:35p
6:20p	6:32p	6:45p	6:52p	7:05p	7:15p	7:25p	7:05p	7:15p	7:25p	7:38p	7:45p	7:54p	8:05p
6:50p	7:02p	7:15p	7:22p	7:35p	7:45p	7:55p	7:35p	7:45p	7:55p	8:08p	8:15p	8:24p	8:35p G
7:20p	7:32p	7:45p	7:52p	8:05p	8:15p	8:25p G	8:05p	8:15p	8:25p	8:38p	8:45p	8:54p	9:05p
7:50p	8:02p	8:15p	8:22p	8:35p	8:45p	8:55p	8:55p	9:05p	9:15p	9:28p	9:35p	9:44p	9:55p
8:20p	8:32p	8:45p	8:52p	9:05p	9:15p	9:25p	9:35p	9:45p	9:55p	10:08p	10:15p	10:24p	10:35p
9:10p	9:22p	9:35p	9:42p	9:55p	10:05p	10:15p	10:15p		10:30p		10:45p	10:54p	11:05p G
10:00p	10:12p	10:25p	10:32p	10:45p									
10:40p	10:52p	11:05p		11:20p									

NUMBERS IN BOXES REFER TO TIME POINTS ON MAP  
 Times with the letter "G" after them indicate bus returns to garage.

# SUNDAY

## EASTBOUND

To Broward Central Terminal

SAWGRASS MILLS MALL	BROWARD BLVD & FLAMINGO RD	WEST REGIONAL TERMINAL	WESTFIELD MALL	BROWARD BLVD & US 441	FT. LAUDERDALE TRI-RAIL STATION	BROWARD CENTRAL TERMINAL
1	2	3	4	5	6	7
		8:15a		8:30a	8:40a	8:50a
		8:45a		9:00a	9:10a	9:20a
8:50a	9:02a	9:15a	9:22a	9:35a	9:45a	9:55a
9:20a	9:32a	9:45a	9:52a	10:05a	10:15a	10:25a
9:50a	10:02a	10:15a	10:22a	10:35a	10:45a	10:55a
10:20a	10:32a	10:45a	10:52a	11:05a	11:15a	11:25a
10:50a	11:02a	11:15a	11:22a	11:35a	11:45a	11:55a
11:20a	11:32a	11:45a	11:52a	12:05p	12:15p	12:25p
11:50a	12:02p	12:15p	12:22p	12:35p	12:45p	12:55p
12:20p	12:32p	12:45p	12:52p	1:05p	1:15p	1:25p
12:50p	1:02p	1:15p	1:22p	1:35p	1:45p	1:55p
1:20p	1:32p	1:45p	1:52p	2:05p	2:15p	2:25p
1:50p	2:02p	2:15p	2:22p	2:35p	2:45p	2:55p
2:20p	2:32p	2:45p	2:52p	3:05p	3:15p	3:25p
2:50p	3:02p	3:15p	3:22p	3:35p	3:45p	3:55p
3:20p	3:32p	3:45p	3:52p	4:05p	4:15p	4:25p
3:50p	4:02p	4:15p	4:22p	4:35p	4:45p	4:55p
4:20p	4:32p	4:45p	4:52p	5:05p	5:15p	5:25p
4:50p	5:02p	5:15p	5:22p	5:35p	5:45p	5:55p
5:20p	5:32p	5:45p	5:52p	6:05p	6:15p	6:25p
5:50p	6:02p	6:15p	6:22p	6:35p	6:45p	6:55p
6:35p	6:47p	7:00p	7:07p	7:20p	7:30p	7:40p
7:20p	7:32p	7:45p		8:00p	8:10p	8:20p G
8:05p	8:17p	8:30p		8:45p	8:55p	9:05p G
8:50p	9:02p	9:15p		9:30p	9:40p	9:50p G

## WESTBOUND

To Sawgrass Mills Mall

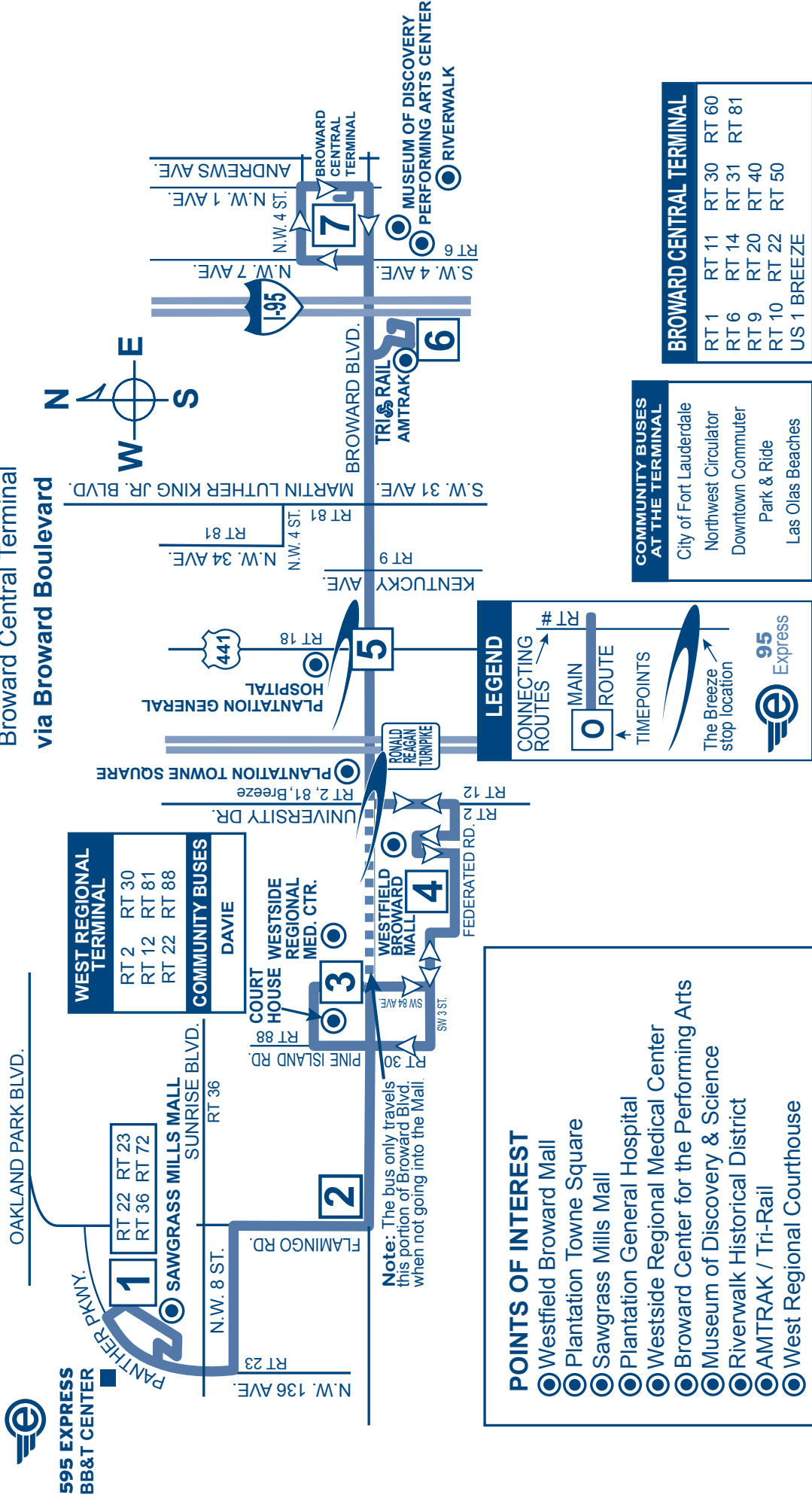
BROWARD CENTRAL TERMINAL	FT. LAUDERDALE TRI-RAIL STATION	BROWARD BLVD & US 441	WESTFIELD MALL	WEST REGIONAL TERMINAL	BROWARD BLVD & FLAMINGO RD	SAWGRASS MILLS MALL
7	6	5	4	3	2	1
8:10a	8:20a	8:30a		8:45a	8:54a	9:05a
8:40a	8:50a	9:00a		9:15a	9:24a	9:35a
9:05a	9:15a	9:25a	9:38a	9:45a	9:54a	10:05a
9:35a	9:45a	9:55a	10:08a	10:15a	10:24a	10:35a
10:05a	10:15a	10:25a	10:38a	10:45a	10:54a	11:05a
10:35a	10:45a	10:55a	11:08a	11:15a	11:24a	11:35a
11:05a	11:15a	11:25a	11:38a	11:45a	11:54a	12:05p
11:35a	11:45a	11:55a	12:08p	12:15p	12:24p	12:35p
12:05p	12:15p	12:25p	12:38p	12:45p	12:54p	1:05p
12:35p	12:45p	12:55p	1:08p	1:15p	1:24p	1:35p
1:05p	1:15p	1:25p	1:38p	1:45p	1:54p	2:05p
1:35p	1:45p	1:55p	2:08p	2:15p	2:24p	2:35p
2:05p	2:15p	2:25p	2:38p	2:45p	2:54p	3:05p
2:35p	2:45p	2:55p	3:08p	3:15p	3:24p	3:35p
3:05p	3:15p	3:25p	3:38p	3:45p	3:54p	4:05p
3:35p	3:45p	3:55p	4:08p	4:15p	4:24p	4:35p
4:05p	4:15p	4:25p	4:38p	4:45p	4:54p	5:05p
4:35p	4:45p	4:55p	5:08p	5:15p	5:24p	5:35p
5:05p	5:15p	5:25p	5:38p	5:45p	5:54p	6:05p G
5:35p	5:45p	5:55p	6:08p	6:15p	6:24p	6:35p
6:05p	6:15p	6:25p	6:38p	6:45p	6:54p	7:05p
6:35p	6:45p	6:55p	7:08p	7:15p	7:24p	7:35p G
7:05p	7:15p	7:25p		7:40p	7:49p	8:00p
7:50p	8:00p	8:10p		8:25p	8:34p	8:45p

NUMBERS IN BOXES REFER TO TIME POINTS ON MAP

Times with the letter "G" after them indicate bus returns to garage.

# ROUTE 22

Sawgrass Mills Mall (Green Toad Entrance) to  
Broward Central Terminal  
via **Broward Boulevard**



Note: The bus only travels this portion of Broward Blvd. when not going into the Mall.

For more details on our fares please visit our web site at [Broward.org/BCT](http://Broward.org/BCT) or call customer service: 954.357.8400.

### Reading a Timetable - It's Easy

1. The map shows the exact bus route.
2. Major route intersections are called time points. Time points are shown with the symbol □.
3. The timetable lists major time points for bus route. Listed under time points are scheduled departure times.
4. Reading from left to right, indicates the time for each bus trip.
5. The bus picks up and drops off riders at all BCT bus stop signs along the route where there is a Broward County bus stop sign.
6. Arrive at the bus stop five minutes early. Buses operate as close to published timetables as traffic conditions allow.

**Not paying your fare is a crime per Florida Statute 812.015. Violation constitutes a misdemeanor, punishable by jail time and/or a fine.**

Information: 954.357.8400

Hearing-speech impaired/TTY:  
954.357.8302

This publication can be made available in alternative formats upon request by contacting 954-357-8400 or TTY 954-357-8302.



This symbol is used on bus stop signs to indicate accessible bus stops.



BOARD OF COUNTY COMMISSIONERS

*An equal opportunity employer and provider of services.*

20,000 copies of this public document were promulgated at a gross cost of \$870.00, or \$.043 per copy to inform the public about the Transit Division's schedule and route information. 5/18

# ROUTE 81 All Week Schedule

Effective 5/6/18



Broward Central Terminal to West Regional Terminal



Real Time Bus Information  
[MyRide.Broward.org](http://MyRide.Broward.org)



954-357-8400  
[Broward.org/BCT](http://Broward.org/BCT)

# Route 81

Broward Central Terminal to  
West Regional Terminal

BROWARD COUNTY TRANSIT



WHEN IT COMES TO OUR SAFETY, WE CAN ALWAYS USE  
AN EXTRA PAIR OF EYES AND EARS. BE ALERT.  
CALL 954-357-LOOK (5665). TELL US.

## MONDAY - FRIDAY

There are additional bus stops in between those listed.

### EASTBOUND

To Broward Central Terminal

WEST REGIONAL TERMINAL	SUNSET STRIP & UNIVERSITY DR	SUNRISE BLVD & NW 56 AVE	NW 44 ST & INVERRARY BLVD	NW 35 ST & NW 50 AVE	LAUDERHILL MALL	BROWARD BLVD & NW 31 AVE	BROWARD CENTRAL TERMINAL
1	2	3	4A	4B	5	6	7
	5:10a	5:22a			5:51a	5:59a	6:12a
	5:30a	5:42a	6:00a		6:31a	6:41a	6:55a
5:45a	5:54a	6:06a	6:26a	6:37a	6:57a	7:15a	7:31a
6:15a	6:26a	6:38a	6:58a	7:11a	7:33a	7:50a	8:06a
6:45a	6:56a	7:11a	7:31a	7:45a	8:07a	8:24a	8:42a
7:20a	7:32a	7:49a	8:09a	8:23a	8:45a	8:58a	9:16a
7:55a	8:07a	8:23a	8:41a	8:54a	9:16a	9:28a	9:46a
8:30a	8:41a	8:53a	9:11a	9:24a	9:46a	9:58a	10:16a
9:05a	9:16a	9:28a	9:46a	9:59a	10:21a	10:33a	10:50a
9:40a	9:51a	10:03a	10:21a	10:34a	10:55a	11:06a	11:22a
10:15a	10:26a	10:38a	10:55a	11:07a	11:27a	11:38a	11:54a
10:40a	10:51a	11:03a	11:20a	11:32a	11:52a	12:03p	12:19p
11:15a	11:26a	11:38a	11:55a	12:07p	12:27p	12:38p	12:54p
11:50a	12:01p	12:13p	12:30p	12:42p	1:02p	1:13p	1:30p
12:25p	12:36p	12:48p	1:05p	1:17p	1:37p	1:48p	2:06p
1:00p	1:11p	1:23p	1:42p	1:54p	2:14p	2:25p	2:43p
1:35p	1:47p	1:59p	2:18p	2:30p	2:50p	3:01p	3:17p
2:10p	2:22p	2:34p	2:53p	3:05p	3:25p	3:38p	3:54p
2:40p	2:52p	3:05p	3:25p	3:37p	3:57p	4:10p	4:26p
3:15p	3:28p	3:42p	4:02p	4:14p	4:32p	4:45p	5:01p
3:50p	4:03p	4:17p	4:37p	4:49p	5:07p	5:20p	5:36p
4:25p	4:38p	4:52p	5:12p	5:24p	5:42p	5:55p	6:11p
5:05p	5:18p	5:32p	5:52p	6:04p	6:22p	6:31p	6:46p
5:40p	5:53p	6:07p	6:26p	6:39p	7:00p	7:09p	7:23p
6:15p	6:28p	6:42p	6:59p	7:12p	7:33p	7:43p	7:56p
6:45p	6:58p	7:12p	7:28p	7:38p	7:57p	8:07p	8:20p
7:25p	7:36p	7:47p	8:02p	8:12p	8:31p	8:41p	8:54pG
7:55p	8:06p	8:17p	8:32p		8:55p	9:05p	9:13p
8:20p	8:31p	8:42p		9:00p	9:24p	9:29p	9:39p
9:00p	9:11p	9:22p	9:37p		10:01p	10:10p	10:17p
9:25p	9:36p	9:47p		10:05p	10:29p	10:34p	10:44p
9:55p	10:05p	10:16p	10:31p		10:55p	11:05p	11:13pG
10:25p	10:35p	10:46p	11:01p	11:12p	11:31p	11:41p	11:54pG
11:00p	11:10p	11:21p	11:36p	11:47p	12:06aG		

### WESTBOUND

To West Regional Terminal

BROWARD CENTRAL TERMINAL	BROWARD BLVD & NW 31 AVE	LAUDERHILL MALL	NW 35 ST & NW 50 AVE	NW 44 ST & INVERRARY BLVD	SUNRISE BLVD & NW 56 AVE	SUNSET STRIP & UNIVERSITY DR	WEST REGIONAL TERMINAL
7	6	5	4B	4A	3	2	1
		5:35a		5:53a	6:08a	6:19a	6:29a
		6:05a		6:24a	6:39a	6:50a	7:00a
6:00a	6:08a	6:22a	6:38a	6:47a	7:06a	7:19a	7:35a
6:30a	6:40a	6:53a	7:13a	7:24a	7:44a	8:01a	8:18a
7:10a	7:21a	7:37a	7:56a	8:05a	8:21a	8:36a	8:52a
7:45a	7:57a	8:11a	8:31a	8:40a	9:01a	9:13a	9:28a
8:20a	8:30a	8:46a	9:06a	9:16a	9:30a	9:43a	9:58a
8:55a	9:04a	9:16a	9:35a	9:43a	9:57a	10:08a	10:25a
9:30a	9:39a	9:51a	10:09a	10:16a	10:30a	10:41a	10:52a
10:00a	10:10a	10:24a	10:42a	10:50a	11:05a	11:17a	11:30a
10:35a	10:45a	10:59a	11:20a	11:30a	11:43a	11:56a	12:09p
11:05a	11:15a	11:30a	11:52a	12:03p	12:16p	12:30p	12:42p
11:40a	11:51a	12:06p	12:27p	12:39p	12:55p	1:06p	1:19p
12:15p	12:25p	12:41p	1:02p	1:11p	1:24p	1:34p	1:47p
12:45p	12:55p	1:11p	1:32p	1:42p	1:58p	2:10p	2:23p
1:15p	1:26p	1:42p	2:03p	2:13p	2:29p	2:41p	2:55p
1:50p	2:00p	2:17p	2:37p	2:47p	3:04p	3:16p	3:29p
2:25p	2:36p	2:53p	3:14p	3:25p	3:42p	3:54p	4:08p
3:00p	3:11p	3:29p	3:50p	4:02p	4:19p	4:32p	4:40p
3:35p	3:47p	4:05p	4:26p	4:38p	5:01p	5:13p	5:21p
4:10p	4:22p	4:39p	5:05p	5:17p	5:40p	5:52p	6:00p
4:40p	4:58p	5:14p	5:40p	5:52p	6:15p	6:26p	6:34p
5:20p	5:41p	6:03p	6:23p	6:34p	6:52p	7:03p	7:13p
5:55p	6:15p	6:34p	6:53p	7:04p	7:21p	7:31p	7:41p
6:25p	6:45p	7:03p	7:23p	7:34p	7:51p	8:00p	8:10p
7:05p	7:25p	7:40p	8:03p	8:12p	8:28p	8:38p	8:48p
7:40p	7:50p	8:05p	8:26p	8:35p	8:51p	9:01p	9:11p
8:10p	8:19p	8:32p	8:52p	9:01p	9:17p	9:27p	9:37p
8:40p	8:49p	9:02p	9:22p	9:31p	9:47p	9:57p	10:07p
9:20p	9:29p	9:45p	10:03p		10:17p	10:27p	10:36p
9:55p	10:04p	10:20p		10:38p	10:52p	11:02p	11:11pG
10:30p	10:39p	10:52p	11:12p	11:21p	11:37p	11:47p	11:57pG
11:05p	11:14p	11:27p	11:47p	11:56p	12:12a	12:22a	12:32aG

#### NUMBERS IN BOXES REFER TO TIME POINTS ON MAP

Times with the letter "G" before them indicate bus returns to garage. To ensure reliable and safe connections for our customers, all trips with the "W" note will NOT depart terminal until directed by either the terminal supervisor or radio.

# SATURDAY

## EASTBOUND

To Broward Central Terminal

WEST REGIONAL TERMINAL	SUNSET STRIP & UNIVERSITY DR	SUNRISE BLVD & NW 56 AVE	NW 44 ST & INVERRARY BLVD	NW 35 ST & NW 50 AVE	LAUDERHILL MALL	BROWARD BLVD & NW 31 AVE	BROWARD CENTRAL TERMINAL
1	2	3	4A	4B	5	6	7
	5:41a	5:50a	6:04a		6:28a	6:40a	6:50a
6:00a	6:09a	6:19a		6:35a	6:57a	7:07a	7:18a
6:30a	6:39a	6:49a	7:03a		7:28a	7:37a	7:51a
7:00a	7:09a	7:20a		7:35a	7:58a	8:06a	8:19a
7:30a	7:39a	7:50a	8:03a		8:28a	8:37a	8:51a
8:00a	8:10a	8:21a		8:36a	8:58a	9:07a	9:22a
8:30a	8:39a	8:50a	9:03a		9:28a	9:39a	9:53a
9:05a	9:13a	9:25a		9:44a	10:06a	10:15a	10:30a
9:40a	9:49a	10:00a	10:14a		10:41a	10:52a	11:05a
10:15a	10:24a	10:36a		10:50a	11:12a	11:21a	11:35a
10:50a	11:00a	11:12a	11:25a		11:49a	12:02p	12:17p
11:25a	11:35a	11:46a		12:02p	12:22p	12:30p	12:46p
12:00p	12:10p	12:21p	12:32p		12:57p	1:05p	1:20p
12:35p	12:45p	12:56p		1:14p	1:34p	1:47p	2:01p
1:10p	1:21p	1:33p	1:46p		2:13p	2:23p	2:32p
1:45p	1:56p	2:10p		2:25p	2:45p	2:58p	3:12p
2:20p	2:31p	2:42p	2:56p		3:22p	3:31p	3:44p
2:55p	3:06p	3:18p		3:33p	3:57p	4:06p	4:20p
3:30p	3:41p	3:54p	4:06p		4:29p	4:41p	4:55p
4:05p	4:15p	4:26p		4:41p	5:02p	5:14p	5:28p
4:40p	4:52p	5:05p	5:17p		5:40p	5:48p	6:06p
5:15p	5:26p	5:38p		5:55p	6:14p	6:25p	6:38p
5:50p	6:01p	6:10p	6:22p		6:50p	7:01p	7:17p
6:25p	6:35p	6:46p		7:01p	7:22p	7:33p	7:46p
7:00p	7:09p	7:21p	7:35p		7:59p	8:09p	8:23p
7:35p	7:45p	7:56p		8:11p	8:32p	8:43p	8:56p
8:10p	8:19p	8:30p	8:42p		9:05p	9:15p	9:29p
8:45p	8:55p	9:06p		9:21p	9:42p	9:53p	10:06pG
9:20p	9:29p	9:40p	9:52p		10:15p	10:25p	10:39p
9:55p	10:06p	10:17p	10:30p	10:43p	11:03pG		
10:45p	10:56p	11:07p	11:20p	11:33p	11:53pG		

## WESTBOUND

West Regional Terminal

BROWARD CENTRAL TERMINAL	BROWARD BLVD & NW 31 AVE	LAUDERHILL MALL	NW 35 ST & NW 50 AVE	NW 44 ST & INVERRARY BLVD	SUNRISE BLVD & NW 56 AVE	SUNSET STRIP & UNIVERSITY DR	WEST REGIONAL TERMINAL
7	6	5	4B	4A	3	2	1
		5:55a		6:12a	6:27a	6:37a	6:47a
6:00a	6:08a	6:23a	6:41a		6:53a	7:01a	7:11a
6:30a	6:37a	6:53a		7:10a	7:25a	7:36a	7:44a
7:00a	7:06a	7:22a	7:37a		7:54a	8:05a	8:15a
7:30a	7:38a	7:53a		8:11a	8:27a	8:39a	8:53a
8:00a	8:08a	8:23a	8:41a		8:55a	9:06a	9:17a
8:30a	8:38a	8:51a		9:09a	9:25a	9:36a	9:51a
9:05a	9:13a	9:28a	9:46a		10:00a	10:12a	10:23a
9:40a	9:49a	10:02a		10:20a	10:36a	10:47a	10:59a
10:15a	10:22a	10:37a	10:56a		11:09a	11:20a	11:35a
10:50a	10:58a	11:14a		11:41a	11:57a	12:02p	12:16p
11:25a	11:36a	11:53a	12:14p		12:25p	12:39p	12:50p
12:00p	12:08p	12:24p		12:46p	12:59p	1:13p	1:27p
12:35p	12:45p	12:59p	1:17p		1:33p	1:44p	1:55p
1:10p	1:20p	1:35p		1:56p	2:09p	2:23p	2:36p
1:45p	1:53p	2:08p	2:26p		2:40p	2:54p	3:06p
2:20p	2:30p	2:44p		3:05p	3:25p	3:35p	3:46p
2:55p	3:04p	3:19p	3:40p		3:53p	4:04p	4:15p
3:30p	3:39p	3:53p		4:14p	4:33p	4:45p	4:56p
4:05p	4:15p	4:27p	4:49p		5:02p	5:13p	5:24p
4:40p	4:48p	5:05p		5:26p	5:40p	5:47p	6:02p
5:15p	5:25p	5:37p	5:59p		6:12p	6:24p	6:30p
5:50p	5:59p	6:14p		6:36p	6:57p	7:03p	7:12p
6:25p	6:33p	6:47p	7:07p		7:20p	7:31p	7:43p
7:00p	7:11p	7:26p		7:48p	8:04p	8:13p	8:23p
7:35p	7:46p	7:59p	8:16p		8:31p	8:42p	8:54p
8:10p	8:17p	8:33p		8:55p	9:08p	9:17p	9:29p
8:45p	8:56p	9:09p	9:28p		9:43p	9:53p	10:01pG
9:20p	9:28p	9:41p		10:03p	10:16p	10:25p	10:37p
9:55p	10:04p	10:20p	10:38p	10:47p	11:02p	11:12pG	
10:45p	10:54p	11:10p	11:28p	11:37p	11:52p	12:02aG	

# SUNDAY

## EASTBOUND

To Broward Central Terminal

1	2	3	4A	4B	5	6	7
8:00a	8:09a	8:20a	8:34a		8:58a	9:08a	9:20a
8:45a	8:55a	9:06a		9:23a	9:43a	9:54a	10:07a
9:30a	9:38a	9:51a	10:04a		10:27a	10:40a	10:51a
10:15a	10:24a	10:33a		10:51a	11:12a	11:21a	11:37a
11:00a	11:08a	11:20a	11:32a		11:57a	12:08p	12:20p
11:45a	11:56a	12:06p		12:23p	12:43p	12:54p	1:06p
12:30p	12:39p	12:50p	1:02p		1:28p	1:37p	1:52p
1:15p	1:24p	1:34p		1:48p	2:13p	2:22p	2:37p
2:00p	2:10p	2:21p	2:33p		2:59p	3:08p	3:23p
2:45p	2:55p	3:07p		3:23p	3:42p	3:53p	4:05p
3:30p	3:41p	3:52p	4:04p		4:29p	4:39p	4:52p
4:15p	4:24p	4:37p		4:53p	5:13p	5:22p	5:37p
5:00p	5:11p	5:23p	5:35p		5:59p	6:10p	6:21p
5:45p	5:57p	6:07p		6:23p	6:44p	6:55p	7:06p
6:30p	6:39p	6:53p	7:05p		7:28p	7:39p	7:51p
7:15p	7:27p	7:37p		7:53p	8:14pG		
8:00p	8:12p	8:24p	8:36p	8:48p	9:08pG		

## WESTBOUND

West Regional Terminal

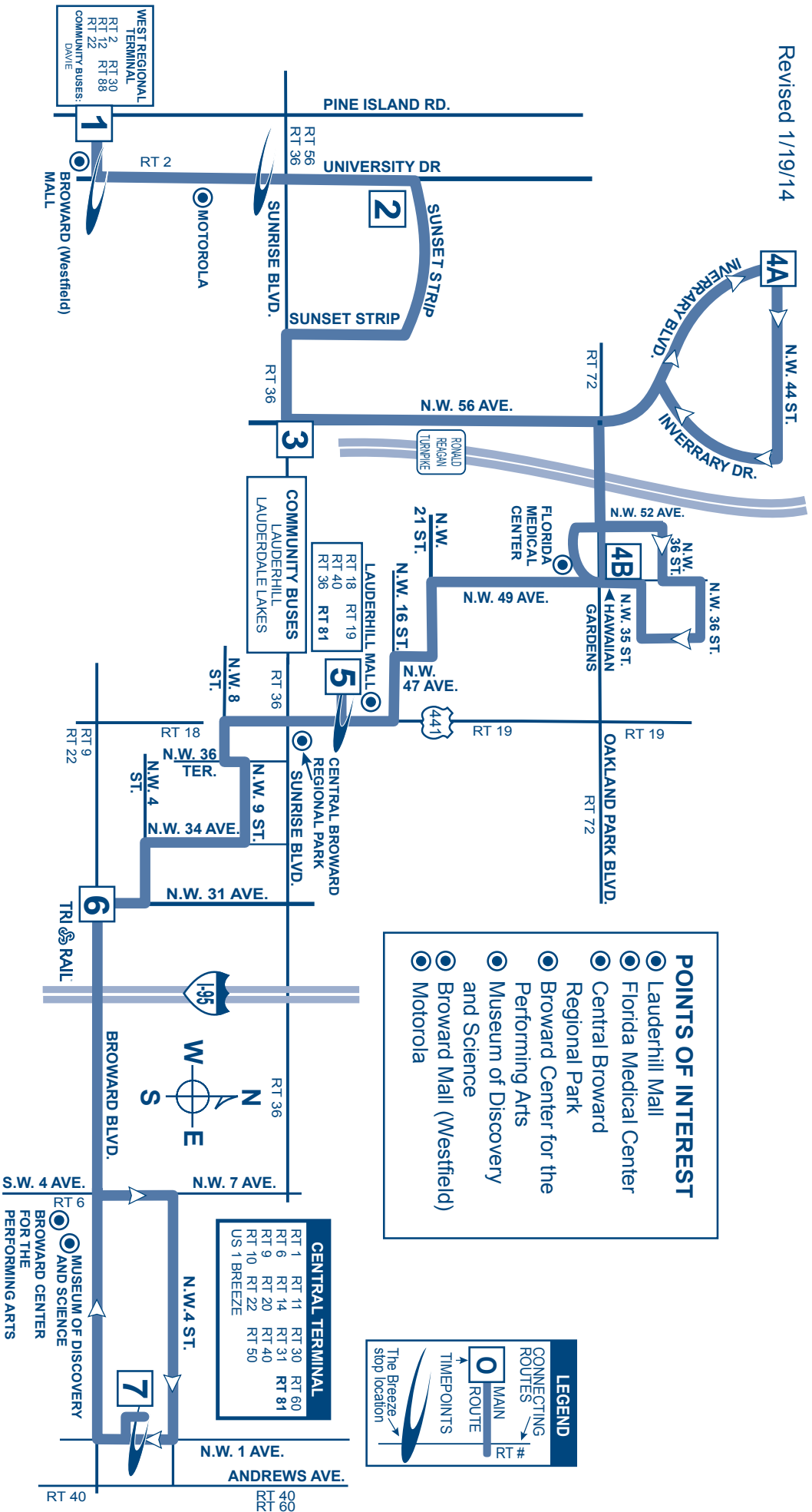
7	6	5	4B	4A	3	2	1
8:00a	8:07a	8:23a		8:42a	8:55a	9:08a	9:17a
8:45a	8:52a	9:07a	9:25a		9:40a	9:48a	9:59a
9:30a	9:37a	9:53a		10:12a	10:25a	10:36a	10:47a
10:15a	10:23a	10:37a	10:53a		11:09a	11:22a	11:33a
11:00a	11:07a	11:21a		11:39a	11:52a	12:05p	12:14p
11:45a	11:52a	12:07p	12:24p		12:39p	12:49p	1:00p
12:30p	12:38p	12:52p		1:12p	1:26p	1:37p	1:49p
1:15p	1:22p	1:38p	1:58p		2:12p	2:22p	2:36p
2:00p	2:08p	2:22p		2:42p	2:56p	3:07p	3:19p
2:45p	2:54p	3:08p	3:26p		3:40p	3:51p	4:04p
3:30p	3:38p	3:52p		4:12p	4:26p	4:37p	4:49p
4:15p	4:24p	4:38p	4:56p		5:10p	5:21p	5:34p
5:00p	5:08p	5:22p		5:42p	5:56p	6:07p	6:19p
5:45p	5:53p	6:07p	6:29p		6:45p	6:53p	7:03p
6:30p	6:38p	6:52p		7:12p	7:26p	7:37p	7:49p
7:15p	7:23p	7:37p	7:59p		8:15p	8:23pG	
8:00p	8:10p	8:25p	8:43p	8:52p	9:06p	9:15pG	



# ROUTE 81









West Regional Terminal to  
Broward Central Terminal

Revised 1/19/14





**954-TROLLEY**  
www.suntrolley.com

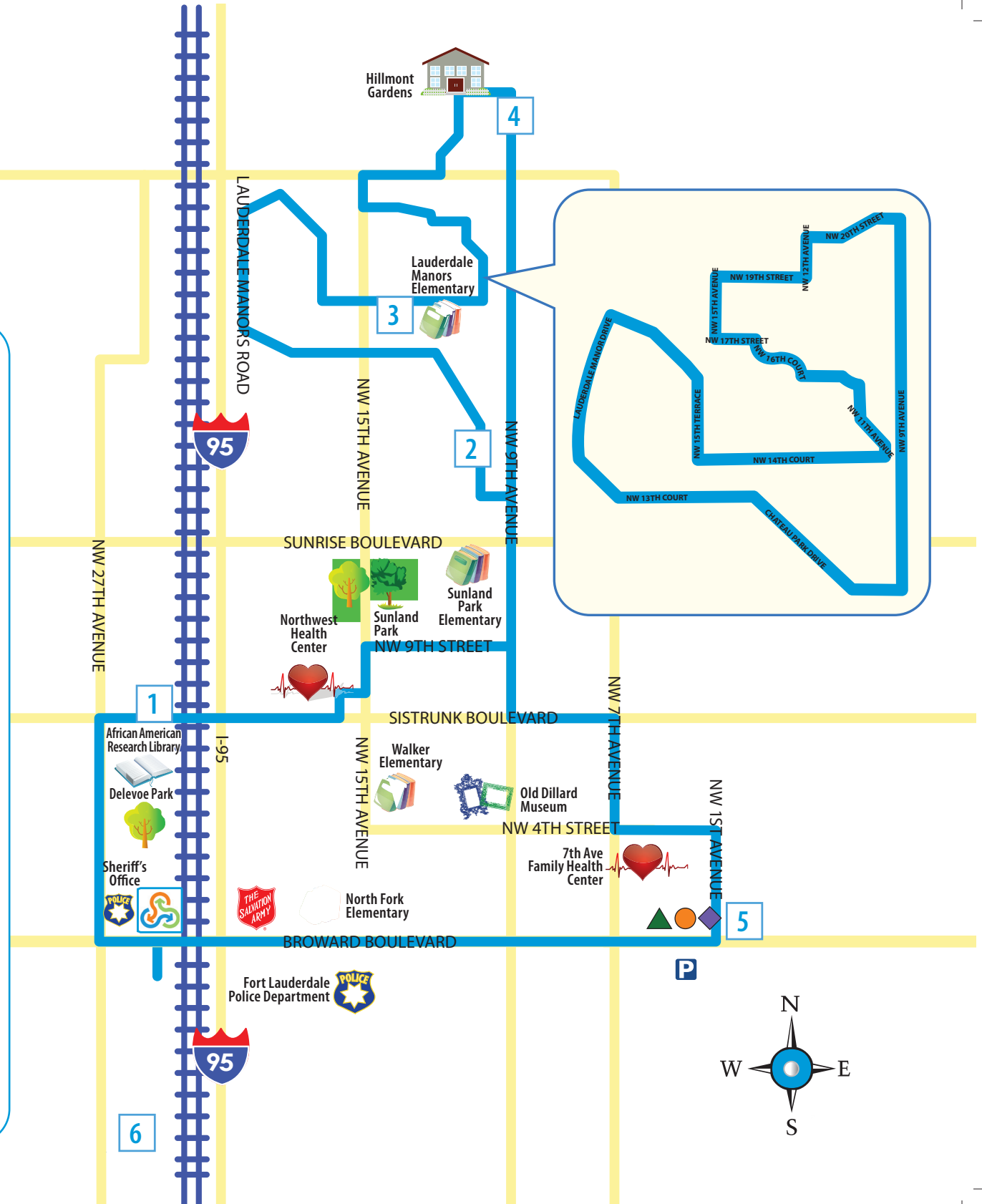
-  NW Community Link
-  Neighborhood Link
-  Scheduled Stop
-  Downtown Link Connection
-  Train Tracks
-  Broward County Transit Central Terminal Connecting to: 1, 6, 9, 10, 11, 14, 20, 22, 30, 31, 40, 50, 60, 81, and US1 Breeze
-  Public Parking
-  Fort Lauderdale Tri-Rail Station & Free Park-n-Ride Lot

**SUN TROLLEY NW COMMUNITY LINK TIMETABLE** MONDAY THROUGH FRIDAY

	North Train Arrives		SUN TROLLEY NW COMMUNITY LINK TIMETABLE										South Train Arrives	
	North Train Arrives	South Train Arrives	Powerline Rd./ Sunrise Blvd.	African American Research Library	Powerline Rd./ Sunrise Blvd.	Lauderdale Manors Elementary	Hillmont Gardens	Powerline Rd./ Sunrise Blvd.	Broward Central Bus Terminal	Broward Central Bus Terminal	Free Park-n-Ride Lot	Powerline Rd./ Sunrise Blvd.	North Train Departs	South Train Departs
<b>ALL DAY SERVICE</b>														
A.M.	7:05	6:47 / 7:07	7:10	7:16	7:30	6:30	6:35	6:40	6:50	6:50	+	7:00	7:05 / 7:25	7:07
	7:45 / 8:05	7:47	8:20	8:26	8:40	8:50	9:00	9:08	9:20	9:24	+	8:18	8:35	8:27
	9:05	9:07	9:38	9:44	9:58	10:08	10:18	10:26	10:38	10:42	+	10:54	11:08	11:09
	10:08	10:09	10:58	11:04	11:18	11:28	11:38	11:46	11:58	12:02	+	12:14	1:08	1:09
P.M.	12:08	12:09	12:16	12:22	12:36	12:46	12:56	1:04	1:16	1:20	+	1:32	2:08	2:09
	1:08	1:09	1:34	1:40	1:54	2:04	2:14	2:22	2:34	2:38	2:48	2:50	3:08	3:09
	2:08	2:09	2:50	2:56	3:10	3:20	3:30	3:38	3:50	3:54	4:04	4:06	4:38	4:47
	4:08	3:59	4:10	4:16	4:30	4:40	4:50	4:58	5:10	5:22	5:32	5:34	5:38 / 6:08	5:37 / 6:07
	5:08	5:17	5:34	5:40	5:54	6:04	6:14	6:22	6:34	6:38	6:46	6:48	7:20	7:07
	6:35	6:37	6:48	6:54	7:00	+	+	+	+	+	+	+	+	+
<b>PEAK SERVICE</b>														
A.M.	7:25 S	7:07 N	7:38	7:40	7:48	7:50	8:06	8:14	8:22	8:36	8:44	9:05 S	9:07 N	
	7:45 / 8:05 S	7:47 N	8:20	8:26	8:40	8:50	9:00	9:08	9:20	9:24	9:36	10:08 S	10:09 N	
	8:35 S	8:27 N	8:44	8:46	8:54	8:56	9:12	9:20	9:28	9:42	9:50	10:08 S	10:09 N	
	9:05 S	9:07 N	9:50	9:52	10:00	10:02	10:18	10:26	10:34	10:48	10:54	11:08 S	11:09 N	
	10:08 S	10:09 N	10:54	+	11:00	11:02	11:18	11:26	11:30	+	+			
P.M.	4:08 S	3:59 N	4:14	+	4:24	3:20	3:36	3:44	3:52	4:06	4:14	4:38 S	4:47 N	
	5:08 S	5:17 N	5:22	+	5:32	4:26	4:42	4:50	4:58	5:12	5:20	5:38 S	5:37 N	
	6:08 S	6:07 N	6:28	+	6:38	6:42	6:54	7:02	7:10	7:20	+	6:35 S	6:37 N	

NOTE: All trolleys are red and yellow, the colors depicted here are just for mapping purposes.

Map updated 2/20/17





**954-TROLLEY**  
www.suntrolley.com

-  Neighborhood Link
-  Scheduled Stop
-  Train Tracks
-  Public Parking
-  Fort Lauderdale Tri-Rail Station & Free Park-n-Ride Lot
-  NW Community Link
-  Downtown Link Connection
-  Broward County Transit Central Terminal Connecting to: 1, 6, 9, 10, 11, 14, 20, 22, 30, 31, 40, 50, 60, 81, and US1 Breeze

Download the Free Sun Trolley Tracker App

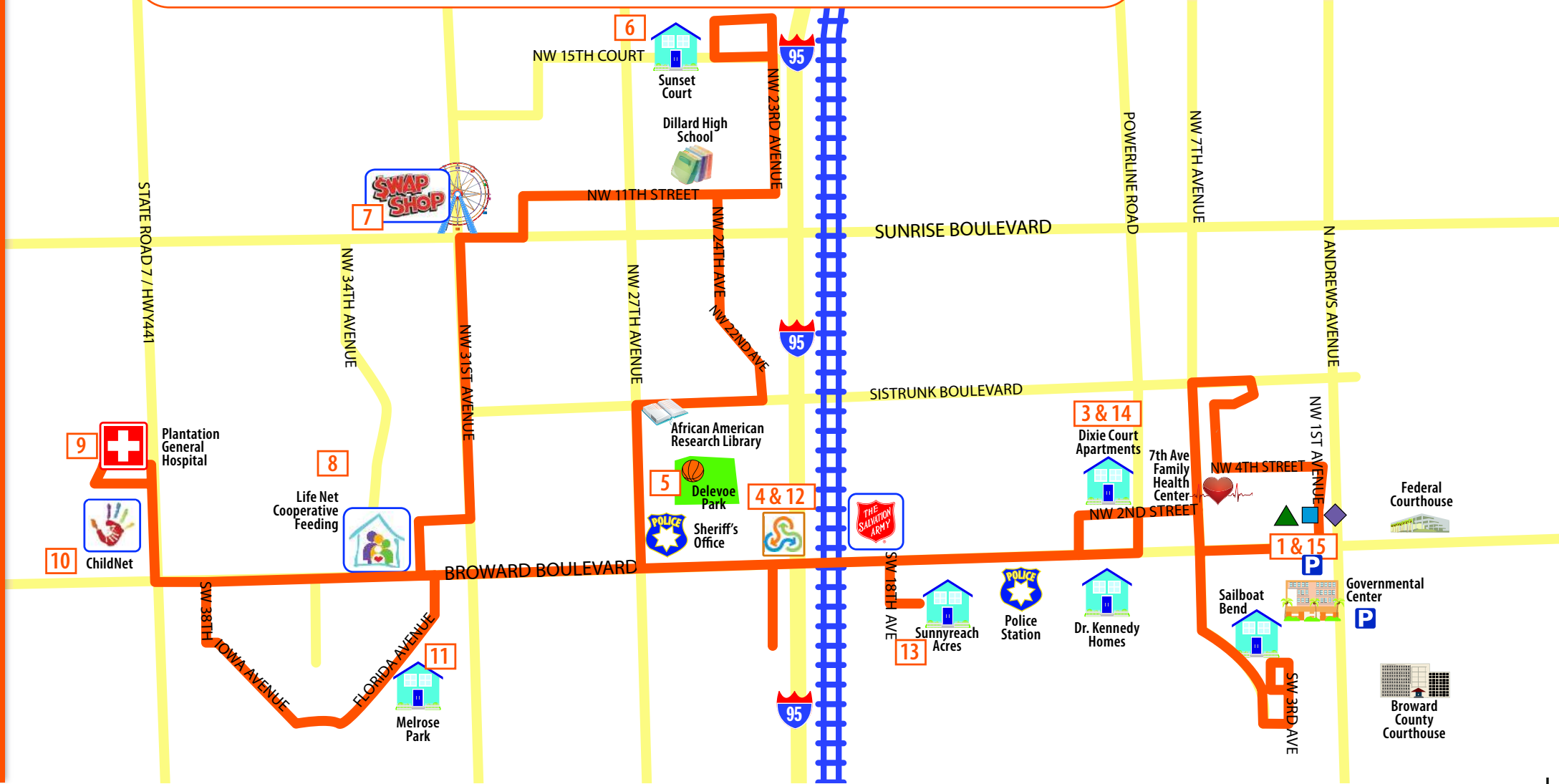
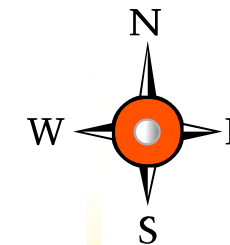
\*Map not to scale.

**NOTE:** All trolleys are red and yellow, the colors depicted here are just for mapping purposes.

### TMA SUN TROLLEY NEIGHBORHOOD LINK TIMETABLE

Mondays thru Fridays

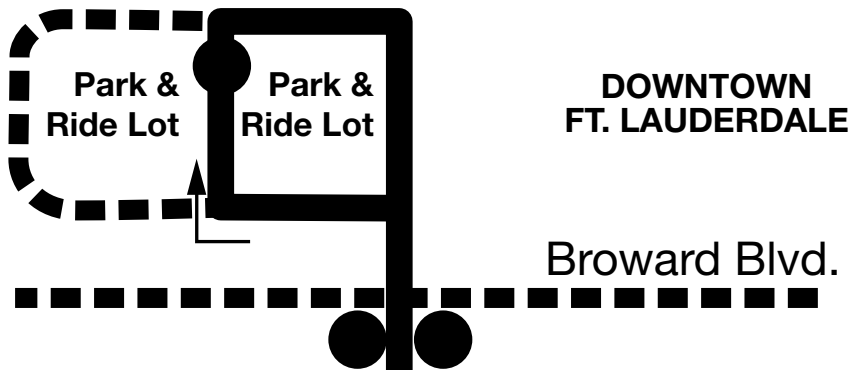
Bus Number	Broward Central Terminal	Sailboat Bend	Save-A-Lot	Dixie Court Apartments	Tri-Rail Station	African-American Research Library & Cultural Center	Suncrest Court	Swap Shop	Life Net/Cooperative Feeding	West Broward Shopping Center	Plantation General Hospital	ChildNet	Melrose Park	Tri-Rail Station	Sunnyreach Acres	Dixie Court Apartments	Save-A-Lot	Broward Central Terminal
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Bus 1	815a	825a	835a	839a	846a	853a	859a	906a	909a	914a	916a	920a	925a	932a	935a	940a	943a	945a
Bus 2	900a	910a	920a	924a	931a	938a	944a	951a	954a	959a	1001a	1005a	1010a	1017a	1020a	1025a	1028a	1030a
Bus 1	950a	1000a	1010a	1014a	1021a	1028a	1034a	1041a	1044a	1049a	1051a	1055a	1100a	1107a	1110a	1115a	1118a	1120a
Bus 2	1035a	1045a	1055a	1059a	1106a	1113a	1119a	1126a	1129a	1134a	1136a	1140a	1145a	1152a	1155a	1200p	1203p	1205p
Bus 1	1125a	1135a	1145a	1149a	1156a	1203p	1209p	1216p	1219p	1224p	1226p	1230p	1235p	1242p	1245p	1250p	1253p	1255p
Bus 2	1210p	1220p	1230p	1234p	1241p	1248p	1254p	101p	104p	109p	111p	115p	120p	127p	130p	135p	138p	140p
Bus 1	100p	110p	120p	124p	131p	138p	144p	151p	154p	159p	201p	205p	210p	217p	220p	225p	228p	230p



Broward County Courthouse



# Route 95 Express Dade/Broward Broward Boulevard



 **Ft. Lauderdale  
Tri-Rail Station**

*Flyover*

-----  
BROWARD COUNTY  
MIAMI-DADE COUNTY



 LIMITED STOP

NW 8 St

**Historic Overtown/  
Lyric Theatre  
Metrorail Station** 

**Arena/State Plaza  
Metromover Station** 

**Government Center  
Metrorail/Metromover  
Station** 

NW 1 St  
**Downtown  
Bus Terminal** 

NW 5 St

NW 1 Ave

**DOWNTOWN  
MIAMI**

SW/SE 1 St



MAP NOT TO SCALE  
10/2015



Ramp












SE 1 Ave

SE 2 Ave



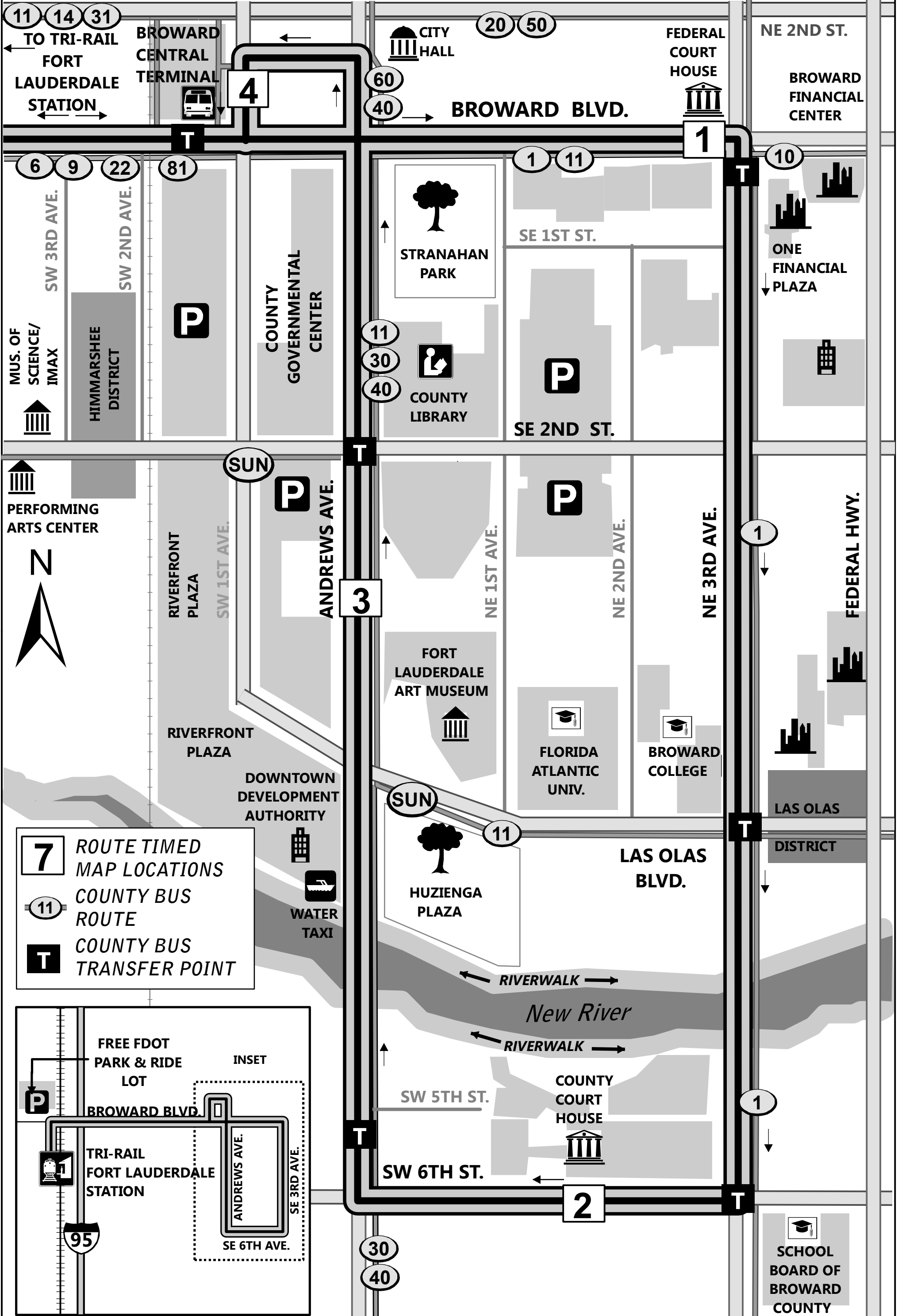
# TRI RAIL™

## SYSTEM MAP

-  TRI RAIL™
-  Tri-Rail Station
-  Free Tri-Rail Shuttle @Station
-  Direct Shuttle Route to Airport
-  Miami-Dade Metrorail
-  Metrorail Station
-  Transfer Station
-  Metrorail Orange Line
-  Metrorail Green Line
-  International Airport
-  Access to Amtrak



# FORT LAUDERDALE STATION FL 1 SHUTTLE BUS MAP



**7** ROUTE TIMED MAP LOCATIONS  
**11** COUNTY BUS ROUTE  
**T** COUNTY BUS TRANSFER POINT

**INSET**

FREE FDOT PARK & RIDE LOT

BROWARD BLVD.

ANDREWS AVE.

SE 3RD AVE.

SE 6TH AVE.

TRI-RAIL FORT LAUDERDALE STATION

95

\*TRANSFERS TO BROWARD COUNTY TRANSIT AVAILABLE AT BROWARD CENTRAL TERMINAL

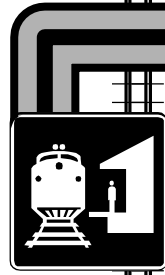
# FORT LAUDERDALE STATION



# FL-2 SHUTTLE BUS MAP



TRI-RAIL  
FORT  
LAUDERDALE  
STATION



SW 9TH AVE.

SW 4TH AVE.

ANDREWS AVE.

SE 14TH ST.

SE 16TH ST.

SE 1ST AVE.

SE 3RD AVE.

FEDERAL HWY.

EISENHOWER BLVD.



HEART  
CENTER  
TRAUMA  
CENTER



BROWARD  
GENERAL  
MEDICAL  
CENTER

BROWARD COUNTY  
HOSPITAL  
BLDG. 9 &  
PHYSICIAN BLDG.

BROWARD COUNTY  
HOSPITAL  
HEADQUARTERS

ART INSTITUTE  
OF FORT  
LAUDERDALE

3

SE 17TH ST.

SE 17TH ST.

SE 17TH ST.

BROWARD  
CONVENTION  
CTR.

DAVIS  
PARK

CROISSANT MARITIME  
ELEM. TRAINING  
CENTER

SOUTHLAND  
SHOPPING  
CTR.

LAUDERDALE  
MEMORIAL  
PARK

STATE ROAD 84

HOTELS

HEALTH  
DEPT.

NATIONAL  
ARMORY

**3** ROUTE TIMED  
MAP LOCATIONS

**40** COUNTY BUS ROUTE

**T** COUNTY BUS  
TRANSFER POINT

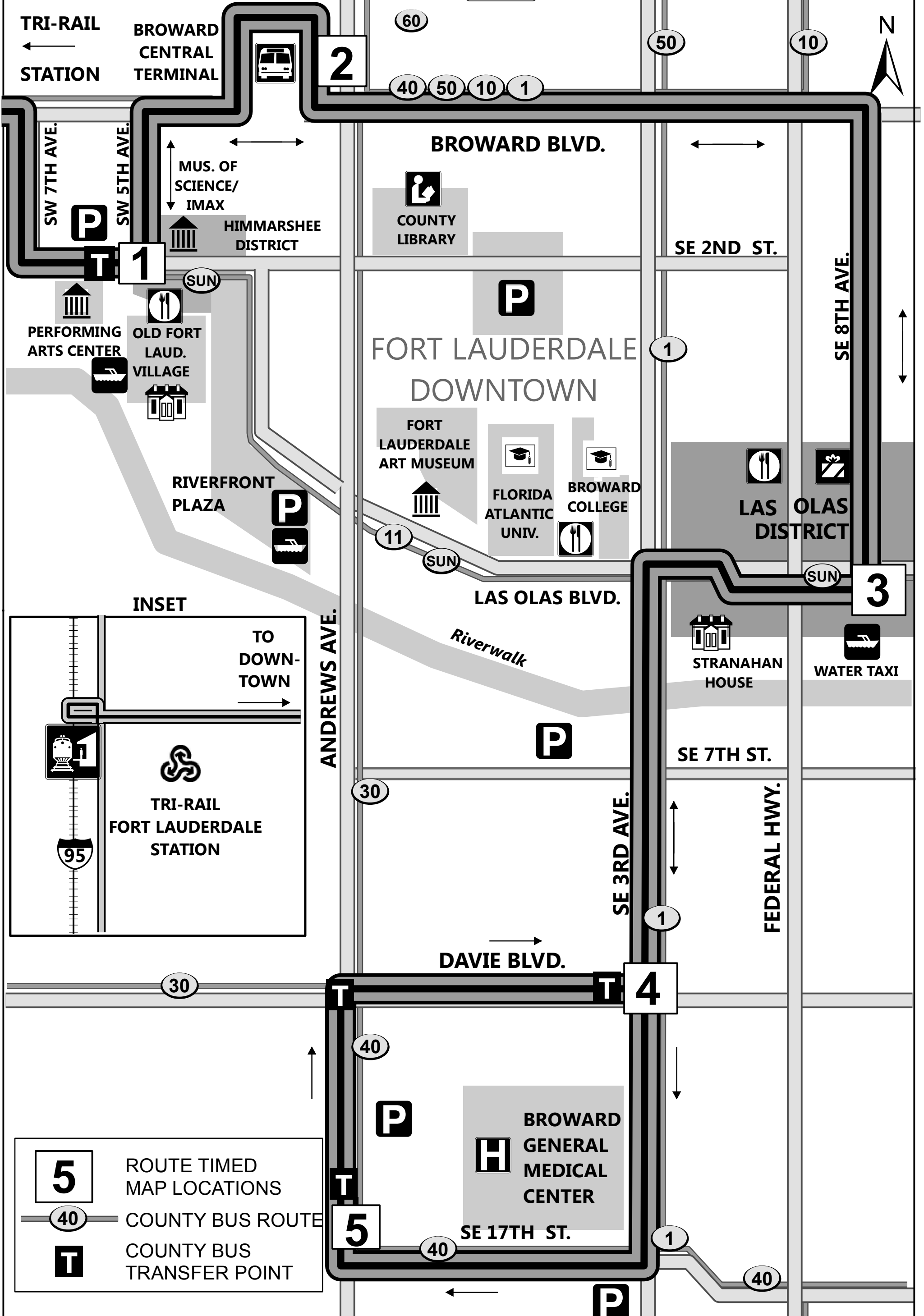


2





# FORT LAUDERDALE STATION FL 3 SHUTTLE BUS MAP



<b>5</b>	ROUTE TIMED MAP LOCATIONS
<b>40</b>	COUNTY BUS ROUTE
<b>T</b>	COUNTY BUS TRANSFER POINT

ADDITIONAL TRANSFERS TO BROWARD COUNTY TRANSIT AVAILABLE AT BROWARD CENTRAL TERMINAL