



# OVERALL CORRIDOR REPORT

## I-195 CORRIDOR PLANNING STUDY

### I-95/NW 12TH AVENUE TO ALTON ROAD MIAMI-DADE COUNTY, FLORIDA

FINANCIAL MANAGEMENT NUMBER: 440228-1-22-01



Prepared for:



PREPARED BY:

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PREPARED ON: JUNE 2020  
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### **Project Study Limits:**

I-95/NW 12<sup>th</sup> Avenue to Alton Road  
Miami-Dade County, Florida

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**September 2020**

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## EXECUTIVE SUMMARY

The purpose of the *I-195 Corridor Planning Study (CPS)* was to evaluate existing conditions and deficiencies, identify needs as well as develop and evaluate improvement concepts. Study interchanges were evaluated along with interchange influence areas, and ramp junctions to identify deficiencies focusing on recurring bottlenecks. From this review, a series of base improvements were developed to address specific operational deficiencies and/or local issues raised by stakeholders as well as system improvement alternatives to address key study objectives related to improving system linkage, system capacity, accommodating future transportation demand, modal interrelationships, and provide better safety outcomes. The study also evaluated the feasibility of providing protected bicycle/pedestrian connections between the City of Miami Beach and the City of Miami.

This overall corridor report (OCR) for the I-195 CPS, summarizes the efforts undertaken through data gathering, as well as a rigorous analysis of existing and future conditions within the study area to identify and evaluate alternatives that can be further developed in the next Project Development & Environment (PD&E) phase of the project. This report also summarizes the interagency and stakeholder coordination undertaken during the I-195 CPS which is anticipated to serve as good foundation for the extensive Public Outreach activities that will follow during the PD&E study. Recommendations for consideration during the PD&E are also included in this report.

### ALTERNATIVES IDENTIFIED

Four groups of alternatives were identified in the I-195 CPS:

- **No Build Alternative** – where no additional improvements are proposed beyond programmed improvements. This alternative served as the benchmark for comparison of all the subsequent Build alternatives,
- **Base Improvement Alternatives** - to address operational deficiencies as well as specific local issues raised by stakeholders,
- **System Improvement Alternatives** - to address key study objectives relative to improving access and addressing major deficiencies that would facilitate systemwide performance,
- **Bicycle and Pedestrian Alternatives** - to improve non-motorized connections between the City of Miami Beach and the City of Miami.

The alternatives were assessed and ranked according to five primary criteria comprising, Socio-Economic, Environmental, Expected Performance, Implementation and Cost.

**TIER 1 EVALUATION**

**Table ES-1** presents a summary of the alternatives that were considered in the Tier 1 Evaluation and their ranking according to the criteria developed in the CPS with Stakeholder input.

**Table ES-1: Summary of Tier 1 Alternatives**

Type	ID No.	Description Of Alternative	Rank
BASE ALTERNATIVES	BI-1	Base Improvement 1 - Construct second SR-112 westbound lane to eliminate single lane bottleneck within the I-95 interchange area	NR <sup>2</sup>
	BI-2	Base Improvement 2 - Construct second I-195 eastbound lane to eliminate single lane bottleneck within the I-95 interchange area	NR <sup>2</sup>
	BI-3	Base Improvement 3 - Modify ramp terminal at the I-195 eastbound off-ramp to NE 36th Street to either include a roundabout <b>or</b> partial signalization of the ramp terminal to include (new southbound to eastbound left turn movement and westbound through movement both of which would be under signal control . The eastbound through movement would be a turbo-lane and free flowing). Addresses request by area residents for more direct access to the high-density condominiums located in the northeast quadrant of NE 36th Street and Biscayne Boulevard <sup>1</sup> .	NR <sup>2</sup>
	BI-4	Base Improvement 4 - Lengthen taper for acceleration lane for the on ramp from Biscayne Boulevard to I-195 eastbound	NR <sup>2</sup>
	BI-5	Base Improvement 5 - Provide a two-lane exit from I-195 westbound to Biscayne Boulevard increasing the capacity of the off-ramp.	NR <sup>2</sup>
	BI-6	Base Improvement 6 - Widen existing Julia Tuttle Causeway in the eastbound direction from just west of diverge area for off-ramp to Alton Road to intersection with Arthur Godfrey Road and Alton Road. The additional lane would terminate at the Alton Road intersection as a designated right-turn lane.	NR <sup>2</sup>
	BI-7	Base Improvement 7 - New traffic signal at intersection of Northbound and Southbound Alton Road south of Barry Street.	NR <sup>2</sup>
	BI-8	Base Improvement 8 - Combine on-ramps to westbound SR 112 from northbound Alton Road and southbound Alton Road (respectively into a 3-lane collector/distributor road (CD Road) then merge CD road with westbound SR 112.	NR <sup>2</sup>
SYSTEM IMPROVEMENT ALTERNATIVES	SI-1	Alternative 1 - Direct Connections to 95 Express Lanes	3
	SI-2	Alternative 2 - Direct Connections to 95 Express Lanes with Viaduct on I-195	2
	SI-3	Alternative 3 - Direct Connections to 95 Express Lanes with Viaduct on I-195. Also includes new ramp connections to and from I-95 General Use Lanes to the Viaduct (I-95/Miami Beach Traffic Separated).	1
	SI-4	Alternative 4 - Texas U-Turn Connections to/from 95 Express Lanes <sup>3</sup>	4
BICYCLE & PEDESTRIAN ALTERNATIVES	BP-A	Alternative A - 14' Shared Path Bridge Structures	2
	BP-B	Alternative B - Dual Shared Path (12' each direction) with Widening of Existing Causeway Bridges on north and south sides.	1

<sup>1</sup> Roundabout option was eliminated due to right-of-way constraints.

<sup>2</sup> Each improvement within this group represents a single alternative to address a specific issue. As such, they were not ranked within this alternative type. They were included in the development of the refined Build Alternative.

<sup>3</sup> Alternative was not carried through to Tier 2 Review. All other alternatives were evaluated further in Tier 2.

It should be noted that the System Alternative 4 Texas U-Turn connection was initially being considered as an interim improvement until more long-term improvements to implement direct connections to the I-95 Express lanes were developed. As an interim improvement, a design objective was to limit the extent right-of-way impacts. However, it was determined the design exceptions and variations necessary to accommodate the design objective were unlikely to be approved and as a result this alternative was not considered further in the Tier 2 review.

## TIER 2 EVALUATION

A Tier 2 evaluation comprising a mixture of qualitative and quantitative measures was performed for the three systems Alternatives 1, 2 and 3 as well as two Alternatives (A and B) to provide protected shared use path connections along the Julia Tuttle Causeway between the City of Miami and Miami Beach. The study team assessed a wide range of transportation system performance measures to develop a comparison between No-Build conditions in 2045 and those of Alternatives 1, 2, and 3 with the Base Improvements, as well as the benefits of the shared use path Alternatives A and B. **Table ES-2** below summarizes the effect of both the systems/highway alternatives and shared use path alternatives on the performance measures developed in the CPS with Stakeholder input.

**Table ES-2: Tier2 Summary of Alternatives Effects on Performance Measures**

Measure	Comparison to No-Build Conditions					Notes
	System Alternatives			Bicycle / Pedestrian Alternatives		
	Alt 1	Alt 2	Alt 3	A	B	
1 Daily Vehicle Miles of Travel (VMT)	0.01%	0.02%	0.07%			Sum across four parallel causeways; VMT increases slightly on Julia Tuttle and decreases on each of the other causeways.
2a Average peak period speed increase (MPH)	1.1	4.5	13.5			Base average speed of 37.3 MPH.
2b Daily Vehicle-Hours of Delay	84	234	591			From I-195 operational analyses; benefits on parallel causeways not included.
3 Change in Safety Performance (annual crashes)	n/a	n/a	25.7			Performance assessed for Alt 3 only.
4 Job Accessibility - Auto	736	501	7815			Countywide change in average jobs accessible in 30 minutes.
5 Job Accessibility - Transit	Minimal	Minimal	Minimal			All support bus-on-shoulder treatments.
6 Percentage Heavily Congested VMT	5.0%	5.2%	15.7%			VMT at < 45 MPH; Base percentage is 21.6%.
7 Transit Travel Time	Minimal	Minimal	Minimal			All support bus-on-shoulder treatments.
8 Quality of Pedestrian Connections	Minimal	Minimal	Minimal	Low	Low	All provide similar design opportunities (repair, lighting, art, etc.).
9 Quality of Access to Recreation	Minimal	Minimal	Minimal	High	High	Both shared path options provide roughly equal improved access to views/recreation.
10 I-195 Access Points Connectivity	Low	Low	Moderate			Base conditions improve local street access; Alternatives improve connections to I-95.
11 Partial return on investment	\$21M	\$60M	\$151M	\$3.7M	\$3.7M	Assessment based on highway delay and recreational benefits of shared use path. Alt 3 adds \$18M for safety.

Section 7.2 of the full report provides an overview of the performance measures used in the evaluation.

## REFINED BUILD CONCEPT

In the I-195 CPS, the Refined Build Concept (RBC) is regarded as the final concept. The RBC comprises System Alternative 3, Shared Use Path Alternative A and all eight (8) Base Improvements identified in Tier 1. As part of the development of the RBC, additional improvements were identified at ramp terminal intersections in order to improve their operations by targeting better operations along the I-195 mainline to the extent possible. With all elements included, it is anticipated that the footprint of the Refined Build Concept will be sufficient to facilitate the required project screening using FDOT's Environmental Screening Tool in preparation for the upcoming PD&E phase. The additional improvements identified at the ramp terminal and adjacent intersections are summarized in **Table ES-3**.

**Table ES-3: Additional Ramp Terminal & Adjacent Intersection Improvements**

Improvement/Intersection	Description of Improvements
1. NW 39th Street at NW 10th Avenue	Convert from stop controlled to signalized intersection subject to signal warrant study
2. I-195 WB On-Ramp at N Miami Avenue	The RBC modifies east leg of the intersection to accommodate a new off-bound ramp from westbound I-195. The east intersection leg would be converted from two-way to one-way traffic flow in the westbound direction between N Miami Avenue and N Miami Court approximately 200'. • Include additional southbound right turn lane. • Add exclusive left turn lane on the northbound approach. • New left turn lane on the westbound approach. • Modify the I-195 westbound on-ramp from a single lane to a two-lane entry ramp tapering to single lane before WB I-195. • Retime / Optimize signal timing
3. I-195 EB Off-Ramp to N Miami Avenue	The RBC introduces a new east leg at the intersection as the new on-ramp to eastbound I-195. • Add exclusive southbound left turn lane, • Add exclusive eastbound right turn lane, • Add new shared through-right lane on the northbound approach, • Retime / Optimize signal timing.
4. NE 36th Street at N Miami Avenue	•Exclusive left turn lane on the eastbound approach •Through lane on the westbound approach •Modify northbound exclusive right turn lane to a shared through-right lane •Retime / Optimize signal timing
5. NE 36th Street at NE 1st Avenue	Convert from stop controlled to signalized intersection subject to signal warrant study
6. NE 36th Street at Federal Hwy & NE 2nd Avenue	Miami-Dade County is modifying intersection as follows: •Southeast bound: Only allow southbound rights and restrict all other movements. •Northbound: Change lane utilization to a shared left-through lane plus a shared through-right lane. Following additional improvements are proposed: •Exclusive right-turn lane on the eastbound and northbound approaches •Modify the lane utilization on the northbound approach to an exclusive left-turn lane, a through lane and an exclusive right-turn lane •Modify the lane utilization on the southbound approach from L-T-R to L-T-T+R •Retime / Optimize signal timing
7. Biscayne Boulevard at NE 36th Street	•Exclusive right turn lane on the southbound approach •Exclusive left turn lane on the westbound approach •Modify the lane utilization on the westbound approach to include two exclusive left turn lanes, a shared through-right lane and an exclusive right turn lane •Retime / Optimize signal timing
8. Biscayne Boulevard at NE 38th Street	•Implement a two-lane Displaced left turn concept on southbound approach. •Add exclusive left turn lane on the westbound approach •Add exclusive right-turn lane on northbound approach •Retime / Optimize signal timing •Westbound approach: two exclusive left turn lanes, a shared through-right lane and an exclusive right turn lane
9. Alton Road at 43rd Street	•Additional northbound left turn lane into the hospital to create three (3) lanes. •Modify lane utilization on southbound approach from an exclusive right-turn to a shared through-right. •Increase the storage lane on the northbound left turn lanes to 400 feet. •Retime / Optimize signal timing
10. Alton Road at Arthur Godfrey Road	•Add additional lane coming from I-195 eastbound as part of Base Improvement # 6 which will become an exclusive right-turn lane, •Modify southbound right turn signal operation from permitted to permitted overlap, •Retime / Optimize signal timing.

POTENTIAL RIGHT-OF-WAY IMPACTS

**Table ES-4** summarizes the potential ROW impacts from the Refined Build Concept.

**Table ES-4: Summary of Potential Right-Of-Way Impacts**

Improvement Type	Improvement/Intersection	Potential Right-of-Way (ROW) Impact
<b>System</b>	Alternative 3 with Viaduct	Approximately 25,000 square feet
<b>Shared Use Path</b>	Alternative A (Separate Bridge)	No ROW impacts
<b>Base Improvements</b>	1. SR 112 WB widening to provide 2 lanes	No ROW impacts anticipated
	2. SR 112 / I-195 EB widening to provide 2 lanes	
	3. Partial Signalization at I-195 EB Off-Ramp to NE 36th Street	
	4. I-195 EB On-Ramp from NE 36th Street parallel entrance widening	
	5. I-195 WB to Biscayne Blvd off-ramp – widen to 2 lanes	
	6. I-195 EB widening to Alton Road Ramp	
	7. New traffic signal at Intersection of NB and SB Alton Road	
	8. I-195 WB CD from Alton Road	
<b>Other Intersection Improvements</b>	1. NW 39th Street at NW 10th Avenue	Minimal to no ROW impacts (Potential need for corner clips for signal mast arms)
	2. I-195 WB On-Ramp at N Miami Avenue	Potential for high ROW impact on the NW, NE and SE corners, potential need to widen bridge along I-195
	3. I-195 EB Off-Ramp to N Miami Avenue	Potential for low ROW impact to SW corner, potential need to widen bridge along I-195
	4. NE 36th Street at N Miami Avenue	Potential for medium ROW impacts to SW and SE corners
	5. NE 36th Street at NE 1st Avenue	Minimal to no ROW impacts (Potential need for corner clips for signal mast arms)
	6. NE 36th Street at Federal Hwy & NE 2nd Avenue	Low ROW impacts to SE and SW corners
	7. Biscayne Boulevard at NE 36th Street	Potential for medium ROW impacts to NE corner and Low impact to NW corner
	8. Biscayne Boulevard at NE 38th Street	Potential for high ROW impact to SE corner
	9. Alton Road at 43rd Street	Potentially low ROW impact to SW corner
	10. Alton Road at Arthur Godfrey Road	Potentially low ROW impact to SW corner

PROJECTED TRAFFIC OPERATIONS

Compared to operations from the No-Build conditions, the operations of most of the intersections evaluated as part of the Refined Build Concept were projected to improve with reductions in delay and few instances of improved levels of service. Even with the proposed improvements noted in **Table ES-4**, operations at the N Miami Avenue Ramp Terminal intersections were projected to degrade (compared to the No-Build conditions) due to the increased traffic resulting from the introduction of the additional intersection legs associated with its conversion to a full interchange.

Operations on the I-195 mainline are projected to significantly improve with the Refined Build Concept compared to the No-Build.

## PROJECTED SAFETY PERFORMANCE

Compared to the No-Build conditions, a 13% reduction in the projected crashes in the 2045 horizon year is estimated to occur with the Refined Build Concept.

## ENVIRONMENTAL REVIEW

Environmental and Community impacts associated with the Refined Build Concept are anticipated to be substantial, requiring extensive coordination and mitigation during the PD&E phase. For the purposes of this study, the Class of Action is assumed to be a Type II Categorical Exclusion for the proposed full improvements. It should be noted that some of the base and intersection improvements have independent utility and may qualify as a Type I Categorical Exclusion, hence they may be advanced to design providing short-term congestion relief. The Class of Action will be determined following the Departments Efficient Transportation Decision Making (ETDM) Screening process.

## RECOMMENDATIONS & NEXT STEPS

As the project moves to the PD&E phase, the following recommendations are offered:

- **Evaluate additional Ramp Terminal and Intersection Improvements** - Notwithstanding the improvements that were proposed for the ramp terminals and adjacent intersections in the I-195 CPS, severe arterial congestion may still persist in the future with likely impacts to the I-195 mainline. Additional intersection improvements beyond those presented in this report (particularly at the N Miami Avenue Ramp Terminals and adjacent intersections) will need to be evaluated as part of a future PD&E project phase.
- **Phased Improvements** – The Refined Build Concept comprises various improvement elements that may be advanced as a segment ahead of the mainline improvements to the extent their advancement would not interfere with the implementation of major elements of the RBC or result in throwaway. Furthermore, some of the improvements prioritized as short-term can be considered as Transportation Systems Management and Operations (TSM&O) strategies (i.e., intersection turn lane improvements, signalization and signal timing optimization) to provide short-term congestion relief. These TSM&O improvements generally reflect lower cost traffic management strategies to address projected traffic demand in lieu of the more extensive improvements contemplated in this study. **Table ES-5** presents a possible project phasing regime considering time frames for each improvement element with their Year-of-Expenditure Construction cost estimates. It also identifies which improvements may be advanced as short-term or mid-term projects.



**Table ES-5: Year-of-Expenditure Construction Cost Estimates**

Improvement Type	Improvement/Intersection	Prioritization	Years from 2020	Present Day Estimate	Year-of-Expenditure <sup>1</sup>
System	Alternative 3 with Viaduct	Long-term	20	\$ 430,000,000	\$ 794,874,000
Shared Use Path	Alternative A (Separate Bridge)	Mid-term	10	\$ 41,600,000	\$ 55,580,000
Base Improvements	1. SR 112 WB widening to provide 2 lanes	Mid-term	10	\$ 550,000	\$ 735,000
	2. SR 112/I-195 EB widening to provide 2 lanes	Mid-term	10	\$ 3,800,000	\$ 5,077,000
	3. Partial Signalization at I-195 EB Off-Ramp to NE 36th Street	Mid-term	10	\$ 1,100,000	\$ 1,470,000
	4. I-195 On-Ramp from NE 36th Street parallel entrance widening	Mid-term	10	\$ 450,000	\$ 601,000
	5. I-195 WB to Biscayne Blvd off-ramp – widen to 2 lanes	Mid-term	10	\$ 3,600,000	\$ 4,810,000
	6. I-195 EB widening to Alton Road Ramp	Mid-term	10	\$ 5,400,000	\$ 7,215,000
	7. New traffic signal at Intersection of NB and SB Alton Road	Short-term <sup>2</sup>	2.5	\$ 350,000	\$ 378,000
	8. I-195 WB CD from Alton Road	Long-term	20	\$ 12,900,000	\$ 23,846,000
Other Intersection Improvements	NW 39th Street at NW 10th Avenue	Short-term <sup>2</sup>	2.5	\$ 300,000	\$ 324,000
	NE 36th Street at N Miami Avenue	Long-term	20	\$ 1,100,000	\$ 2,033,000
	I-195 EB Off-Ramp to N Miami Avenue	Long-term	20	\$ 1,200,000	\$ 2,218,000
	I-195 WB On-Ramp at N Miami Avenue	Long-term	20	\$ 5,000,000	\$ 9,243,000
	NE 36th Street at NE 1st Avenue	Short-term <sup>2</sup>	2.5	\$ 300,000	\$ 324,000
	NE 36th Street at Federal Hwy & NE 2nd Avenue	Short-term <sup>2</sup>	2.5	\$ 1,000,000	\$ 1,080,000
	US-1 at NE 36th Street	Short-term <sup>2</sup>	2.5	\$ 1,100,000	\$ 1,188,000
	US-1 at NE 38th Street	Short-term <sup>2</sup>	2.5	\$ 4,200,000	\$ 4,536,000
	Alton Road at Arthur Godfrey Road	Mid-term	10	\$ 900,000	\$ 1,202,000
Alton Road at 43rd Street	Short-term <sup>2</sup>	2.5	\$ 450,000	\$ 486,000	
<b>Total Construction Costs</b>				<b>\$ 515,300,000</b>	<b>\$ 917,220,000</b>

1. Year of Expenditure dollars calculated using inflation factors from, *FDOT Revenue Forecasting Guidebook, January 2019*

2. Short-term improvements reflect TSM&O strategies

- Consider Impact of COVID 19 on Long Term Traffic Trends** – A review of I-195 mainline traffic demand from the base year of the I-195 CPS to the current year of its final documentation, shows a 30% reduction in traffic demand along the corridor. While conventional wisdom may suggest traffic levels could resume growing at pre-quarantine levels once the pandemic recedes, it is quite possible a high level of penetration in the proportion of teleworkers will remain, giving way to a ‘new normal’. Initiatives to study this phenomenon have started to emerge and should be leveraged to understand the benefits in planning for the future transportation needs of the study area.
- Evaluate Requirements of the Limited Access ROW along the Causeway to Accommodate Proposed Shared Use Path** –Section 224.1.1 of the FDM outlines the criteria for locating new shared use path facilities on causeways or bridges that span navigable waterways (such as with this project along the Julia Tuttle Causeway). Based on coordination with the District 6 Survey Office during the I-195 CPS, it was determined there is no record of a Limited Access (LA) right-of-way line along the Causeway. Depending on the final alignment selected for the Shared Use Path Alternative, the Department will have the opportunity to establish a location for the LA line as part of the PD&E Study.

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## 1.0 INTRODUCTION

The purpose of the *I-195 Corridor Planning Study (CPS)* was to evaluate existing conditions and deficiencies, identify needs as well as develop and evaluate improvement concepts. Study interchanges were evaluated along with interchange influence areas, and ramp junctions to identify deficiencies focusing on recurring bottlenecks. From this review, a series of base Improvements were developed to address specific operational deficiencies and/or local issues raised by stakeholders as well as system improvement alternatives to address key study objectives related to improving system linkage, system capacity, accommodating future transportation demand, modal interrelationships, and provide better safety outcomes. The study also evaluated the feasibility of providing protected bicycle/pedestrian connections between the City of Miami Beach and the City of Miami.

This overall corridor report (OCR) for the I-195 CPS, is a compendium of the detailed reports included in the Appendices. It summarizes the efforts undertaken through data gathering, as well as a rigorous analysis of existing and future conditions within the study area to identify and evaluate alternatives that can be further developed in the next Project Development & Environment (PD&E) phase of the project. This report also summarizes the interagency and stakeholder coordination undertaken during the I-195 CPS which is anticipated to serve as good foundation for the extensive Public Outreach activities that will follow during the PD&E. Recommendations for consideration during the PD&E are also included in this report.

### 1.1 Project Description

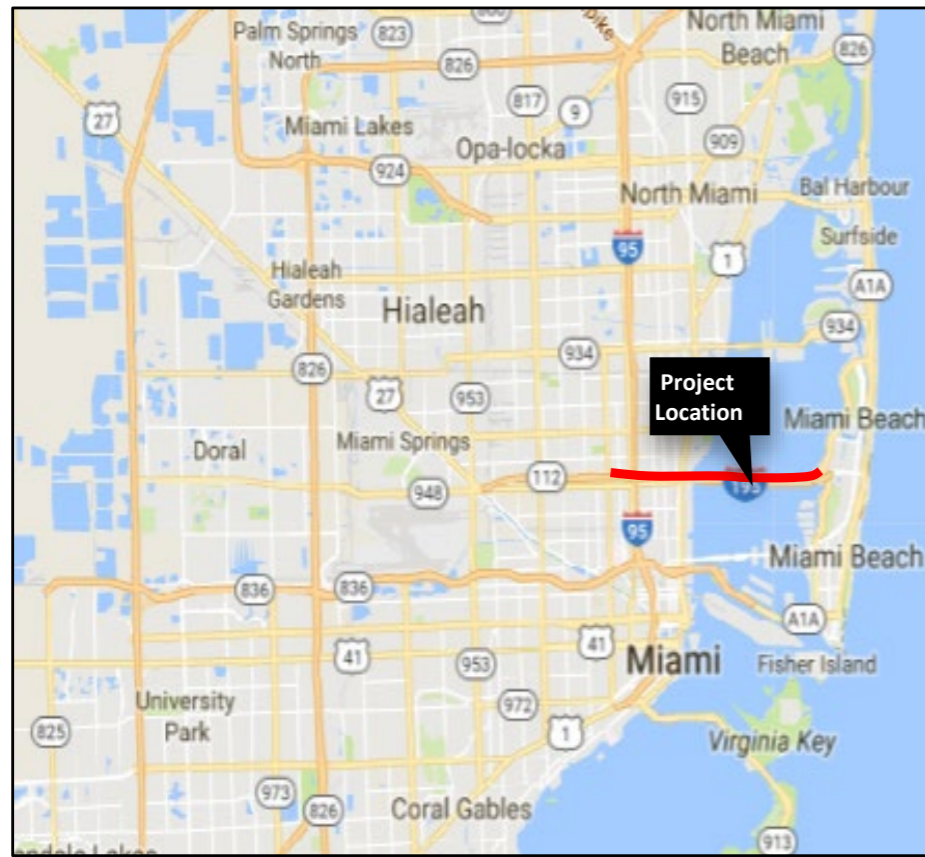
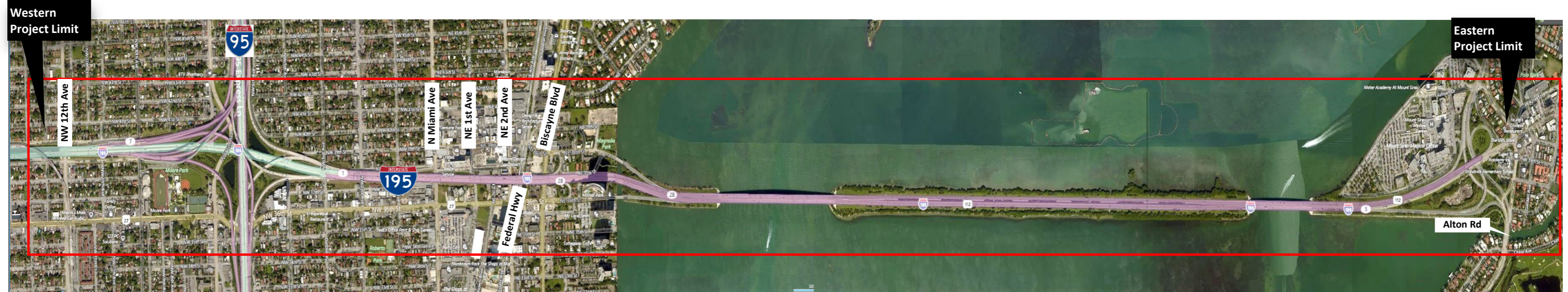
I-195 is a vital limited access facility in Miami-Dade County providing a direct connection between Miami International Airport (via State Road 112 [SR 112]), Interstate 95 (I-95), and the densely populated areas of Miami Beach. One of two limited access facilities in Miami-Dade County connecting the mainland to the barrier island, SR 112/I-195 carries approximately 130,000 vehicles daily. The corridor provides interchange access to several neighborhoods recently experiencing significant growth including the Design District, Midtown, and Wynwood in the City of Miami. Travel demand in this corridor, is expected to increase over the next 30 years due to continued growth that is being planned for within both the City of Miami and the City of Miami Beach. Opportunities for geometric expansion along the corridor to address anticipated growth are constrained due to limited right-of-way.

### 1.2 Project Limits

The project study limits include the SR 112/I-195/ Julia Tuttle Causeway corridor from NW 12<sup>th</sup> Avenue (west of I-95) to the Alton Road interchange to the east in Miami Beach. The following interchanges exist within the study limits: NW 12<sup>th</sup> Avenue (partial), I-95 (system-to-system), North Miami Avenue (partial), Biscayne Boulevard (full), and SR 907/Alton Road (full). Following defines the limits of the project according to the FDOT Roadway Section ID and Mile Post nomenclature:

- Section 87003000/SR-112 from MP 3.962 (NW 12<sup>th</sup> Avenue) to MP 4.132 (NW 11<sup>th</sup> Avenue)
- Section 87004000/SR-112/I-195 from MP 0.000 (NW 11<sup>th</sup> Avenue) to MP 4.910 (Alton Road).

The Florida Department of Transportation (FDOT) Straight Line Diagrams depicting the project limits, are included in **Appendix “OCR-A”**. **Exhibit 1-1** on the next page, shows the project location and study limits.



**LEGEND**

- Study limits
- I-195/SR 112 Study Corridor

Project Name: **I-195 Corridor Planning Study from I-95/NW 12th Avenue to SR 907/Alton Road** FM No. 440228-1-22-01

Exhibit Name: **Project Location Map**

Report Title: **Overall Corridor Report**

Exhibit No. 1-1  
Page No.  
Date: 9/19

## 2.0 PROJECT PURPOSE AND NEED

The purpose and need of a project provide the basis for identifying, developing, evaluating, and screening of alternatives. The purpose and need helped establish a framework for the development and evaluation of alternatives identified in this study.

### 2.1 Project Purpose

The purpose of this project is to provide multimodal improvements within the I-195 study corridor to address current and future mobility, transportation demand and safety issues as well as improved access for multimodal users of the corridor including I-95 express lanes access for transportation users along I-195 east of I-95. Additionally, the project is intended to provide improved bicycle/pedestrian connectivity between the Cities of Miami and Miami Beach consistent with the vision of the Miami-Dade 2040 Long Range Transportation Plan (for non-motorized users) to create interconnected bicycle and pedestrian friendly communities throughout the county. This I-195 CPS is the first phase of the planning process. Alternatives identified will be further refined and developed in the subsequent Project Development and Environment (PD&E) phase.

### 2.2 Project Need

Per Part 2, Chapter 1, of the FDOT PD&E manual, the following elements of need for the project were considered.

#### 2.2.1 Project Status

FDOT initiated a Planning Study in August 2017 for the SR 112/I-195 Corridor from NW 12<sup>th</sup> Avenue west of I-95 in the City of Miami to Alton Road in the City of Miami Beach. A Project Advisory Team comprising representative stakeholders from various governmental and quasigovernmental entities was formed and provided technical oversight to the project team. Additional stakeholder coordination included meetings with elected officials (representing constituents of the study area), public workshops, presentation to the Miami-Dade TPO Bicycle Pedestrian Action Committee (BPAC), meetings with representatives from the Miami Design District as well as meetings with the Biscayne Neighborhoods Association and the Miami Beach Chamber of Commerce. Top priorities gleaned from the initial stakeholder coordination included desires for:

- Improved access at the I-195 interchange with N Miami Avenue (i.e., conversion from partial to full interchange);
- Improved access at the terminal of the off-ramp from eastbound I-195 to Biscayne Boulevard to allow direct left-turn access to the high-density residential areas to the east along NE 36<sup>th</sup> Street;
- Multimodal improvements within the study area and,
- Development of a long-term plan to mitigate the anticipated impacts to the regional network due to the reconstruction of the I-395 corridor to the south.

The planning study identified alternatives for further evaluation in the next project PD&E phase.

## 2.2.2 System Linkage

I-195 is a corridor on FDOT's Strategic Intermodal System (SIS) network which comprises Corridors, Hubs and Connectors. Each component of the SIS network is described as follows:

- **Corridors** on the SIS include - Highways, passenger and freight rail lines, urban fixed guideway transit, and waterways connecting regions within Florida or connecting Florida and other states or nations.
- **Hubs** within the SIS include - Airports, spaceports, seaports, rail terminals, and other types of freight and passenger terminals moving goods or people between Florida regions or between Florida and other states and nations.
- **Connectors** on the SIS include - Highways, passenger and freight rail lines, urban fixed guideway transit, and waterways linking hubs to corridors, linking hubs to other hubs, or linking corridors to major military facilities.

The SIS is Florida's high priority network of transportation facilities important to the State's economy and mobility. Within the FDOT D6 Planning area, the I-195 corridor intersects with I-95 (another major SIS corridor) and connects Miami Beach and areas east of I-95 to the Miami International Airport (a SIS Hub). This project aims to improve the System Linkage in two ways:

1. By providing direct connections between the I-95 express lanes and the population and major activity centers along I-195 to the east of I-95 which currently do not exist today. This has long been a source of critical concern for residents and businesses located in this area of the County. Existing transportation users from this area currently desiring to access the I-95 express lanes must travel along circuitous routes significant distances west of the I-195/I-95 Interchange enduring inconvenient increases in travel time and heavy congestion.
2. By providing improved bicycle/pedestrian connectivity between the City of Miami and Miami Beach consistent with the vision of the Miami-Dade 2040 Long Range Transportation Plan (for non-motorized users) thus contributing to an interconnected bicycle and pedestrian friendly system countywide. The improved bicycle/pedestrian connectivity would also help provide safe access to fishing spots along the causeway

It is anticipated that these improvements in System Linkages will greatly enhance the effective movement of people, goods, and services within this area of the County.

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### 2.2.3 Capacity

Roadway facilities on the Florida State Highway System located in urbanized areas (such as the SR 112/I-195 study corridor) are planned to maintain a minimum Level of Service (LOS) 'D' target according to FDOT *Topic No: 000-525-006-c Level of Service Targets for the State Highway System – Effective April 19, 2017*. Based on analyses conducted in the February 2019 *I-195 CPS Existing and Future No-Build Traffic Analysis Report* included in **Appendix “OCR-B”** of this report, several capacity and operational deficiencies were identified for the existing conditions and these are projected to be exacerbated in the future.

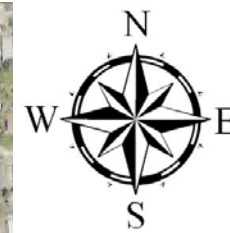
The SR 112/I-195 Freeway and Ramp areas were analyzed using the Highway Capacity Software Version 7.6, based on Chapter 10 Procedures of the *Highway Capacity Manual Version 6*. Freeway segments comprising basic, weaving, merge and diverge types, were combined to form continuous connected facilities in each direction so that the effects of downstream traffic operating conditions were considered in reporting the operations along a given facility. Traffic density (passenger cars per lane per mile) was used as the measure of effectiveness to estimate the LOS of facility segments.

**Exhibits 2-1** through **2-3** on the following pages summarize the traffic operations for SR 112/I-195 freeway segment and ramp areas showing exacerbated operations for the future no-build planning horizon of year 2045. Traffic operations are projected to degrade across the freeway and ramp area network within the study area. Poor levels of service are projected (i.e., LOS 'E' and LOS 'F') on several segments during the AM and PM peak hours underscoring the need for future improvements to target these deficiencies.

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**Legend**

\* Eastbound  
 \* Westbound  
 \*Label oriented to direction of travel.



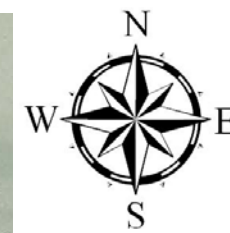
		Segment Characteristics									
Facility Direction	Segment Description	ID Label	Type	No of Lanes	Length (Feet)	Peak Period	Flow Rate (pc/h)	Density (pc/ln/mi)	Speed (MPH)	LOS	
EASTBOUND 	West of Off-Ramp to NW 12th Avenue	EB1	Diverge	4	1,500	AM	6,516	30.5	53.3	D	
						PM	5,020	23.2	54.1	C	
	Between Off-Ramp from NW 12th Avenue and Off-Ramp to I-95 NB / SB	EB2	Diverge	4	1,100	AM	6,381	30.3	52.5	D	
						PM	4,936	23.3	52.9	C	
	Between Off-Ramp to I-95 NB / I-95 SB and Lane Drop	EB3	Basic	2	3,620	AM	3,135	68.6	23.5	F	
						PM	2,315	21.1	50.9	C	
	Between Lane Drop and On-Ramps from NB / SB I-95	EB4	Merge	2	1,200	AM	4,187	43.1	48.6	F	
					PM	4,499	47.5	47.4	F		
	Between On-Ramps from NB / SB I-95 and Off-Ramp to N Miami Ave	EB5	Weave	4	585	AM	8,133	-	-	F	
					PM	6,211	-	-	F		
	Between Off-Ramp to N Miami Ave and Off-Ramp to Biscayne Blvd	EB6	Basic	3	1,770	AM	6,350	42.2	50.2	E	
					PM	4,549	29.8	50.9	D		

\* The HCM procedure does not allow for the determination of speed and density values in weaving segments where demand exceeds capacity. However, a level of service 'F' is the MOE that is available to be reported.

		Segment Characteristics									
Facility Direction	Segment Description	ID Label	Type	No of Lanes	Length (Feet)	Peak Period	Flow Rate (pc/h)	Density (pc/ln/mi)	Speed (MPH)	LOS	
WESTBOUND 	Between On-ramp from Biscayne Blvd and On-Ramp from N Miami Ave	WB9	Basic	3	1,100	AM	4,527	27.4	48.6	D	
						PM	4,250	96.1	14.7	F	
	Between On-ramp from N Miami Ave and Off-Ramp to I-95 NB/SB	WB10	Weave	4	1,080	AM	5,786	30.7	47.0	F	
						PM	4,865	25.9	48.1	F	
	Between Off-Ramp to I-95 NB/SB and Lane Drop	WB11	Basic	2	2,880	AM	2,284	20.8	50.3	C	
						PM	1,639	14.9	50.4	B	
	Between Lane Drop and On-Ramp from I-95 NB/SB	WB12	Basic	2	1,500	AM	4,500	48.5	46.4	F	
					PM	4,239	44.7	47.4	F		
	Between On-Ramp from I-95 NB/SB and On-Ramp from SB I-95 Express Lanes	WB13	Merge	3	500	AM	5,020	10.5	55.0	A	
					PM	6,097	15.6	55.0	B		
	At On-Ramp from SB I-95 Express Lanes	WB14	Merge	5	500	AM	5,020	17.0	55.0	B	
					PM	6,553	22.2	55.0	C		

\* The HCM procedure does not allow for the determination of speed and density values in weaving segments where demand exceeds capacity. However, a level of service 'F' is the MOE that is available to be reported.

MATCHLINE SHEET 2



**Legend**

EB1 \* Eastbound  
WB1 \* Westbound

\*Label oriented to direction of travel.

MATCHLINE SHEET 1



Facility Direction		Segment Characteristics									
Direction	Segment Description	ID Label	Type	No of Lanes	Length (Feet)	Peak Period	Flow Rate (pc/h)	Density (pc/ln/mi)	Speed (MPH)	LOS	
EASTBOUND 	<u>Between</u> Off-Ramp to N Miami Ave <u>and</u> Off-Ramp to Biscayne Blvd	EB6	Basic	3	1,770	AM	6,350	42.2	50.2	E	
						PM	4,549	29.8	50.9	D	
	<u>At</u> Off-Ramp to Biscayne Blvd	EB7	Diverge	3	1,500	AM	6,350	45.0	50.0	D	
						PM	4,549	30.0	50.5	C	
	<u>Between</u> Off-Ramp to Biscayne Blvd <u>and</u> On-Ramp from Biscayne Blvd	EB8	Basic	3	2,190	AM	4,326	26.2	50.9	D	
						PM	3,086	20.2	50.9	C	
	<u>At</u> On-Ramp from Biscayne Blvd	EB9	Merge	3	1,500	AM	6,037	41.4	48.6	D	
						PM	4,707	31.1	50.5	C	
	<u>Between</u> On-Ramp from Biscayne Blvd <u>and</u> Off-Ramp to Alton Road	EB10	Basic	3	9,580	AM	6,037	37.3	50.9	E	
						PM	4,708	30.8	50.9	D	

Facility Direction		Segment Characteristics									
Direction	Segment Description	ID Label	Type	No of Lanes	Length (Feet)	Peak Period	Flow Rate (pc/h)	Density (pc/ln/mi)	Speed (MPH)	LOS	
WESTBOUND 	<u>Between</u> On-Ramp from SB Alton Road <u>and</u> Off-Ramp to Biscayne Blvd	WB5	Basic	3	10,400	AM	4,587	27.8	51.1	D	
						PM	4,747	72.8	25.7	F	
	<u>At</u> Off-Ramp to Biscayne Blvd	WB6	Diverge	3	1,500	AM	4,587	30.3	50.4	D	
						PM	4,561	87.6	18.4	F	
	<u>Between</u> Off-Ramp to Biscayne Blvd <u>and</u> On-ramp from Biscayne Blvd	WB7	Basic	3	2,400	AM	3,223	19.5	50.5	C	
						PM	3,502	106.4	11.2	F	
	<u>At</u> On-Ramp from Biscayne Blvd	WB8	Merge	3	1,500	AM	4,527	29.8	50.7	C	
						PM	4,297	96.4	14.9	F	

**Legend**

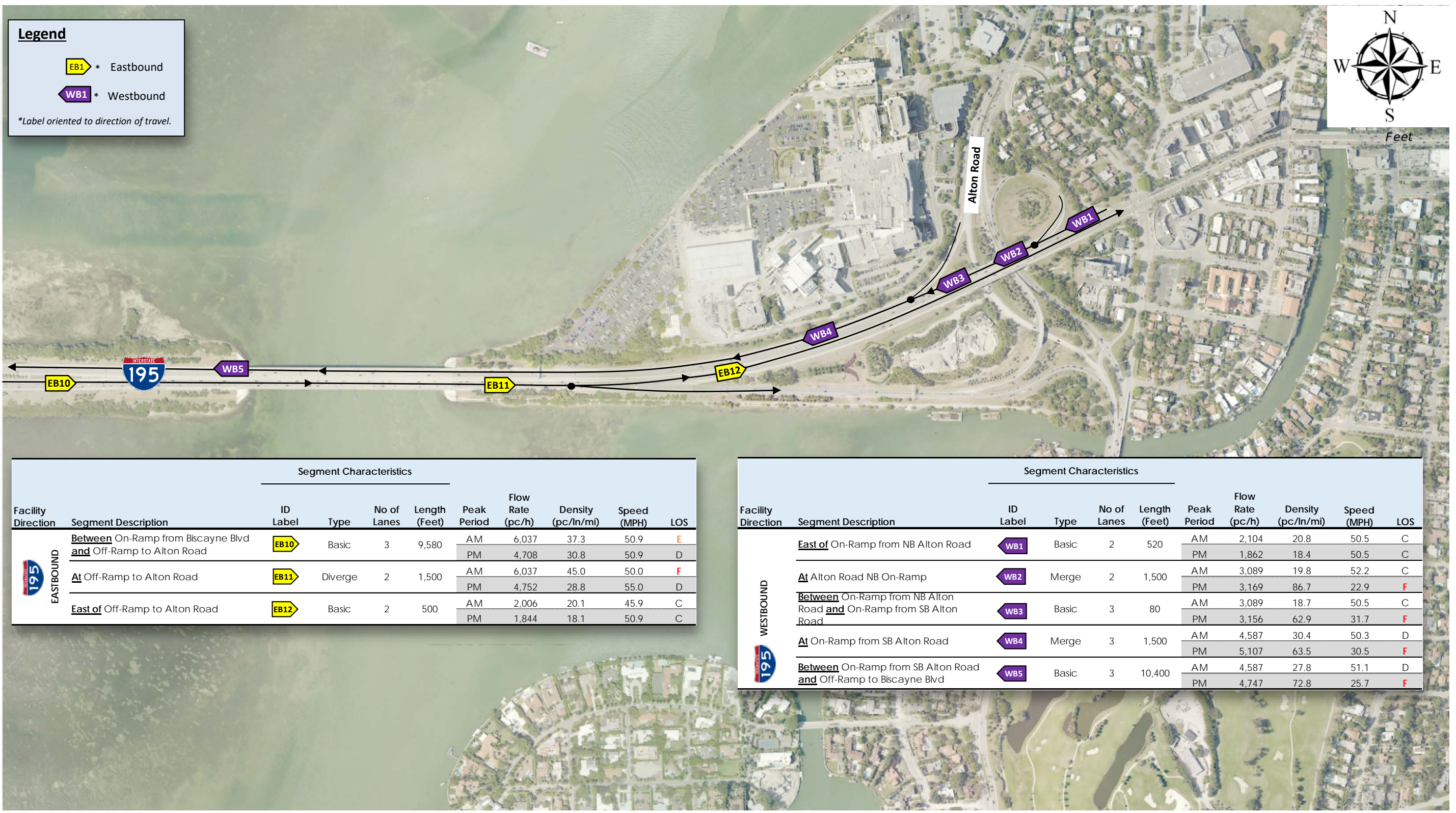
EB1 \* Eastbound

WB1 \* Westbound

\*Label oriented to direction of travel.



MATCHLINE SHEET 2



Facility Direction	Segment Description	Segment Characteristics								
		ID Label	Type	No of Lanes	Length (Feet)	Peak Period	Flow Rate (pc/h)	Density (pc/ln/mi)	Speed (MPH)	LOS
EASTBOUND 195	<u>Between</u> On-Ramp from Biscayne Blvd <u>and</u> Off-Ramp to Alton Road	EB10	Basic	3	9,580	AM	6,037	37.3	50.9	E
						PM	4,708	30.8	50.9	D
	<u>At</u> Off-Ramp to Alton Road	EB11	Diverge	2	1,500	AM	6,037	45.0	50.0	F
						PM	4,752	28.8	55.0	D
	<u>East of</u> Off-Ramp to Alton Road	EB12	Basic	2	500	AM	2,006	20.1	45.9	C
						PM	1,844	18.1	50.9	C

Facility Direction	Segment Description	Segment Characteristics								
		ID Label	Type	No of Lanes	Length (Feet)	Peak Period	Flow Rate (pc/h)	Density (pc/ln/mi)	Speed (MPH)	LOS
WESTBOUND 195	<u>East of</u> On-Ramp from NB Alton Road	WB1	Basic	2	520	AM	2,104	20.8	50.5	C
						PM	1,862	18.4	50.5	C
	<u>At</u> Alton Road NB On-Ramp	WB2	Merge	2	1,500	AM	3,089	19.8	52.2	C
						PM	3,169	86.7	22.9	F
	<u>Between</u> On-Ramp from NB Alton Road <u>and</u> On-Ramp from SB Alton Road	WB3	Basic	3	80	AM	3,089	18.7	50.5	C
						PM	3,156	62.9	31.7	F
	<u>At</u> On-Ramp from SB Alton Road	WB4	Merge	3	1,500	AM	4,587	30.4	50.3	D
						PM	5,107	63.5	30.5	F
	<u>Between</u> On-Ramp from SB Alton Road <u>and</u> Off-Ramp to Biscayne Blvd	WB5	Basic	3	10,400	AM	4,587	27.8	51.1	D
						PM	4,747	72.8	25.7	F

### 2.2.4 Transportation Demand

A review of the *Miami-Dade 2040 Long Range Transportation Plan (LRTP), October 2014* shows significant growth in population within the Project area. The growth in population between the year 2010 and the forecast year 2040 is depicted in **Exhibit 2-4** on the following page. The I-195 Study corridor either falls within or is bounded by the “North” and the “Beach/CBD” Planning areas. **Table 2-1** below presents a summary of the population growth in these planning areas.

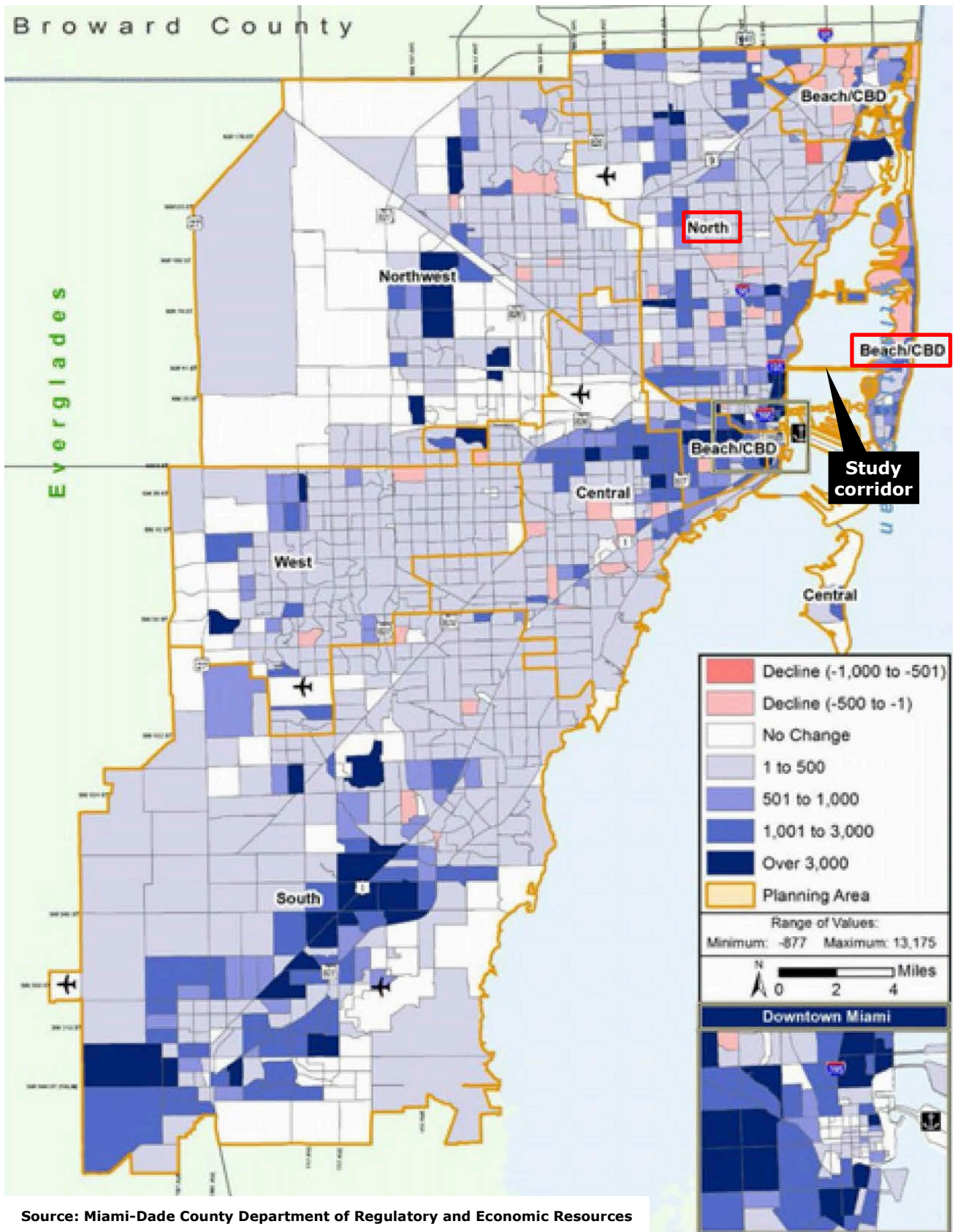
**Table 2-1: Miami-Dade County Population Summary**

Planning Area	Population			% Growth
	2010	2040	Change	
North	513,938	712,036	198,098	39%
Beach/CBD	380,838	543,806	162,968	43%

*Source: Miami-Dade 2040 LRTP Data Compilation Review and Development Report, October 23, 2014*

Overall, the projected percentage in population growth is around 40% which underscores the increase in transportation demand projected for the study area and the associated improvements that will need to be made to the transportation infrastructure.

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Source: Miami-Dade County Department of Regulatory and Economic Resources

Exhibit 2-4: 2010 To 2040 Miami-Dade County Change in Population

### 2.2.5 Modal Interrelationships

The proposed project will complement other modes of transportation beyond enhancing mobility for automobiles. It is anticipated this project will improve travel between Miami International Airport (MIA) and Miami Beach as well as result in improved transit and bicycle/pedestrian mobility within the study area.

- Miami International Airport** - I-195 is an important limited access facility in Miami-Dade County providing a direct connection between Miami International Airport (via SR 112), I-95, and the densely populated areas of Miami Beach. The Miami-Dade County Board of County Commissioners recently adopted a new capital improvement program for MIA to fund up to \$5 billion in airport-wide modernization projects over the next five to 15 years. It is anticipated this would pave the way for future growth in passenger and cargo traffic at MIA which is projected to reach 77 million travelers and more than four million tons of freight by the year 2040. A pertinent objective of the *Miami-Dade Comprehensive Development Master Plan (CDMP) October 2013*, requires a coordinated effort through the transportation planning and project review processes to make roadway access to airports compatible with the applicable Airport Master Plans, County and Florida Aviation Systems Plans, the Florida Department of Transportation Work Program, and consistent with the Transportation and Capital Improvement Elements of the Miami-Dade County Comprehensive Development Master Plan (*ref. Objective AV-4C, Aviation Sub element, Transportation Element, CDMP*). The SR 112/I-195 improvement project will further this objective to the extent improvements are identified that improve mobility between the Miami-Beach and the Airport compatible with MIA future expansion plans.
- Proposed BERT Beach Express North Route/Miami Beach** – The Strategic Miami Area Rapid Transit (SMART) Plan was adopted on April 21, 2016 by the Miami-Dade TPO Board as a top priority to promote the advancement of rapid transit corridors and transit supportive projects across the County. The SMART Plan will expand transit options in Miami-Dade County along six critical corridors that are linked to regional, state, national, and global economic markets. A critical component of the SMART Plan is a network of Express Buses, known as Bus Express Rapid Transit (BERT), that will connect the SMART rapid transit corridors on limited access facilities, thus promoting the active expansion of South Florida's Express Lanes network. The Beach Express North service will advance the SMART Plan as it is one of the three (3) BERT routes from the mainland to Miami Beach shown in the SMART Plan. BERT service will consist of enhanced branded buses operating limited stop service operating along roadway shoulders or within dedicated transit lanes, where feasible, to reduce travel time and help ensure service schedule reliability. Transit ridership is expected to increase as commuters will experience decreased travel time, decreased expense, and increased reliability. The Beach Express North service is planned to operate between the Park-and-Ride Lot at the Golden Glades Interchange to the north and Miami Beach via the I-95 Express Lanes and the SR 112/I-195/Julia Tuttle Causeway Corridor. New connections between the I-95 express lanes and I-195 to the east to be developed as part of this project, will be integral to the long-term successful operation of the Beach Express North service.

- **Bicycle / Pedestrian Accommodations** – The project is intended to fulfill a vision of the Miami-Dade 2040 Long Range Transportation Plan of creating interconnected bicycle and pedestrian friendly communities throughout the County. The development of a dedicated bicycle/pedestrian facility along the Causeway to provide a safe and improved bicycle/pedestrian connection between the City of Miami and Miami Beach is consistent with furthering this vision and fills a key gap that exists in the system today.

### 2.2.6 Safety

The October 2018 *I-195 CPS Existing Conditions Report* in **Appendix “OCR-C”** documents an analysis of the 5-year historical crash data (available at the time the report was prepared) along the I-195 study corridor from NW 12<sup>th</sup> Avenue to Alton Road. Based on five years of crash data (January 2011 to December 2015) obtained from FDOT's Crash Analysis Reporting System (CARS), a total of 2,395 crashes were reported. There was a year over year increase in the number of crashes with 371 crashes in 2011, 409 crashes in 2012, 459 crashes in 2013, 501 crashes in 2014, and 655 crashes in 2015. The leading crash types along the study corridor were rear end with 1,206 crashes (50 percent) and sideswipe with 336 crashes (14 percent).

Along the study corridor, a couple segments exhibited abnormally high crash characteristics within the five-year review period including:

- I-195 just east of the I-95 overpass that had an abnormally high number of crashes in year 2011; and
- SR 112/Julia Tuttle Causeway from Alton Road North/South Off-ramp (MP 4.351) to Alton Road (4.910)] which had an abnormally high number of crashes in years 2013, 2014 and 2015.

Several locations along the study corridor exhibited a concentration or clustering of crashes, indicative of potential safety issues that need to be assessed. Crash clusters were noted at:

- SR 112 at NW 12<sup>th</sup> Avenue
- SR 112/I-195 at I-95
- SR 112/I-195 at North Miami Avenue
- SR 112/I-195 at Exit Ramp to Alton Road
- SR 112/I-195 EB/WB at Alton Road

Most cluster locations had rear-end and sideswipe crashes as their leading frequency crash types during the five-year study period. These crash patterns are typical of highly congested roadways with frequent stop-and-go traffic conditions. Additionally, it should be noted that some locations are directly impacted by traffic within the influence area of on or off-ramps to I-195. **Table 2-2** on the following page summarizes the probable contributing causes for the crash clusters based on the review of the crash summaries and aerials. The safety analysis of existing conditions is presented in Section 7.0 of the *I-195 CPS Existing Conditions Report, October 2018* included as **Appendix “OCR-C”** of this report.



**Table 2-2: Crash Clusters Probable Causes**

Cluster	Crash Pattern(s)	Probable Cause(s)
SR 112/I 195 at Exit Ramp To NW 12 Avenue	Rear End (41%) (Mostly eastbound)	<ul style="list-style-type: none"> <li>• tourist)</li> <li>• Excessive speed</li> <li>• Ramp Traffic spillover</li> <li>• Lack of Deceleration lane</li> <li>• Construction</li> <li>• Aggressive driving</li> </ul>
	Sideswipe (17%)	<ul style="list-style-type: none"> <li>• Congestion</li> <li>• Sign Visibility issues</li> <li>• Abrupt lane changing</li> <li>• Construction</li> <li>• Ramp lane spillover</li> </ul>
SR 112/I 195 Under I-95 Overpass	Rear End (55%) (Mostly eastbound)	<ul style="list-style-type: none"> <li>• Congestion</li> <li>• Excessive speed</li> <li>• Narrowing of Lanes (merge lane related)</li> </ul>
	Sideswipe (21%)	<ul style="list-style-type: none"> <li>• Excessive speed</li> <li>• Narrowing of Lanes (merge lane related)</li> <li>• Abrupt lane changing</li> </ul>
SR 112/I 195 at N Miami Avenue	Rear End (60%) (Mostly eastbound)	<ul style="list-style-type: none"> <li>• Congestion (due to capacity constraints at the arterial level)</li> <li>• Excessive speed</li> <li>• Ramp Traffic spillover</li> <li>• Lack of Deceleration lane</li> </ul>
	Sideswipe (16%) (Mostly during peak traffic periods)	<ul style="list-style-type: none"> <li>• Congestion (due to capacity constraints at the arterial level)</li> <li>• Excessive speed</li> <li>• Ramp Traffic spillover</li> </ul>
SR 112/I 195 at Gore Approaching Exit Ramp To Alton Road	Rear End (68%) (Mostly eastbound)	<ul style="list-style-type: none"> <li>• Aggressive driving</li> <li>• Abrupt lane changing</li> <li>• Congestion (related to ramp spillover)</li> <li>• Excessive speed</li> <li>• Drivers not aware of access points</li> <li>• Poor Signage</li> </ul>
	Sideswipe (7%) (Mostly eastbound)	<ul style="list-style-type: none"> <li>• Congestion</li> <li>• Abrupt lane changing</li> <li>• Aggressive driving</li> </ul>
SR 112/I 195 at Gore Approaching Exit Ramp To N/S Alton Road	Rear End (73%) (Mostly eastbound)	<ul style="list-style-type: none"> <li>• Aggressive driving</li> <li>• Abrupt lane changing</li> <li>• Congestion</li> </ul>
SR 112/I 195 at Alton Road	Rear End (64%) (Mostly eastbound)	<ul style="list-style-type: none"> <li>• Congestion</li> <li>• Vertical grade differential</li> <li>• Drivers not aware of access points</li> </ul>

These probable causes belie safety issues that will need to be addressed by the project.

### 3.0 TRANSPORTATION PLANS AND PREVIOUS STUDIES

Transportation plans and previous studies relevant to the I-195 corridor were reviewed as part of the CPS. The reports referenced, represent the versions of the documents that were available at the inception of this study in September 2017.

#### 3.1 Transportation Plans

The Transportation plans reviewed as part of this study included:

- Miami-Dade Transportation Planning Organization (TPO) 2040 Long Range Transportation Plan (LRTP)
- Miami-Dade Transportation Improvement Program (TIP)
- Florida Department of Transportation (FDOT) District 6 – Five Year Work Program
- FDOT Strategic Intermodal System (SIS) – Ten Year Plan
- FDOT SIS – Cost Feasible Plan
- Southeast Florida’s Express Lanes Network Regional Concept of Traffic Operations
- Strategic Miami Area Transit (SMART) Plan
- Brightline Rail Project
- Proposed North Beach Master Plan

An overview of these plans and their relevance to the I-195 CPS was presented in Section 2.0 of the *I-195 CPS Existing Conditions Report, October 2018* included as **Appendix “OCR-C”** of this report.

#### 3.2 Transportation Studies

The Transportation studies reviewed as part of this study included:

- I-95 Corridor Planning Study
- FDOT Bicycles on Limited Access Facilities Pilot Program
- Feasibility for Shared Use Path Along SR 112/I-195 Julia Tuttle Causeway
- Safety Study for the intersection of SR 907/Alton Road at 43<sup>rd</sup> Street
- Analysis of Design District Connections to I-95 Express – White Paper
- Biscayne Boulevard Safety Study from NE 32<sup>nd</sup> Street to NE 38<sup>th</sup> Street
- Middle Beach Intermodal Center Feasibility Study

An overview of these studies and their relevance to the I-195 CPS was presented in Section 2.0 of the *I-195 CPS Existing Conditions Report, October 2018* included as **Appendix “OCR-C”** of this report.

## 4.0 INTERAGENCY COORDINATION

As part of the I-195 CPS, a Public Involvement Plan (PIP) was deployed to disseminate information on the planned corridor improvements and to solicit stakeholder input. **Appendix “OCR-D”** contains the complete *I-195 CPS, Public Involvement Report, June 2020*. Key elements of the PIP included the establishment of a Project Advisory Team (PAT) and conducting PAT meetings, FDOT internal project meetings, agency/public official briefings, and public workshops. The following sections summarize these key elements.

### 4.1 Project Advisory Team Meetings

A Project Advisory Team was established consisting of representatives from the Miami-Dade Transportation Planning Organization (TPO), Miami-Dade Department of Transportation and Public Works (DTPW), Miami-Dade Expressway Authority (MDX), South Florida Regional Council (SFRC), and the Miami-Dade Department of Transportation Planning. PAT members from municipal agencies included staff from the Midtown Community Development District (CDD), Wynwood Business Improvement District (BID), OMNI/Midtown Community Redevelopment Agency (CRA), City of Miami and City of Miami Beach. Four PAT meetings were held during the CPS covering the following topics:

- PAT Meeting #1 (May 23, 2018) – Introduction of project and review of existing conditions,
- PAT Meeting #2 (December 5, 2018) – Review of future no-build conditions as well as identification and review of alternatives,
- PAT Meeting #3 (October 9, 2019) – Review of results of screening of Tier 1 alternatives and the alternatives for Tier 2 review,
- PAT Meeting #4 (June 3, 2020) – Project summary and review of Tier 2 evaluations and refined build alternative.

### 4.2 FDOT Internal Workshops

An internal workshop was held during the development of the CPS, on April 30, 2019. It included FDOT District 6 Management and staff from Intermodal Systems Development, Design, Consultant Management, Traffic Operations, and Transportation Systems Management and Operations. The purpose of the workshop was to brief and seek input from FDOT District 6 Management as well as the Golden Glades Interchange project team, on the Tier 1 Alternatives that were developed.

### 4.3 Local Government Agencies & Elected Officials Briefings

Coordination meetings and briefings were held with elected officials or their representatives and technical committee within the project area and local government agencies at various times during the project. The goal was to ensure that elected officials and their staff fully understood the project's objectives, the process, and schedule and conversely to ensure that their priorities, values and needs, and concerns were understood and reflected in the project efforts.

#### 4.4 Stakeholders Community Agencies Meeting

Meetings were held with stakeholders, business leaders, and community groups to hear their concerns and project input, and to encourage their participation in the study process. At all these meetings, staff were updated on project developments and were asked to share information that could assist the project team in the development of alternatives.

#### 4.5 Public Workshops

Areawide informational public workshops were conducted to present the concepts developed in the CPS. The subject workshops were advertised and noticed. Locations of the public workshops were distributed along the corridor:

- Workshop #1 (February 12, 2020) – Legion Park, 6447 NE 7<sup>th</sup> Avenue, Miami, FL 33138
- Workshop #2 (February 13, 2020) – Miami Beach Golf Club, 2301 Alton Road, Miami Beach, FL 33140

**Appendix “OCR-D”** contains the complete *I-195 CPS, Public Involvement Report, June 2020*.

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## 5.0 EXISTING CONDITIONS INVENTORY & ANALYSIS

An Existing Conditions Report was prepared as part of the I-195 CPS study. The report summarized and analyzed the existing data that were collected or compiled. The I-195 CPS Existing Conditions Report, October 2018 is included as **Appendix “OCR-C”**. Key data elements included aerial photography, current transportation plans, typical cross sections, right-of-way, ITS equipment, utility infrastructure, drainage system, and public transportation data which were reviewed in regard to their relevance and the base information they provided to facilitate the development of improvements to address the future needs of the I-195 study corridor.

### 5.1 Existing Land Use

The study corridor is located within two municipalities including the City of Miami on the west end and the City of Miami Beach on the east end. Information from the Planning and Zoning Department in each municipality was compiled and summarized.

#### 5.1.1 Existing Land Use City of Miami

The portion of the study area that falls within the City of Miami comprises various land use types including residential, commercial retail, office and industrial uses. The area east of Biscayne Boulevard and south of I-195 mainly comprises, high-rise residential developments including the Blue and Charter Club Condominiums. The area between Biscayne Boulevard and N Miami Avenue comprises, the Miami Design District, the historic Buena Vista neighborhood, the mixed-use Midtown Miami urban infill development, and industrial land uses. The area, between N Miami Avenue and just west of NW 12th Avenue mainly consists of single-family residential neighborhoods. Various boundaries are created by transportation networks traversing this portion of the study area which limit the interaction between some of the land uses. North-south mobility between land uses is constrained by the presence of the I-195 corridor running through the center of the study area. East-west mobility towards the west of the study area is constrained by the I-95 corridor. East-west vehicular and pedestrian mobility (on the east side just west of the Intracoastal Waterway) between the Biscayne Boulevard and areas to the west, are constrained by the presence of the FEC rail corridor which runs parallel to Federal Highway. It is anticipated that the burgeoning design district together with Midtown Miami, a major mixed-use development of local and regional significance, will continue to generate increased attractions to the area. A plethora of redevelopment activity continues within the study area and its environs which will result in increased demands on the transportation system.

#### 5.1.2 Existing Land Use City of Miami Beach

The portion of the study area that falls within the City of Miami Beach comprises various land use types including residential, commercial retail, Public Facility/Hospital and Recreational within the SR 112 / Alton Road Interchange. The main traffic generator around the interchange is the Mt. Sinai Hospital.

## 5.2 Roadway Characteristics

An inventory of various roadway characteristics data was performed utilizing FDOT's Roadway Characteristics Inventory (RCI) database, existing records drawings as well as other sources where noted. To facilitate the documentation of much of the roadway characteristics information that were gathered, aerial photography was compiled and cut into several plan sheets at a 1" = 100' scale to develop base maps that were used as a basis for plotting various data necessary for the study.

## 5.3 Existing Transit

The study area is currently served by several transit service bus routes that either operate within the cities of Miami and Miami Beach for intra city travel or between the cities of Miami and Miami Beach for intercity travel. Miami-Dade Transit (a division of the Miami-Dade Department of Transportation and Public Works - DTPW) is the agency responsible for operating a majority of the existing transit service in the study area followed by the City of Miami which operates three trolley routes and the City of Miami Beach which operates one trolley route.

## 5.4 Traffic Data

Traffic data were collected along the project corridor at various ramp, mainline and mid-block locations as well as at major intersections. The data collected included: 72-hour average daily traffic (ADT) counts, turning movement counts, travel time runs and Origin-Destination Surveys. In addition to the traffic field data collected, historical annual average daily traffic (AADT) data from the FDOT Traffic Online Database were also obtained to supplement and provide traffic data along the corridor.

## 5.5 Safety Analysis

A safety analysis along Interstate 195 (I-195) was conducted to identify crash patterns at interchanges, ramps, and other influence areas within the corridor. Locations with high crash rates and trends as well as general countermeasures to address multi-modal crash patterns were identified. Crash data for a five-year study period (January 2011 to December 2015) were reviewed and summarized for the following study sections:

- Section 87003000/SR-112 from MP 3.810 (NW 14th Avenue) to MP 4.132 (NW 11th Avenue)
- Section 87004000/SR-112/I-195 from MP 0.000 (NW 11th Avenue) to MP 4.910 (Alton Road).

The crash data were obtained from FDOT's Crash Analysis Reporting System (CARS). Crash data at interchanges, interchange influence areas, and ramp junctions were collected. The study area was divided into six segments along the mainline to account for the change in the lane configuration, crash rate category, and ADT along the SR-112 / I-195 study corridor. A cluster analysis of the crash frequencies for the mainline and ramps was conducted to identify the concentration of crashes within the study limits.

## 5.6 Environmental

Data on existing environmental conditions within the study corridor and its environs were collected and agency databases were reviewed to determine the potential environmental issues within the existing I-195 and I-95 project area. The environmental review was conducted using the following sources:

- The Efficient Transportation Decision Making (ETDM) Environmental Screening Tool (EST).
- Florida Geographic Data Library (FGDL)
- Aerial Photographs and Street Maps
- Field visits

The environmental review of these data is further documented in **Section 9.0** of this overall corridor report.

## 5.7 Existing Operational Analysis

The existing traffic operations along the I-195/SR 112 mainline facility, at interchanges, interchange influence areas, and ramp junctions were evaluated using the Highway Capacity Software Version 7.6, based on Chapter 10 Procedures of the *Highway Capacity Manual Version 6*. Freeway segments of the Basic, weaving, merge and diverge type, were combined to form continuous connected facilities in each direction so that the effects of downstream traffic operating conditions were considered in reporting the operations along a given facility. The HCS analysis identified capacity deficiencies in the following segments:

### I-195 Eastbound (AM Peak):

- Within the eastbound single lane bottle neck section just upstream the merging on-ramp from the I-95 northbound and southbound general-purpose lanes,
- The weaving segment between the on-ramp from I-95 and the off-ramp to N Miami Avenue,
- The diverge segment at the off-ramp to Alton Road.

### I-195 Westbound (PM Peak):

- Along the segments between the on-ramp from Biscayne Blvd and the off-ramps to I-95,
- Within the westbound single lane bottle neck section just upstream the merging on-ramp from the I-95 northbound and southbound general-purpose lanes.

The operational analyses of ramp-terminals and adjacent intersections within and surrounding the study interchanges were performed using Synchro (Version 9) software, which is based on the methodologies of the 2000/2010 Editions of the Highway Capacity Manual. The Synchro analysis identified capacity deficiencies in overall Level of Service (LOS) at 7 of the 27 intersections evaluated with notable poor operations in critical intersection turning movements. The *I-195 CPS, Existing and Future No-Build Traffic Analysis Report, February 2019* included in, **Appendix "OCR-B"**, contains more details on these analyses.

A microscopic traffic model using the VISSIM software was also developed to provide a more detailed analysis of traffic operations within the interchange areas and along the SR 112/I-195 mainline.

## 6.0 FUTURE NO-BUILD CONDITIONS

This Future No-Build Conditions contemplate certain programmed and planned future transportation improvements will be in place prior to implementation of any long-term alternatives identified in this study. Following is a description of the programmed and planned transportation improvements projected to have an operational impact on future travel demand:

1. **Golden Glades Interchange (GGI) Enhancement Project – aka GGI Ultimate, (FM# 428358-1, 428358-4, 428358-5, 428358-8, 437053-1, 437053-2, 437053-3, 437053-4 & 437053-5)** FDOT District Six and Florida's Turnpike Enterprise are developing and designing several roadway projects within the GGI in Miami-Dade County. The proposed enhancements to the GGI Interchange include several miles of roadway and ramps. It is anticipated the overall project will help increase regional connectivity to this major interchange and resolve existing constraints in the I-95 express lane capacity within the GGI Interchange. The project comprises five major facilities including State Road (SR) 9A/I- 95, SR 826/Palmetto Expressway, Florida's Turnpike, SR 9 and SR 7/US 441/NW 7 Avenue. It should be noted that at the time of this writing of overall corridor report for the I-195 CPS, the construction phase for the GGI Enhancement Project has been deferred until issues related to utility conflicts can be resolved and funding restored.
2. **SR 907/Alton Road to westbound SR 112/I-195/Julia Tuttle Causeway, (FM# 430444-3)** - This project addresses existing operational deficiencies along the southbound (SB) Alton Road to westbound (WB) I-195 single-lane on-ramp. Construction is underway and scheduled for completion in 2021.
3. **I-195 Frontage Road & Ramp Realignment – (FM# 435843-1)** This project involves the realignment of the I-195 westbound on-ramp from the N Miami Avenue & NW/NE 38 Street & extension of the I-195 Off-Ramp/ Frontage Road. Construction was scheduled for completion in 2022. However, this project is currently on hold pending the outcome of the Interchange Modification Report that is being coordinated by Miami-Dade County which is still pending at the time of this writing of overall corridor report for the I-195 CPS.
4. **SR 112/I-195/Julia Tuttle Causeway from E of SR 5/Biscayne Blvd. to Alton Road., (FM# 444622-1)** – This is a shoulder improvement project that will widen and improve the existing inside shoulders of the Julia Tuttle Causeway from east of Biscayne Boulevard (MP 1.898) to Alton Road (MP 4.904) to accommodate County Express Bus service to operate on the shoulders during peak periods of congestion, this is a joint effort between FDOT and Miami-Dade DTPW. This project is programmed for construction in Fiscal Year (FY) 2022.
5. **I-95 Corridor Planning Study from US 1/SR 5 to Broward County Line, (FM# 414964-6)** – A planning study for the I-95 corridor from US 1 to the Broward County line was recently completed. A subsequent PD&E Phase is being initiated to further develop and refine the alternatives recommended from that planning study. The recommended concept developed from the I-95 Corridor Planning Study includes additional express lanes capacity from SR 112/I-195 to the Broward/Miami-Dade County line and mainline geometric and interchange improvements throughout the corridor. The additional express lanes capacity will be important to accommodate the increased express lanes demand from the new connections to and from I-195 to the east identified later in this report.



## 6.1 Design Hour Traffic

Design traffic volumes for the future no-build 2045 horizon year for the AM and PM peak hours, were developed consistent with procedures outlined in FDOT's *Project Traffic Forecasting Handbook and Project Traffic Forecasting Procedure (# 525-030-120)*. In addition, a more detailed methodology memorandum was approved by FDOT D6 PLEMO staff which outlined the traffic factors to apply to average daily link volumes in the process of developing balanced design hour directional freeway/ramp/arterial link volumes as well as turning movement volumes at ramp terminal locations and the surrounding intersections.

Future year volumes were forecast using growth rates obtained from the Southeast Florida Regional Planning Model version 7.071 (SERPM 7.071). The model growth rates obtained by comparing link volumes between the validated base sub area and future long range SERPM models, were applied to existing traffic volumes as part of the development of the future no-build design hour directional freeway/ramp/arterial link volumes.

The *I-195 CPS, Existing and Future No-Build Traffic Analysis Report, February 2019* included in, **Appendix "OCR-B"**, contains more details on the development of Design-Hour Traffic.

## 6.2 Future No-Build Operational Analysis

A traffic operations analysis of the 2045 future No-Build conditions of the roadway network within the study area was performed using the same methodologies and tools described in **Section 5.7** for existing conditions.

The projected traffic operations along the freeway segments and at the ramp areas resulting from the anticipated future No-Build conditions, were compared to the existing operations initially summarized in **Section 5.7** of this report. Traffic operations are projected to degrade significantly across the freeway and ramp area network within the study area. The existing operational hotspots are projected to get worse and new operational failures are projected during the AM and PM Peak Periods.

The projected traffic operations at the ramp terminals and intersections resulting from the anticipated future No-Build conditions, were compared to the existing operations summarized in **Section 5.7** of this report. For signalized intersections, signal timing splits were generally optimized to accommodate the anticipated future traffic demand. Traffic operations are projected to degrade significantly at ramp terminals and intersections within the study area from existing to No-Build conditions (with capacity deficiencies in overall Level of Service in eleven additional intersections), underscoring the need for improvements.

The *I-195 CPS, Existing and Future No-Build Traffic Analysis Report, February 2019* included in, **Appendix "OCR-B"**, contains more details on these analyses.

A microscopic traffic model using the VISSIM software was also developed to provide a more detailed analysis of traffic operations within the interchange areas and along the SR 112/I-195 mainline. The results of the VISSIM analysis for Future No-Build conditions are documented as part of an Appendix of the *I-195 CPS, Future Build Traffic Analysis Report Microsimulation Analysis, June 2020* in **Appendix "OCR-E"** of this report.

## 7.0 CONCEPT DEVELOPMENT & EVALUATION

This section of the report summarizes the identification, development and evaluation of the alternatives for the I-195 CPS using a two-tiered approach. It summarizes the criteria and performance measures used to develop and evaluate the improvements. Also included in this section of the report is a summary of the evaluation of the refined build concept that can be further developed in the next Project Development & Environment (PD&E) phase of the project. The *I-195 CPS, Concept Development & Evaluation Report, June 2020* in **Appendix “OCR-F”**, contains further details regarding the development & evaluation of the alternatives.

### 7.1 Tier 1 Evaluation

Several alternatives were identified to address the study objectives and stakeholder interests. The alternatives comprised:

- **Base Improvement Alternatives** - to address operational deficiencies as well as specific local issues raised by stakeholders,
- **System Improvement Alternatives** - to address key study objectives relative to improving access and addressing major deficiencies that would facilitate systemwide performance,
- **Bicycle and Pedestrian Alternatives** - to improve non-motorized connections between the City of Miami Beach and the City of Miami.

**Table 7-1** on the following page presents a summary of the alternatives that were considered in the Tier 1 Evaluation and their ranking according to the criteria listed in *I-195 CPS, Concept Development & Evaluation Report, June 2020*.

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**Table 7-1: Summary of Tier 1 Alternatives**

Type	ID No.	Description Of Alternative	Rank
BASE ALTERNATIVES	BI-1	Base Improvement 1 - Construct second SR-112 westbound lane to eliminate single lane bottleneck within the I-95 interchange area	NR <sup>2</sup>
	BI-2	Base Improvement 2 - Construct second I-195 eastbound lane to eliminate single lane bottleneck within the I-95 interchange area	NR <sup>2</sup>
	BI-3	Base Improvement 3 - Modify ramp terminal at the I-195 eastbound off-ramp to NE 36th Street to either include a roundabout <b>or</b> partial signalization of the ramp terminal to include (new southbound to eastbound left turn movement and westbound through movement both of which would be under signal control . The eastbound through movement would be a turbo-lane and free flowing). Addresses request by area residents for more direct access to the high-density condominiums located in the northeast quadrant of NE 36th Street and Biscayne Boulevard <sup>1</sup> .	NR <sup>2</sup>
	BI-4	Base Improvement 4 - Lengthen taper for acceleration lane for the on ramp from Biscayne Boulevard to I-195 eastbound	NR <sup>2</sup>
	BI-5	Base Improvement 5 - Provide a two-lane exit from I-195 westbound to Biscayne Boulevard increasing the capacity of the off-ramp.	NR <sup>2</sup>
	BI-6	Base Improvement 6 - Widen existing Julia Tuttle Causeway in the eastbound direction from just west of diverge area for off-ramp to Alton Road to intersection with Arthur Godfrey Road and Alton Road. The additional lane would terminate at the Alton Road intersection as a designated right-turn lane.	NR <sup>2</sup>
	BI-7	Base Improvement 7 - New traffic signal at intersection of Northbound and Southbound Alton Road south of Barry Street.	NR <sup>2</sup>
	BI-8	Base Improvement 8 - Combine on-ramps to westbound SR 112 from northbound Alton Road and southbound Alton Road (respectively into a 3-lane collector/distributor road (CD Road) then merge CD road with westbound SR 112.	NR <sup>2</sup>
SYSTEM IMPROVEMENT ALTERNATIVES	SI-1	Alternative 1 - Direct Connections to 95 Express Lanes	3
	SI-2	Alternative 2 - Direct Connections to 95 Express Lanes with Viaduct on I-195	2
	SI-3	Alternative 3 - Direct Connections to 95 Express Lanes with Viaduct on I-195. Also includes new ramp connections to and from I-95 General Use Lanes to the Viaduct (I-95/Miami Beach Traffic Separated).	1
	SI-4	Alternative 4 - Texas U-Turn Connections to/from 95 Express Lanes <sup>3</sup>	4
BICYCLE & PEDESTRIAN ALTERNATIVES	BP-A	Alternative A - 14' Shared Path Bridge Structures	2
	BP-B	Alternative B - Dual Shared Path (12' each direction) with Widening of Existing Causeway Bridges on north and south sides.	1

1 Roundabout option was eliminated due to right-of-way constraints.

2 Each improvement within this group represents a single alternative to address a specific issue. As such, they were not ranked within this alternative type. They were included in the development of the refined Build Alternative.

3 Alternative was not carried through to Tier 2 Review. All other alternatives were evaluated further in Tier 2.

It should be noted that the System Alternative 4 Texas U-Turn connection was initially being considered as an interim improvement until more long-term improvements to implement direct connections to the I-95 Express lanes are developed. As an interim improvement, a design objective was to limit the extent right-of-way impacts. However, it was determined the design exceptions and variations necessary to accommodate the design objective were unlikely to be approved and as a result this alternative was not considered further in the Tier 2 review.

The *I-195 CPS, Concept Development & Evaluation Report, June 2020* in **Appendix “OCR-F”**, contains further details including exhibits illustrating the improvements in **Table 7-1**.

## 7.2 Tier 2 Evaluation

A Tier 2 evaluation comprising a mixture of qualitative and quantitative measures was performed for the three systems Alternatives 1, 2 and 3 as well as two Alternatives (A and B) to provide protected shared use path connections along the Julia Tuttle Causeway between the City of Miami and Miami Beach as presented in Section 7.1 of this report. The study team assessed a wide range of transportation system performance measures to develop a comparison between No-Build conditions in 2045 and those of Alternatives 1, 2, and 3 with the Base Improvements, as well as the benefits of the shared use path Alternatives A and B. **Table 7-2**, below summarizes the effect of both the systems/highway alternatives and shared use path alternatives on the performance measures described in the *I-195 CPS, Concept Development & Evaluation Report, June 2020* in **Appendix “OCR-F**.

**Table 7-2: Tier2 Summary of Alternatives Effects on Performance Measures**

Measure	Comparison to No-Build Conditions					Notes
	System Alternatives			Bicycle / Pedestrian Alternatives		
	Alt 1	Alt 2	Alt 3	A	B	
1 Daily Vehicle Miles of Travel (VMT)	0.01%	0.02%	0.07%			Sum across four parallel causeways; VMT increases slightly on Julia Tuttle and decreases on each of the other causeways.
2a Average peak period speed increase (MPH)	1.1	4.5	13.5			Base average speed of 37.3 MPH.
2b Daily Vehicle-Hours of Delay	84	234	591			From I-195 operational analyses; benefits on parallel causeways not included.
3 Change in Safety Performance (annual crashes)	n/a	n/a	25.7			Performance assessed for Alt 3 only.
4 Job Accessibility - Auto	736	501	7815			Countywide change in average jobs accessible in 30 minutes.
5 Job Accessibility - Transit	Minimal	Minimal	Minimal			All support bus-on-shoulder treatments.
6 Percentage Heavily Congested VMT	5.0%	5.2%	15.7%			VMT at < 45 MPH; Base percentage is 21.6%.
7 Transit Travel Time	Minimal	Minimal	Minimal			All support bus-on-shoulder treatments.
8 Quality of Pedestrian Connections	Minimal	Minimal	Minimal	Low	Low	All provide similar design opportunities (repair, lighting, art, etc.).
9 Quality of Access to Recreation	Minimal	Minimal	Minimal	High	High	Both shared path options provide roughly equal improved access to views/recreation.
10 I-195 Access Points Connectivity	Low	Low	Moderate			Base conditions improve local street access; Alternatives improve connections to I-95.
11 Partial return on investment	\$21M	\$60M	\$151M	\$3.7M	\$3.7M	Assessment based on highway delay and recreational benefits of shared use path. Alt 3 adds \$18M for safety.

Following is an overview of the performance measures used in the evaluation:

- **Vehicle Miles Traveled (VMT)** – This measure is the product of the length of a roadway segment and the number of vehicles. The effect of each alternative on VMT considered

both the effect on I-195 as well as the three parallel causeways (79<sup>th</sup> Street, Venetian, and MacArthur) providing connections between Miami and the Mid-Beach and South-Beach areas of Miami Beach.

- **Average Peak Period Speed Increase (MPH)** – The average peak period speed increase compares the three build system alternatives to the No-Build Condition for 2045. The average speed considers the total system vehicle miles of travel divided by the total system vehicle hours of travel reflecting a volume-weighted average speed for both AM and PM peak hours combined.
- **Daily Vehicle-Hours of Delay** – The daily vehicle hours compares vehicle hours of travel for 2045 AM and PM peak hours to the hours of travel that would accrue if there were no delay (in other words, if all freeway travel occurred at a 60 MPH target speed).
- **Change in Safety Performance** – The Safety Performance (SP) is a measure of the predicted crash frequency estimated using the procedures of the Highway Safety Manual 1<sup>st</sup> Edition, Supplement 2014 (American Association of State Highway and Transportation Officials – AASHTO). The Safety Performance of an alternative is estimated using Safety Performance Functions (SPFs).
- **Job Accessibility – Auto** – Accessibility to jobs by highways measures how many jobs can be reached from a specified location within a given amount of travel time by car. The FDOT Source Book defines this measure more specifically as the number of jobs reached from a Census Block within 30-minutes assuming a departure time of 8:00 AM on a weekday.
- **Job Accessibility – Transit** – Accessibility to jobs by transit measures how many jobs can be reached from a specified location within a given amount of travel time by transit. For the I-195 study this measure was evaluated qualitatively, as no single Build Alternative would provide a substantive advantage over the Base condition, given that transit vehicles would be presumed to utilize Bus on Shoulder treatments, and operations for each alternative would be tailored to maximize Bus on Shoulder use, given the need for transit vehicles to weave into and out of the shoulder use where auto travel speeds are low.
- **Percent Heavily Congested VMT** – The FDOT Sourcebook defines heavily congested as roadways operating at below 45 MPH. The percent of heavily congested VMT was determined by multiplying the number of auto trips made on heavily congested segments.
- **Transit Travel Time** – The transit travel time measure focuses both the existing routes, MDT 110J and MDT 150 which both run between Miami International Airport and Miami Beach, as well as the potential for future routes to use the Julia Tuttle Causeway. MDT 110J operates on NW/NE 36<sup>th</sup> Street to the south of I-195 and MDT 150 operates on I-195. As noted in **Table 7-2**, none of the alternatives is found to significantly affect transit travel times because it is expected that Bus on Shoulder treatments will allow transit vehicle to bypass significant congestion in all cases.
- **Quality of Access to Recreation** – This is a qualitative measure of the access to points of interest along the Julia Tuttle Causeway as well as the value of the Causeway itself as a recreational resource.
- **I-195 System Connectivity** – The I-195 System Connectivity measure focuses on the degree to which connections are made between local ramps and freeway system destinations.
- **Return on Investment** – The benefits to be monetized include the anticipated reduction in crashes and travel time / delay associated with the Build Alternatives. These data are captured in the safety performance measure and travel time reductions.

## 8.0 REFINED BUILD CONCEPT REVIEW

In the I-195 CPS, the Refined Build Concept (RBC) is regarded as the final concept. The RBC comprises System Alternative 3, Shared Use Path Alternative A and all eight (8) Base Improvements identified in **Sections 7.1** and **7.2** of this report. As part of the development of the RBC, additional improvements were identified at ramp terminal intersections in order to improve their operations thereby facilitating better operations along the I-195 freeway segments to the extent possible. With all elements included, it is anticipated that the footprint of the Refined Build Concept will be sufficient to facilitate the required project screening using FDOT's Environmental Screening Tool in preparation for the upcoming PD&E phase. The RFB is the basis for the Environmental review summarized in **Section 9.0** of this report. A detailed documentation of the RFB is included in the *I-195 CPS, Concept Development & Evaluation Report, June 2020* in **Appendix "OCR-F"**.

This section of the I-195 CPS Overall Corridor Report summarizes the review that was undertaken for the RBC including identifying potential constraints in the horizontal alignment, identifying additional intersection improvements necessary to minimize impacts to mainline operations, estimating preliminary construction costs and identifying potential right-of-way impacts. The projected impact on traffic operations, safety as well as the potential benefits of the RBC were also reviewed.

### 8.1 Horizontal Constraints

Due to the limited right of way and given the developed properties adjacent to the I-195 study corridor, there are several locations where the improvements would not meet the design criteria. **Table 8-1** summarizes the Horizontal Constraints that were identified during the development of the RFB.

**Table 8-1: Refined Build Concept Horizontal Constraints**

Location	Design Element	Existing	Required	Recommended	Reason for not addressing
SR 112 from NW 12th Ave to NW 10th Ave - South Side	Inside Shoulder Width	8' Min.	12' Min.	Match Existing	Require additional widening which may impact On-Ramps from I-95 SB Express to I-195 WB, I-95 SB to I-195 WB and I-95 NB to I-195 WB
SR 112 from NW 12th Ave to NW 10th Ave - North Side	Inside Shoulder Width	8' Min.	12' Min.	Match Existing	Require additional widening which may impact Off-Ramps from I-195 EB to I-95 NB Express, to I-95 SB and to I-95 NB
I-195 EB at NE 1st Ct	Outside Shoulder Width	10' Min.	12' Min.	8'	Impacts to the building adjacent to I-195 EB at NE 1st Ct
I-195 EB, east of NE 36th St/ US-1 off-ramp	Outside Shoulder Width	10' Min.	12' Min.	6'	Impacts to the building adjacent to I-195 EB
Viaduct East of Biscayne Blvd	Horizontal Curve Length	N/A	900'	480'	Impacts to the building adjacent to I-195 EB

The *I-195 CPS, Concept Development & Evaluation Report, June 2020* in **Appendix "OCR-F"**, contains further details including exhibits illustrating the locations of these constraints.

## 8.2 Additional Intersection Improvements

Additional improvements were identified at the ramp terminal and adjacent intersections in order to improve their operations and minimize impacts from arterial congestion on mainline operations to the extent possible. **Table 8-2** summarizes the intersection improvements.

**Table 8-2: Additional Ramp Terminal & Adjacent Intersection Improvements**

Improvement/Intersection	Description of Improvements
1. NW 39th Street at NW 10th Avenue	Convert from stop controlled to signalized intersection subject to signal warrant study
2. I-195 WB On-Ramp at N Miami Avenue	The RBC modifies east leg of the intersection to accommodate a new off-bound ramp from westbound I-195. The east intersection leg would be converted from two-way to one-way traffic flow in the westbound direction between N Miami Avenue and N Miami Court approximately 200'. • Include additional southbound right turn lane. • Add exclusive left turn lane on the northbound approach. • New left turn lane on the westbound approach. • Modify the I-195 westbound on-ramp from a single lane to a two-lane entry ramp tapering to single lane before WB I-195. • Retime / Optimize signal timing
3. I-195 EB Off-Ramp to N Miami Avenue	The RBC introduces a new east leg at the intersection as the new on-ramp to eastbound I-195. • Add exclusive southbound left turn lane, • Add exclusive eastbound right turn lane, • Add new shared through-right lane on the northbound approach, • Retime / Optimize signal timing.
4. NE 36th Street at N Miami Avenue	<ul style="list-style-type: none"> <li>•Exclusive left turn lane on the eastbound approach</li> <li>•Through lane on the westbound approach</li> <li>•Modify northbound exclusive right turn lane to a shared through-right lane</li> <li>•Retime / Optimize signal timing</li> </ul>
5. NE 36th Street at NE 1st Avenue	Convert from stop controlled to signalized intersection subject to signal warrant study
6. NE 36th Street at Federal Hwy & NE 2nd Avenue	<p>Miami-Dade County is modifying intersection as follows:</p> <ul style="list-style-type: none"> <li>•Southeast bound: Only allow southbound rights and restrict all other movements.</li> <li>•Northbound: Change lane utilization to a shared left-through lane plus a shared through-right lane.</li> </ul> <p>Following additional improvements are proposed:</p> <ul style="list-style-type: none"> <li>•Exclusive right-turn lane on the eastbound and northbound approaches</li> <li>•Modify the lane utilization on the northbound approach to an exclusive left-turn lane, a through lane and an exclusive right-turn lane</li> <li>•Modify the lane utilization on the southbound approach from L-T-R to L-T-T+R</li> <li>•Retime / Optimize signal timing</li> </ul>
7. Biscayne Boulevard at NE 36th Street	<ul style="list-style-type: none"> <li>•Exclusive right turn lane on the southbound approach</li> <li>•Exclusive left turn lane on the westbound approach</li> <li>•Modify the lane utilization on the westbound approach to include two exclusive left turn lanes, a shared through-right lane and an exclusive right turn lane</li> <li>•Retime / Optimize signal timing</li> </ul>
8. Biscayne Boulevard at NE 38th Street	<ul style="list-style-type: none"> <li>•Implement a two-lane Displaced left turn concept on southbound approach.</li> <li>•Add exclusive left turn lane on the westbound approach</li> <li>•Add exclusive right-turn lane on northbound approach</li> <li>•Retime / Optimize signal timing</li> <li>•Westbound approach: two exclusive left turn lanes, a shared through-right lane and an exclusive right turn lane</li> </ul>
9. Alton Road at 43rd Street	<ul style="list-style-type: none"> <li>•Additional northbound left turn lane into the hospital to create three (3) lanes.</li> <li>•Modify lane utilization on southbound approach from an exclusive right-turn to a shared through-right.</li> <li>•Increase the storage lane on the northbound left turn lanes to 400 feet.</li> <li>•Retime / Optimize signal timing</li> </ul>
10. Alton Road at Arthur Godfrey Road	<ul style="list-style-type: none"> <li>•Add additional lane coming from I-195 eastbound as part of Base Improvement # 6 which will become an exclusive right-turn lane,</li> <li>•Modify southbound right turn signal operation from permitted to permitted overlap,</li> <li>•Retime / Optimize signal timing.</li> </ul>

The *I-195 CPS, Concept Development & Evaluation Report, June 2020* in **Appendix “OCR-F”**, contains further details including exhibits illustrating these improvements.

### 8.3 Estimated Construction Costs

Construction cost estimates were developed using the FDOT Long Range Estimate (LRE) cost estimating system. The estimates include major bridge construction for ramp flyovers from System to System connecting I-95 express lanes with I-195. The costs for the additional intersection improvements were estimated using FDOT cost per mile model. **Table 8-3** summarizes the construction cost estimate for each segment analyzed. The costs are preliminary and will be refined during the PD&E phase.

**Table 8-3: Construction Cost Estimates**

Improvement Type	Improvement/Intersection	Construction Cost Estimate
<b>System</b>	Alternative 3 with Viaduct	\$ 430,000,000
<b>Shared Use Path</b>	Alternative A (Separate Bridge)	\$ 41,600,000
<b>Base Improvements</b>	1. SR 112 WB widening to provide 2 lanes	\$ 550,000
	2. SR 112 / I-195 EB widening to provide 2 lanes	\$ 3,800,000
	3. Partial Signalization at I-195 EB Off-Ramp to NE 36th Street	\$ 1,100,000
	4. I-195 EB On-Ramp from NE 36th Street parallel entrance widening	\$ 450,000
	5. I-195 WB to Biscayne Blvd off-ramp – widen to 2 lanes	\$ 3,600,000
	6. I-195 EB widening to Alton Road Ramp	\$ 5,400,000
	7. New traffic signal at Intersection of NB and SB Alton Road	\$ 350,000
	8. I-195 WB CD from Alton Road	\$ 12,900,000
<b>Other Intersection Improvements</b>	1. NW 39th Street at NW 10th Avenue	\$ 300,000
	2. I-195 WB On-Ramp at N Miami Avenue	\$ 5,000,000
	3. I-195 EB Off-Ramp to N Miami Avenue	\$ 1,200,000
	4. NE 36th Street at N Miami Avenue	\$ 1,100,000
	5. NE 36th Street at NE 1st Avenue	\$ 300,000
	6. NE 36th Street at Federal Hwy & NE 2nd Avenue	\$ 1,000,000
	7. Biscayne Boulevard at NE 36th Street	\$ 1,100,000
	8. Biscayne Boulevard at NE 38th Street	\$ 4,200,000
	9. Alton Road at 43rd Street	\$ 900,000
	10. Alton Road at Arthur Godfrey Road	\$ 450,000
<b>Total Construction Costs</b>		<b>\$ 515,300,000</b>

Further details regarding the estimation of construction costs are contained within the appendix of the *I-195 CPS, Concept Development & Evaluation Report, June 2020* which is included in **Appendix “OCR-F”** of this report.



## 8.4 Potential Right of Way Impacts

Table 8-4 summarizes the potential ROW impacts from the proposed improvements.

**Table 8-4: Summary of Potential Right-Of-Way Impacts**

Improvement Type	Improvement/Intersection	Potential Right-of-Way (ROW) Impact
<b>System</b>	Alternative 3 with Viaduct	Approximately 25,000 square feet
<b>Shared Use Path</b>	Alternative A (Separate Bridge)	No ROW impacts
<b>Base Improvements</b>	1. SR 112 WB widening to provide 2 lanes	No ROW impacts anticipated
	2. SR 112 / I-195 EB widening to provide 2 lanes	
	3. Partial Signalization at I-195 EB Off-Ramp to NE 36th Street	
	4. I-195 EB On-Ramp from NE 36th Street parallel entrance widening	
	5. I-195 WB to Biscayne Blvd off-ramp – widen to 2 lanes	
	6. I-195 EB widening to Alton Road Ramp	
	7. New traffic signal at Intersection of NB and SB Alton Road	
	8. I-195 WB CD from Alton Road	
<b>Other Intersection Improvements</b>	1. NW 39th Street at NW 10th Avenue	Minimal to no ROW impacts (Potential need for corner clips for signal mast arms)
	2. I-195 WB On-Ramp at N Miami Avenue	Potential for high ROW impact on the NW, NE and SE corners, potential need to widen bridge along I-195
	3. I-195 EB Off-Ramp to N Miami Avenue	Potential for low ROW impact to SW corner, potential need to widen bridge along I-195
	4. NE 36th Street at N Miami Avenue	Potential for medium ROW impacts to SW and SE corners
	5. NE 36th Street at NE 1st Avenue	Minimal to no ROW impacts (Potential need for corner clips for signal mast arms)
	6. NE 36th Street at Federal Hwy & NE 2nd Avenue	Low ROW impacts to SE and SW corners
	7. Biscayne Boulevard at NE 36th Street	Potential for medium ROW impacts to NE corner and Low impact to NW corner
	8. Biscayne Boulevard at NE 38th Street	Potential for high ROW impact to SE corner
	9. Alton Road at 43rd Street	Potentially low ROW impact to SW corner
	10. Alton Road at Arthur Godfrey Road	Potentially low ROW impact to SW corner

## 8.5 Operational Analysis

An operational analysis of future year (2045) conditions was performed for the Refined Build Concept. Operational analyses of ramp-terminals and adjacent intersections within and surrounding the study interchanges, were performed using Synchro (Version 10.3) software, which applies methodologies of the 2000/2010/6<sup>th</sup> Editions of the Highway Capacity Manual. For the I-195/SR 112 mainline segments and ramp areas, a microsimulation analysis using VISSIM (Version 10.00-06) software was performed to evaluate the operations of these facilities.

### 8.5.1 Ramp Terminal and Intersection Operations

The projected traffic operations at the ramp terminals and intersections resulting from the anticipated future build conditions, were compared to the no-build operations. Comparisons of the projected overall intersection operations between Build and No-Build conditions are summarized in **Table 8-5** on the following page. Additional details are contained in the *I-195 CPS, Concept Development & Evaluation Report, June 2020* which is included in **Appendix "OCR-F"** of this report.

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**Table 8-5: Refined Build vs No-Build Intersection Operational Analysis Summary**

Improvement Type	Intersection	Peak Period	No-Build		Build		Δ Change (Build vs No-Build)		Comment
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (%) Change	LOS	
Base Improvements	3. Partial Signalization at I-195 EB Off-Ramp to NE 36th Street	AM	-	-	6.1	A	-	-	The existing off-ramp configuration is a free flowing movement
		PM	-	-	8.3	A	-	-	
	7. New traffic signal at Intersection of NB and SB Alton Road	AM	7.9	A	14.4	B	82%	Lower	The overall intersection delay in the No-Build shows lower delay because NB is free-flowing
PM		70.8	F	51.0	D	-28%	Better		
Other Intersection Improvements	1. NW 39th Street at NW 10th Avenue	AM	34.6	D	10.7	B	-69%	Better	The overall intersection operations get better with the improvements
		PM	48.2	E	14.4	B	-70%	Better	
	2. I-195 WB On-Ramp at N Miami Avenue	AM	112.2	F	170.4	F	52%	Same	The overall intersection operations got worse because of the new off-ramp from I-195 WB
		PM	155.8	F	197.3	F	27%	Same	
	3. I-195 EB Off-Ramp to N Miami Avenue	AM	53.3	D	54.6	D	2%	Same	The overall intersection operations got worse because of the new on-ramp from N Miami Ave
		PM	58.1	E	69.5	E	20%	Same	
	4. NE 36th Street at N Miami Avenue	AM	125.1	F	66.0	E	-47%	Better	The overall intersection operations get better with the improvements
		PM	142.6	F	78.5	E	-45%	Better	
	5. NE 36th Street at NE 1st Avenue	AM	-	F	20.3	C	-	Better	Synchro reports an error for the stop-controlled intersection in the No-Build conditions
		PM	-	F	23.9	C	-	Better	
6. NE 36th Street at Federal Hwy & NE 2nd Avenue	AM	360.9	F	65.6	E	-82%	Better	The overall intersection operations get better with the improvements	
	PM	378.8	F	90.5	F	-76%	Same		
7. Biscayne Boulevard at NE 36th Street	AM	441.1	F	181.0	F	-59%	Same	The overall intersection operations get better with the improvements	
	PM	263.5	F	103.5	F	-61%	Same		
8. Biscayne Boulevard at NE 38th Street	AM	219.5	F	85.1	F	-61%	Same	The overall intersection operations get better with the improvements	
	PM	142.4	F	37.7	D	-74%	Better		
9. Alton Road at 43rd Street	AM	135.5	F	69.4	E	-49%	Better	The overall intersection operations get better with the improvements	
	PM	91.2	F	56.4	E	-38%	Better		
10. Alton Road at Arthur Godfrey Road	AM	96.7	F	78.0	E	-19%	Better	The overall intersection operations get better with the improvements	
	PM	48.4	D	47.5	D	-2%	Same		

### 8.5.2 Mainline Operations

An operational analysis was performed using the VISSIM microsimulation tool to assess the projected change in operations between No-Build conditions and the Refined Build Concept. Unlike the intersection analysis summarized in Section **8.5.1** of this report where the measures of effectiveness (MOEs) were reported for a single hour for each of the AM and PM peak periods, the VISSIM microsimulation analysis reported MOEs for 4 hours within the AM and PM peak periods respectively. The changes in networkwide statistics to evaluate the relative projected performances between the two alternatives. These statistics include average speeds, total delay time, latent delay time, latent demand, number of stops, number of vehicles in the network and that left the network. A comparison of these statistics is summarized in **Table 8-6** on the following pages for the AM and PM peak periods. As can be seen from the results in Table 8-6 the refined build concept is projected to perform significantly better than the no-build by any of the measures reported.

The results from the analysis are documented in the *I-195 CPS, Future Build Traffic Analysis Report – Microsimulation Analysis, June 2020* in **Appendix “OCR-E”** of this report.

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**Table 8-6: Refined Build vs No-Build Networkwide Mainline Operational Analysis Summary**

Peak Hour	Parameter	No-Build				Refined Build				Difference				Percentage of Difference			
		Hour 1	Hour 2	Hour 3	Hour 4	Hour 1	Hour 2	Hour 3	Hour 4	Hour 1	Hour 2	Hour 3	Hour 4	Hour 1	Hour 2	Hour 3	Hour 4
AM Peak	Average speed [mph]	24	21	20	20	36	30	26	25	12	9	6	5	49%	42%	28%	26%
	Total delay time [h]	2,745	3,589	3,838	3,845	1,107	2,112	2,885	2,884	-1,638	-1,477	-953	-961	-60%	-41%	-25%	-25%
	Latent delay time [h]	5,260	20,330	45,325	69,985	1,844	7,016	17,054	27,176	-3,416	-13,314	-28,271	-42,809	-65%	-65%	-62%	-61%
	Latent demand [veh]	9,506	32,310	58,754	81,341	3,302	11,446	22,956	31,433	-6,204	-20,864	-35,798	-49,908	-65%	-65%	-61%	-61%
	Number of Stops	294,077	362,252	352,847	323,991	91,537	200,470	311,120	307,644	-202,540	-161,782	-41,727	-16,347	-69%	-45%	-12%	-5%
	Number of vehicles in the network	5,231	6,194	6,221	6,165	3,550	5,429	5,710	5,364	-1,681	-765	-511	-801	-32%	-12%	-8%	-13%
	Number of vehicles that have left the network	52,912	53,600	51,326	47,565	54,498	62,493	61,135	57,584	1,586	8,893	9,809	10,019	3%	17%	19%	21%
PM Peak	Average speed [mph]	18	17	17	17	27	25	24	24	8	8	8	8	47%	47%	45%	45%
	Total delay time [h]	4,375	4,725	4,785	4,812	2,652	2,967	3,058	3,070	-1,723	-1,758	-1,727	-1,742	-39%	-37%	-36%	-36%
	Latent delay time [h]	15,340	40,321	66,354	91,928	7,722	21,274	37,063	53,745	-7,618	-19,047	-29,291	-38,182	-50%	-47%	-44%	-42%
	Latent demand [veh]	27,390	53,516	79,017	104,825	13,956	29,003	45,232	62,626	-13,434	-24,513	-33,784	-42,199	-49%	-46%	-43%	-40%
	Number of Stops	470,433	465,100	463,597	465,947	286,885	271,502	246,693	240,998	-183,548	-193,598	-216,904	-224,949	-39%	-42%	-47%	-48%
	Number of vehicles in the network	6,872	7,007	7,022	6,944	5,558	5,711	5,647	5,662	-1,314	-1,296	-1,375	-1,282	-19%	-18%	-20%	-18%
	Number of vehicles that have left the network	52,683	49,554	48,457	48,302	59,840	56,391	53,687	52,500	7,157	6,837	5,230	4,198	14%	14%	11%	9%

### 8.5.3 Operational Summary

It should be noted that the results from the VISSIM models summarized in **Section 8.5.2** for the Refined Build and No-Build conditions, reflect operations based on a disconnected arterial network comprising ramp terminals and adjacent intersections surrounding the study interchanges. This modeling approach was taken in order to reasonably capture the effect of the build alternative on freeway operations.

However, as noted in **Section 8.5.1**, notwithstanding the improvements that have been identified for the intersections as summarized in **Section 8.2**, heavy delays at the ramp terminal intersections would still persist which are likely to severely impact upstream mainline conditions along I-195. This suggests that additional intersection improvements beyond what has been presented in this report (particularly at the N Miami Avenue Ramp Terminals and adjacent intersections) will need to be evaluated as part of a future PD&E project phase.

## 8.6 Safety Performance Evaluation

The assessment of the projected change in safety performance utilized the Interchange Safety Analysis Tool Enhanced (ISATe) developed by the Federal Highway Administration (FHWA) to implement analysis procedures described in the Highway Safety Manual (HSM). This analysis was performed for the Refined Build Concept and the No-Build Alternative. The estimated change in safety performance in the number of crashes in the 2045 horizon year within the project limits goes from 199.3 projected crashes in the No-Build Alternative to 173.6 projected crashes with the refined build alternative, a reduction of 25.7 crashes. More details of this analysis is contained in the companion *I-195 CPS, Future Safety Analysis Report, June 2020* which is included in **Appendix “OCR-G”** of this report.

## 9.0 ENVIRONMENTAL REVIEW

The Department uses the Preliminary Environmental Discussion (PED) during the ETDM process to inform the Environmental Technical Advisory Team (ETAT) and other agencies, as appropriate, of the District's initial understanding of the natural, physical, cultural, and community issues/resources in a project study area. The PED includes the identification of environmental issues/resources, a discussion of potential involvement, and the anticipated technical reports and permits.

The project's PED will be finalized by the Department for the ETDM screening based on the environmental analysis that is described within this section.

The environmental analysis performed for this PD&E Planning Study identifies existing environmental features of potential concern within the project study area. The project was evaluated based on a desktop and field review of the project study area using Geographic Information Systems (GIS) and resource including:

- GIS review of social, cultural, natural and physical environmental issues using the Efficient Transportation Decision Making (ETDM) Environmental Screening Tool (EST)
- Review of aerials using GIS, ETDM and Google Earth Pro.
- National Oceanic and Atmospheric Administration (NOAA) Essential Fish Habitat (EFH) Mapper
- Environmental Protection Agency's Environmental Justice Tool (EJSCREEN)
- Miami-Dade County Regulatory and Economic Resources (RER) Environmental Services Online Records System
- Field Review on April 15, 2020

The following subsections review several environmental factors that will need to be considered and further evaluated in the Projects PD&E phase. **Exhibit 9-1** on the following page graphically depicts the community resources and key environmental features discussed in the following subsections. The PED that has been prepared to begin the ETDM screening for the project, is included in **Appendix "OCR-H"** of this report.

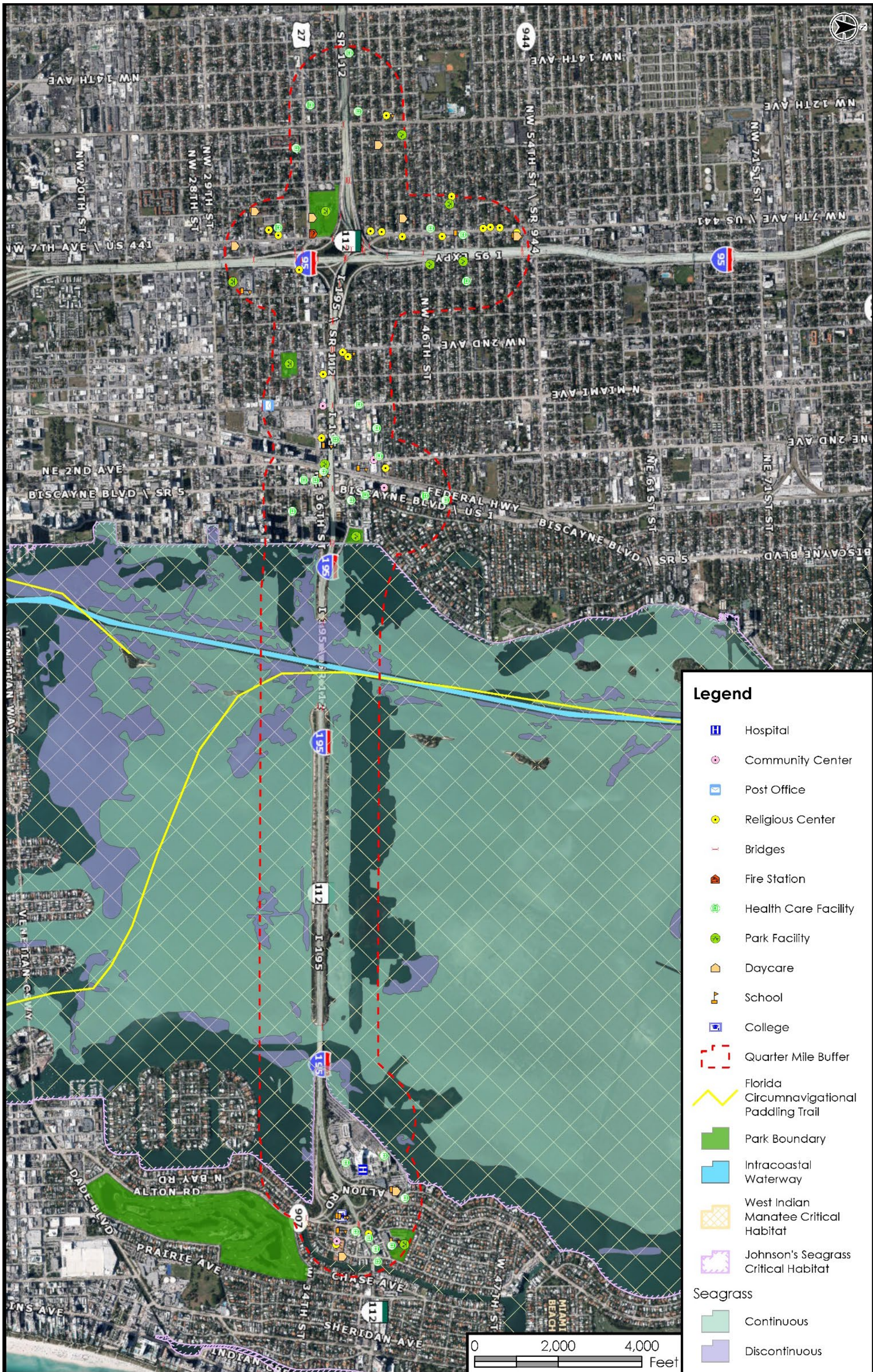


Exhibit 9-1: Community Resources



## 9.1 Social and Economic

The sociocultural effects study area includes communities immediately surrounding the project. The standard sociocultural effects buffer of 1,320 feet was used to identify the community characteristics and demographics of the area.

### 9.1.1 Social

Demographic information for the study area was obtained from the 2018 American Community Survey (ACS). Demographic data for Miami-Dade County is 68% Hispanic, 18% Black or African American and 14% White. According the ACS, the project study area is 50% Hispanic, 34% Black or African American and 16% White. The median household income is lower (\$42,917) than Miami-Dade County (\$48,982) and the state of Florida averages (\$50,857). The median age for the population within the study area is lower (37) than Miami-Dade County (39), and the state of Florida (40). Approximately 7% of the population is age 65 and over in the project study area. The minority population in the study area is 85% which is comparable to Miami-Dade County (86%). Approximately 15% of the population speaks English not well or not at all. Public involvement for this project must comply with Title VI of the Civil Rights Act and Executive Order 13166 "Improving Access to Services for Persons with Limited English Proficiency" and Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations". A Sociocultural Effects Evaluation (SCE) will be included during the PD&E Study phase.

### 9.1.2 Land Use Changes

The project is in the developed urban area of the City of Miami and the City of Miami Beach, in Miami-Dade County. The existing land use in the surrounding area is primarily residential, public/semi-public, retail/office and vacant land uses. Community services identified within the project area include a police and fire station, schools, religious and healthcare facilities, community centers, government centers and parks/recreational facilities. There are numerous parks/recreational facilities located within a ¼-mile buffer of the project area; however, there are three (3) parks, Albert Pallot Park, Moore Park and Woodson Mini Park, located immediately adjacent to the project study area. It should be noted that Martell Park and Stearns Park are stormwater detention areas owned by FDOT. While no improvements are proposed within the parks, impacts from the proposed viaduct from the system improvements may impact park viewsheds. Further analysis on potential impacts to community services shall occur during the PD&E Study phase.

### 9.1.3 Mobility

The project alternative includes providing express lane connections via a new grade separated viaduct for I-95 northbound and southbound to and from Miami Beach. In addition, new shared use path bridges are proposed from Biscayne Boulevard to Miami Beach which will provide bicycle/pedestrian connectivity between the Cities of Miami and Miami Beach. The project alternative will improve travel between Miami International Airport (MIA) and Miami Beach, and will result in improved transit and bicycle/pedestrian mobility within the area. Overall, the project alternative intends to provide multimodal improvements within the corridor to address future mobility, transportation demand and safety issues, as well as improved access for multimodal

users. Further analysis, along with public outreach on potential impacts to the community shall be included in the PD&E Study phase.

#### 9.1.4 Aesthetic Effects

The proposed new grade separated viaduct has the potential for controversy since this may impact aesthetics of the project study area. The proposed base improvements and shared use path bridges are not anticipated to impact aesthetics. Further analysis on impacts to viewsheds and aesthetics shall occur during the PD&E Study phase.

#### 9.1.5 Relocation Potential

Right-of-way (ROW) acquisition may be required at eleven (11) residential and retail/office properties to accommodate the eastbound and westbound alignment on I-195 between NW 2nd Avenue and NE 2nd Avenue from the proposed system improvements. Alternative 1 anticipates full acquisition of two (2) residential properties and two (2) commercial properties. During the PD&E Study phase, impacts to properties will be further evaluated. Should the Department identify any relocations during the PD&E Study phase, a Conceptual Stage Relocation Plan (CSRP) will be completed.

## **9.2 Cultural Resources**

### 9.2.1 Section 106 of the National Historic Preservation Act

A search of the Florida Master Site File (FMSF) GIS identified twenty (20) previously conducted surveys and one hundred and seventy-one (171) previously recorded historic resources within the study area. This included one hundred and sixty-four (164) structures, six (6) resource groups, and one (1) bridge. Seven (7) of the structures and four (4) of the resource groups have been evaluated by the State Historic Preservation Office (SHPO) as National Register-eligible. The Bay Vista Park Historic District, 8DA6692, is north of I-195 and east of I-95. The FEC Railway, 8DA10107, traverses under I-195 to the west of Biscayne Boulevard. The Nautilus Historic District, 8DA14723, and the 41<sup>st</sup> Street Historic District, 8DA15151, are adjacent to the eastern terminus of the study area. Of the seven (7) structures previously determined eligible, five (5) are contributing to the Bay Vista Park Historic District, 8DA6692: the Central Nazarene Church/422 NW 40<sup>th</sup> Street, 8DA6684; 420 NW 40<sup>th</sup> Street, 8DA6685; 410 NW 40<sup>th</sup> Street, 8DA6686; 555 NW 40<sup>th</sup> Street, 8DA6690; and, +/- 575 NW 41<sup>st</sup> Street, 8DA6691. The remaining two (2) eligible structures are located outside of the Bay Vista Park Historic District. The Miami-Dade County Water and Sewer Department/3625 NW 10<sup>th</sup> Avenue, 8DA6197, is located to the southwest of the I-195/I-95 interchange. The Dale Miller Residence/3838 NE 6<sup>th</sup> Avenue, 8DA6683 is to the north of I-195 and west of Biscayne Bay. A search of FGDG GIS data and the FDOT bridge information (FDOT Office of Maintenance 2020) also identified thirty-three (33) potential historic bridges within the study area that are not currently recorded in the FMSF. While there are several interstate bridges within the study area, they are each individually exempt from recordation and Section 106 evaluation of effects under the 2005 ACHP *Exemption Regarding Historic Preservation Review Process for Effects to the Interstate Highway System*. Additionally, there are numerous historic-aged structures and properties documented throughout the project area. No archaeological sites are documented within the project area. The project alternative has the potential to impact historic resources within the area of potential effect (APE). A Cultural Resource Assessment Survey (CRAS) evaluation and coordination with the City of Miami Beach Historic Preservation Board,

the Office of Environmental Management (OEM) and the SHPO will be required during the PD&E phase to determine the effects associated with the project alternative. A more detailed report is included in in **Appendix “OCR-H”** of this report.

### 9.2.2 Section 4(f) of the USDOT Act of 1966

An evaluation of Section 4(f) regulations governing the use of publicly owned parks, recreation areas, wildlife and waterfowl refuges, and public or private historic sites was done per 23 Code of Federal Regulations (CFR) 774. There are numerous parks and recreation areas located within a ¼-mile project buffer; however, three (3) parks are located immediately adjacent to the project - Woodson Mini Park, Moore Park and Albert Pallot Park. In addition, the Florida Circumnavigational Paddling Trail crosses the Julia Tuttle Causeway. Section 4(f) also applies to any other resources which may be found eligible for the National Register of Historic Places (NRHP), either individually or as a contributing resource. Additional resources known to exist within the expected APE are the Nautilus Historic District, DA14723; 41<sup>st</sup> Street Historic District, DA15151; Bay Vista Park Historic District, DA06692; and, historic structures, the Miami-Dade County Water and Sewer Department/3625 NW 10<sup>th</sup> Avenue, 8DA6197, and the Dale Miller Residence/3838 NE 6<sup>th</sup> Avenue, 8DA6683. Additionally, the F.E.C Railway is a NR-eligible SHPO Resource Group; however, impacts to the railway are not anticipated as a result of the proposed improvements from the project alternative. Any work proposed within or adjacent to Section 4(f) resources will require evaluation. Section 4(f) applicability and impacts will be further evaluated during the PD&E Study phase.

## **9.3 Natural Resources**

### 9.3.1 Protected Species and Habitat

Based on a review of the ETDM EST, the project is within the Critical Habitat for the federally-threatened Johnson’s seagrass (*Halophila johnsonii*) and West Indian manatee (*Trichechus manatus*). The project is also within the consultation areas for the piping plover (*Charadrius melodus*), Everglade snail kite (*Rostrhamus sociabilis plumbeus*), American crocodile (*Crocodylus acutus*), Florida bonneted bat (*Eumops floridanus*), and within the Core Foraging Area of a wood stork (*Mycteria americana*) colony. The project is also within the range of sea turtles and smalltooth sawfish (*Pristis pectinata*).

A benthic survey shall be conducted during the PD&E Study phase to document seagrasses and other benthic communities in the project area and to guide avoidance and minimization strategies. A Florida bonneted bat survey will also be required to identify any potential roosting habitat (tree cavities and bridge structures) or evidence or utilization by the species.

Any in-water work and/or bridge construction and widening may impact benthic resources, including Johnson’s seagrass. Impacts to protected species and Critical Habitat will be further evaluated through a Natural Resource Evaluation (NRE) which will be prepared during the PD&E Study phase. If any impacts are unavoidable, a Conceptual Mitigation Plan will be developed. Coordination with the United States Fish and Wildlife Service (USFWS), the Florida Fish and Wildlife Commission (FWC), and National Marine Fisheries Service (NMFS) shall occur for impacts to protected species, as warranted by the effect determinations, in accordance with Section 7 of the Endangered Species Act.

### 9.3.2 Wetlands and Other Surface Waters

Based on a review of the ETDM EST, the waters surrounding the project area are designated as estuarine and marine deep water, and palustrine (freshwater pond) habitats within the USFWS National Wetland Inventory (NWI). Based on a field review on April 15, 2020, mangroves were observed on the south side of Miami Beach and along the south side of the Julia Tuttle Causeway where mangrove planters are present. Additionally, there are two (2) retention ponds on the southwest and northeast corners of the I-95/I-195 interchange. Alternative 1 is not anticipated to impact mangroves; however, the new grade separated viaduct may impact the two (2) retention ponds at the I-95/I-195 interchange. Impacts to mangroves and wetlands will require coordination and permits from federal, state, and local agencies. Wetland and mangrove impacts will be further evaluated through an NRE which will be prepared during the PD&E Study phase. If any impacts are unavoidable, a Conceptual Mitigation Plan will be developed during the PD&E Study phase.

### 9.3.3 Essential Fish Habitat (EFH)

Based on a review of the NOAA EFH Mapper tool, the project is within EFH for several managed species with Fishery Management Plans (FMP) from the South Atlantic Fishery Management Council (SAFMC). Species include Snapper Grouper (*Serranidae* spp.), Spiny Lobster (*Palinurus* spp.), Black Tip Shark (*Carcharhinus limbatus*), Bull Shark (*Carcharhinus leucas*), Sandbar Shark (*Carcharhinus plumbeus*), Golden crab, Shrimp, Red Drum (*Sciaenops ocellatus*), and corals (Anthozoans). Habitat Areas of Special Concern (HAPCs) are defined as subsets of EFH that provide critically important ecological functions or are especially vulnerable to degradation. HAPCs present within the Julia Tuttle Causeway includes Biscayne Bay, coral, coral reefs and live/hardbottom and seagrass habitat. Based on the field review, mangroves are present on the fill islands on the Causeway, and seagrass is present along the fill islands along the Causeway. During the PD&E Study phase, a benthic survey will be required to document seagrass and other benthic communities in the project area, and guide avoidance and minimization strategies. Impacts to EFH will be further evaluated through an NRE. Any in-water work and bridge widening/construction may result in additional impacts to EFH. If any impacts are unavoidable, a Conceptual Mitigation Plan shall be developed during PD&E Study phase. Coordination with the NMFS will be required in accordance with the requirements set forth in the Magnuson-Stevens Fishery Conservation Management Act.

### 9.3.4 Floodplains

Based upon a review of the ETDM EST, the project lies within Zone AE and VE of FEMA's 100-year floodplain, and within the 500-year floodplain. Based on the project alternative, the project is not anticipated to: 1) affect flood heights or base floodplain limits; 2) result in increased or new adverse environmental impacts; 3) increase flood risks or damage; or, 4) significantly change the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, this project is not anticipated to encroach upon base floodplain, as defined in the PD&E Manual, but potential impacts will be further evaluated during the PD&E Study phase.

### 9.3.5 Water Quality and Quantity

Based on a review of the ETDM EST, the project is within the Biscayne Bay Aquatic Preserve (BBAP), which is designated as Outstanding Florida Waters (OFW). Also, there are two (2) stormwater retention area's present within the I-195/I-95 interchange. Alternative 1 has the potential to impact water quality within the BBAP through in-water work activities associated with bridge construction and widening, and stormwater discharge during and post-construction. The project is within the jurisdiction of the South Florida Water Management District (SFWMD). SFWMD requires that all projects meet state water quality criteria as set forth in Chapter 62-302, Florida Administrative Code (FAC). Water quality criteria for this project will be stringent due to the OFW designation.

In addition, the existing drainage features in the project area may be altered as a result of the improvements. Permitting and drainage will be further evaluated during the PD&E Study phase. Best Management Practices (BMPs) must be implemented during construction to minimize impacts to water quality. Impacts to water quality, aquatic preserves and OFW's will be further evaluated in the NRE that will be prepared during the PD&E Study phase.

### 9.3.6 Aquatic Preserves and Outstanding Florida Waters

The proposed shared use path bridges and Julia Tuttle Causeway bridge widening is within the Biscayne Bay Aquatic Preserve, which is designated as an Outstanding Florida Waters (OFW) resource under Rules 18-18 and 62-302.700(9), Florida Administrative Code. Coordination with the Florida Department of Environmental Protection (FDEP) will be required to determine whether the project will or will not have an impact on the Biscayne Bay Aquatic Preserve.

## **9.4 Physical Resources**

### 9.4.1 Highway Traffic Noise

A review of the project study area and RBC concludes that the project is a capacity improvement project, which will requires a noise analysis in accordance with 23 CFR 772 Procedures for Abatement of Highway Traffic Noise and Construction Noise and Part 2, Chapter 18 – Highway Traffic Noise of the FDOT PD&E Manual.

Noise sensitive sites near the project primarily consist of private homes and multi-family residential high-rises, parks and retail/office land use. Noise levels are anticipated to increase as a result of the new grade separated viaduct proposed as part of the system improvements along I-95 and I-195 and touches down on the Julia Tuttle Causeway.

The FHWA Traffic Noise Model (TNM) Version 2.5 (February 2004) was used to estimate future traffic noise levels. Conceptual phase noise models of the project were developed to evaluate potential for noise impacts and to provide a planning phase level assessment of potential noise abatement. These models were developed using a six-lane mainline expressway and a grade-separated four-lane viaduct over the mainline. Level-of-Service C traffic capacity was taken from the FDOT's 2020 Generalized Peak Hour Directional Volumes for Florida's Urbanized Areas tables.

The 66.0 dB(A) noise level contour is estimated to extend as far as 1,085 feet from the near edge-of-pavement of the travel lanes of conceptualized roadway typical section. The 71.0 dB(A) contour is expected to extend as far as 365 feet. A GIS review identified more than 1,050 noise sensitive sites (primarily residences) that have the potential be impacted by traffic noise due to the project that are not already protected by existing noise barriers. Thus, based on the methodologies used to estimate the noise impact contours, the planned improvements are expected to generate noise impacts at many noise sensitive sites within the project corridor. The total length of new noise barriers that may be required was developed through a GIS analysis. The potential exists for up to approximately 7,250 linear-feet of 8 to 14-foot tall concrete shoulder and structure-mounted noise barriers to be required along the outside edges of the project in areas that do not already have adjacent noise barrier. Based on the FDOT's current statewide average noise barrier unit cost (\$30 per square-foot), the planning-level estimate of the cost of the noise abatement for this project ranges from approximately \$1,740,000 for all 8-foot tall noise barriers to \$3,045,000 for all 14-foot tall noise barriers.

A more detailed analysis of potential traffic noise impacts will be conducted during the PD&E Phase in order to more precisely identify the number of impacted sites. In accordance with FHWA requirements, noise abatement will be considered for all noise sensitive sites where design-year traffic noise levels are predicted to approach or exceed noise abatement criteria.

#### 9.4.2 Air Quality

The project is located in an area which is designated attainment for all of the National Ambient Air Quality Standards under the criteria provided in the Clean Air Act. Therefore, the Clean Air Act conformity requirements do not apply to the project. The project area features residential, public/semi-public and retail/office land use. Air quality impacts are not expected to occur as a result of the project. However, the project should be evaluated for potential air quality impacts during the PD&E Study phase and documented in an Air Quality Technical Memorandum in accordance with the FDOT PD&E Manual.

#### 9.4.3 Contamination

Based on a desktop review, there are several known contaminated sites within a 200-foot radius of the project study area. There are ten (10) biomedical waste sites, two (2) brownfield sites, one (1) DERM contaminated site, three (3) hazardous waste facilities, five (5) onsite sewage sites, two (2) petroleum sites, seven (7) storage tank contamination monitoring sites, one (1) Super Act Risk sources, one (1) USEPA Regulated Air Emissions Facilities (ICIS-AIR) and six (6) USEPA Resource Conservation and Recovery Act (RCRA) regulated facilities. Contamination involvement is anticipated for this project, and a Contamination Screening Evaluation Report (CSER) should be prepared during the PD&E Study phase to comprehensively identify potential sources of contamination, verify potential contamination involvement and document findings. Additionally, an asbestos survey should be conducted by the FDOT Maintenance Office due to the majority of the project occurring on bridges.

#### 9.4.4 Navigation

The project crosses the Atlantic Intracoastal Waterway (ICW), a navigable waterway, at the western bridge on the Julia Tuttle Causeway. The proposed bridge widening and new shared

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use path bridges must match existing vertical and horizontal clearances. Coordination with the United States Coast Guard (USCG) will be required.

## **9.5 Permits**

Based on the proposed alternative, a Section 404 Dredge and Fill Permit from the United States Army Corps of Engineers (USACE), Bridge Permit from the USCG and an Environmental Resource Permit (ERP) from the SFWMD are anticipated to be required. Permits from the Miami-Dade County Department of Regulatory and Economic Resources, Division of Environmental Resources Management (DERM) will be required, including a Class 1 Coastal Construction and Class II Drainage Permits.

## **9.6 Potential Class of Action**

Based on the proposed alternative, the project qualifies for screening through the Efficient Transportation Decision Making (ETDM) process. The Class of Action will be determined following the ETDM Screening. For the purposes of this study, the Class of Action is assumed to be a Type II Categorical Exclusion for the proposed full improvements. It should be noted that some of the base and intersection improvements have independent utility and may qualify as a Type I Categorical Exclusion, hence they may be advanced to design providing short-term congestion relief.

## 10.0 IMPROVEMENT PHASING & PRIORITIZATION

As noted in **Section 8.0**, the Refined Build Concept, comprises various elements including System Alternative 3, Shared Use Path Alternative A, all eight (8) Base Improvements as well as additional ramp terminal and intersection improvements identified to minimize impacts to mainline operations to the extent possible. While the review undertaken of the RBC up to this point may imply a common time frame for the further development and implementation of the various elements, it is instructive to consider opportunities which might exist to advance certain elements as different segments ahead of the mainline improvements to the extent their advancement would not interfere with the implementation of major elements of the RBC or result in throwaway. For the purpose of this review, each element of the RBC was examined to determine the general implementation time frame as well as required phases for their implementation.

### 10.1 Time Frames

The implementation frames generally considered priority bands breakdown included in the Miami-Dade TPO 2045 LRTP to establish the windows in time for which a project could be funded for and begin construction (assuming all prior development phases were completed). The following time frames were established:

- Short-Term: Begin Construction  $\leq$  5 years
- Mid-Term: 5 years  $<$  Begin Construction  $\leq$  15 years
- Long Term: Begin Construction  $>$  15 years

### 10.2 Project Phases

The FDOT project development and delivery process begins with the planning phase and ends with the construction phase. This I-195 CPS was the first phase in the development of the improvements previewed in this report. Given that this project comprises a limited access facility with interchanges that will be impacted by improvements that will be proposed, the following general phases were identified for evaluation:

- Interchange Access Request (IAR)- The improvements developed in this study will affect the study interchanges in varying degrees if implemented. The FDOT Interchange Access Request User's Guide establishes a framework for the type of IAR that is needed depending on the extent to which travel patterns and operations at the existing interchanges are expected to be affected. The types of IARs likely for this project include Interchange Modification Reports – IMR (due to anticipated modifications to the travel patterns, e.g. at N Miami Avenue interchange) and an Interchange Operational Analysis Report – IOAR ( due to modifications at existing access points that do not change existing interchange configuration or travel patterns, e.g. the proposed modification to the I-195 eastbound off-ramp terminal intersection at NE 36<sup>th</sup> Street). The IAR approval is focused on determining the safety, operational and engineering (SO&E) acceptability of the request by satisfying and documenting the requirements of the FHWA's Policy on Access to the Interstate System.
- PD&E- The PD&E phase builds on the earlier planning phase to further refine the project's purpose and need. The PD&E phase will further develop alternatives requiring environmental approval to address the purpose and need for the project. Throughout



the PD&E process, interagency coordination will be conducted to identify project impacts, permitting requirements, project commitments, and funding sources.

- Design and Right-of-Way Phase - The Design phase prepares the detailed engineering design, contract plans, specifications, and estimates for the project according to criteria and procedures established in FDOT's Design Manual (FDM). Right-way needs are refined during the design phase and provides a basis for the required coordination for the acquisition of needed right-of-way.
- Construction Phase - Constructs the improvements that have been developed and designed with funding that has been identified to facilitate their implementation.

### 10.3 Project Phasing & Prioritization

**Table 10-1** on the next page summarizes the phasing and prioritization of the various improvements comprising the Refined Build Concept.

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**Table 10-1: Improvement Projects Phasing & Prioritization**

Improvement Type	Improvement/Intersection	Prioritization <sup>1</sup>	IAR	PD&E	Design/ ROW	Construction	Comments
System	Alternative 3 with Viaduct	Long-term	✓	✓	✓	✓	IAR will include a SIMR for the I-195/I-95 Interchange and an IMR for the I-195 at N Miami Ave Interchange
Shared Use Path	Alternative A (Separate Bridge)	Mid-term		✓	✓	✓	Keep as one PD&E with Alternative 3. Could be advanced as an improvement ahead of long-term alternatives after PD&E
Base Improvements	1. SR 112 WB widening to provide 2 lanes	Mid-term		✓	✓	✓	Keep as one PD&E with Alternative 3. Could be advanced as an improvement ahead of long-term alternatives after PD&E
	2. SR 112/I-195 EB widening to provide 2 lanes	Mid-term		✓	✓	✓	Keep as one PD&E with Alternative 3. Could be advanced as an improvement ahead of long-term alternatives after PD&E
	3. Partial Signalization at I-195 EB Off-Ramp to NE 36th Street	Mid-term	✓		✓	✓	Requires IOAR. Could be advanced as an improvement ahead of long-term alternatives after IOAR
	4. I-195 On-Ramp from NE 36th Street parallel entrance widening	Mid-term		✓	✓	✓	Keep as one PD&E with Alternative 3. Could be advanced as an improvement ahead of long-term alternatives after PD&E
	5. I-195 WB to Biscayne Blvd off-ramp – widen to 2 lanes	Mid-term		✓	✓	✓	Keep as one PD&E with Alternative 3. Could be advanced as an improvement ahead of long-term alternatives after PD&E
	6. I-195 EB widening to Alton Road Ramp	Mid-term		✓	✓	✓	Keep as one PD&E with Alternative 3. Could be advanced as an improvement ahead of long-term alternatives after PD&E
	7. New traffic signal at Intersection of NB and SB Alton Road	Short-term			✓	✓	Has independent utility and may qualify as a Type I CE to be advanced and provide short-term congestion relief
	8. I-195 WB CD from Alton Road	Long-term	✓	✓	✓	✓	Requires an IMR. Keep as one PD&E with Alternative 3. Could be advanced as an improvement ahead of long-term alternatives after PD&E
Other Intersection Improvements	NW 39th Street at NW 10th Avenue	Short-term			✓	✓	Has independent utility and may qualify as a Type I CE to be advanced and provide short-term congestion relief
	NE 36th Street at N Miami Avenue	Long-term		✓	✓	✓	These improvements are tied to the system alternative 3 as part of the modification of the partial interchange at N Miami Avenue to a full interchange
	I-195 EB Off-Ramp to N Miami Avenue	Long-term	✓	✓	✓	✓	
	I-195 WB On-Ramp at N Miami Avenue	Long-term	✓	✓	✓	✓	
	NE 36th Street at NE 1st Avenue	Short-term			✓	✓	Has independent utility and may qualify as a Type I CE to be advanced and provide short-term congestion relief
	NE 36th Street at Federal Hwy & NE 2nd Avenue	Short-term			✓	✓	Has independent utility and may qualify as a Type I CE to be advanced and provide short-term congestion relief
	US-1 at NE 36th Street	Short-term			✓	✓	Has independent utility and may qualify as a Type I CE to be advanced and provide short-term congestion relief
	US-1 at NE 38th Street	Short-term			✓	✓	Has independent utility and may qualify as a Type I CE to be advanced and provide short-term congestion relief
	Alton Road at Arthur Godfrey Road	Mid-term		✓	✓	✓	Tied to Base Improvement #6
Alton Road at 43rd Street	Short-term			✓	✓	Has independent utility and may qualify as a Type I CE to be advanced and provide short-term congestion relief	

1. Short-Term: Begin Construction ≤ 5 years ; Mid-Term: 5 years < Begin Construction ≤ 15 years; Long Term: Begin Construction > 15 years

It should be noted the short-term improvements listed in **Table 10-1** can be considered as Transportation Systems Management and Operations (TSM&O) strategies (i.e., intersection turn lane improvements, signalization and signal timing optimization) to provide short-term congestion relief. These TSM&O improvements generally reflect lower cost traffic management strategies to address projected traffic demand in lieu of the more extensive improvements contemplated in this study.

#### 10.4 Year of Expenditure Construction Cost Estimates

The construction cost estimates summarized in Table 8-3 are in present year dollars (i.e, 2020). However, according to *FHWA Major Project Program Cost Estimating Guidance, January 2007*, in the planning phase of a major project, for the cost estimates that are prepared, they should be expressed in year-of-expenditure (YOE) dollars if it is anticipated there could be multiple construction contracts. The guidance recommends assigning an inflation rate per year to the proposed midpoint of the anticipated construction phase. To determine the YOE dollars for the various improvement projects comprising the Refined Build Concept, approximate midpoints of the Prioritization time frames were identified and the number of years from the present year estimated as follows:

- Short-Term: YOE = 2.5 years (Begin Construction  $\leq$  5 years)
- Mid-Term: YOE = 10 years (5 years < Begin Construction  $\leq$  15 years)
- Long Term: YOE = 20 years Begin Construction > 15years

Inflation factors from the FDOT Revenue Forecasting Guidebook, January 2019 were used to adjust present day cost estimates based on the number of years generally anticipated for each time frame. Table 10-2 below presents a summary of the YOE construction estimates.

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**Table 10-2: Year-of-Expenditure Construction Cost Estimates**

Improvement Type	Improvement/Intersection	Prioritization	Years from 2020	Present Day Estimate	Year-of-Expenditure <sup>1</sup>
System	Alternative 3 with Viaduct	Long-term	20	\$ 430,000,000	\$ 794,874,000
Shared Use Path	Alternative A (Separate Bridge)	Mid-term	10	\$ 41,600,000	\$ 55,580,000
Base Improvements	1. SR 112 WB widening to provide 2 lanes	Mid-term	10	\$ 550,000	\$ 735,000
	2. SR 112/I-195 EB widening to provide 2 lanes	Mid-term	10	\$ 3,800,000	\$ 5,077,000
	3. Partial Signalization at I-195 EB Off-Ramp to NE 36th Street	Mid-term	10	\$ 1,100,000	\$ 1,470,000
	4. I-195 On-Ramp from NE 36th Street parallel entrance widening	Mid-term	10	\$ 450,000	\$ 601,000
	5. I-195 WB to Biscayne Blvd off-ramp – widen to 2 lanes	Mid-term	10	\$ 3,600,000	\$ 4,810,000
	6. I-195 EB widening to Alton Road Ramp	Mid-term	10	\$ 5,400,000	\$ 7,215,000
	7. New traffic signal at Intersection of NB and SB Alton Road	Short-term <sup>2</sup>	2.5	\$ 350,000	\$ 378,000
	8. I-195 WB CD from Alton Road	Long-term	20	\$ 12,900,000	\$ 23,846,000
Other Intersection Improvements	NW 39th Street at NW 10th Avenue	Short-term <sup>2</sup>	2.5	\$ 300,000	\$ 324,000
	NE 36th Street at N Miami Avenue	Long-term	20	\$ 1,100,000	\$ 2,033,000
	I-195 EB Off-Ramp to N Miami Avenue	Long-term	20	\$ 1,200,000	\$ 2,218,000
	I-195 WB On-Ramp at N Miami Avenue	Long-term	20	\$ 5,000,000	\$ 9,243,000
	NE 36th Street at NE 1st Avenue	Short-term <sup>2</sup>	2.5	\$ 300,000	\$ 324,000
	NE 36th Street at Federal Hwy & NE 2nd Avenue	Short-term <sup>2</sup>	2.5	\$ 1,000,000	\$ 1,080,000
	US-1 at NE 36th Street	Short-term <sup>2</sup>	2.5	\$ 1,100,000	\$ 1,188,000
	US-1 at NE 38th Street	Short-term <sup>2</sup>	2.5	\$ 4,200,000	\$ 4,536,000
	Alton Road at Arthur Godfrey Road	Mid-term	10	\$ 900,000	\$ 1,202,000
	Alton Road at 43rd Street	Short-term <sup>2</sup>	2.5	\$ 450,000	\$ 486,000
<b>Total Construction Costs</b>				<b>\$ 515,300,000</b>	<b>\$ 917,220,000</b>

1. Year of Expenditure dollars calculated using inflation factors from, FDOT Revenue Forecasting Guidebook, January 2019

2. Short-term improvements reflect TSM&O strategies

## 11.0 CONOPS/PSEMP

A Concept of Operations (ConOps) Plan and a Project System Engineering Management Plan (PSEMP) were developed for the Refined Build Concept which relied upon FDOT guidelines. **Appendix OCR-I** of this report comprises both plans.

Existing TSM&O strategies comprising Intelligent Transportation Systems (ITS), express lanes, the warning gate system along I-95 and I-195, will be expanded as part of the Refined Build Concept. The ITS will need to be upgraded to include additional devices for the new interchange ramp connections between the I-95 Express Lanes and the proposed I-195 viaduct which will be integrated with the existing equipment such as dynamic message signs (DMS), closed-circuit television cameras (CCTV), and vehicle detectors. As part of express lanes system, these devices allow ramps to be monitored for congestion, incidents to be managed and tolling information to be provided for the new I-95 Express direct ingress ramps. In addition, a warning gate system comprising a series of swing gates is recommended at the new express lanes ingress from I-195 to allow this access to be closed whenever there is an incident or to facilitate planned construction and maintenance. The District 6 Transportation Management Center (D6 TMC) would manage these expanded systems.

Additional systems and devices beyond the existing TSM&O strategies should be further evaluated during the PD&E and design phases of the project such as the implementation of a Wrong Way Detection System (WWDS) - Currently, there are no WWDS deployed along I-195 within the study area. FDOT Design bulletin 19-03 introduced Wrong Way Driving Advanced Countermeasures at Interchange Exit Ramps. Wrong Way Detection System will be provided at exit ramps. The wrong way alert is transmitted from the Wrong Way field device, the alert data can be transmitted by a cellular gateway antenna, fiber optics ethernet network to be received in the District's SunGuide® servers.

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## 12.0 CONCLUSION & RECOMMENDATIONS

The *I-195 Corridor Planning Study (CPS)* evaluated existing conditions, deficiencies and future travel demand. The CPS identifies and evaluates a refined build concept (RBC) comprising three main elements to address the study objectives and stakeholder interests including:

- **Base Improvements** - *Eight (8) base improvements identified to address mainline operational deficiencies as well as specific local issues raised by stakeholders during the initial public outreach,*
- **System Improvements** - The system improvements represent one of four alternatives that were evaluated in the CPS for this category of improvements. These improvements are intended to address key study objectives relative to improving access (i.e., better I-95 express lanes connectivity and interchange access) as well as systemwide performance. The alternative incorporated into the RBC, includes a new viaduct that would be implemented in the center of I-195 east of I-95 to allow traffic between I-95 (general purpose and express lanes) and Miami Beach to bypass local interchanges at N Miami Avenue and at Biscayne Boulevard along the I-195 corridor. The alternative also proposes converting the partial interchange at N Miami Avenue to a full interchange,
- **Bicycle and Pedestrian Improvements** - The Bicycle and Pedestrian improvements included in the RBC, represent one of two alternatives that were evaluated in the CPS for this category of improvements. These improvements are intended to address a key study objective of improving the non-motorized connections between the City of Miami Beach and the City of Miami. The alternative incorporated into the RBC, involves the implementation of a 14' shared use path running parallel to the Julia Tuttle Causeway on the southside that will cross open water areas within Biscayne Bay via separate bridge structures. The 14' shared use path would allow for two-way non-motorized traffic within the path.

The I-195 CPS determined that the alternatives identified have the potential to positively address the Purpose and Need documented for the study area and they lay the groundwork for the upcoming PD&E phase. A Refined Build Concept, developed from the multiple alternatives evaluated, will be used to complete the initial environmental screening in preparation for the PD&E Study. Implementing the Refined Build Concept would lead to significant improvements in traffic operations and safety. However, the associated environmental and community impacts are likely to be substantial requiring extensive coordination and mitigation.

It should be noted that while the RBC incorporates a single alternative from the multiple alternatives considered in each of the **System Improvements** and **Bicycle and Pedestrian Improvements** categories, the other alternatives from those categories will be available for further review and evaluation during the PD&E study. As the project moves to the PD&E phase, the following recommendations are offered:

- **Evaluate additional Ramp Terminal and Intersection Improvements** - Notwithstanding the improvements that were proposed for the ramp terminals and adjacent intersections in the I-195 CPS, severe arterial congestion may still persist in the future with likely impacts to the I-195 mainline. Additional intersection improvements beyond those presented in this report (particularly at the N Miami Avenue Ramp Terminals and adjacent intersections) will need to be evaluated as part of a future PD&E project phase.

- **Phased Improvements** – The Refined Build Concept comprises various improvement elements that may be advanced as a segment ahead of the mainline improvements to the extent their advancement would not interfere with the implementation of major elements of the RBC or result in throwaway. Furthermore, some of the improvements prioritized as short-term can be considered as TSM&O strategies (i.e., intersection turn lane improvements, signalization and signal timing optimization) to provide short-term congestion relief. These TSM&O improvements generally reflect lower cost traffic management strategies to address projected traffic demand in lieu of the more extensive improvements contemplated in this study. **Table 10-1** presents a possible project phasing regime considering time frames for each improvement element with their Year-of-Expenditure Construction cost estimates. It also identifies which improvements may be advanced as short-term or mid-term projects.
- **Consider Impact of COVID 19 on Long Term Traffic Trends** – A review of I-195 mainline traffic demand from the base year of the I-195 CPS to the current year of its final documentation, shows a 30% reduction in traffic demand along the corridor. While conventional wisdom may suggest traffic levels could resume growing at pre-quarantine levels once the pandemic recedes, it is quite possible a high level of penetration in the proportion of teleworkers will remain, giving way to a ‘new normal’. Initiatives to study this phenomenon have started to emerge and should be leveraged to understand the benefits in planning for the future transportation needs of the study area.
- **Evaluate Requirements of the Limited Access ROW along the Causeway to Accommodate Proposed Shared Use Path** –Section 224.1.1 of the FDM outlines the criteria for locating new shared use path facilities on causeways or bridges that span navigable waterways (such as with this project along the Julia Tuttle Causeway). Based on coordination with the District 6 Survey Office during the I-195 CPS, it was determined there is no record of a Limited Access (LA) right-of-way line along the Causeway. Depending on the final alignment selected for the Shared Use Path Alternative, the Department will have the opportunity to establish a location for the LA line as part of the PD&E Study.