

**ADMINISTRATIVE ACTION
ENVIRONMENTAL ASSESSMENT**

Florida Department of Transportation

In cooperation with US Army Corps of Engineers, US Coast Guard

Financial Management Number: 422713-2-22-01

Federal Project Number: To be Determined

FDOT Efficient Transportation Decision Making Project Number: 12756

VENETIAN CAUSEWAY FROM NORTH BAYSHORE DRIVE TO PURDY AVENUE, Miami-Dade County Florida

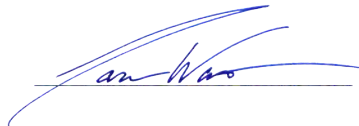
The Venetian Causeway is approximately 2.5 miles long and is a two-lane undivided facility that provides a major link between the City of Miami and the City of Miami Beach. The bridges were originally built in 1926. The Causeway consists of ten fixed span bridges and two bascule leaf span bridges over the Intracoastal Waterway. In 1996, the bridges underwent a major rehabilitation and full replacement of all sidewalks and railings. Presently, the bridges exhibit severe deterioration because of aggressive marine environment. This project proposes to address identified structural and functional deficiencies of the twelve existing bridges through potential alternatives such as rehabilitation or replacement.

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated 12/14/2016 and executed by the Federal Highway Administration and FDOT.

Approved For Public Notice

03/07/2021

Date



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1.0 PROJECT DESCRIPTION

The Venetian Causeway is approximately 2.5 miles long and is primarily a two-lane undivided facility that provides a major link between the City of Miami and the City of Miami Beach in Miami-Dade County, Florida. The Causeway includes ten fixed span bridges and two bascule leaf span bridges over the Intracoastal Waterway (ICWW) (Bridge Identification No.'s 874459, 874460, 874461, 874463, 874465, 874466, 874471, 874472, 874473, 874474, 874477, and 874481) extending from North Bayshore Drive (City of Miami) to Purdy Avenue (City of Miami Beach).

The bridges were originally built in 1926 and have been designated as historic landmarks by the City of Miami and City of Miami Beach; they are also listed on the National Register of Historic Places (NRHP). The project will take this historic designation into consideration and ensure that any decisions on improvements are coordinated through the County and a Task Force of representatives that reflect the local, state and federal interests of historic preservation. Given the historicity of the bridges, rehabilitation options will also be explored as part of the potential build alternatives during the Project Development and Environment (PD&E) Study.

The corridor is tolled and is owned and operated by Miami-Dade County. A Project Location Map is included as **Figure 1-1**. For ease of identification, the bridges are numbered 1 through 12 with Bridge 1 being the westernmost bridge and Bridge 12 the easternmost bridge. The Causeway bridges are mainly short span reinforced concrete arch beam bridges. Each bridge section consists of two 12-foot (ft.) travel lanes with 4-ft. shoulder/bicycle lanes and 4-ft. sidewalks on each side, except Bridge 1 (spans 1 to 16) (see **Figure 1-2**). Bridge 1 (spans 1 to 16) consists of two 11-ft. travel lanes with 5-ft. shoulders/bicycle lanes and 4-ft. sidewalks on each side. Presently, Bridges 2 to 12 exhibit severe deterioration because of their proximity to the very aggressive marine environment. Bridge 1 (spans 1 to 16) was replaced in 2016 and has no deterioration, spans 17 to 41 were replaced in 1998 and have moderate deterioration. Due to new design codes, the bridges do not meet current design and safety requirements.



Figure 1-1 Project Location Map

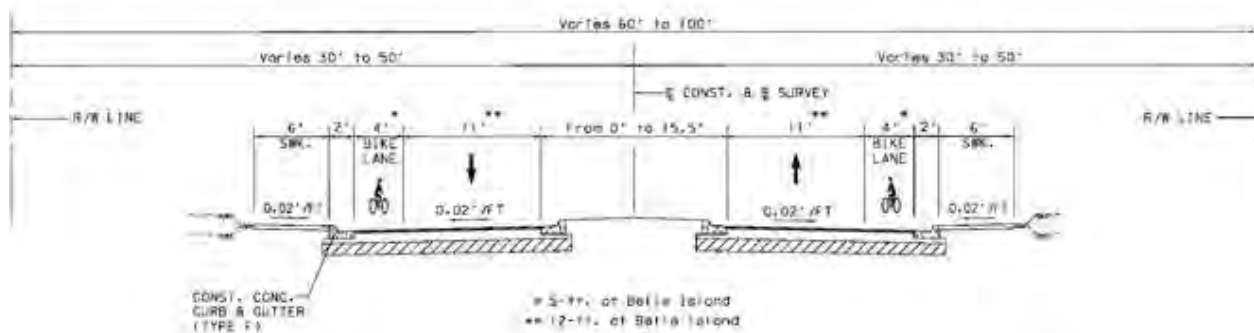


Figure 1-2 Bridge 1 Typical Section

Project Background

The Venetian Causeway is classified as an urban minor arterial road in Miami-Dade County, and is a significant transportation route connecting the City of Miami with the City of Miami Beach in Miami-Dade County, Florida. The current Causeway follows the original route of the Collins Bridge, a wooden structure built in 1913. The bridges along the causeway were originally built in 1926 with an anticipated design life of 50 years. Please refer to the Inspection Report Condition Ratings (Table 2-6) in the Preliminary Engineering Report (PER) for more information.

Between 1996 and 1999, the twelve causeway bridges underwent major rehabilitation that included gunite repairs to the superstructure concrete arched beams, decks, foundations and the full replacement of all sidewalks and railings. The rehabilitation and repairs to the concrete elements were anticipated to last for ten years. The major rehabilitation replaced 1,274-ft. (spans 17 thru 41) of the west bascule bridge (Bridge 1), including the bascule span, with a higher profile and wider channel to accommodate navigational traffic. As part of the rehabilitation, the east bascule bridge (Bridge 10) movable span and machinery was replaced.

As a result of the continued deterioration of the bridges, in 2004 the FDOT authorized Miami-Dade County to post load restrictions on the bridges. Between 2009 and 2011, the County conducted another major rehabilitation project to repair the causeway's bridges. The scope of work for this rehabilitation included major repairs to the bridge support beams, diaphragms, deck undersides, and support piers. In 2011 FDOT in partnership with Miami-Dade County initiated the PD&E Study to address the structural and functional deficiencies of the 12 existing bridges that comprise the Venetian Causeway. Between 2015 and 2016 the Venetian Causeway underwent an Emergency Repair to replace the remaining 730-ft. 9-in. of the original west bridge (Bridge 1 - spans 1 to 16). Bridge 1 has been replaced in phases and none of the original structure remains. In 2016 the County also conducted a rehabilitation project to repair Bascule Bridge 10. It included structural, mechanical, and electrical repairs to improve existing conditions. The bridges are continuously being repaired to maintain them in operational condition. See **Table 1-1** for the Venetian Causeway Bridges Repair Timeline.

The deteriorated condition of the bridges, deck geometry, and load carrying capacity of the bridges, affects the ability of the bridges to adequately serve traffic demand; as such, Bridges 2 thru 11 have been classified as functionally obsolete and Bridge 12 has been classified as functionally obsolete and structurally deficient. Bridge 1 has been replaced in phases and remains functionally obsolete. See the PER for more detailed information.

Due to the accelerated state of deterioration of Bridges 2 through 12, inspection dates were increased from biennial inspections (every other year) required by Federal Highway Administration (FHWA) to bi-annual inspections (every 6 months). Bridge 1 has already been replaced and was not included for evaluation during this PD&E Study.

Table 1-1 Venetian Causeway Bridges Repair Timeline

Bridge Construction/Bridge Replacement	Year	Description
Original Construction	1926	The bridges along the causeway were originally built in 1926 with an anticipated design life of 50 years.
Undocumented Rehabilitation Projects	1926-1996	Numerous repairs were performed on the bridges during this time interval. Bridge records only exist since 1996.
Major Bridge Rehabilitation Project	1996-1999	The twelve causeway bridges underwent major rehabilitation that included the concrete arched beams, decks, foundations and the full replacement of all sidewalks and railings. The rehabilitation and repairs to the concrete elements were anticipated to last for ten years. As part of the rehabilitation, the east bascule bridge (Bridge 10) movable span and machinery was replaced. Spans 17 through 41 of the west bascule bridge (Bridge 1), including the bascule span, was replaced with a higher profile and wider channel to accommodate navigational traffic.
Bridge Load Restrictions	2004	As a result of the continued deterioration of the bridges, the FDOT authorized Miami-Dade County to post load restrictions on the bridges.
Venetian Causeway Streetscape Improvements Project	2009	The County conducted a Streetscape Improvements Project. This project included the reconstruction of the Causeway's roadway.
Major Bridge Rehabilitation Project	2009-2011	The County conducted another major rehabilitation project to repair the Causeway's bridges. The scope of work for this rehabilitation included major repairs to the bridge support beams, diaphragms, deck undersides, and support piers.
PD&E Study Project	2011	FDOT, in partnership with Miami-Dade County, initiated the current PD&E Study to address the identified structural and functional deficiencies of the 12 existing bridges that comprise the Venetian Causeway.
Design-Build Emergency Repair Project	2015-2016	The Venetian Causeway underwent an Emergency Repair to replace the remaining original spans of Bridge 1 (spans 1 to 16). The bridges are continuously being repaired to maintain them in operational condition.
Bascule Bridge 10 Rehabilitation	2016	The County conducted rehabilitation project to repair Bascule Bridge 10. It included structural, mechanical, and electrical repairs to improve existing conditions.

1.1 Purpose and Need

The purpose of the proposed project is to address identified structural and functional deficiencies of the twelve existing bridges through potential alternatives such as replacement or rehabilitation. The improvements are anticipated to meet and/or address the following:

1.1.1 Structural and Functional Deficiencies

The Venetian Causeway is classified as an urban minor arterial in Miami-Dade County and is a significant transportation route connecting the City of Miami with the City of Miami Beach. The bridges along the Venetian Causeway were originally built in 1926 with an anticipated design life of 50 years. The bridges have exceeded their design life by over 40 years and, in all cases, are Functionally Obsolete (FO). Bridge 12 is also Structurally Deficient (SD). Due to the accelerated state of deterioration, FDOT increased the inspection frequency from the biennial minimum (every other year) required by Federal Highway Administration (FHWA) to bi-annual (twice a year) inspections. Bridge Inspection Reports (conducted between October 2018 and January 2019) yielded sufficiency ratings between 16 and 67.6 on a scale of 100.0. Bridge 1 has a sufficiency rating of 67.6. Bridges 2 through 12 all have ratings below 50 and are eligible for replacement funding from FHWA. The sufficiency rating of each bridge is shown in **Table 1-2**.

The superstructure of Bridges 2 through 12 displays advanced corrosion with section loss of several members that is significant enough to warrant supplemental supports and/or load restrictions. The bridge inspection reports also cite:

- Under-deck cracks
- Failure of compression joints
- Delamination and cracks on pier walls and abutments
- Corrosion and section loss of substructure members
- Major deficiencies in the bridge tender's facility
- Major deck pavement deterioration
- Substandard signing
- Pavement marking and signalization
- Major Americans with Disabilities Act (ADA) deficiencies on both sidewalks along the bridges

Once initiated, corrosion cannot be remedied, and sufficiency ratings are only expected to decrease further over time.

Table 1-2 Venetian Causeway Bridge Inventory Ratings

Bridge No.	FDOT Bridge No.	2019 Sufficiency Rating	Deficiency
1	874459	67.6	Functionally Obsolete
2	874460	36.6	Functionally Obsolete
3	874461	23.6	Functionally Obsolete
4	874463	25.1	Functionally Obsolete
5	874465	23.6	Functionally Obsolete
6	874466	28.1	Functionally Obsolete
7	874471	37.6	Functionally Obsolete
8	874472	25.1	Functionally Obsolete
9	874473	27.4	Functionally Obsolete
10	874474	32.2	Functionally Obsolete
11	874477	34.3	Functionally Obsolete
12	874481	16	Structurally Deficient and Functionally Obsolete

1.1.2 Transportation Plan Consistency

The Venetian Causeway Bridge Replacement project is identified in the Miami-Dade Metropolitan Planning Organizations 2045 Long Range Transportation Plan (LRTP) as an unfunded project. The 2019 Miami-Dade Transportation Planning Organization (TPO) Transportation Improvement Program (TIP) only includes funds for the planning phase of the project. The Adopted 2014-2019 FDOT Five-Year Work Program shows the Venetian Causeway Bridge project with funding in the amount of \$327,716 for Highways/PD&E in FY 2019.

The Fiscal Year 2018-2019 Adopted Budget and Multi-Year Capital Plan for Miami-Dade County Parks, Recreation and Open Spaces has allocated funds for the Venetian Causeway Bridge Replacement project. The project will replace Bridges 2 through 12, Bridge 1 will remain. The budget includes \$4.75 million for the planning and design phases during FY 2018 - 2020, and \$13.5 million for the construction phase of the project during FY 2020 -2024.

More information regarding planning consistency can be found in **Appendix A**. All appendices to this EA and all documents designated as located in the project file are adopted by reference and incorporated herein.

1.1.3 Modal Interrelationships

Sidewalks and bicycle lanes exist on both sides of the Venetian Causeway along the entire corridor. Both the City of Miami and the City of Miami Beach Bicycle Master Plans identify the Venetian Causeway as a significant bicycle corridor as it serves as one of the County's most well-traveled recreational and commuter bicycle routes. Pedestrian facilities will additionally be studied for opportunities to enhance safety and connectivity. Pedestrian and bicycle mobility are anticipated to be improved as a result of this project.

It should be noted that a Miami-Dade Transit bus route also operates along the Causeway corridor, Route 101, Route A. This route connects the Omni Metromover/Bus Terminal adjacent to the Performing Arts Center to Lincoln Road in South Beach. Bus operation will be maintained on the corridor.

1.1.4 Emergency Evacuation

The Venetian Causeway not only serves west/east travel between the City of Miami and the City of Miami Beach, but it also serves regional travel as it is one of only two routes leading from south Miami Beach that provides hurricane evacuation capabilities.

1.2 Alternatives Development

Alternatives were developed and evaluated based on the ability of each to meet the project needs. The development and analysis of the alternatives included No-Build and Build Alternatives (Rehabilitation or Replacement) as summarized in **Table 1-3**. Bridge 1 has already been replaced and was not included for evaluation. Multimodal Alternatives were addressed as part of the Transportation Systems Management & Operations (TSM&O). The Rehabilitation Build Alternative was developed by combining a Fixed Bridge Rehabilitation Alternative with the corresponding Bascule Bridge Rehabilitation Alternative. The Replacement Build Alternative was developed by combining a Fixed Bridge Alternative and a Movable Bridge Alternative. The alternatives developed and evaluated acknowledge the historic appearance of the original low-profile bridges. The alternatives were also evaluated for their ability to satisfy the Purpose and Need, project cost, ROW required, and environmental impacts as further outlined in Section 2. For additional information relating to the Alternatives Analysis, please see the PER in the project file.

Table 1-3 No-Build and Build Alternatives (Rehabilitation or Replacement)

NO-BUILD ALTERNATIVES	
1	No-Action – The bridges remain as is with routine maintenance only.
2	Transportation Systems Management & Operations (TSM&O) – The bridges remain as is with routine maintenance only. Transit, bicycle, pedestrian and other operational improvements would be made to facilitate transportation along the corridor.
BUILD ALTERNATIVES - REHABILITATION	
Fixed Bridge Alternatives The rehabilitation of the bridges would require that a rehabilitation alternative for the fixed bridges be selected.	
3	Fixed Bridge Rehabilitation w/out Beam Strengthening – Rehabilitation of the fixed bridges to improve safety and load carrying capacity.
4	Fixed Bridge Rehabilitation with Beam Strengthening - Rehabilitation of the fixed bridges to improve safety and load carrying capacity. Includes beam strengthening to achieve a higher load carrying capacity.
Movable Bridge Alternative The rehabilitation alternative of the eastern movable bridge (Bridge 10).	
M1	Bascule Bridge Rehabilitation – Rehabilitation of the eastern movable bridge (Bridge 10) to improve safety and achieve a higher load carrying capacity.
BUILD ALTERNATIVES - REPLACEMENT	
Fixed Bridge Alternatives The replacement of the bridges would require that the structural system for the fixed bridges be selected.	
5	Tunnel – This alternative replaces the movable bridges with a tunnel that maintains navigational traffic and connects to the residential islands.
6	High Level Fixed Bridge – This alternative replaces the movable bridges with a high-level bridge that maintains navigational traffic.
7	Arched Beams – This alternative provides low-level bridges, replicates the arched beams and maintains the look of the existing bridges
8	Florida I Beams (FIB) with Arched Fascia – This alternative provides low-level bridges, replicates the existing arched beams at the fascia of the bridge and uses FIB for the interior beams.
9	Florida I Beams (FIB) - This alternative provides low-level bridges, uses FIB for all the beams.
10	Cast-in-Place Slab (Flat/Variable Depth) – This alternative provides low-level bridges that use a cast- in-place deck that can have either a flat profile or a variable profile that approximates an arch beam.
11	Infill Spoil Islands – It was suggested during the Alternatives Public Workshop that removing the existing bridges and filling to create a long spoil island that would bridge the gap to the residential island be evaluated as an alternative.
12	Value Engineering Alternative – This alternative consists of seven alternatives for addressing bridges 2 through 12 and 3 alternatives for the typical section.
Movable Bridge Alternatives The replacement of the eastern movable bridge (Bridge 10) would require that the movable bridge type be selected.	
M2	Swing Bridge – The existing double leaf bascule bridge (drawbridge) would be replaced with one that pivots around a center support and swings open to allow the passage of boats.
M3	Vertical Lift Bridge - The existing double leaf bascule bridge (drawbridge) would be replaced with one that lifts the bridge deck vertically to allow the passage of boats below the raised deck.
M4	Double Leaf Bascule Bridge – The existing bridge would be replaced in kind.
M5	Single Leaf Bascule Bridge – The existing double leaf bascule bridge (drawbridge) would be replaced with one that has only one leaf instead of two.

1.3 Alternatives Considered but Eliminated

The following build alternatives were considered but not carried forward for this more detailed study:

- Rehabilitation Alternative 3, Fixed Bridge Rehabilitation without beam strengthening
- Replacement Alternative 5, Tunnel
- Replacement Alternative 6, High-level Fixed Bridge
- Replacement Alternative 8, Florida I Beam (FIB) with Arched Fascia Beam
- Replacement Alternative 9, FIB
- Replacement Alternative 10, Cast-in-Place Slab (Flat / Variable Depth)
- Replacement Alternative 11, Infill of Spoil Islands
- Replacement Alternative 12, Value Engineering Alternative
- Replacement Alternative M2, Swing Bridge
- Replacement Alternative M3, Vertical Lift Bridge
- Replacement Alternative M5, Single Leaf Bascule Bridge

1.3.1 Rehabilitation Alternative 3: Fixed Bridge Rehabilitation without Beam Strengthening

Rehabilitation Alternative 3 includes deck replacement, beam repairs (without beam strengthening) and foundation strengthening. With the exception of the American Association of State Highway Transportation Officials (AASHTO) HL-93 live load capacity, this alternative satisfies the Purpose and Need for the project and the rehabilitation evaluation criteria. Please refer to the Bridge Rehabilitation Evaluation Criteria Table (Table 6-2) in the PER. Beam strengthening is required in order for the bridges to achieve the AASHTO HL-93 live load capacity. The AASHTO HL-93 is a theoretical vehicular loading that is currently used as the design loading for highway structures and is a combination of three different loads: HL-93 Design Truck (formerly, HS20-44 Truck), HL-93 Design Tandem (formerly, Alternate Military) and a Design Lane Load.

This rehabilitation alternative would correct physical and design criteria deficiencies of the existing bridges to extend their service life. Considering the historical significance of the Causeway, all efforts were made to protect and preserve the existing historic bridge properties. The rehabilitation alternative proposes to improve the bridge structures design life while maintaining the original historic bridges. The rehabilitation includes the following:

- Replace the existing 6.5-inches (in.) deck with a new higher strength concrete 8.5-in. deck (**Figure 1-3**)
- Strengthen the existing foundations by driving new piles or drilled shafts
- Foundations would be designed to resist wave force vulnerability
- Repair concrete spalls and cracks in the beams and diaphragms
- Repair jacketed piles and provide cathodic protection

This rehabilitation alternative will have a minimal impact on natural resources including wetlands, benthic resources and listed species. There are no impacts to noise and air quality and the potential for contamination involvement is similar to all Build Alternatives. This alternative was eliminated from additional study because it does not meet the current AASHTO HL-93 live load structural capacity.

Estimated ROW Acquisition: None

Anticipated Cost: \$34 Million – \$36 Million

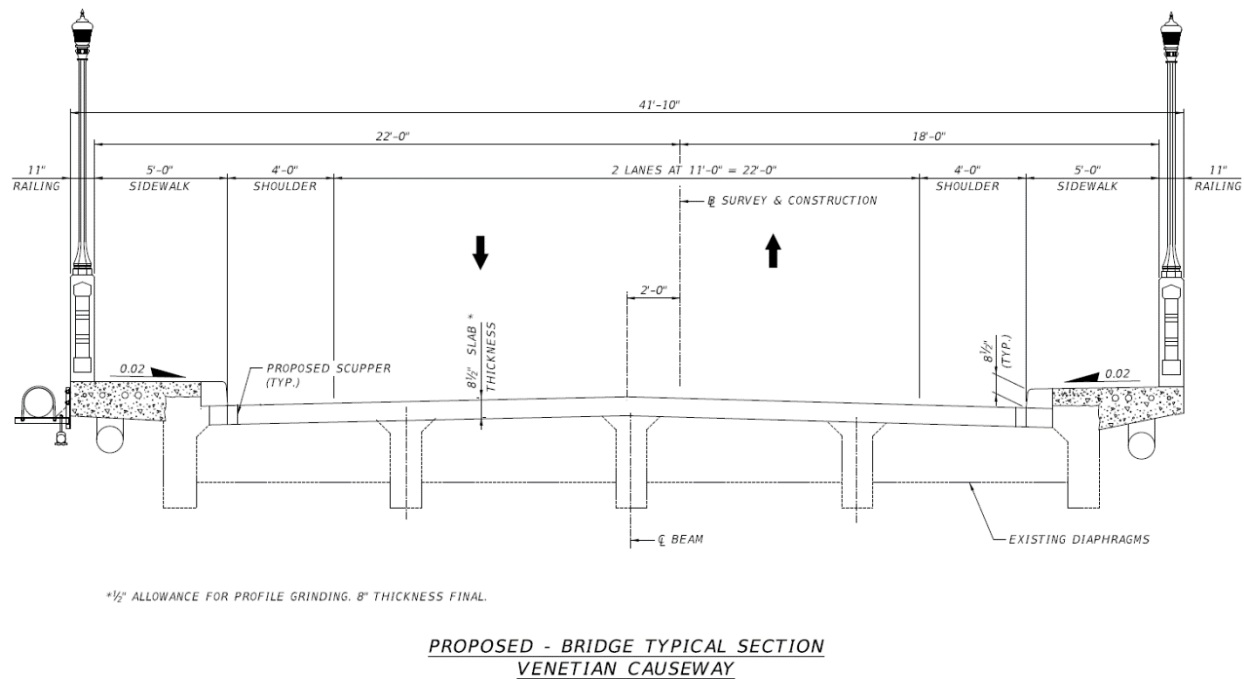


Figure 1-3 Rehabilitation Alternative 3 – Bridge Typical Section

1.3.2 Replacement Alternative 5: Tunnel

This alternative replaces Bridges 9 through 11, with a tunnel below the Biscayne Bay. Bridges 2 through 8 and Bridge 12 would remain as low-level bridges and would be replaced with a fixed bridge alternative.

A tunnel constructed under the ICWW would allow uninterrupted flow of vehicular and marine traffic. Within the tunnel, the pedestrian facilities would be entirely separated from vehicles for safety and air quality reasons. The width of the sidewalks would be increased to 12 ft. to accommodate maintenance vehicles. The design clear height within the tunnel would be 18 ft. for vehicular traffic, with an additional 6 ft. of vertical clearance above the travel lanes for ventilation, mechanical and electrical systems. To accommodate the travel lanes and sidewalks, the overall dimensions of the tunnel alternative would need to be approximately 80 ft. wide by 30 ft. deep.

Existing subsurface conditions would affect the feasibility of construction of a tunnel as an alternate to a bridge over the ICWW. The longitudinal sections of the tunnel would depend on the subsoil stratification, the depth of the ICWW, proposed grade, and construction method. The tunnel would be subjected to uplift force, due to buoyancy.

This uplift force is countered by the downward weight of water above the tunnel and soil cover. A number of construction methods could be considered, but additional geotechnical investigation would be required to determine the most appropriate method for the existing bay bottom conditions.

Figure 1-4 Replacement Alternative 5 - Tunnel and Portal Limits illustrates the limits of the proposed tunnel. The tunnel must be sufficiently deep to provide adequate cover from the channel bottom. Five percent grades with an approximate 250-ft. sag curve transition would result in the shortest tunnel length, approximately 1,200 ft. However, retaining walls at least 8 ft. high that extend for at least 400 ft. would be required at both ends of the tunnel. This would result in an overall length of approximately 2,000 ft. The touchdown points, or points where the tunnel construction would meet the existing roadway grade would extend much farther to the west and east as compared to the other alternatives. Visual impacts resulting from construction of the barrier walls could be substantial for adjacent property owners.

This alternative was eliminated from additional study because it would not preserve the historic character of the corridor, it would be extremely costly, would require 7 acres of right-of-way (ROW) acquisition, and would have a negative impact on neighborhood access and connectivity, as well as the degree and duration of disruption to the community during construction. Constructing a tunnel would eliminate work within the surface waters of Biscayne Bay; however, the ingress/egress locations may negatively impact Belle Isle Park, a Section 4(f) resource, as well as impact wetlands and other surface waters along the Causeway.

A tunnel typical section was not developed, given that there are many variables involved and that this alternative was not a viable alternative.

Estimated ROW Acquisition: 7 Acres

Anticipated Cost: \$140 Million - \$180 Million



Figure 1-4 Replacement Alternative 5 - Tunnel and Portal Limits

1.3.3 Replacement Alternative 6: High-Level Fixed Bridge

The High-Level Fixed Bridge Alternative replaces Bridges 9 through 11 with a single fixed bridge structure. Bridges 2 through 8 and Bridge 12 would remain as low-level bridges and would be replaced with a fixed bridge alternative. See **Figure 1-5** for the High-Level Fixed Bridge limits, **Figure 1-6** for the High-Level Fixed Bridge Typical Section and **Figure 1-7** for the High-Level Fixed Bridge concept.

This alternative would provide benefits to navigation and through vehicular traffic. It would eliminate vehicular traffic, as well as boat traffic delays caused by the openings and closings of the existing bascule bridge. This alternative was eliminated from additional study, due to the negative impacts to neighborhood access and sight lines. The High-Level bridge also does not meet the historic or cultural resource requirements for a new bridge. In addition, the bridge approaches may negatively impact Belle Isle Park, a Section 4(f) resource, as well impacts to wetlands and other surface waters along the causeway. There are no impacts to noise and air quality and the potential for contamination involvement is similar to all Build Alternatives.

Due to public input in the Project Advisory Group meetings and the Value Engineering Report findings, further study was considered for a High-Level Fixed Bridge over Bridges 9 through 11 only. See the PER for the *High-Level Fixed Bridge Technical Memorandum* for additional details.

Estimated ROW Acquisition: None

Anticipated Cost: \$52 Million - \$57 Million



Figure 1-5 Replacement Alternative 6 – High-Level Fixed Bridge Limits

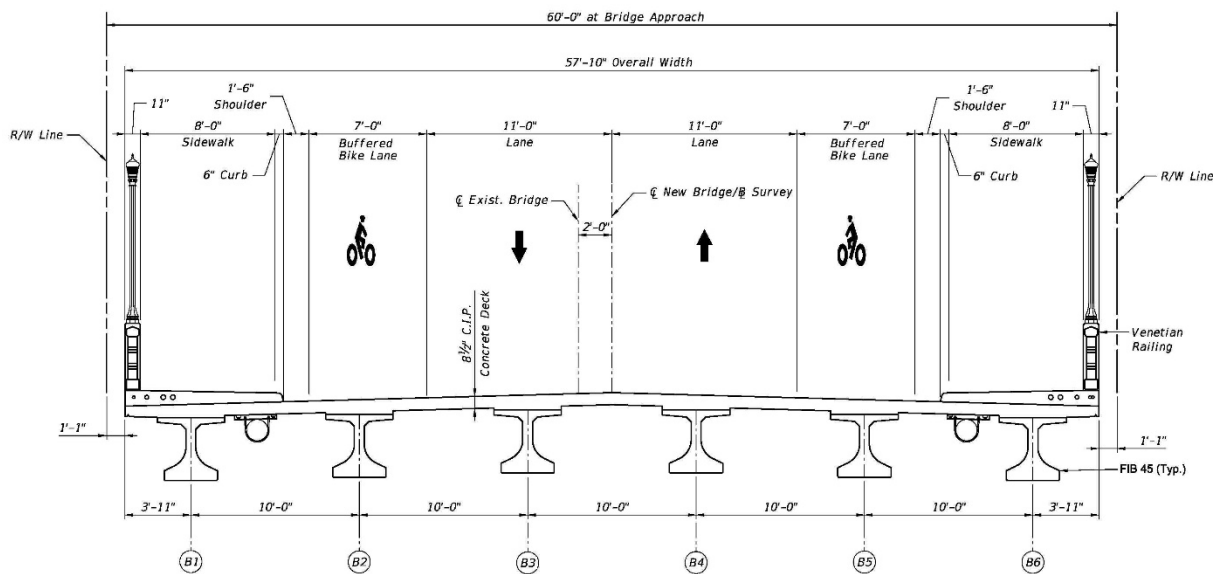


Figure 1-6 Replacement Alternative 6 – High-Level Fixed Bridge Typical Section



Figure 1-7 Replacement Alternative 6 – Rendering High-Level Fixed Bridge to replace Bridges 9 through 11

1.3.4 Replacement Alternative 8: Florida I-Beam (FIB) with Arched Fascia Beam

This alternative replaces Bridges 2 through 9, Bridge 10 approaches, and Bridges 11 and 12 with a combination of Florida-I Beam 45 (FIB-45) and concrete arched fascia beams. The superstructure would consist of two custom variable depth prestressed concrete fascia arch girders and three interior FIB-45 beams, that support an 8.5-in. cast-in-place reinforced concrete deck. Similar to all fixed bridge Replacement Alternatives, this alternative will have a minimal impact on natural resources including wetlands, benthic resources and listed species. There are no impacts to noise and air quality and the potential for contamination involvement is similar to all Build Alternatives. This alternative has a cost advantage, but the interior FIB beams would be visible at midspan (see **Figure 1-8**). Considering that the existing arched beams are part of the historic significance of the bridges, and that this alternative would change the historic appearance of the bridges, this alternative was eliminated from additional study.

Estimated ROW Acquisition: None

Anticipated Cost: \$35 Million - \$40 Million

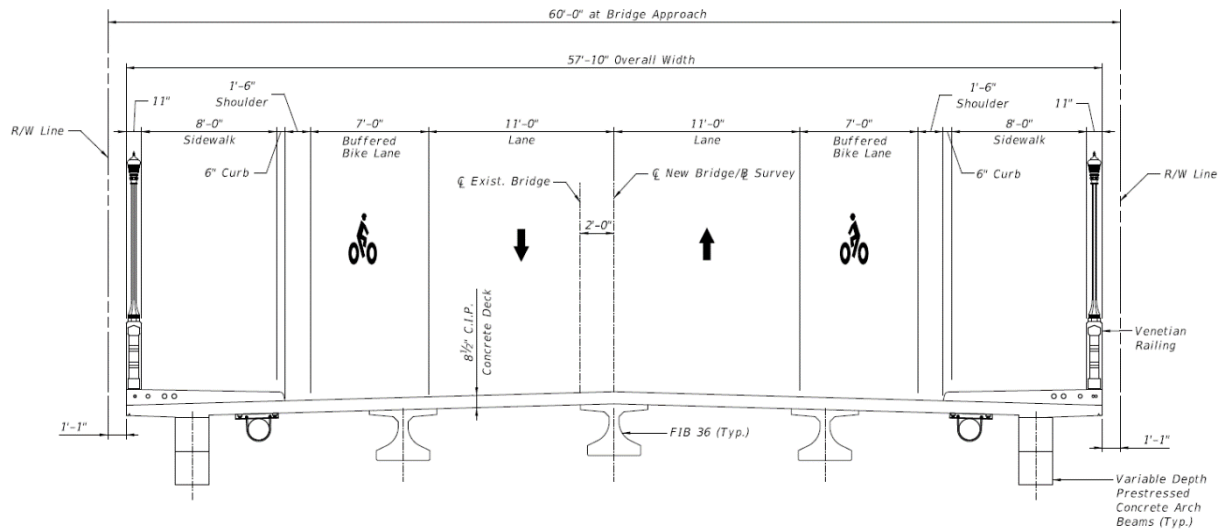


Figure 1-8 Replacement Alternative 8 - Bridge Typical Section

1.3.5 Replacement Alternative 9: Florida I-Beam (FIB)

This alternative replaces the existing arched beam (Bridges 2 through 9, Bridge 10 approaches, and Bridges 11 and 12) superstructure systems with FIB-36s. The bridge spans would consist of five FIB-36 beams that support an 8.5-in. cast-in-place reinforced concrete deck (see **Figure 1-9**). Similar to all fixed bridge Replacement Alternatives, this alternative will have a minimal impact on natural resources including wetlands, benthic resources and listed species. There are no impacts to noise and air quality and the potential for contamination involvement is similar to all Build Alternatives. This alternative has a cost advantage but would alter the appearance of the bridges when compared to the existing. Considering that the existing arched beams are part of the historic significance of the bridges, and that this alternative would change the appearance of the bridges, this alternative was eliminated from additional study.

Estimated ROW Acquisition: None

Anticipated Cost: \$35 Million - \$39 Million

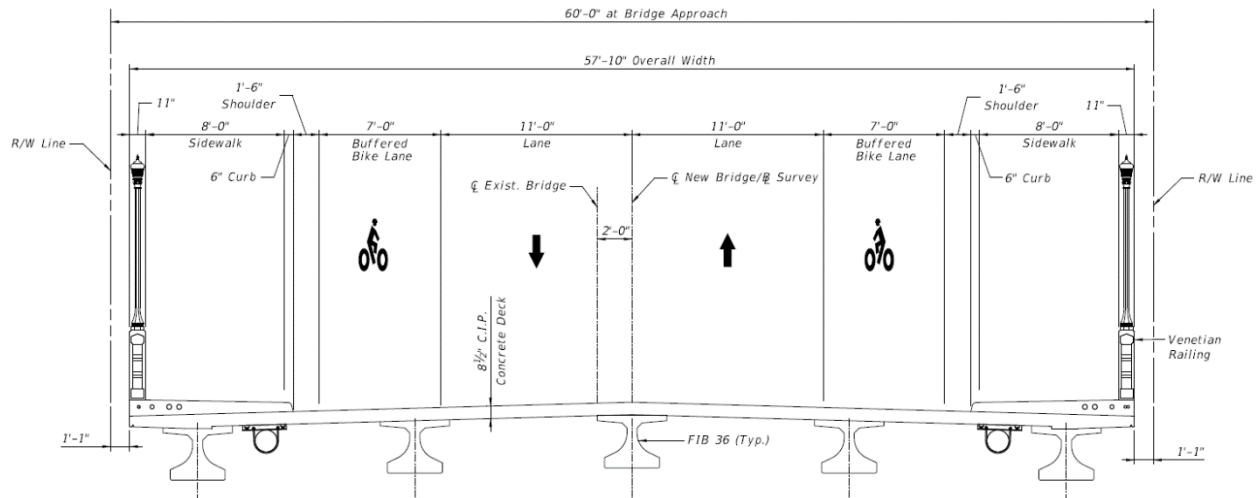


Figure 1-9 Replacement Alternative 9 Typical Section

1.3.6 Replacement Alternative 10: Cast-in Place Slab (Flat/Variable Depth)

This alternative replaces the existing arched beam (Bridges 2 through 9, Bridge 10 approaches and Bridge 11 and 12) with a new variable depth arched concrete slab superstructure. The approach spans consist of a variable depth slab that is 4 ft. deep at the ends and 2 ft. 4 in. deep at midspan (see **Figure 1-10**). Similar to all fixed bridge Replacement Alternatives, this alternative will have a minimal impact on natural resources including wetlands, benthic resources and listed species. There are no impacts to noise and air quality and the potential for contamination involvement is similar to all Build Alternatives. This alternative was eliminated from additional study due to its high cost and deviation from the historic appearance of the bridges.

Estimated ROW Acquisition: None

Anticipated Cost: \$46 Million - \$52 Million

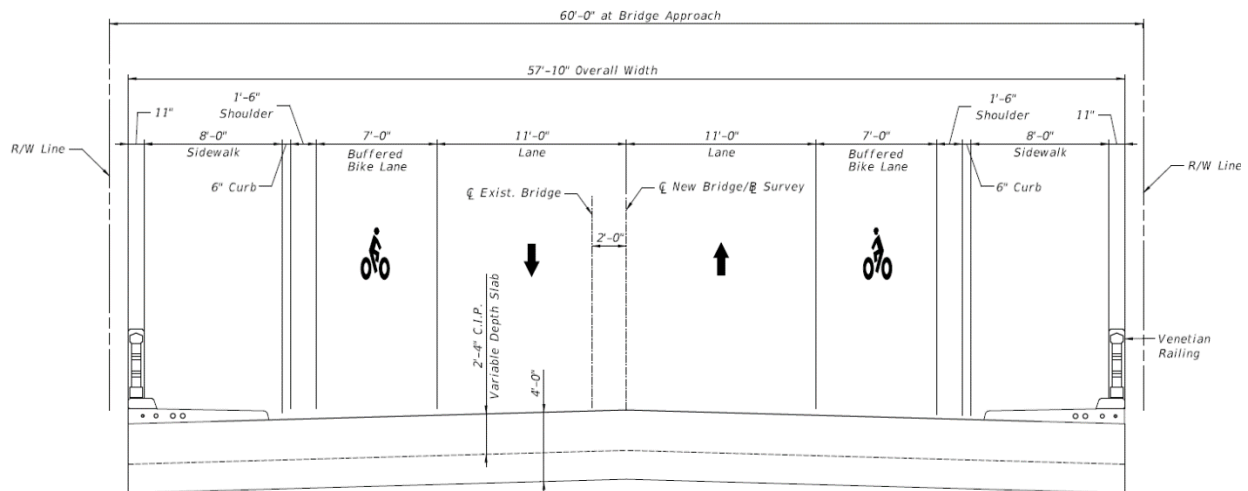


Figure 1-10 Replacement Alternative 10 Typical Section

1.3.7 Replacement Alternative 11: Infill Spoil Islands

This alternative replaces the fixed bridges (Bridges 2 through 9, 11 and 12) on the Causeway with fill to connect the residential islands and spoil islands. This alternative was suggested by some Venetian Island residents at the Alternative Public Workshop. This alternative would eliminate all the fixed bridges. Bridge 1 and Bridge 10, the two bascule bridges, would remain. Filling of Biscayne Bay will result in negative impacts to benthic resources/Essential Fish Habitat, fragmentation of habitat for listed species and mangrove habitat located on the spoil islands. There are no impacts to noise and air quality and the potential for contamination involvement is similar to all Build Alternatives.

This alternative was eliminated from additional study due to the environmental and hydraulic conductivity impacts associated with filling the waterways the bridges cross. The alternative also has a significant impact on the historic characteristics and aesthetics of the Causeway.

1.3.8 Replacement Alternative 12: Value Engineering Alternative

During a week-long process in August 2015, a FDOT organized Value Engineering (VE) Team performed a VE Analysis and prepared a Value Engineering report. The team developed three recommendations which consisted of nine alternatives to add value to the project by improving the function of the project or reducing the cost. The VE Study and the response to the Study are included in the PER, which is in the project file. The VE team focused on the following elements of the project: Bridges 9, 10 and 11, Fixed Bridges 2 through 9, 11 and 12, and Typical Section.

Bridges 9, 10 and 11

The VE Team proposed alternatives that would raise the vertical profile of the bridges and eliminate the bascule bridge using a High-Level Fixed Bridge over Bridges 9 through 11. The most favorable of these alternatives was studied further as part of this PD&E and presented at a Project Advisory Group meeting (see the PER for the High-Level Fixed Bridge Technical Memorandum).

The High-Level Fixed Bridge proposes a single fixed bridge from Belle Isle to Rivo Alto Island, with the maximum attainable vertical clearance, replacing Bridges 9, 10 & 11. This alternative has negative impacts to neighborhood access and connectivity due to the large footprint of the bridge's approaches. This alternative requires roadway reconstruction at the island approaches to accommodate the new bridge profile and retaining walls needed to tie into the existing roadways.

These alternatives were eliminated from additional study as they do not acknowledge the historic appearance of the original bridges and were not favored by the community.

Fixed Bridges 2 through 9, 11 and 12

The VE Team proposed alternatives that would replace the arched beams and/or change the existing span configuration of the bridges. This would result in use of lower cost beam types and a more efficient structural system.

The Venetian Causeway is on the NRHP. Notable structural features include the span configurations, arched beams, geometrically designed railings and the low profile of the bridges. These characteristics define the causeway and the community. The community has expressed its desire to see the project pay homage to the historic character of the Causeway. Additionally, the State Historic Preservation Officer (SHPO) has indicated that the replication of the bridges would be considered as part of the mitigation for any action that would harm the historic bridges. As a result, these VE alternatives were eliminated from additional study.

Typical Section

The VE Team proposed alternatives that reduced the width of the bicycles lanes and sidewalks to moderate the cost of the structures.

Given the heavy bicycle traffic and the concerns of the residents for bicycle safety on the confined bridge section, the 7-ft. buffered bicycle lanes should remain in accordance with current design criteria. Additionally, the community requested the sidewalks be as wide as possible as the bridges are a look out point for tourists and the wider sidewalks would allow pedestrians to safely maneuver the sidewalks. As a result, the VE alternative was eliminated from additional study.

1.3.9 Replacement Alternative M2: Swing Bridge

This alternative replaces the existing movable bridge with a new swing bridge at Bridge 10. Similar to all movable bridge replacement alternatives, this alternative will have a minimal impact on natural resources including wetlands, benthic resources and listed species. There are no impacts to noise and air quality and the potential for contamination involvement is similar to all Build Alternatives.

Swing span bridges provide unlimited vertical clearance in the open position (similar to bascule bridges) and provide dual navigation channels. An example of a swing bridge is provided in **Figure 1-11**. However, these advantages are severely offset by disadvantages that include:

- Hazards to marine traffic, the bridge would pivot towards approaching vessels and leave the swing span more exposed to vessel collision;
- Greater hazard to vehicular traffic, because drop off condition would require positive blocking measures at each approach; and
- No direct access to the swing span in the open position.

Therefore, this alternative was eliminated from additional study.

Anticipated Cost: \$50 Million - \$55 Million



Figure 1-11 Swing Bridge Example

1.3.10 Replacement Alternative M3: Vertical Lift Bridge

This alternative would replace the existing movable bridge with a new vertical lift bridge at Bridge 10. An example of a vertical lift bridge is provided in **Figure 1-12**. Similar to all movable bridge replacement alternatives, this alternative will have a minimal impact on natural resources including wetlands, benthic resources and listed species. There are no impacts to noise and air quality and the potential for contamination involvement is similar to all Build Alternatives. Advantages to vertical lift bridges include:

- Shallower depth of structure that provides more vertical clearance with the span in the lowered position;
- Provide longer movable span lengths that can allow for spanning the waterway with no piers in the water; and
- Provide increased horizontal navigation clearance and improved navigation safety.

However, these advantages are offset by disadvantages that include:

- High cost;
- Tall towers (80 – 90 ft.);
- Restricted vertical clearance with the span raised (65 ft.);
- Longer operating time;
- Hazard to vehicular traffic, drop off condition requires positive blocking measures at each approach; and
- No operating system redundancy, required maintenance disables bridge.

Considering these disadvantages and the anticipated cost, this alternative was eliminated from additional study.

Anticipated Cost: \$46 Million - \$50 Million



Figure 1-12 Vertical Lift Bridge Example

1.3.11 Replacement Alternative M5: Single Leaf Bascule Bridge

This alternative replaces the existing movable bridge with a new single leaf bascule bridge at Bridge 10. Similar to all movable bridge replacement alternatives, this alternative will have a minimal impact on natural resources including wetlands, benthic resources and listed species. There are no impacts to noise and air quality and the potential for contamination involvement is similar to all Build Alternatives.

Section 8.1.1 of the *Florida Department of Transportation Structures Design Guidelines* (January 2017) states:

“Projects for which the criteria are applicable will result in designs that preferably, provide new bascule bridges with a "two leaves per span" configuration.”

“Commentary: Single leaf bascules are not allowed but may be considered for small channel openings where navigational and vehicular traffic is low and with approval from the Structures Design Office (SDO).”

Bridge 10 does not meet FDOT’s criteria for considering a single leaf bascule bridge. The bridge tender’s log indicates a significant amount of openings to allow the passage of navigational traffic because of the low vertical clearance. Vehicular and pedestrian/bicycle traffic volumes are high. For the projects opening year (2024), this segment of the Causeway is expected to operate at LOS F during the peak hour in the peak direction. Therefore, the Single Leaf Bridge alternative was eliminated from additional study. An example of a single leaf bascule bridge is provided (see **Figure 1-13**).

Anticipated Cost: \$27 Million - \$30 Million



Figure 1-13 Single Leaf Bascule Bridge Example

1.4 Alternatives Considered for Additional Study

Alternatives evaluated during the PD&E Study include the No-Action Alternative, the Transportation Systems Management and Operations (TSM&O) alternative, and two Build Alternatives as described below. Alternatives were developed and evaluated based on the ability to meet the project needs. The No-Action Alternative will remain viable until after the Public Hearing. For additional information relating to the Alternatives Analysis, please see the PER in the project file. See **Table 1-4** for the Viable Alternatives selected for additional study.

Table 1-4 Viable Alternatives

NO-BUILD ALTERNATIVES	
1	No-Action – The bridges remain as is with routine maintenance only.
2	Transportation Systems Management & Operations (TSM&O) – The bridges remain as is with routine maintenance only. Transit, bicycle, pedestrian and other operational improvements would be made to facilitate transportation along the corridor.
BUILD ALTERNATIVES - REHABILITATION	
Fixed Bridge Alternatives The rehabilitation of the bridges would require that a rehabilitation alternative for the fixed bridges be selected.	
4	Fixed Bridge Rehabilitation with Beam Strengthening - Rehabilitation of the fixed bridges to improve safety and load carrying capacity. Includes beam strengthening to achieve a higher load carrying capacity.
Movable Bridge Alternative The rehabilitation alternative of the eastern movable bridge (Bridge 10).	
M1	Bascule Bridge Rehabilitation – Rehabilitation of the eastern movable bridge to improve safety and achieve a higher load carrying capacity.
BUILD ALTERNATIVES - REPLACEMENT	
Fixed Bridge Alternatives The replacement of the bridges would require that the structural system for the fixed bridges be selected.	
7	Arched Beams – This alternative provides low-level bridges, replicates the arched beams and maintains the look of the existing bridges
Movable Bridge Alternatives The replacement of the eastern movable bridge (Bridge 10) would require that the movable bridge type be selected.	
M4	Double Leaf Bascule Bridge – The existing bridge would be replaced in kind.

1.4.1 No-Action Alternative

The No-Action Alternative maintains the existing bridges and roadway approaches in their current condition. No improvements would be made on the structures, except for routine maintenance. This alternative is used as a basis to evaluate the other project alternatives.

As a result of the bridge inspections dated October 11, 2018 through January 15, 2019, Bridges 2 through 11 in the Causeway were classified as “functionally obsolete” and Bridge 12 was classified as “structurally deficient.” Sufficiency ratings for Bridges 2 through 12 are all below 50 out of a possible 100 based on the FHWA Sufficiency Rating Evaluation. According to the FHWA policy, bridges with a sufficiency rating of less than 50 are eligible for replacement.

The No-Action Alternative includes only routine maintenance performed as needed to keep the bridges open to traffic until safety issues, such as reduced capacity due to ongoing deterioration, would require them to be closed. Repair or replacement could be considered at a later date. This alternative does not include modification or improvements to the existing bridges or the approach roadway. Existing geometric features and other deficiencies, including substandard lane width and curbs would remain. No changes to

the existing horizontal and vertical navigational clearances would occur. The routine maintenance that would be performed on the structures would include:

- Spall repairs;
- Structural steel cleaning and painting;
- Steel repairs; and
- Mechanical and Electrical maintenance repairs.

The bridges are vulnerable to coastal storms and are below the 100-year Peak Storm Surge elevation of 11.6 ft. North American Vertical Datum of 1988 (NAVD88). Data from Federal Emergency Management Agency (FEMA) indicates that the storm surge heights in the area range from 7.7 ft. to 11.6 ft. for the 100-year storm. A wave crest is storm surge plus 70% of the maximum wave height. The Causeway fixed bridges would be inundated in the 100-year storm event. The bridges are also scour susceptible. The 100-year base flood event is predicted to result in scour to an elevation of (-)20.9 ft., which is below average existing pile tip elevation of (-)19.0 ft. This would result in bridge failure.

The No-Action Alternative would preserve the historic character of the Venetian Causeway and does not appear to be an adverse effect to the significant resources under Section 106 of the National Historic Preservation Act. There are also no impacts to noise and air quality and no potential for contamination involvement with the no-action alternative. However, the alternative does not meet the purpose and need of the project as it does not correct the bridges' structural and functional deficiencies. In addition, the lack of appropriate treatment of stormwater runoff will continue to degrade the natural habitat of Biscayne Bay. Over time, continued deterioration of structural elements will pose safety hazards to the public or place intolerable restrictions on travel.

1.4.2 Transportation Systems Management & Operations (TSM&O)

TSM&O options generally include traffic signal and intersection improvements, access management and transit improvements. The TSM&O Alternative includes those types of activities designed to maximize the utilization and efficiency of the present system. The alternative components that were considered include the following:

- Traffic signal optimization;
- Traffic operational improvements to include signing and pavement marking improvements;
- Enhanced bus service;
- Enhanced pedestrian and bicycle facilities; and
- Limited repairs on the existing bridges to improve operation.

Similar to the No-Action Alternative, the TSM&O Alternative would preserve the historic character of the bridges and does not appear to be an adverse effect to the significant resources under Section 106 of the National Historic Preservation Act but maintains the existing bridges in their current condition. There are no impacts to noise and air quality and no potential for contamination involvement. The alternative provides some transportation operation improvements on the corridor but does not meet the purpose

and need as it does not correct the bridges' structural and functional deficiencies. In addition, the lack of appropriate treatment of stormwater runoff will continue to degrade the natural habitat of Biscayne Bay. Over time, continued deterioration of structural elements will pose safety hazards to the public and place restrictions on travel.

1.4.3 Build Alternative – Rehabilitation

Rehabilitation Alternative 4: Fixed Bridge Rehabilitation with Beam Strengthening

Rehabilitation Alternative 4 includes deck replacement, beam strengthening and foundation strengthening. This alternative would correct physical and design criteria deficiencies of (Bridges 2 through 9, 11 and 12) to extend their service life. Considering the historical significance of the existing causeway, all efforts were made to protect and preserve the historic bridge elements. This alternative was developed in order to maintain the existing bridges in their location and to extend service life by 25 years.

This alternative achieves the established rehabilitation criteria and includes the following:

- Replace the existing 6.5-in. deck with a new higher strength concrete 8.5-in. deck;
- Strengthen the existing foundations by installing new drilled shafts (**Figure 1-14** and **Figure 1-15**);
- Foundations designed to resist wave force vulnerability;
- Encase existing and new footings to strengthen the foundations;
- Repair concrete spalls and cracks in the beams and diaphragms;
- Repair jacketed piles;
- Strengthen interior beams by widening by 8-in. on both sides and strengthening exterior beams by widening by 8-in. on the inside face;
- Strengthened beams, cast-in-place deck and strengthened foundation will provide adequate resistance to meet current FDOT/AASHTO (American Association of State Highway Transportation Officials) live load requirements;
- Strengthened foundation to meet the standards for scour resistance, wave force resistance (classified as Extremely Critical) and vessel impact resistance (classified as Critical). Refer to the **Bridge Hydraulics/ Design Scour Report** dated November 20, 2017.
- Cathodic protection impressed current system for the beams and diaphragms. Refer to **Conceptual Cathodic Protection Design for Bridge Superstructure and Substructure Components** dated June 15, 2016;
- Bridges to be closed one at a time during construction, and detours to be provided;
- Utility services to be maintained on the bridges during construction time.

Estimated ROW Acquisition: None

Anticipated Cost: \$43 Million

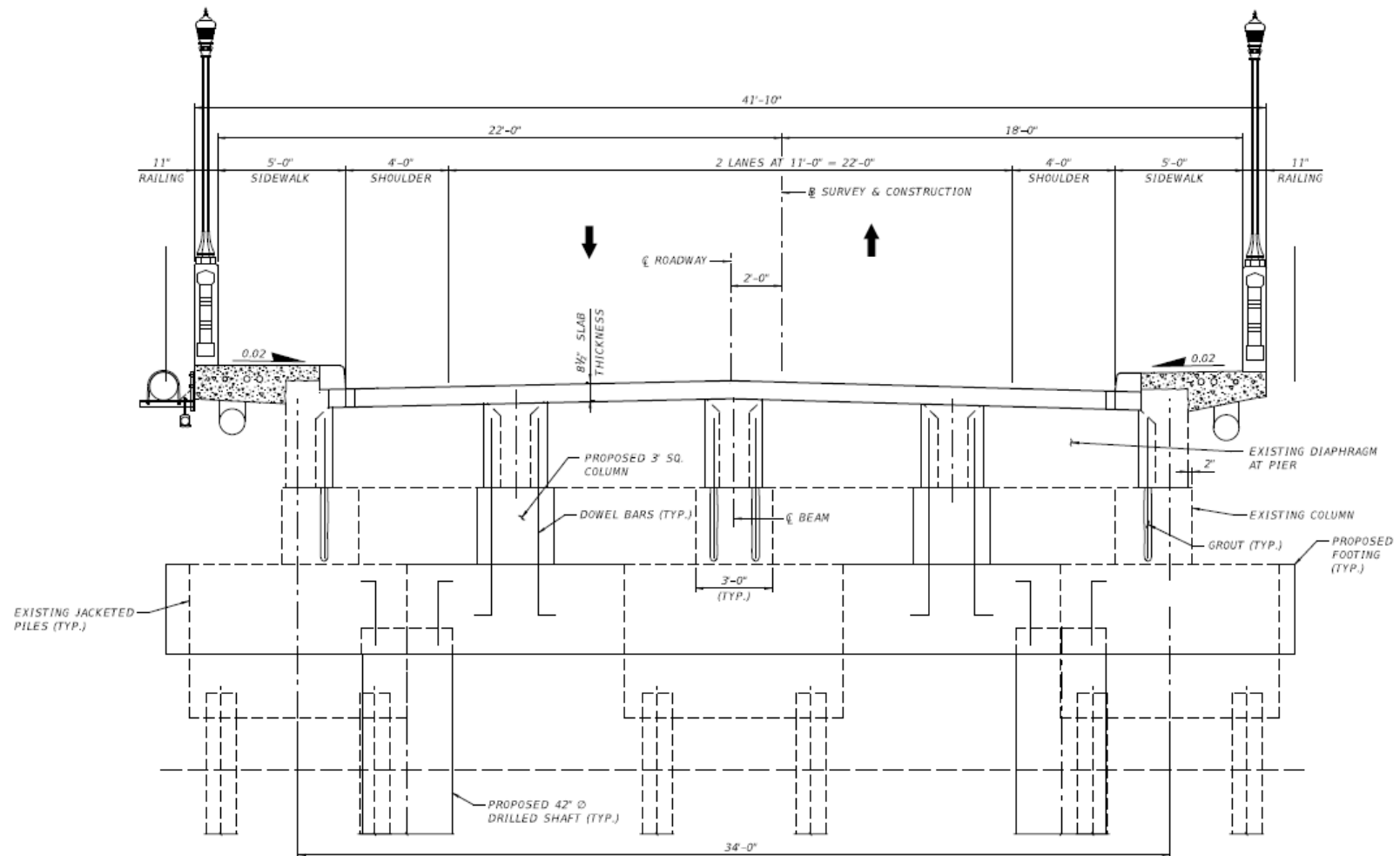


Figure 1-14 Rehabilitation Alternative 4: Beam and Foundation Strengthening Concept



Rehabilitation Alternative M1: Bascule Bridge Rehabilitation

Rehabilitation Alternative M1 includes the rehabilitation of the movable span Bridge 10 (see **Figure 1-16**). Bridge 1 has already been replaced and was not included for evaluation for this alternative. Rehabilitation Alternative M1 modifies the existing movable span of Bridge 10 to improve safety aspects and eliminate structural, mechanical and electrical deficiencies. The rehabilitation would be designed to extend the life of the bridge for a minimum of 25 years with routine maintenance and periodic repairs. This rehabilitation alternative would not include changes in the horizontal or vertical clearance. The bridge would not be widened; therefore, the existing sidewalks and lane configurations would remain the same (see **Figure 1-16**).

The following scope of work is considered for the rehabilitation alternatives:

Bridge 10 (East Bascule – 874474)

This bridge was completely rehabilitated in 1999 to include new electrical and mechanical systems, as well as new bascule leaves. In 2016, there was also a structural, mechanical, and electrical rehabilitation to improve existing conditions. This rehabilitation would extend the life of the bridge by 25 years.

Structural:

- Recondition Bascule Span Superstructure (Reduce Maintenance):
 - Replace Bolts with Mechanically Galvanized Structural Bolts for Enhanced Corrosion Resistance
 - Use Stainless Steel (Type 316) Fasteners for Miscellaneous Components
- Modify Bascule Span Superstructure (Improve Functionality/Maintenance):
 - Replace Sidewalk Plates and Install New Curb Assembly (5-ft. Sidewalk)
 - Install Machinery Room Access Platforms
- Repair Bascule Pier Concrete (Extend Concrete Service Life):
 - Remove Surface Concrete to Depth of Reinforcement
 - Removes Unsound and Contaminated Material
 - Supplement Deteriorated Reinforcing Steel (as required)
 - Install Cathodic Protection System
 - Use Corrosion Resistant Concrete
 - Replace Class 5 Applied Finish Coating
- Strengthen Bascule Pier Foundations (Resist Wave Loading):
 - Remove Bascule Pier Deck and Deck Joints between Curbs
 - Remove Live Load Support Beams and Concrete Brackets
 - Temporarily Remove Bascule Leaves
 - Float-out on Barges
 - Install Drilled Shafts or Driven Concrete Piles between Footings

- Install Steel Sheet Pile Cofferdam with Tremie Concrete Seal and Dewater
 - Facilitates Construction in the Dry
- Install Reinforcing Steel and Anchor to Pier Footings
- Form and Pour Concrete Strut between Pier Footings
- Cut-off or Remove Steel Sheet Piles
- Construct Counterweight Enclosure (Prevent Submersion of Counterweight/Improve Protection)
 - Construct Precast Enclosure Slab/Walls
 - Install Precast between Pier Columns and Seal with Supplemental Forms
 - Install Tremie Concrete Seal and Dewater
 - Facilitates Construction in the Dry
 - Install Reinforcing Steel and Anchor to Pier Columns, Beams and Diaphragms
 - Form and Pour Concrete Slab and Walls
 - Reinstall Bascule Leaves
 - Float-in on Barges
 - Reconstruct Live Load Shoe Support Beams and Concrete Bracket
- Reconstruct Bascule Pier Deck between Curbs
- Install Galvanized Steel Screen and Gate along Front Wall (Prevent Unauthorized Access)
- Recondition Fender System (Reduce Maintenance):
 - Replace Timber Components with Plastic Marine Lumber
 - Replace Hardware with Stainless Steel (Type 316) Hardware
 - Replace Access Ladders

Mechanical:

- Recondition Drive Train (Improve Reliability/Reduce Maintenance):
 - Replace Steel Coating System
 - Use Metalized Primer for Enhanced Corrosion Resistance
 - Recondition Gear Boxes
 - Replace Gaskets, Breathers, and Sight Glasses
 - Recondition Bearings
 - Clean and Polish Surfaces
 - Replace Lubrication Ports, Flush and Clean

Electrical:

- Replace Electrical Power Distribution System (Improve Reliability and Reduce Maintenance):
 - New Conduit, Wiring, Junction Boxes, Receptacles, Pier Lighting
 - Use Improved Materials for Enhanced Corrosion Resistance
 - New Motor Control Center
 - New Service Entrance
 - New Standby Generator and Automatic Transfer Switch
 - New Grounding and Surge Suppression System
 - New Submarine Cable Installed in Permanent Duct
- Replace Navigation Lighting (Improve Reliability/Reduce Maintenance)
- Replace Warning Gates and Signals (Improve Reliability/Reduce Maintenance)

Architectural:

- Renovate Control House
 - Replace Windows and Doors
 - Install CCTV Camera System
 - Clean and Paint Interior
 - Replace Flooring

Estimated ROW Acquisition: None

Anticipated Cost: \$9 Million

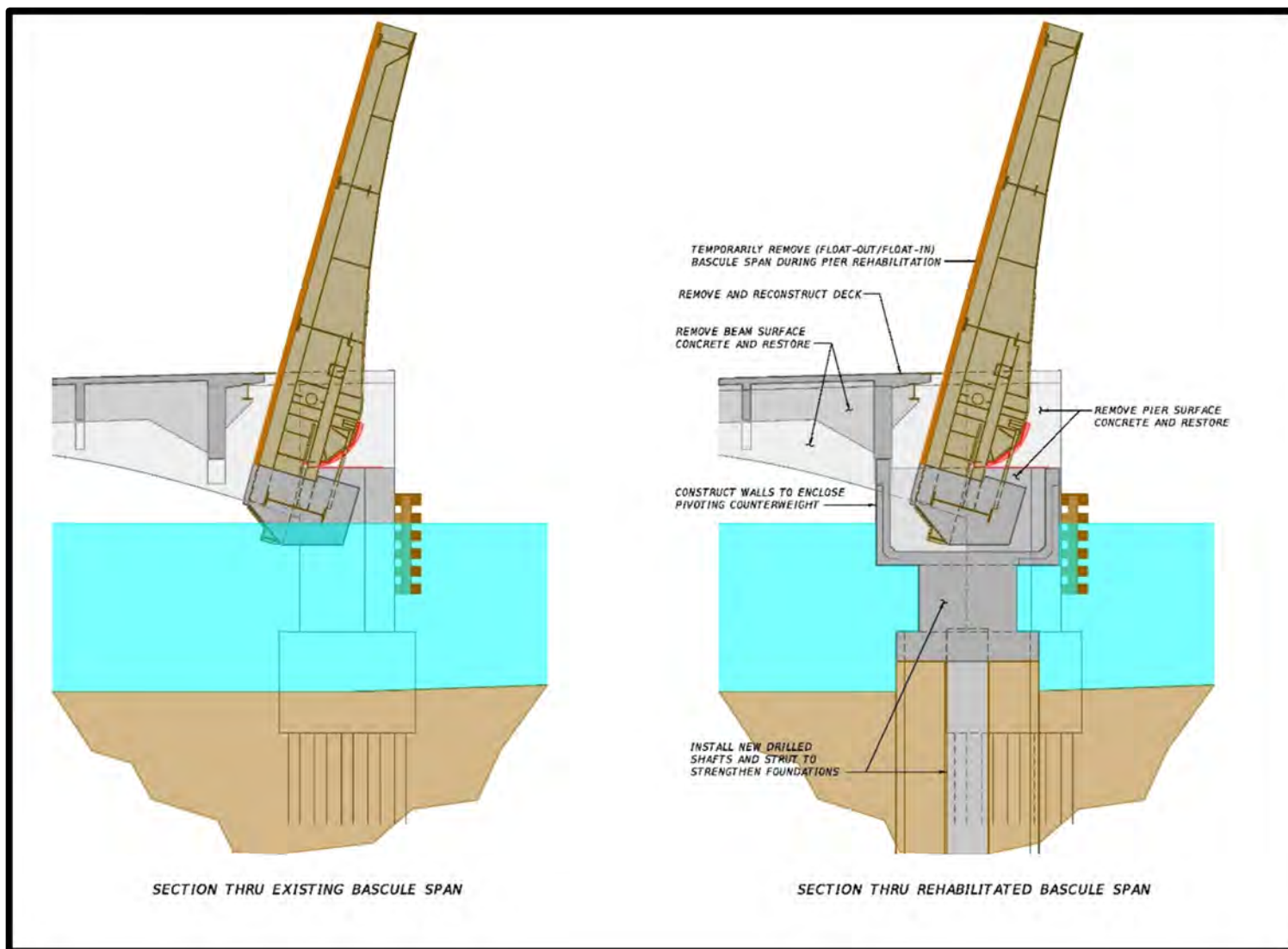


Figure 1-16 Bridge 10 Bascule Leaf Rehabilitation Concept

Rehabilitation Alternative Stormwater Management System

The rehabilitation alternative consists of restriping bridges 2 through 12. The bicycle lanes will remain at 4-ft. wide. The reduction in the width of the travel lanes from 12-ft. to 11-ft. allows for the increase in the width of the sidewalks from 4-ft. to 5-ft. Existing stormwater management systems in the residential islands and proposed systems on the spoil islands will be utilized to collect runoff from the bridges since scuppers will be eliminated with the replacement of the existing bridge deck. These systems will provide water quality treatment and attenuation. The stormwater management approach will be coordinated through pre-application meetings with Miami-Dade County Department of Environmental Resource Management (DERM), the local-environmental agency, and the South Florida Water Management District (SFWMD), the regional water management district, as well as the maintaining agencies, such as the City of Miami and the City of Miami Beach.

For Bridge 12, half of the stormwater runoff will drain toward the City of Miami Beach's stormwater management system along Dade Boulevard and Sunset Harbour Drive. The proposed stormwater management approach will be coordinated with the City of Miami Beach to ensure there is sufficient capacity to handle the stormwater runoff.

Environmental Analysis of the Rehabilitation Alternative

As detailed in the technical environmental reports in the project file and further described in Section 2, the rehabilitation alternative will have minimal environmental impacts overall. However, this alternative will result in an adverse effect to the significant historic resources (see **Section 2.2** for additional details). There are no impacts to noise and air quality and the potential for contamination involvement is minimal. With no ROW acquisition required, there are no permanent impacts to the community. Temporary disruption to the traveling public will occur during construction due to bridge closures. However, there will be no permanent impact to access or connectivity along the corridor. There will be no use of two (2) Section 4(f) recreational resources along the corridor, Belle Isle Park, Maurice Gibb Memorial Park and temporary occupancy of the Florida Circumnavigational Saltwater Paddling Trail due to a temporary closure of Bridge 10 during construction. This alternative will have a minimal impact on natural resources including wetlands, benthic resources and listed species located along the causeway and beneath the bridges in Biscayne Bay. No direct shading impacts to benthic communities will occur as the bridge deck will not be widened. However, temporary shading from barge use may occur during construction. Best management practices (BMPs) and Standard Construction Conditions for In-Water Work for the West Indian manatee, smalltooth sawfish and sea turtles will be employed during construction to ensure minimal impacts to water quality and species.

1.4.4 Build Alternative – Replacement

Replacement Alternative 7: Arched Beams

Replacement Alternative 7 includes the replacement of Bridges 2 through 9, Bridge 10 approaches, and Bridge 11 and 12 with low-profile, arched beam bridges that mimic the original bridges. The arched beam superstructure Replacement Alternative supports the required AASHTO HL-93 load. The structural system

mimics the dimensions and appearance of the original structure. The superstructure consists of variable depth arched beams. The variable depth beams are approximately 2 ft. deep at midspan and 4 ft. deep at beam ends (see **Figure 1-20**).



Figure 1-17 Replacement Alternative 7: Arched Beam Elevation View

The proposed approach span bridge section would be increased 16 ft. from the existing 41 ft. 10 in. wide section. The 57 ft. 10 in. wide bridge section includes two 8-ft. sidewalks, two 1-ft. 6-in. shoulders, two 7-ft. buffered bicycle lanes and two 11-ft. travel lanes (see **Figure 1-21**).

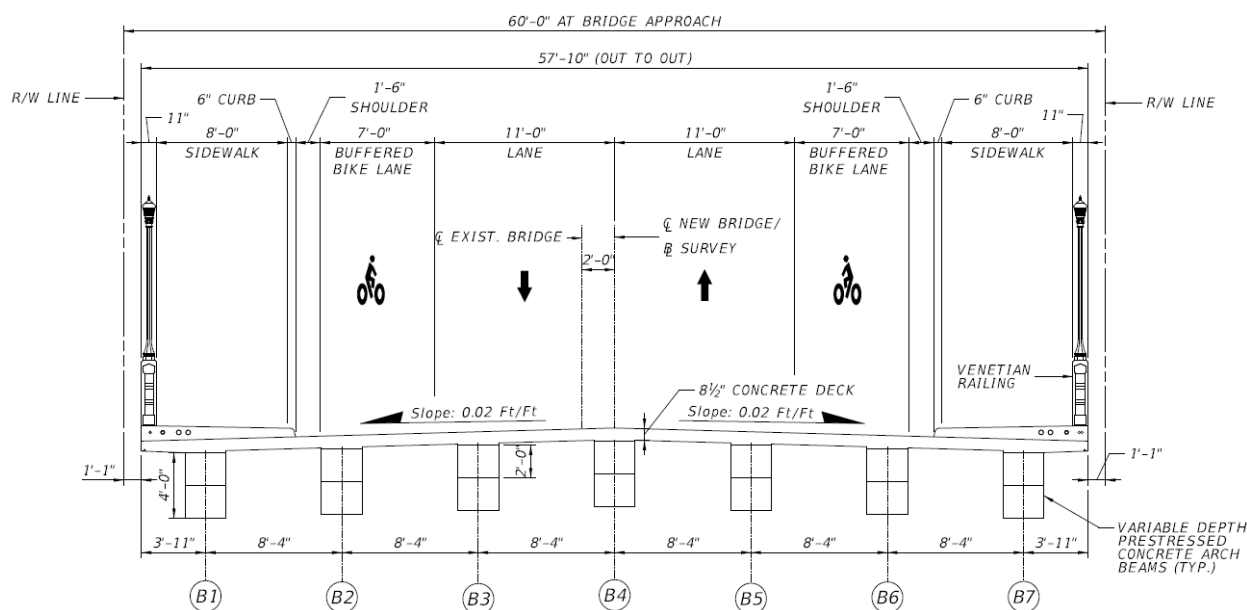


Figure 1-18 Replacement Alternative 7: Arched Beam Typical Section

The potential for sea-level rise was considered in establishing the proposed bridge vertical alignment. Potential sea-level rise elevations were established using the FDOT Drainage Manual. The manual provides sea-level rise data based on historical tidal records that was used to project the sea-level rise for the project location assuming a 75-year design life. It was estimated that overall, the project location is expected to experience 0.79-ft. of sea-level rise by year 2093. To mitigate the expected 0.79-ft. of sea-level rise, the vertical alignment of Bridges 2 through 9, 11 and 12 would be raised approximately 1 ft. above the existing clearance to Biscayne Bay. The ability for a higher vertical alignment is limited by the

potential for impacts to the adjacent ROW and the connection to the intersections on the residential islands.

The minimum increase in clearance over water was favored during the public meetings as residents stated that the bridges should remain as low as possible in order to maintain the historic appearance of the original bridges. The bridges will continue to be subject to the 100-year storm surge. The East Bascule Bridge No. 10 will be raised so the machinery is above the 100-year storm surge height.

The raised bridge profile will require modifications to the roadway approaches (see **Figure 1-19**). The design speed will be 10 mph over the current posted speed.

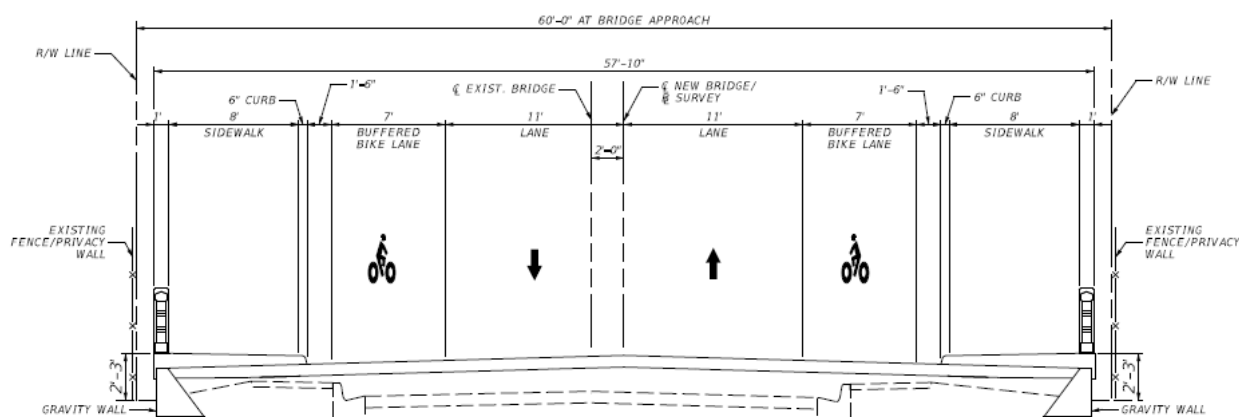


Figure 1-19 Replacement Alternative 7: Bridge Approach

Substructure

For the replacement alternatives, two foundation types were considered: 24-in. Square prestressed concrete Piles and 48-in. drilled shafts. Drilled shafts were favored as they have fewer noise and vibration impacts.

48-in. Drilled Shafts

Drilled shaft foundations are cast-in-place reinforced concrete deep foundations. They are larger than driven piles, therefore they can take larger loads than piles as well as resist more vertical loads and movements. Drilled shafts are constructed by drilling to the required depth, cleaned, inspected, reinforced with a reinforcing steel cage, and concrete placed in the hole. The construction process has more environmental impacts than piles due to the drilling operation; however, the temporary noise impacts due to construction would be greatly reduced for this alternative.

Despite the high cost of drilled shafts, they are recommended for this project to reduce temporary noise impacts. Additionally, drilled shafts were proven to be effective during the partial Bridge 1 replacement in 1999 and 2016.

At this time, based on the information provided, it appears this alternative will likely result in an adverse effect to the significant resources. While this alternative results in an adverse effect, it will acknowledge

the historic appearance of the original bridges by replicating the low-profile bridges with arched beams and same span configurations, as well as geometrically designed railings that recognize the historic railing design.

Estimated ROW Acquisition: None

Anticipated Cost: \$47 Million

Replacement Alternative: M4: Double Leaf Bascule Bridge

This alternative would replace the existing Bridge 10 movable bridge with a new double leaf Bascule Bridge 10. Advantages to the double leaf bascule bridges include:

- Unlimited vertical clearance in the raised position;
- The design can be laid out in a symmetrical arrangement which is an advantage when an “arched” look is desired; and
- They provide natural barriers to vehicular traffic when in the open position.

The existing bascule span provides 6 ft. of minimum vertical clearance above Mean High Water (MHW) at the face of fenders and 10 ft. at the center of the navigation channel with the span lowered. The existing horizontal clearance is 56 ft. between fenders. There are no established official United States Coast Guard (USCG) vertical or horizontal guide clearances for this waterway crossing. However, a USCG Bridge Permit will be required for the replacement bridge. For reference, the bridges at the east end of Julia Tuttle Causeway (I-195) to the north and MacArthur Causeway (SR A1A) to the south are high-level bridges with fixed spans over the navigation channel that provide 35 ft. of minimum vertical clearance above MHW. They both provide 75 ft. of horizontal clearance between fenders.

A 75-ft. horizontal clearance between fenders is proposed for the movable span replacement option. This provides improved safety at the Venetian Causeway site and is consistent with bridges located to the north and south of the Causeway. In order to span the proposed 75-ft. wide navigation channel, the bascule span will require a minimum overall structure depth (controlled by the depth of the main girders) at the face of fenders of approximately 10 ft. The proposed horizontal clearance was coordinated with the USCG and meets the minimum 75-ft. horizontal clearance requirement even though Bridge 10 is not crossing a USCG navigable channel (see **Appendix B – USCG Meeting Minutes**).



Figure 1-20 Replacement Alternative M4: Double Leaf Bascule Bridge

For a movable span bridge, the vertical clearance in the closed position affects the number of bridge openings and traffic flow. Higher vertical clearance in the closed position would require fewer bridge openings. The existing bridge provides only 6 ft. of minimum vertical clearance at MHW over the ICWW at the fenders in the closed position. Unlimited clearance is provided in the open position. The vessel height survey conducted on this bridge indicated the bridge would see fewer openings if the vertical clearance of the bridge was raised. The raising of the bridge must take into consideration the impacts to the spoil islands and residential islands, as well as the historic appearance of the Causeway. Analysis for the proposed vertical clearance for Bridge 10 included the following:

- 13.0 ft. of vertical clearance at the fender and 16.0 ft. of vertical clearance at centerline of channel. See **Figure 1-20**. This profile would maximize the height of the bridge by raising the profile beginning at the point where Bridges 9 and 11 connect to the residential islands. The spoil islands will have retaining walls. A ramp could be provided for pedestrian access to the islands.

After presenting the proposed vertical clearance for Bridge 10 at the Alternatives Public Workshop, a lower profile alternative was requested. The Venetian residents recommended the vertical profile be revisited to maintain the bridge as low as possible to minimize impacts to the adjacent spoil and residential islands. The vertical profile for the proposed vertical clearance would require the spoil islands to be filled and that retaining walls of approximately 8 ft. in height be constructed. This alternative would significantly impact the historic appearance of the causeway. As a result, the vertical profile was refined, and a lower profile was presented:

- 10.5 ft. of vertical clearance at the fender and 13.5 ft. of vertical clearance at centerline of channel. This profile maintains the drive machinery above the 100-year flood elevation. Although the bascule piers will flood during a storm event, the mechanical and electrical systems of the bridge will remain above the flood elevation. The spoil islands will have retaining walls. A ramp could be provided for pedestrian access to the islands.

Vertical profiles were prepared for both alternatives to determine where each alternative would tie back into existing grade on the approach roadways. Both proposed profiles have a maximum vertical grade of five percent to meet ADA requirements for pedestrians (see **Figure 1-21**).

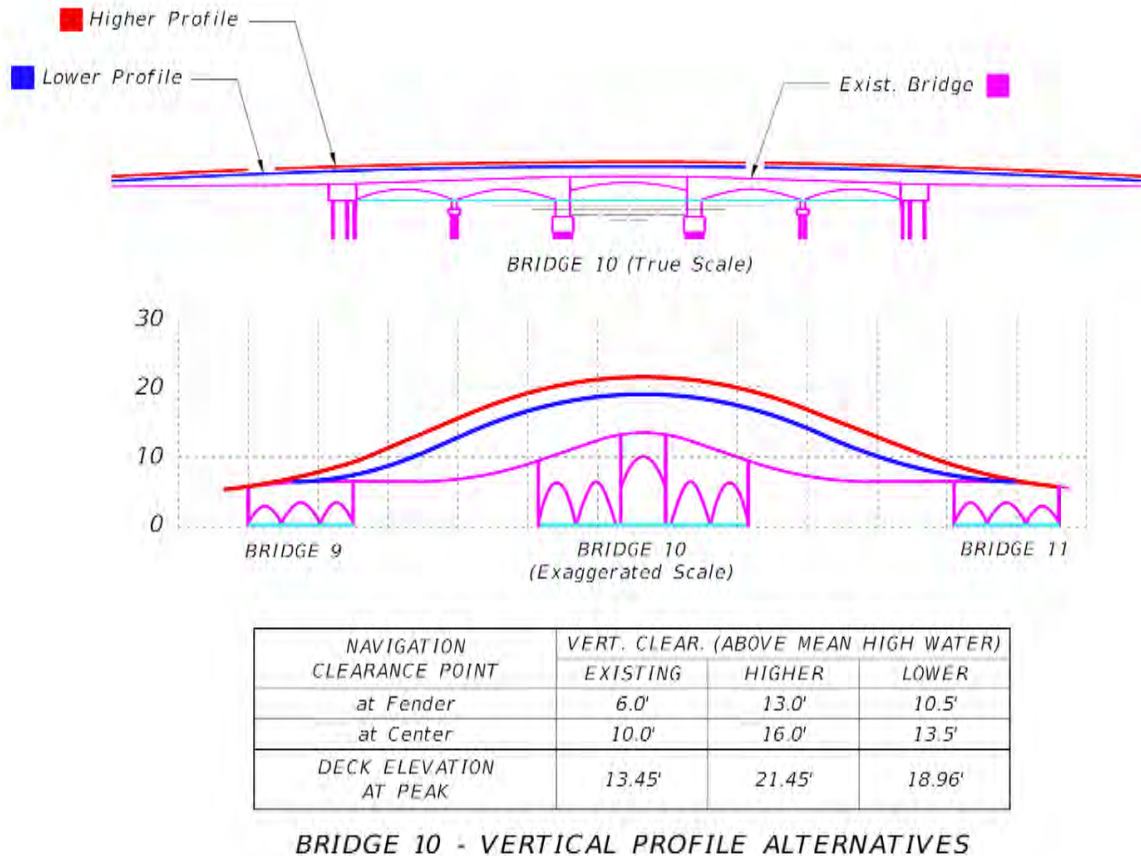


Figure 1-21 Bridge 10 Vertical Profile

The lower profile bridge with 10.5-ft. vertical clearance at the fender and 13.5-ft of vertical clearance at the centerline of the channel was desired by the public, in order for the bridges to remain as low as possible. This profile has the following benefits:

- Least impacts to the appearance of the Causeway
- Reduces the need to raise Bridges 9 and 11
- Minimizes the use of retaining walls
- Maintains pedestrian access to the spoil islands from the roadway

- Has the least impacts to the aesthetics and view shed of the Causeway

Estimated ROW Acquisition: None

Anticipated Cost: \$43 Million

Replacement Alternative Stormwater Management System

Similar to the rehabilitation approach, the existing stormwater management systems in the residential islands and proposed systems on the spoil islands will be utilized to collect runoff from the bridges since scuppers will be eliminated. These systems will provide water quality and attenuation. The stormwater management approach will be coordinated through pre-application meetings with DERM, the local environmental agency, and SFWMD, the regional water management district, as well as the maintaining agencies, such as the City of Miami and the City of Miami Beach.

For Bridge 12, half of the stormwater runoff will drain toward the City of Miami Beach's stormwater management system along Dade Boulevard and Sunset Harbour Drive. Dade Boulevard has completed reconstruction and the proposed stormwater management approach will be coordinated with the City of Miami Beach to ensure there is sufficient capacity to handle the stormwater runoff.

Environmental Analysis of the Replacement Alternative

As detailed in the technical environmental reports in the project file and further described in Section 2, the replacement alternative will have minimal environmental impacts overall. However, this alternative will result in an adverse effect to the significant historic resources (see **Section 2.2** for additional details). There are no impacts to noise and air quality and the potential for contamination involvement is limited to the work associated with the bridge approaches at the east and west project termini. With no ROW acquisition required, there are no permanent impacts to the community. There will be minimal disruption to the traveling public during construction since traffic will remain on the bridges as they are replaced. No permanent impact to access or connectivity along the corridor is proposed. There will be no use of two (2) Section 4(f) recreational resources along the corridor, Belle Isle Park, Maurice Gibb Memorial Park and temporary occupancy of the Florida Circumnavigational Saltwater Paddling Trail due to the temporary closure of Bridge 10 during construction. This alternative will result in 0.71 acres of permanent shading of Biscayne Bay, an other surface water and essential fish habitat, due to the widening of the bridges. In addition, temporary shading from barge use may also occur during construction. No impacts to wetlands located along the causeway and or listed species is anticipated. This alternative will result in permanent impacts to Johnson's seagrass critical habitat (summarized in **Section 2.3**); however, mitigation is not required. Best management practices (BMPs) and Standard Construction Conditions for In-Water Work for the West Indian manatee, smalltooth sawfish and sea turtles will be employed during construction to minimize impacts to water quality and species.

1.4.4.1 Bridge Railing Options

The Project Team conducted public outreach meetings and workshops to collect feedback from residents and business owners within the project area on the bridge railing options. Bridge railings are required for the protection of traffic and pedestrians from drop offs and other obstacles and must function to contain and redirect errant vehicles using the structure. Bridge railings are designed to satisfy requirements provided by AASHTO's Guide Specification for Bridge Railings. AASHTO requires railings to have

performance characteristics based on a number of factors such as: roadway classification, design speed, average daily traffic, percentage of truck traffic, alignments and bridge conditions. The railing selection is vital for maintaining the historic character of the bridges. The following railing options were considered for the Replacement Alternative of Bridges 2 through 12:

Railing Option: T1 – Venetian Railing

Railing Option T1 maintains the existing Venetian Railing at the coping and maintains the historical character of the causeway (see **Figure 1-22**). The existing Venetian Railing is different from the original Venetian Railing. During the 1996 to 1999 Rehabilitation Project, the original railings were replaced with heavier railings designed for vehicular impact consistent with the AASHTO requirements at the time, but not the geometric sphere requirements and the requirement for the posts to be setback behind the railing. The provision of a curbed sidewalk in front of the railing was introduced on both sides of the bridge to mitigate for any geometric deficiencies. The existing Venetian Railing was also used in the 2016 Emergency Repair Project for Bridge 1. The existing Venetian Railing maintains the historic appearance of the causeway. The proposed railing will not comply with the 6-in. sphere requirement of AASHTO's Guide Specification for Bridge Railings so a design variation memorandum will be required during final design.

T1 – Venetian Railing



Figure 1-22 Railing Option T1

Railing Option: T2 – Wyoming Railing TL-4 at Coping

This railing option includes a Wyoming TL-4 Railing at the Coping. This railing was introduced because local residents desired a railing that provided greater visibility of Biscayne Bay. The Wyoming TL-4 railing allows motorists to have the best scenic experience while providing crash safety. An additional bicycle rail is included on top of the railing. This railing option was eliminated because it does not preserve the historic character of the corridor (see **Figure 1-23**).



Figure 1-23 Railing Option T2

Railing Option: T3 – Wyoming Railing TL-3 at Curb and Original Venetian Railing at Coping

This railing option includes a Wyoming TL-3 at the curb with the Original (1926) Venetian Railing at coping. The Original Venetian Railing could be placed at the coping since the Wyoming TL-3 railing would serve as the traffic railing. The Original Venetian Railing would have inserts in the openings to meet the sphere requirements. The advantage to this option is that the traffic barrier at the curb would provide separation between pedestrians and the traffic. It would improve the safety and functionality at the movable span and provide larger openings in the concrete railing for improved visibility of the waterway and scenery. This railing option was eliminated because it does not preserve the historic character of the corridor (see **Figure 1-24**).



Figure 1-24 Railing Option T3

Railing Option: T4 – Wyoming Railing TL-3 at Curb and Custom Railing at Coping

This railing option includes a Wyoming TL-3 at the curb with a Custom Railing at the coping. The Custom Metal Railing could be placed at the coping since the Wyoming TL-3 railing would serve as the traffic barrier. The custom railing would serve as a pedestrian railing only (see **Figure 1-25**). The advantage to this option is that the traffic barrier at the curb would provide separation between the pedestrians and the traffic, would improve the safety and functionality at the movable span and it would provide greater visibility of the waterway and scenery. The Wyoming railing does not acknowledge the railing aesthetics of the original bridges. This railing option was eliminated because it does not preserve the historic character of the corridor.



Figure 1-25 Railing Option T4

The Venetian Railing is symbolic of the Causeway and was used in the 2016 Emergency Repair Project for Bridge 1 and does not result in an adverse effect to the significant resources. Railing Option T1: Venetian Railing was selected as it maintains the historic appearance of the Causeway.

1.4.5 Comparative Alternative Evaluation

An evaluation matrix was developed to compare and contrast the performance of each viable alternative in meeting the evaluation criteria, and to quantify impacts to the natural, social cultural and physical environment.

The viable alternatives are identified as:

- No Build Alternatives
 - No-Action
 - Transportation Systems Management & Operations (TSM&O)
- Build Alternatives
 - Rehabilitation Alternative
 - Alternative No. 4 – Fixed Bridge Rehabilitation with Beam Strengthening
 - Movable Bridge Alternative M1 – Bascule Bridge Rehabilitation
 - Replacement Alternative
 - Alternative No. 7 – Arched Beams
 - Movable Bridge Alternative M4 – Double Leaf Bascule Bridge

Numerical ratings for specific and relevant qualitative and quantifiable criteria included a direct comparison of each of the alternatives such that the Preferred Alternative could be identified.

Evaluation Criteria includes:

- Purpose and Need
- Current Safety Standards
- Service Life
- Typical Section Functionality
- Structural Capacity
- Hurricane Resistance
- Vessel Collision Resistance
- Bridge Clearances
- Maintenance of Traffic during construction
- Utility Services
- Economic Impacts
- Constructability
- Pedestrian and Bicycle Facilities
- Environmental Impacts, and
- Project Costs

A project team workshop was held with representatives from FDOT, Miami-Dade County, the project team and the public (using the results from the Alternatives Public Workshop). The alternatives were compared and ranked based on the extent to which each alternative met each evaluation criterion.

The anticipated degree of impact to each criterion was ranked by attendees from low to high on a scale of zero to five - zero representing no benefit or not applicable, and five representing the least impacts or most beneficial. (see **Table 1-5**).

Table 1-5 Evaluation Criterion Ranking

Score	Description
0	No Benefit or Not Applicable
1	Most impactful or least benefit
2	Very impactful or little benefit
3	Moderate impact or moderate benefit
4	Little impact or very beneficial
5	Least impactful or most benefit

The total score was calculated for each alternative to indicate the degree to which the alternative satisfies the evaluation criterion. Refer to the evaluation matrix (see **Table 1-6**).

The evaluation matrix is used to:

- Clarify the benefits and shortcomings of the alternatives;
- Summarize likely or potential impacts; and to
- Present a score to show how well each alternative meets the project's purpose and need; and satisfies the evaluation criteria.

The alternatives with the highest numerical total points represented the most desirable alternative. As shown in **Table 1-7** the Replacement Alternative received the highest score of 101. This alternative consists of Fixed Bridge Alternative 7 – Arched Beams and Moveable Bridge Alternative M4 – Double Leaf Bascule Bridge.

Table 1-6 Evaluation Matrix

Criteria		No Build Alternatives				Build Alternatives			
						Rehabilitation		Replacement	
		Alt 1 - No-Action	Score	Alt 2 - Transportation System Management and Operations	Score	Alt 4 - Rehabilitation with Beam Strengthening and Alt M1 - Bascule Bridge Rehabilitation	Score	Alt 7 - Arched Beams with T1 - Venetian Railing and Alt M4 - Double Leaf Bascule Bridge	Score
Meets Purpose and Need		No	0	No	0	Yes	3	Yes	5
Meets Current Safety Standards		No	1	No	1	Partially	3	Yes	5
Service Life		0-3 years	1	0-8 years	1	25 years	2	75 years	5
Typical Sectional Functionality		Substandard sidewalks and bicycle lanes	1	Substandard sidewalks and bicycle lanes	1	Substandard sidewalks and bicycle lanes	2	Meets current criteria	5
Structural Capacity		H-15	1	H-15	1	HL-93	5	HL-93	5
Hurricane Resistance		Not Satisfied	0	Not Satisfied	0	Satisfied	5	Satisfied	5
Vessel Collision Resistance		Not Satisfied	0	Not Satisfied	0	Satisfied	5	Satisfied	5
Bridge Clearances		Remain	1	Remain	1	Remain	1	Improved (Raised 1')	2
Maintenance of Traffic During Construction		N/A	5	N/A	5	82 months	1	48 months (phased construction)	3
Utility Services		Remain	3	Remain	3	Remain	3	Improved	5
Economic Impact		None	1	None	1	None	3	Improved	5
Constructability		No Impact	5	Minimal	4	Major Impact	1	Some Impact	3
Pedestrian and Bicycle Facilities		Remain as is	1	Remain as is	1	Pedestrian - Improved Bicycle - Remain as is	2	Improved	5
Environmental Impacts									
NATURAL	Benthic Resources	no impact	5	no impact	5	impact to corals from scour protection, substructure & beam strengthening	3	impact to corals from scour protection, substructure replacement, spoil island shoreline	2
	Essential Fish Habitat	no impact	5	no impact	5	minimal impacts from construction means and methods	4	minimal impacts from construction means and methods/minimal impact to shoreline of spoil islands	3
	Threatened & Endangered Species	no impact	5	no impact	5	minimal impacts from construction means and methods	4	minimal impacts from construction means and methods	3
	Water Quality	Scuppers discharge to OFW	0	Scuppers discharge to OFW	0	Scuppers discharge to OFW	0	temporary impacts during construction/overall benefit	5
PHYSICAL	Noise Impacts	no impact	5	no impact	5	minimal impacts from construction means and methods	5	temporary impacts during construction	5
	Air Quality	no impact	5	no impact	5	minimal impacts from construction means and methods	5	temporary impacts during construction	5
	Contamination Impacts	Not Applicable	0	Not Applicable	0	Not Applicable	0	Not Applicable	0
Cultural and Historic	Historic - Section 106/4(f)	No Adverse Effect	5	No Adverse Effect	5	No Adverse Effect - some impact to resource	3	Adverse Effect - Resource replaced, National Register of Historic Places listing may be affected	1
SOCIAL and ECONOMIC	Aesthetic/Visual Impacts	utilities remain	3	utilities remain	3	utilities remain	4	wider section, bridge aesthetics replicated, utilities hidden, arch and railings remain	4
	Recreational Areas	Not Applicable	0	Not Applicable	0	Not Applicable	0	Not Applicable	0
	Community Cohesion	no impact	3	no impact	3	temporary impact to access during construction	3	temporary impact to access during construction	5
Project Costs									
Engineering Costs (Bridges only)		\$ -	5	\$ -	5	\$6.9 Million	3	\$11.7 Million	1
Construction Costs (Bridges only)		\$ -	5	\$ -	5	\$53 Million	3	\$90 Million	1
Yearly Maintenance Costs (first 25 years)		\$1.4 Million	1	\$1.4 Million	1	\$1.4 Million	1	\$100,000	5
Life Cycle Costs over 75 years		Unknown	0	Unknown	0	\$179 Million	1	\$96 Million	3
Total Points			67		66		75		101

1.5 Preferred Alternative

The Preferred Alternative is the Replacement Alternative and consists of the following:

- Concrete Arched Beams for the fixed spans of Bridges 2 through 12 (Fixed Bridge Alternative 7 – Arched Beams)
- A double leaf bascule bridge for the movable span at Bridge 10 (Movable Bridge Alternative M4 – Double Leaf Bascule Bridge)

The bridges will incorporate railings (Railing Option T1 – Venetian Railing) that replicate the existing and a wider typical section with enhanced bicycle and pedestrian facilities.

See **Figure 1-26** below.



Figure 1-26 Preferred Alternative (Replacement) Components

The typical section for the replacement bridges will be wider than the existing bridges to accommodate wider sidewalks and bicycle lanes.

Typical Section

A two-lane undivided roadway typical section was developed for the project. This typical section consists of one 11-ft. lane in each direction separated by a double yellow line at the center of the roadway, 7-ft. bicycle lanes, curb and gutter with 8-ft. sidewalks on each side and the Venetian Railing. (see **Figure 1-27**).



Figure 1-27 The Replacement Alternative Typical Section

Alternative Typical Section – Separated Bike Lane Alternative

An alternative typical section, which does not change the footprint of the bridge, was developed to accommodate the potential for separated bicycle lanes on the causeway. The alternative typical section is only feasible if Miami-Dade County's Department of Transportation and Public Works implements separated bicycle lanes on the roadway portions of the causeway. The typical section is in accordance with FDOT's Design Manual and FHWA's Separated Bike Lane Planning and Design Guide. The sidewalks in this alternative are reduced from 8-ft. to 7-ft. and the bicycle lanes are increased from 7-ft. to 8-ft. (6-ft. bicycle lane and 2-ft. median separation). The Replacement Alternative Typical Section – Separated Bike Lane Alternative is shown in **Figure 1-28**.

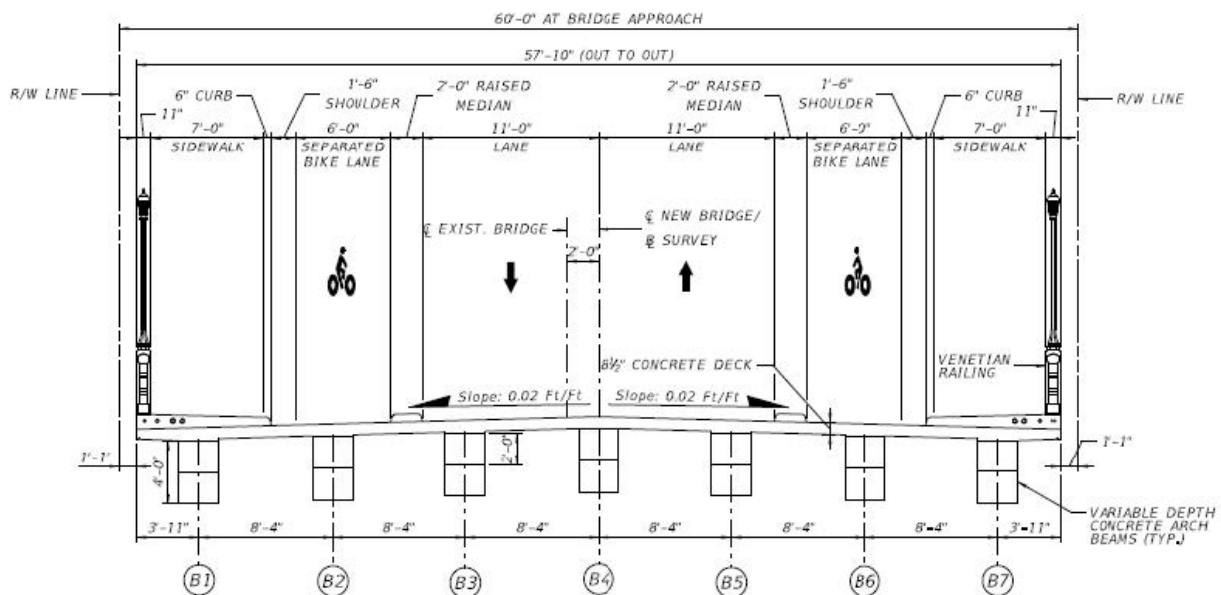


Figure 1-28 The Replacement Alternative Typical Section – Separated Bike Lane Alternative

Construction Phasing

The Venetian Causeway corridor connects the City of Miami mainland with the City of Miami Beach and is utilized by a significant amount of vehicles, pedestrians and bicyclists. The preservation of safety, as well as the minimization of access disruption during construction are of great concern. The replacement of the existing fixed bridge structures is proposed in two construction phases to allow the maintenance of at least one lane of two-way traffic and one sidewalk during the construction. See **Figure 1-29** through **Figure 1-32** for Construction Plan Phases. The first construction phase requires partial demolition of the bridge that allows for one lane of traffic and sidewalk to be maintained on the remainder of the bridge. A portion of the new bridge could then be constructed. One lane of traffic and sidewalk can be maintained on the new portion of bridge while the remainder of the existing bridge is demolished, and the remainder of the new bridge is constructed.

The bascule bridge cannot be constructed in phases and will require the complete closure of the existing

bridge during replacement. Traffic could either be detoured or a temporary bridge provided. A temporary movable bridge would allow for the maintenance of navigational traffic; however, a fixed temporary bridge would block navigational traffic for the duration of the construction. A Maintenance of Traffic (MOT) – Phased Construction Plan has been developed for the Preferred Build Alternative and includes both phases, as well as the options at Bridge 10, in the *Conceptual Bridge and Roadway Plans* in the PER.

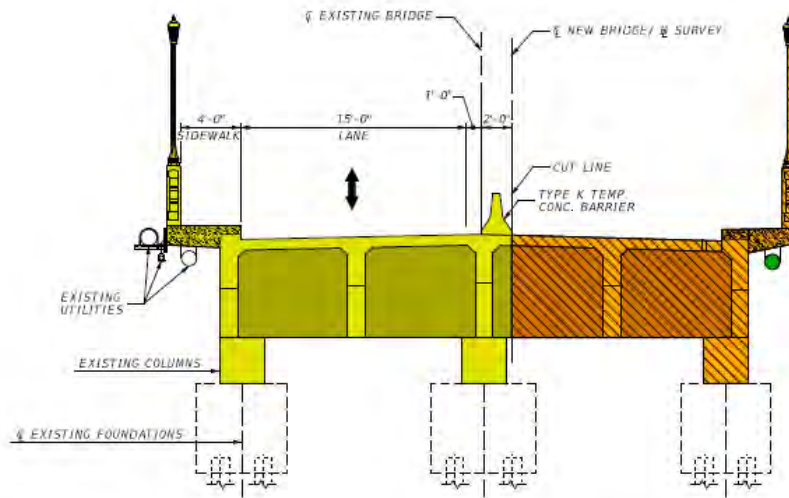


Figure 1-29 Phased Construction Plan – (Phase I – Stage I)

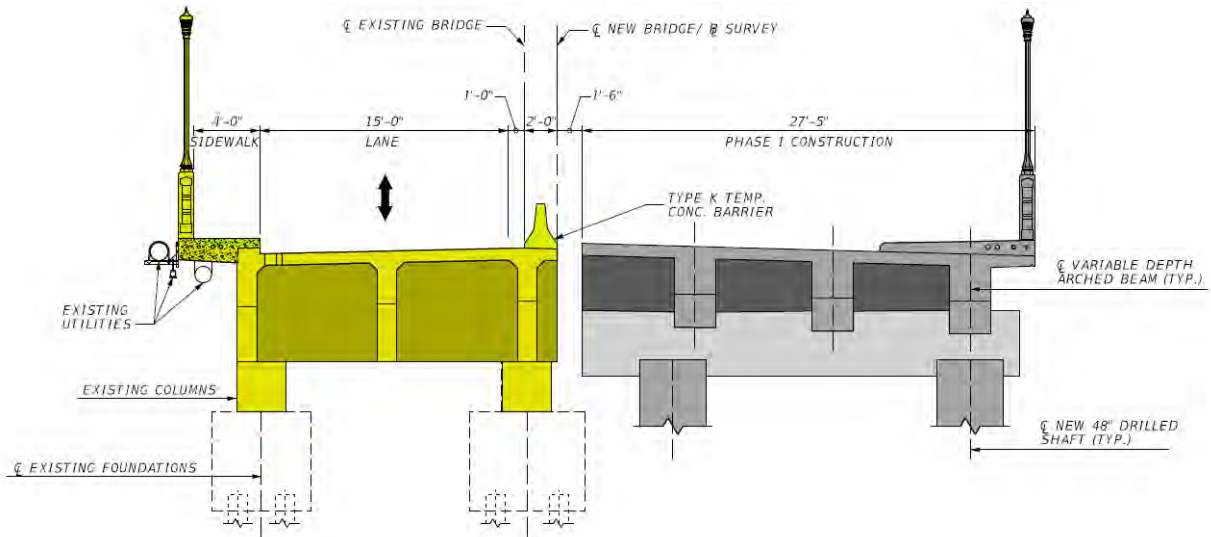


Figure 1-30 Phased Construction Plan (Phase I – Stage II)

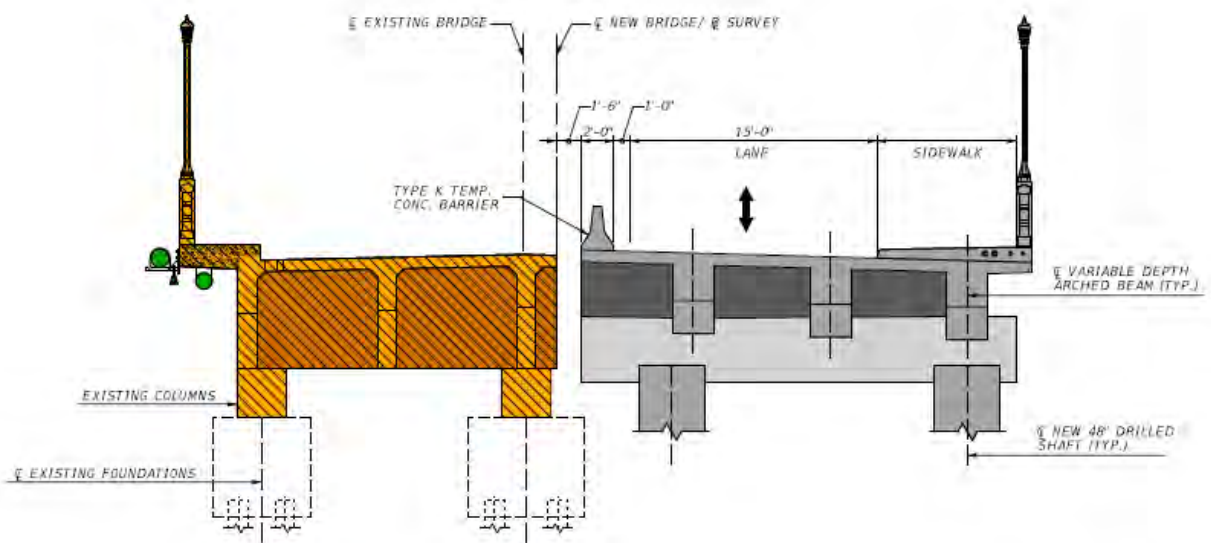


Figure 1-31 Phased Construction Plan – (Phase II – Stage I)

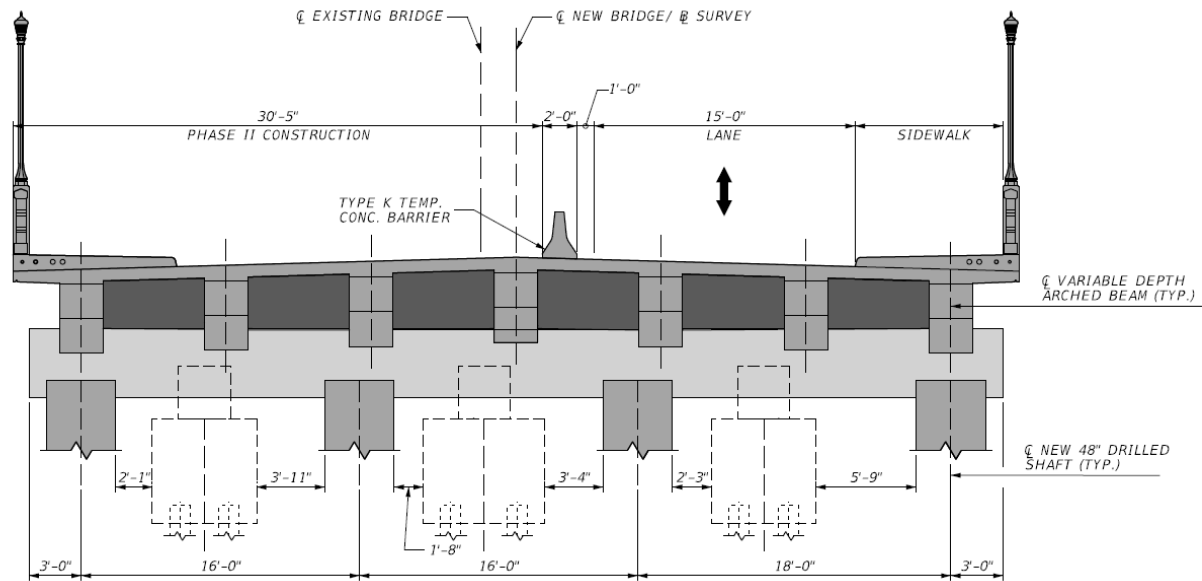


Figure 1-32 Phased Construction Plan – (Phase II – Stage II)

Transportation Management Plan

Transportation Management Plan for the construction of the proposed improvement is an important component of this study. The study team has developed a conceptual **Maintenance of Traffic (MOT) – Phased Construction Plan** to complete this project in two phases; with two stages per phase. Refer to **Figure 1-29** through **Figure 1-32** and the Conceptual Roadway and Bridge Plans for the Phased Construction Plans in the PER.

As previously stated, the Venetian Causeway corridor is an area which generates frequent motor, pedestrian and bicycle traffic. The conceptual phased construction plan has considered minimizing interruptions to the modes of transportation by allowing the motorists, local bus service, pedestrians and bicyclists to still have access to the corridor during construction. The proposed wider typical section creates an opportunity to phase construct for the fixed bridges while maintaining one lane of two-way traffic and a shared use path for pedestrians and bicyclists. The temporary bridge at the East Bascule allows construction of the new bascule bridge while directing all transportation modes to the temporary bridge. This Maintenance of Traffic (MOT) plan will minimize the access impacts by limiting them to one island at a time. The full MOT plan with temporary bridge will take approximately 48 months. Refer to **Figure 1-33** and the PER for the MOT Plan.



Figure 1-33 Maintenance of Traffic Plan

Construction Impacts

Construction activities for the replacement of the fixed and bascule bridges will temporarily impact vehicular, navigational, pedestrian and bicycle traffic. There will also be short-term temporary impacts to air, noise, water quality and environmental resources. Residents and users of the Causeway will be limited to one lane of two-way traffic during the construction. Additionally, unless a temporary bridge is provided at Bridge 10, a detour will have to be implemented. The closure of Bridge 10 will result in impacts to navigational traffic.

Maintenance of traffic and the sequence of construction will be planned and scheduled to minimize traffic delays throughout the project. Signs will be used to provide notice of access to local business and other pertinent information to the traveling public. The latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction* will be followed.

The air quality effect will be short-term and will mainly be in the form of dust from earth work and unpaved roads. These impacts will be minimized by adherence to all applicable State and Local regulations and to the FDOT's *Standard Specifications for Road and Bridge Construction*.

The project area is lined with many noise sensitive residences and parks, these were included within the Area of Potential Effects (APE) and are considered to be significant. Bridges are built with heavy construction equipment and there is potential for noise and vibration impacts. Construction noise and vibration impacts to these sites will be minimized by adherence to the controls listed in the latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction*.

Water quality effects resulting from erosion and sedimentation will be controlled in accordance with the latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction*.

There are potential contamination sites located within 500 ft. of the project corridor, solid waste facilities within one-quarter mile, and Superfund Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites within one mile of the project. The potential contamination types at the facilities include petroleum hydrocarbons, pesticides and herbicides, metals, corrosive and caustic materials, as well as a variety of industry specific regulated compounds. Most of the contamination sources are adjacent to either the east or west approaches of the Causeway. The majority of potential contamination sites are considered to present low risks. However, during construction the project will be reevaluated to determine if any new contamination-related risks are present and to evaluate any potential dewatering concerns. If dewatering is necessary during construction, a SFWMD Water Use Permit for construction dewatering activities will be required. Contamination and unforeseen contamination will be controlled in accordance with the latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction*.

The project is located in Biscayne Bay, an Outstanding Florida Water (OFW) and designated Aquatic Preserve. The proposed Preferred Alternative cannot completely avoid impacts to existing natural resources within the project area; however, avoidance and minimization measures will be incorporated during the construction of the project to minimize impacts to natural resources. Best Management Practices (BMPs) are to be implemented to prevent impacts to threatened and endangered species; wetlands and surface water features; Essential Fish Habitat; and benthic resources. Additional details regarding the measures to be implemented prior to and during construction are discussed in **Section 2.3**.

2.0 ENVIRONMENTAL ANALYSIS

Summarized below are the results of the environmental data collection and analysis conducted as part of this PD&E Study. The purpose of this analysis was to determine the effects associated with the Build Alternatives being considered for the project. This analysis was conducted using the information obtained from the Efficient Transportation Decision Making (ETDM) screening process and detailed studies of the Social, Cultural, Natural and Physical environments conducted for this project. The ETDM Programming Screen Summary Report (#12756) was published on November 28, 2016 and is in the project file.

2.1 Social and Economic

2.1.1 Social

A buffer of 1,320 feet (quarter mile) was used to establish the study area and identify the locations of sociocultural resources surrounding the Venetian Causeway, as it is the largest recommended buffer from the Environmental Screening Tool (EST). The following community resources are in the vicinity of the project study area. Note that these resources, with the exception of the recreational facilities, are located to the east or west of the project termini (see **Figure 2-1**):

Civic Centers:

- Doubletree Grand Hotel, Biscayne Bay (1717 N. Bayshore Drive)
- Marriott MIA Biscayne Bay (1633 N. Bayshore Drive)
- Miami Woman's Club (1737 N. Bayshore Drive)
- Greater Miami Chamber of Commerce (1601 Biscayne Boulevard)

Colleges:

- Miami International University of Art & Design (1501 Biscayne Boulevard)

Private Schools:

- The Learning World Academy in Downtown (555 NE 1 Street)

Religious Facilities:

- Trinity Episcopal Cathedral (464 NE 16 Street)
- Episcopal Diocese of Southeast Florida (525 NE 15 Street)
- Chabad of the Venetian and Sunset Islands (14 Farrey Lane)



Parks/Recreational Areas:

- Maurice Gibb Memorial Park (18 Street/Purdy Avenue)
- Belle Isle Park (Venetian Causeway/Island Avenue)
- Florida Circumnavigational Saltwater Paddling Trail

Table 2-1 summarizes the demographic information for the quarter-mile project buffer/study area and for Miami-Dade County. This information was based on a density analysis of the census blocks obtained from the 2010 American Community Survey (ACS). In the Study Area, the race and ethnicity of the population is 88.2% White, 4.7% African American and 41.1% Hispanic. According to the EST, Geographical Information Systems (GIS) analysis results conducted during the ETDM Screening, the Hispanic population within the buffer area is 23.9% less than the Hispanic population found in Miami-Dade County (65%). In addition, the White population within the buffer area is 14.4% higher than the average observed in Miami-Dade County (73.8%). The African American population is 14.2% lower than the Miami-Dade County average (18.9%). The population under age 18 accounts for 11.4% of the overall population within the project buffer, which is substantially less than the average found within Miami-Dade County (24.8%). The percentage of households with no access to an automobile (24.2%) is 9.9% higher than the overall Miami-Dade County average (14.3%). Finally, the median family income within the buffer area is \$61,248 which is generally greater than seen in the County (\$40,260) by approximately \$21,000.

Table 2-1 2010 Study Area Demographics

Demographic	One Quarter-Mile Project Buffer	Miami-Dade County
Race/Ethnic Group		
White (Race)	88.2%	73.8%
African American (Race)	4.7%	18.9%
Hispanic (Ethnic Group)	41.1%	65.0%
“Other” (Race)	7.1%	7.3%
Age		
Under the Age of 18	11.4%	24.8%
Age 65+	15.3%	13.3%
Income		
Median Family Income	\$61,248	\$40,260
Other		
Households without Car	24.2%	14.3%

Increases and decreases in population are not expected as a result of this project. The population is expected to fluctuate in response to regional factors unrelated to the project. The project will not change

or alter the demographic mix of populations along the corridor. The existing neighborhoods and communities will not be divided or fragmented by either of the Build Alternatives and no specific ethnic groups or minority populations will become socially or culturally isolated as improvements are occurring on an existing corridor. None of the community services adjacent to or along Venetian Causeway will be directly impacted by the Build Alternatives. There is also no ROW acquisition proposed for either Build Alternative. Therefore, there are no direct impacts to social or community resources associated with the Build Alternatives as the improvements are mainly to the bridges and approaches located on the causeway. However, construction activities for the replacement of the fixed and bascule bridges will temporarily impact vehicular, pedestrian and bicycle traffic. Residents and users of the Causeway will be limited to one lane of two-way traffic during construction. Bicycle and pedestrian access will be maintained via a shared use path on all of the bridges during construction, except for Bridge 10, where a temporary bridge will be provided. During the replacement of Bridge 10, no bicycle or pedestrian access will be provided during construction. The closure of Bridge 10 will also result in temporary construction impacts to navigational traffic at the east end of the corridor; however, vessels will be able to cross beneath the Causeway at Bridge 1 (west bascule bridge) throughout the construction phase. A maintenance of traffic and sequence of construction will be planned and scheduled to minimize traffic delays throughout the project. Signs will be used to provide notice of access to local businesses and other pertinent information to the traveling public. The latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction* will be followed.

In accordance with the Executive Order 12898, Title VI of the Civil Rights Act of 1964 and Executive Order 13166, "Improving Access to Services for Persons with Limited English Proficiency", the project team has made concerted efforts to reach out to disadvantaged groups. Public participation was solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Through the public involvement process, various public meetings were held, as outlined in Section 3.3 along with Project Advisory Group (PAG) Meetings which included members of communities and organizations in the immediate project vicinity to discuss the project and the historic significance of the bridges. In addition to PAG meetings, Cultural Resource Committee (CRC) Meetings were held to assist with developing ideas on how to address potential impacts to the historic aspect of the bridges and project area resulting from future road construction. Twelve bilingual newsletters, in English and Spanish, were prepared over the course of the study and provided to residents which included current information regarding the project and a public involvement schedule. In addition, two bilingual newsletters were distributed and announcements were made on radio stations in Spanish. Public involvement has been conducted throughout the study as outlined in the project's Public Involvement Plan (PIP) (December 2014) which is in the project file.

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practical and permitted by law. Potential impacts to minority populations, low-income populations and other groups protected by nondiscrimination laws have been fully considered for each Build Alternative through the alternatives analysis and public involvement process during this study. As transportation actions affect communities and influence the quality of life of their citizens, it is important that potential impacts and benefits to

community facilities, cultural resources, public parks and recreation areas, community cohesion, safety/emergency response, and compatibility with community goals are evaluated. During the final design phase, coordination with emergency services will take place for MOT. Overall, there are no adverse impacts to community resources or social issues associated with the Build Alternatives. The proposed project will improve safety and access to the residential and commercial areas within and surrounding the project corridor and enhance bicycle and pedestrian mobility. A MOT Plan will also be implemented during construction to minimize temporary impacts to the traveling public during construction. There are no direct impacts on businesses, residences or any social resources. This project has been developed in accordance with Title VI of the 1964 Civil Rights Act, without regard to race, color, national origin, age, sex, religion, disability or family status, and no individual population groups will be isolated or adversely impacted as a result of this project. Therefore, there are no disproportionate impacts to minority or low-income populations associated with either Build Alternative. Therefore, in accordance with the provisions of Executive Order 12898 and 13166, no further Environmental Justice analysis is required.

2.1.2 Economic

The Venetian Causeway is classified as an urban minor arterial and is a significant transportation route connecting the City of Miami with the City of Miami Beach. The proposed rehabilitation or replacement of Venetian Causeway will result in positive economic impacts to the project area. Bridge replacement will improve recreational boating as the new bridges will have a higher vertical clearance and would allow passage of more vessels without requiring a bridge opening. In addition, the project will reduce escalating maintenance costs of the bridges that are projected to continue if no corrective action occurs. The bridge replacement will also ensure the continuation of safe access to employment centers and economic focal points located in Downtown Miami and in Miami Beach. In addition, providing a safe vehicular and bicycle/pedestrian facility will enhance access to and from the commercial areas to the east and west of the corridor.

There are no changes to tax base or tax revenue as a result of either Build Alternative. The project is compatible with the economic land uses in the area since there is no change in land use and no anticipated change in property values. Therefore, no adverse effects are anticipated as a result of the proposed Build Alternatives.

2.1.3 Land Use Changes

To characterize the project area, the existing land uses and cover types were identified using the latest SFWMD Florida Land Use and Cover Geographical Information Systems (GIS) layer, and the more detailed Miami-Dade County Land Use Management Application (LUMA) land use GIS layer. Land uses identified within the proposed ROW limits and adjacent to the project corridor are predominantly medium density, single family and high-density multi-family residential and commercial lodging. Recreational land and open space are also adjacent to the ROW (see **Appendix C - Land Use Figure**). No ROW acquisition from any residential, business or recreational/open space property is proposed for either Build Alternative. Therefore, no change to existing land use is anticipated.

Future land use in close proximity to Venetian Causeway is not anticipated to change substantially. Therefore, the proposed rehabilitation and replacement Build Alternatives are not anticipated to impact

future land use on Venetian Causeway or the surrounding project area as work is proposed on the existing bridges and associated approaches.

2.1.4 Mobility

The Venetian Causeway bridges have exceeded their design life by over 40 years and, in all cases, are Functionally Obsolete and Bridge 12 is also Structurally Deficient. Due to the accelerated state of deterioration, supplemental supports and/or load restrictions have been implemented for Bridges 2 through 12. The Rehabilitation Alternative would be designed to extend the life of the bridge for a minimum of 25 years with routine maintenance and periodic repairs whereas the Replacement Alternative will replace the existing structures in their entirety for Bridges 2 through 12. The improvements with both Build Alternatives will enhance mobility and provide safer, continuous access to and from the residences along the Causeway as well as the commercial and community resources located to the east and west of the corridor. The Venetian Causeway also serves as a critical link which provides hurricane evacuation capabilities in times of need. Therefore, any interruptions in access for routine repairs can limit access on a regular basis as well as during hurricane evacuation.

The project corridor will enhance pedestrian and bicycle facilities and will provide the non-driving public with better access to transit. A Miami-Dade Transit bus route currently operates along the causeway corridor, Route 101, Route A. This route connects the Omni Metromover/Bus Terminal adjacent to the Performing Arts Center to Lincoln Road in South Beach. Additionally, the easternmost island, Belle Isle, is serviced by the South Beach Local, Route 123. Bus operations will be maintained with a temporary bridge on the corridor.

Sidewalks and bicycle lanes currently exist on both sides of the Venetian Causeway along the entire corridor which serve the population of non-vehicle dependent households within the corridor. Both the City of Miami and the City of Miami Beach Bicycle Master Plans identify Venetian Causeway as a significant bicycle corridor as it serves as one of the County's most well-traveled recreational and commuter bicycle routes.

The bicycle and pedestrian mobility facilities will be improved on the bridges for both Build Alternatives. The Rehabilitation Alternative consists of restriping Bridges 2 through 12. The bicycle lanes will remain at 4 ft. wide; however, the reduction in the width of the travel lanes from 12 ft. to 11 ft. allows for the increase in the width of the sidewalks from 4 ft. to 5 ft. For the Replacement Alternative, the bicycle lane width will increase from 4 ft. to 7 ft., and the sidewalk widths will increase from 4 ft. to 8 ft on the bridges. The bicycle lanes will transition to 4 ft. at the connection to the roadway on the islands, except for Belle Isle which will transition to 5 ft. and the sidewalks from 8 ft. to 6 ft.

Overall, both Build Alternatives will enhance mobility for vehicular, pedestrian and bicycle traffic.

2.1.5 Aesthetic Effects

Due to the close proximity of residential uses, historic landmark designations, and listings on the NRHP, potential impacts on community aesthetics were evaluated as part of this project. The two parks within the study area provide views of natural resources, such as vegetation and wildlife. The Venetian Causeway is part of the Venetian Island Resource Group which is a NRHP-listed historic resource. The bridges with their signature railings, islands and earthen causeway landings are all part of the historically designed landscape that was intended to create a “Venetian” style residential landscape across Biscayne Bay in the early 1900’s. The features of the bridges, such as the railings and arched beam design, contribute to the visual character of the project study. As part of the public workshops, Project Advisory Group and Cultural Resource Committee meetings, the public expressed concern regarding these aesthetic features and how they were going to be preserved as part of the Build Alternatives.

The historical and aesthetic significance of the existing bridges, as well as the need to protect and preserve the bridges, was an important consideration in developing the Rehabilitation Alternative. The evaluation criteria for the bridge Rehabilitation Alternatives were developed with input from the Venetian Causeway residents, the Project Advisory Group and the Cultural Resource Committee. With the Rehabilitation Alternative, the bridge would not be widened. The existing sidewalks and lane configurations would change slightly. Travel lanes will reduce from 12 ft. to 11 ft. and sidewalk width will increase from 4 ft. to 5 ft. The bridges vertical and horizontal clearance and railing design would remain the same.

The Replacement Alternative consists of the construction of entirely new structures. The new bridge structures will be built along the same alignment; however, the bridge typical sections will be widened by 16 ft. to provide wider sidewalks and buffered bicycle lanes. The replacement Build Alternative proposes a higher vertical clearance. However, the visual quality of the higher bridge will not impact aesthetics in the project study area as it will be increased by a minimum of 1 ft. above the existing clearance to Biscayne Bay. This alternative provides a new railing design, the Venetian Railing, which replicates the existing railing to maintain the historic character of the Causeway. The elements for the Replacement Alternatives were also developed with input from the residents, Project Advisory Group and Cultural Resource Committee.

The visual quality of the bridge will be improved from its current deteriorated condition with both Build Alternatives. Both Build Alternatives propose to preserve the aesthetic elements (arched beam and railing design) of the existing bridges. Therefore, the aesthetics and viewshed of the project area will not be adversely impacted as a result of either Build Alternative.

2.1.6 Relocation Potential

No ROW acquisition nor any residence or business relocations are proposed for either Build Alternative. However, temporary construction easements are required for the harmonization of the roadway with the adjacent properties and driveway connections associated with the Replacement Build Alternative. The proposed project, as presently conceived, will not displace any residences or businesses within the community. Should this change over the course of the project, a *Right-of-Way and Relocation Assistance Program* in accordance with Florida Statute 421.55, Relocation of displaced persons, and the Uniform

Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646 as amended by Public Law 100-17).

2.1.7 Farmland

Through coordination with the Natural Resources Conservation Service, it has been determined that the project area, which is located in the urbanized area of Miami and Miami Beach, does not meet the definition of farmland as defined in 7 CFR Part 658. Therefore, the provisions of the Farmland Protection Policy Act of 1981 do not apply to this project.

2.2 Cultural

2.2.1 Section 4(f)

In compliance with the Department of Transportation Act of 1966 and in accordance with the FDOT PD&E Manual, the Venetian Causeway Bridges project was evaluated for potential Section 4(f) impacts.

Parks/Recreational Areas

Two publicly owned parks/recreational resources, Belle Isle Park and Maurice Gibb Memorial Park, and one paddling trail, the Florida Circumnavigational Saltwater Paddling Trail, are within the project study area and were identified for potential Section 4(f) involvement (see **Figure 2-2**). There is a property named Venetian Causeway Park located on Biscayne Island, the westernmost island of the Venetian Causeway. However, this property is not designated as a recreational facility but is designated as open space associated with the adjacent toll facility. In addition, the project occurs within the Biscayne Bay Aquatic Preserve. As documented in the Biscayne Bay Aquatic Preserve Management Plan dated (February 2013), the primary purpose of the preserve is not for recreational use or conservation, restoration, or management of endangered species, their habitat, and other wildlife and waterfowl resources and their habitat. Therefore, this property does not qualify as a resource protected by Section 4(f). A Determination of Applicability (DOA) was prepared to document this determination and is in the project file.

Statement of Significance letters were received from the City of Miami Beach for Belle Isle Park and Maurice Gibb Memorial Park, and from the Florida Department of Environmental Protection (FDEP) for the Florida Circumnavigational Saltwater Paddling Trail. Due to the proximity of the improvements to the recreational facilities, No Use Determination Forms were prepared for Belle Isle Park and Maurice Gibb Memorial Park. The primary use of Belle Isle Park is for walking and open greenspace. The park is located in the center of Belle Island, the easternmost residential island. No direct impacts are proposed to Belle Isle Park from either Build Alternative. Only temporary noise impacts are anticipated during construction and access will be maintained. Therefore, a No Use determination was made for Belle Isle Park. Maurice Gibb Memorial Park is located on 18th Street and Purdy Avenue on Miami Beach, adjacent to the eastern project terminus; however, there is no direct park access to and from the bridge. This park features walking paths, play structures, and is adjacent to a boat launch and dock. For the Replacement Alternative, the travel lanes of Dade Boulevard (adjacent to the south side of the park) will be constructed two feet closer to Maurice Gibb Memorial Park but within the existing ROW. While noise levels may increase during construction, impacts from noise will not substantially impair the protected activities, features, or attributes that qualify the property for protection under Section 4(f). However, noise levels are not



Figure 2-2 Section 4(f) Recreational Resources Map

anticipated to substantially increase. There will be no temporary or permanent acquisition of land from the park, and no proximity impacts that substantially impair the protected activities, features, and attributes of the park. For the Rehabilitation Alternative, no work is proposed adjacent to the park property; however, the same temporary impacts to noise may occur. Therefore, a No Use determination was made for Maurice Gibb Memorial Park.

Due to the temporary closure of the Florida Circumnavigational Saltwater Paddling Trail at Bridge 10 during construction for both Build Alternatives, an Exception/Exemption Determination Form was prepared for this resource. The paddling trail crosses beneath Bridges 1 and 10. During design, coordination with FDEP's Office of Greenways and Trails shall occur regarding a detour to Bridge 1 while Bridge 10 is under construction. Prior to construction on Bridge 10, a notification regarding this alternate route can be announced on FDEP's website.

The Office of Environmental Management (OEM) concurred with the No Use and Exception/Exemption Determination Forms on February 5, 2021. The final No Use Determination Forms and Exception/Exemption Form can be found in **Appendix D**.

Historic Resources

A Programmatic Section 4(f) Evaluation was prepared to evaluate impacts related to the NRHP-eligible Venetian Islands Resource Group (8DA14395), which includes the NRHP-listed Venetian Causeway (8DA4736), the twelve (12) individual bridges (8DA14373-8DA14384), and the six (6) man-made islands and five (5) earthen causeway landings of the Venetian Islands (see **Section 2.2.2** below for additional details regarding the historic sites). The twelve (12) individual bridges (8DA14373-8DA14384) are considered contributing resources to the Venetian Islands Resource Group (8DA14395) under Criteria A and C in the categories of Community Planning and Development, Transportation, Architecture, and Engineering (see **Section 2.2.2** below for additional details regarding the historic sites). The bridges are not considered National Historic Landmarks. The PD&E Study's extensive alternatives analysis process was conducted as a basis for the Section 4(f) evaluation to ensure that no feasible and prudent alternatives to the use of the historic Causeway/bridges exist and that any harm to the resource is minimized to the greatest extent possible. Twelve (12) reasonable alternatives were developed during the alternative's analysis. As a result of the alternatives screening, only four (4) alternatives were considered viable alternatives (see **Section 1.0** above for details on the alternatives analysis). The draft Programmatic Section 4(f) Evaluation is in the project file and in Appendix D.

As part of the alternatives evaluation documented in the **PER** and summarized in **Section 1.2**, the Replacement Alternative was determined to be the Preferred Alternative. This alternative includes the replacement of Fixed Bridges 2 through 9, 11 and 12, as well as a double leaf bascule bridge for Bascule Bridge 10. Bridge 1 was not included as part of the Replacement Alternative because it was already replaced during a major rehabilitation project in 1999 that replaced approximately two-thirds of the bridge, and an emergency repair design-build project in 2016, that replaced the remainder of the bridge. Pursuant to Section 106 of the National Historic Preservation Act (NHPA), the demolition of bridges 2 through 12 will have an adverse effect on the Venetian Islands Causeway Resource Group (8DA14395). The arched beam replacement bridges will mimic the dimensions and appearance of the original structures. The alternative incorporates low profile bridges, replicated Venetian railing, and replicated

Venetian bridge lighting fixtures. The raised profile of the new bridges accommodates sea-level rise as the bridges are proposed to be raised approximately 1 ft. above the existing low member elevations. The Rehabilitation Alternative did not perform as well as the Replacement Alternative as discussed in Section 1.4 since the substandard deck geometry would remain, and the 25 year service life resulted in a higher life-cycle cost.

Consultation with the SHPO confirmed that the bridges are adversely affected by replacement, and Section 4(f) is applicable and requires a *Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges*. Based upon the criteria and findings required by the Programmatic Section 4(f) Evaluation and Approval for FDOT Projects that Necessitate the Use of Historic Bridges, the proposed Venetian Causeway Bridges PD&E Study (FM No. 422713-2-22-01) meets the requirements set forth in Section 4(f) of the USDOT Act of 1966, as amended, that there is no *feasible and prudent* alternative to the use of the Venetian Islands Resource Group (8DA14395) and the proposed action includes all possible planning to minimize harm to the Venetian Islands Resource Group (8DA14395) resulting from such use. Federal funds will be used for the construction of the project.

Although the No-Build Alternative will preserve the historic character of the Venetian Causeway, it was deemed to be neither *feasible nor prudent*, as it does not correct the bridges' structural and functional deficiencies, nor does it extend the anticipated service life of the bridges. Over time, the continued deterioration of structural elements will pose safety hazards to the public and place intolerable restrictions on travel. Similar to the No-Action Alternative, the TSM&O Alternative would preserve the historic character of the bridges and does not appear to be an adverse effect to the significant resources under Section 106 but maintains the existing bridges in their current condition. The alternative provides some transportation operation improvements on the corridor but was deemed to be neither feasible nor prudent as it does not correct the bridges' structural and functional deficiencies. The Build on New Location Alternative failed the *prudent and feasible* standard since the existing bridges are located in what is realistically the only sensible location. A new location option would result in new bridge landings/access and would likely still result in an adverse effect to the resource group. The Rehabilitation of Historic Bridge without Affecting the Integrity of the Bridge Alternative does not correct the need for increased vertical clearance in order to reduce traffic interruptions nor address substandard bicycle lanes. In addition, the bridges will require significant yearly maintenance, as this alternative partially meets the current safety standards and only extends the bridges' service life by 25 years. As a result, the Rehabilitation Alternative fails the *prudent and feasible* standard.

With the exception of the Replacement Alternative, all of the alternatives do not meet the purpose of the project and normal maintenance will not correct any deficiencies or hazards addressed by the project. The analysis documented that the No-Build Alternative, Build on New Location Alternative and Rehabilitation of Historic Bridge without Affecting the Integrity of the Bridge Alternative are not *prudent and feasible*. The Replacement Alternative meets the *prudent and feasible* standard and is recommended. The SHPO concurred with the findings from the Section 106 Evaluation and Determination of Effects Case Study. A Memorandum of Agreement (MOA) was prepared as part of the Section 106 documentation, which details input from the SHPO, Advisory Council of Historic Preservation (ACHP) and FDOT on measures to minimize harm (see **Appendix E**). Minimization and mitigation measures have been evaluated and incorporated and included all possible planning to minimize harm. Measures to minimize harm

include historic bridge recordation in accordance with Level II Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) Standards; a project design that acknowledges the historic appearance of the bridges; incorporation of a historically sensitive bridge tender house design for the New East Bascule Bridge (Bridge 10); and making the bridges to be replaced available for an alternative use, if feasible.

2.2.2 Historic Sites/Districts

A Cultural Resource Assessment Survey (CRAS) (April 2019), including background research and field survey, has been performed. The purpose of the survey was to locate, identify, and bound any cultural resources within the project Area of Potential Effect (APE) and to assess their significance in terms of eligibility for listing in the NRHP. This CRAS was conducted in compliance with Section 106 of the *National Historic Preservation Act (NHPA) of 1966* (Public Law 89-665, as amended), as implemented by 36 CFR 800 -- *Protection of Historic Properties* (incorporating amendments effective August 5, 2004); Stipulation VII of the *Programmatic Agreement among the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation (ACHP), the Florida Division of Historical Resources (FDHR), the SHPO, and the FDOT Regarding Implementation of the Federal-Aid Highway Program in Florida* (Section 106 Programmatic Agreement, effective March 2016, amended June 7, 2017); Section 102 of the *National Environmental Policy Act (NEPA) of 1969*, as amended (42 USC 4321 et seq.), as implemented by the regulations of the CEQ (40 CFR Parts 1500–1508); Section 4(f) of the *Department of Transportation Act of 1966*, as amended (49 USC 303 and 23 USC 138); the revised Chapter 267, *Florida Statutes (F.S.)*; and the standards embodied in the *FDHR's Cultural Resource Management Standards and Operational Manual* (February 2003), and Chapter 1A-46 (*Archaeological and Historical Report Standards and Guidelines*), *Florida Administrative Code (FAC)*. In addition, this report was prepared in conformity with standards set forth in the FDOT PD&E Manual. All work also conforms to professional guidelines set forth in the *Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716, as amended and annotated). The CRAS is available in the project file.

The APE for historic resources includes the footprint of the existing bridges and the earthen structures, as well as the parcels immediately adjacent to where the current bridges touch down. The Architectural Historian with the Compliance and Review Section of the SHPO, participated in the Cultural Resources Committee meetings and made several site visits to the Causeway. The APE was deemed appropriate for the project improvements.

A comprehensive Florida Master Site File (FMSF) search and literature review was performed to determine the locations of previously recorded cultural resources. In addition, local property appraiser's data and historic aerials were consulted during the background research. The search revealed that previous work has been performed in the vicinity and a number of cultural resources exist in and surrounding the APE. A historic resources survey was also conducted to ensure that resources built during or before 1970 within the project area were identified and recorded.

The CRAS identified a total of 42 historic resources. There were two previously recorded buildings (8DA11740 and 8DA11754), two previously recorded linear resources (8DA11375 and 8DA12366), two newly recorded resource groups (8DA14395 and 8DA15805), twelve newly identified bridges (8DA14373-8DA14384) and 24 newly identified buildings (8DA14385-8DA14393, 8DA15806-8DA15821). The NRHP-

listed resource, Venetian Causeway (8DA4736), was converted to the Venetian Islands Resource Group (8DA14395) and includes the 12 individual bridges that make up the Causeway, as well as six man-made islands and five earthen causeway landings that are contributing features within the historic designed landscape.

Two previously recorded resources are considered or determined to be NRHP-ineligible. The previously recorded building, Venetian Isles Apartment (8DA11740), has not been evaluated by the SHPO; however, the previous surveyor determined that the building was NRHP-ineligible. Given its common design and lack of historic significance, this building is considered ineligible for listing in the NRHP individually or as part of a historic district. The previously recorded linear resource, Collins Canal Seawall (8DA12366), was determined to be NRHP-ineligible by the SHPO on May 4, 2012. New seawall construction and deterioration of the existing historic wall has diminished the resource's historic integrity of materials, design, and workmanship. Therefore, given its loss of integrity, this resource is still considered ineligible for listing in the NRHP individually or as part of a historic district.

Two previously recorded resources have been determined to be NRHP-eligible. The previously recorded building, Terrace Towers (8DA11754), was determined to be NRHP-eligible by the SHPO on January 5, 2011. It is considered eligible for listing in the NRHP as the work of a master under Criterion C. The previously recorded linear resource, Collins Canal (8DA11375), was determined to be NRHP-eligible by the SHPO on May 4, 2012. It is considered eligible for listing in the NRHP under Criteria A and C in the categories of Transportation, Engineering, and Community Planning and Development.

As a result of this project, the Venetian Islands Resource Group (8DA14395) was documented. This resource group subsumes the NRHP-listed Venetian Causeway (8DA4736). Due to severe deterioration, the bridges are in need of rehabilitation or replacement. Recently, spans of the westernmost bridge were replaced following consultation with the SHPO. The resource group classification serves as a comprehensive tool for documenting the entire landscape of the Venetian Islands, including the bridges. While the Venetian Causeway remains NRHP-listed, the individual bridges evaluated as part of the current project are contributing resources within the Venetian Islands Resource Group and not individually eligible for listing on the NRHP. In addition, the six islands and five earthen causeway landings were included within the historic designed landscape. This landscape results from developers' ambitious plans to create a residential development on Biscayne Bay. Between 1915 and 1916, the layout and location of the islands were planned and arranged by real estate developers to create a "Venetian" landscape across Biscayne Bay. Despite the replacement of spans of the westernmost bridge in 2015, the Venetian Islands Resource Group (8DA14395) is considered NRHP-eligible under Criteria A and C in the categories of Community Planning and Development, Transportation, Architecture, and Engineering.

The twenty-four newly identified historic buildings (8DA14385-8DA14393, 8DA15806-8DA15821) and one newly identified historic resource group (8DA15805) are considered NRHP-ineligible, individually or as part of a historic district. These resources represent residential buildings that do not appear to be associated with any known historic events or trends in the area, nor are they related to any persons important or significant in local, state, or national events. Furthermore, these resources have experienced extensive alterations and additions resulting in the loss of historic integrity of design, materials, workmanship, and feeling. Therefore, due to the common architecture, loss of integrity, and lack of

historic significance, resources 8DA14385-8DA14393, 8DA15805-8DA15821 are considered ineligible for listing in the NRHP individually or as part of a historic district.

The SHPO concurred with the findings of the CRAS on June 25, 2019 (see **Appendix E**).

A Section 106 Determination of Effects Case Study Report (February 2020) was prepared for the project to evaluate the effects to NRHP-listed and NRHP-eligible resources. Potential effects that the improvements may have on the Collins Canal (8DA11375), Terrace Towers (8DA11754) and the Venetian Islands Resource Group (8DA14395) were evaluated. Various alternatives were evaluated as part of the PER. The No-Action and TSM&O Alternatives would result in *no effect* to the significant resources. The Rehabilitation Alternative will result in *adverse effect* to the Venetian Islands Resource Group, as the bridges' notable characteristics and features will need to be substantially modified as part of the rehabilitation. The other significant resources, Collins Canal (8DA11375) and Terrace Towers (8DA11754), will not be adversely affected as part of the Rehabilitation Alternative.

Based on the improvements that are proposed as part of the Replacement Alternative, there will be *no adverse effect* to the Collins Canal (8DA11375) and Terrace Towers (8DA11754). There is no work to Collins Canal, and the work within the immediate vicinity of the canal will not require the modification of any physical characteristics of the canal. The improvements closest to the Terrace Towers will not require ROW from the resource and will follow the existing alignment through the length of the project area. The Replacement Alternative will require the removal and replacement of key resources within the Venetian Islands Resource Group (8DA14395), including the bridges and their railings. Additionally, there will be retaining walls added to the bridge touchdowns at the historic spoil islands. Therefore, the Replacement Alternative will result in an *adverse effect* to the Venetian Islands Resource Group. FDOT coordinated with the Advisory Council on Historic Places (ACHP) regarding the adverse effect finding and the ACHP has chosen not to participate in consultation as documented in a letter dated August 24, 2020 (see **Appendix E**) and a Memorandum of Agreement (MOA) has been prepared with input from affected parties (see **Appendix E**). The MOA includes measures to minimize and mitigate adverse effects to the Venetian Islands Resource Group. These mitigation measures include HABS/HAER documentation, including Level II documentation and photographs, project design that acknowledges the historic appearance of the bridges and the bridges to be replaced will be made available for an alternative use, if feasible.

2.2.3 Archaeological Sites

No previously recorded archaeological sites are within the project APE. No local-designated archaeological sites or zones were identified within the archaeological APE. The archaeological APE consists of bridges and associated abutments located on man-made land. The sub-structural features associated with the bridges are in an area of Biscayne Bay that has been subjected to dredging and disturbance resulting from underwater cables and pipelines. Based on this, subsurface testing for archaeological sites was not conducted and the archaeological portions of the investigation focused on providing relevant documentation to support the low potential for archaeological sites.

2.2.4 Recreational Areas and Protected Lands

There are no upland state-owned conservation lands located within or adjacent to the project area which are subject to review by the Acquisition and Restoration Council (ARC).

2.3 Natural

2.3.1 Wetlands and Other Surface Waters

Pursuant to Presidential Executive Order 11990, entitled “Protection of Wetlands,” and in accordance with the FDOT PD&E Manual, the project alternatives were evaluated to determine any potential impacts to wetlands or other surface waters (OSW). The Wetland Evaluation prepared for this project is contained in the Natural Resource Evaluation (NRE) Report (August 2019), located in the project file.

The following wetlands were identified within the project study area (see **Appendix F – Wetland Figures**).

- **Wetland 1 (W1)** is located adjacent to the southern seawall of Biscayne Island which is the first developed island from the west. Salt tolerant herbaceous wetland vegetation includes sea oxeye daisy (*Borrchia frutescens*), sea purslane (*Sesuvium portulacastrum*) and seashore paspalum (*Paspalum vaginatum*). This seasonally flooded area is mowed and maintained and is classified as a disturbed artificial estuarine wetland. W1 occurs outside of the project footprint for all of the Build Alternatives and no impacts are anticipated.
- **Wetland 2 (W2)** is the largest estuarine wetland within the Causeway project corridor and is located within the intertidal zone on the southern edge of Biscayne Island and within Venetian Causeway Park. This regularly flooded mangrove system extends approximately 950 ft. and varies in width from 25 ft. to 65 ft. in the western portion of the wetland to 15 ft. to 25 ft. in the eastern end of the wetland. This mangrove wetland is outside the limits of proposed construction for all of the Build Alternatives and no impacts are anticipated.
- **Wetland 3 (W3)** is located on the northern shoreline of Spoil Island “C” and contains a few buttonwoods (*Conocarpus erectus*), white mangroves (*Laguncularia racemosa*) and red mangroves (*Rhizophora mangle*) growing within the rip rap of the intertidal zone. Saltwort (*Batis maritima*) is also present in several areas. This small estuarine wetland is not within or adjacent to the proposed construction area for either Build Alternative and no impacts are anticipated. The remainder of the island is vegetated with planted coconut palms and sea grapes, as well as sod that is regularly mowed and maintained.
- **Wetland 4 (W4)**, located on Spoil Island “E”, contains a few small buttonwoods on the northern shoreline within the rip rap of the intertidal zone. The remainder of this spoil island is vegetated by sparse sod that is routinely mowed and a few scattered sea grapes that have been planted. This small estuarine wetland is not within or adjacent to the proposed construction areas of either Build Alternative and no impacts are anticipated.

The following OSW areas were identified within the project study area (see **Appendix F – Wetland Figures**).

- **Other Surface Water 1 (OSW 1)** is a small estuarine retention area located on Biscayne Island south of the toll plaza and near the southern seawall. OSW 1 is dominated by saltgrass (*Distichlis spicata*) that is mowed and is not within or adjacent to proposed construction areas for the Build Alternatives and no impacts are anticipated.

- **Other Surface Water 2 (OSW 2)** includes the waters of Biscayne Bay that the bridges span. Biscayne Bay is an OFW and the project corridor lies within the Biscayne Bay Aquatic Preserve. This project will result in minor direct and indirect impacts to the surface waters of the Biscayne Bay in the form of shading, turbidity and additional impervious surface. These impacts are present in all Build Alternatives other than the No-Action Alternative.

Direct Impacts

No direct impacts are anticipated to the wetlands identified (W1, W2, W3, and W4) and OSWs (OSW 1 and OSW 2) as a result of the No-Action Alternative, as there are no construction activities involved. Impacts are not anticipated to wetlands and OSW 1, for the Rehabilitation and Reconstruction Build Alternatives. A permanent direct shading impact to OSW 2/Biscayne Bay of 0.82 acres is anticipated for the Replacement Build Alternative as a result of proposed bridge deck widening of 16 ft. to accommodate pedestrians and cyclists. Both Build Alternatives would maintain the same centerline as the existing bridges and all work is proposed within the existing ROW. The installation of additional piles to each bridge will also result in a permanent impact to OSW 2. Temporary impacts to OSW 2, such as: water quality due to construction activities, and shading from barge use, are associated with both Build Alternatives. Temporary impacts to water quality will be minimized and avoided through the use of BMPs including, but not limited to, such measures as development of a debris containment plan and installation of turbidity curtains, silt fencing, rock bags, etc.

Indirect Impacts

Indirect impacts to wetlands and OSW 1 are not anticipated as a result of the No-Action Alternative, as there are no construction activities involved. OSW 2/ Biscayne Bay, under existing conditions, is impacted by direct stormwater drainage via scuppers. There are no indirect impacts to wetlands anticipated as a result of the Rehabilitation Build Alternative and the Replacement Build Alternative as indirect impacts are not anticipated to uplands existing adjacent to any wetland along the corridor, maintaining current upland buffers. However, these Build Alternatives would create additional impervious surface on the bridge decks. The installation of a stormwater management system would mitigate for this additional impervious surface and result in net water quality improvements compared to baseline conditions of the No-Action Alternative.

Cumulative Impacts

No cumulative impacts are anticipated as a result of the proposed alternatives. The new construction will follow the same alignment as the existing Causeway, and vehicle and boat capacity will not be increased. Dominant land uses surrounding the project area consist of residential and commercial, and public and semi-public, which is not anticipated to change post-construction. Ongoing and future development is likely to be in the form of reconstruction or redevelopment of existing facilities. Planned improvements are to be constructed within the existing ROW and include improvements to the stormwater management system. Therefore, it is anticipated that cumulative impacts to wetlands or other surface waters from the proposed action, when combined with other past, present, and future projects, would be insignificant.

Agency Communication

Discussion on potential wetlands impacts was initiated with the United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Florida Fish and Wildlife Conservation Commission (FWC), SFWMD, and the U.S. Army Corps of Engineers (USACE) through the ETDM, Environmental Screening Tool (ETDM # 12756), as well as through their participation in an interagency meeting on June 28, 2017 (see **Appendix G** for the interagency meeting minutes).

Avoidance, Minimization and Mitigation

Wetland mitigation is not anticipated for the project alternatives. No impacts are proposed to wetlands (W1, W2, W3, W4) and OSW 1. Impacts are limited to the Build Alternatives as a result of the proposed bridge deck widening which will result in the installation of piles to each bridge structure, as well as 0.82 acres of shading to OSW 2/Biscayne Bay. The Build Alternatives will have a net improvement to water quality in OSW 2/Biscayne Bay by replacing scuppers with a drainage system that will treat and attenuate runoff. BMPs, such as turbidity curtains, silt fencing, rock bags, etc., will be implemented to prevent temporary water quality impacts.

2.3.2 Aquatic Preserves and Outstanding Florida Waters

In accordance with the FDOT PD&E Manual, the project was evaluated to determine impacts to Aquatic Preserves and OFW. More details can be found in the NRE, which is in the project file.

This project is located in the Biscayne Bay Aquatic Preserve, which is designated as an OFW resource under Rules 18-18 and 62-302.700(9), FAC (see **Figure 2-3**) The proposed Build Alternatives have the potential to impact Biscayne Bay Aquatic Preserve in the form of shading, turbidity and additional impervious surface. However, the proposed stormwater treatment systems for both Build Alternatives will eliminate the existing scuppers from the bridge to prevent direct runoff into Biscayne Bay, provide treatment and improve overall water quality as discussed further in **Section 2.3.3**. The bridge deck will be widened as part of the Replacement Build Alternative but will be raised approximately 1 ft. which would allow for additional light to penetrate the water column. BMPs will be applied to minimize temporary impacts to water quality during construction. Stringent turbidity control measures will be established and maintained to minimize all construction related turbidity and sedimentation impacts. Appropriate turbidity control measures, proper barge routes and spudding areas will be determined during design and construction. A water quality/turbidity monitoring plan will be developed and implemented during construction to ensure turbidity levels beyond containment measures are maintained at 0 NTUs (Nephelometric Turbidity Units) above ambient (background) levels. In addition, a Barge Use Plan and a Bridge Demolition/Debris Containment Plan will be developed. As this project is evaluating the rehabilitation or replacement of existing bridges which provides access to the residences along the corridor and is a vital connection between the Cities of Miami and Miami Beach, there is no practicable alternative to locate this project outside of the limits of the aquatic preserve.

Coordination with FDEP occurred during the PD&E phase to gain input on the resource, discuss potential impacts and to identify the coordination necessary during the design and permitting phase. A coordination letter and attachments were sent to FDEP on March 31, 2020 and a response was received on May 28, 2020 (see **Appendix H** for correspondence). Many of FDEP's requests in the response email are already

considered as part of our natural resource evaluation, commitments, avoidance and minimization measures and BMPs. FDOT held a teleconference with FDEP on July 1, 2020 to further clarify their response, discuss project status and how to proceed in the future project phases FDOT will continue to coordinate with FDEP during the design phase and as part of the state permitting process. The SFWMD will issue the Environmental Resource Permit; however, FDEP will have the opportunity to review the permit application and to provide comments to the SFWMD regarding the aquatic preserve.

2.3.3 Water Quality and Stormwater

The Venetian Causeway Bridges project is located in the Biscayne Bay Drainage Basin within the jurisdiction of SFWMD and Miami-Dade County's Department of Regulatory Economic Resources (DRER). The current drainage system discharges stormwater run-off from the travel lanes and sidewalks directly into Biscayne Bay. Currently, no water quality treatment mechanisms are provided to address pollutants from stormwater run-off from the bridges prior to discharging into Biscayne Bay.

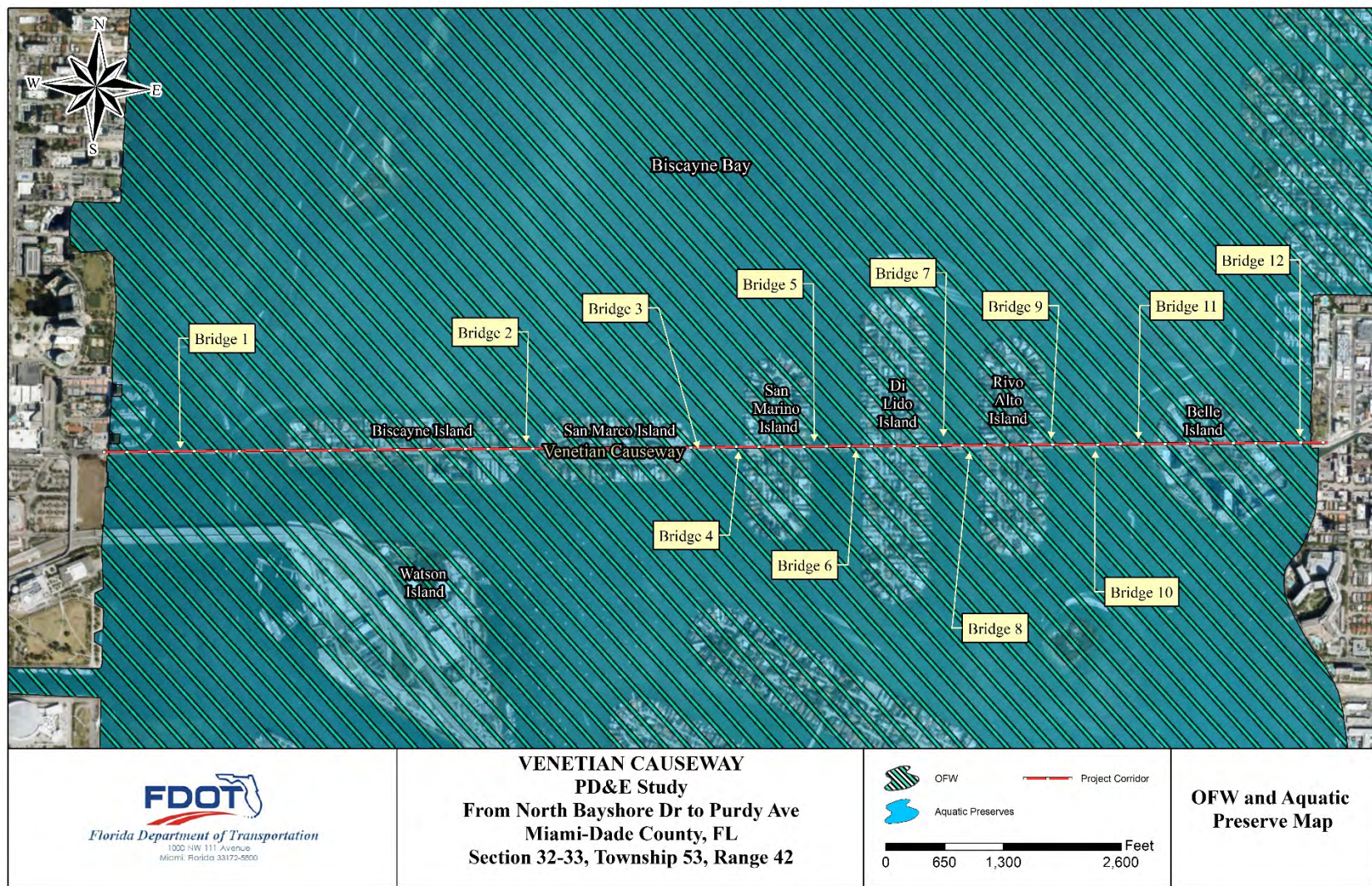


Figure 2-3 Biscayne Bay Aquatic Preserve Map

Stormwater will no longer drain directly into Biscayne Bay with the proposed Build Alternatives. Instead, stormwater runoff will be routed to the bridge approaches and collected in curb inlets. Bridge scuppers will not be required as the length of the bridges will facilitate deck drainage to the approach roadways or spoil islands. The runoff will be treated and attenuated in stormwater management facilities located in the existing roadway or new systems in the spoil islands. The use of French drains and detention structures will be examined for water quality treatment and discharge attenuation. After the water quality treatment requirements have been met, there will be discharge to the Biscayne Bay through new outfalls located at the spoil islands. The allowable volume of discharge will be less in the post-development condition versus the pre-development condition. Due to the potential presence of existing aquatic resources, discharge velocities will be evaluated to determine if energy dissipators/baffles are necessary in order to avoid erosive velocities that may impact those existing resources at the outfall locations. BMPs will be employed during construction to ensure minimal impacts to water quality.

The proposed stormwater improvements were discussed with the DRER and SFWMD on April 7, 2015 and April 15, 2015, respectively (see **Appendix I** for the meeting minutes). The project team discussed the stormwater management requirements and applicable permits that would be required by the agencies as well as the local water management jurisdiction for the proposed Venetian Causeway Bridges Build Alternatives. Also discussed was the water quality and quantity requirements, nutrient loading, drainage approach and floodplain encroachment. It was determined that a DERM Class I Coastal Construction Permit, DERM Class II Drainage Permit and SFWMD ERP would be required.

A Water Quality Impact Evaluation (WQIE) (October 2019) was completed for the project and is in the project file. The results of the WQIE confirmed that the proposed stormwater facility design will include, at a minimum, the water quality requirements for the water quality impacts as required by the SFWMD in Chapter 62-302, FAC. It is therefore anticipated that no adverse effects will occur to the water quality within the project area. The FDOT will continue to coordinate water quality and quantity impacts and stormwater management with the appropriate regulatory agencies as required through the design and permitting phases of the project, as well as during construction. Water quality impacts resulting from erosion and sedimentation during construction activities will be controlled in accordance with FDEP's National Pollutant Discharge Elimination System (NPDES) Permit including the preparations of a Stormwater Pollution Prevention Plan (SWPPP); the latest edition of the FDOT Standard Specification for Road and Bridge Construction and through the use of BMPs including temporary erosion features (e.g., inlet protection, turbidity barriers) during construction.

This project lies within the boundaries of the Biscayne Sole Source Aquifer, the principal drinking water source for the project area. In accordance with the Sole Source Aquifer Program, authorized by Section 1424(e) of the Safe Drinking Water Act of 1974, FDOT submitted the WQIE and Sole Source Aquifer checklist to the EPA and requested concurrence regarding potential impacts to the Biscayne Aquifer. EPA concurred that there will be no impact to the Sole Source Aquifer in a letter dated February 18, 2020 (**Appendix J**).

2.3.4 Wild and Scenic Rivers

In accordance with the FDOT PD&E Manual, the study area was evaluated for designated Wild and Scenic Rivers including rivers on the Nationwide Rivers Inventory, and none were identified in the project study area. Therefore, no impacts are anticipated.

2.3.5 Floodplains

Based on the FEMA, Flood Insurance Rate Maps (FIRM), the Venetian Causeway Bridges are within the 100-year floodplain, Zone AE. Flood elevations vary from 6.44 ft. to 7.44 ft. NAVD 88. The FIRMs for the area are Miami-Dade County, Florida and Incorporated Areas (September 11, 2009). Refer to **Table 2-2** and **Figure 2-4** below.

Table 2-2 Flood Insurance Rate Map (FIRM) Summary

Bridge Number	Map Number	Flood Zone	Elevation NGVD 29	Elevation NAVD 88
Bridge 1	12086C0316L	AE	9	7.45
Bridge 2	12086C0316L	AE	9	7.45
Bridge 3	12086C0316L	AE	9	7.45
Bridge 4	12086C0316L	AE	9	7.45
Bridge 5	12086C0316L	AE	9	7.45
Bridge 6	12086C0316L	AE	9	7.45
Bridge 7	12086C0316L	AE	9	7.45
Bridge 8	12086C0316L & 12086C0317L	AE	9	7.45
Bridge 9	12086C0317L	AE	9	7.45
Bridge 10	12086C0317L	AE	9	7.45
Bridge 11	12086C0317L	AE	9	7.45
Bridge 12	12086C0317L	AE	8 & 9	6.45 & 7.45

NGVD 29 Elevations – 1.55 ft. = NAVD 88 Elevations



Figure 2-4 Floodplain Location Map

The proposed structure will perform hydraulically in a manner equal to or greater than the existing structure, and backwater surface elevations are not expected to increase. Thus, there will be no significant adverse impacts on natural and beneficial floodplain values. There will be no risk, and there will not be a significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that this encroachment is not significant (see **Appendix I**, DRER and SFWMD Meeting Minutes).

The potential for sea-level rise was considered in establishing the proposed bridge elevations. Potential sea-level rise elevations were established using the FDOT Drainage Manual. The manual provides sea-level rise data based on historical tidal records that was used to project the sea-level rise for the project location assuming a 75-year design life. The station closest to the project location is Miami Beach and it will experience a rise of 2.39 millimeters (mm) per year. It was estimated that overall, the project location is expected to experience 0.79-ft. of sea-level rise by year 2093. To mitigate the expected 0.79-ft. of sea-level rise, the proposed bridges will be raised by approximately 1 ft. Refer to the PER for additional information and calculations.

2.3.6 Coastal Zone Consistency

In accordance with Section 307 of the Coastal Zone Management Act of 1972 and implementing regulations in 15 CFR 930, the Florida Coastal Management Act of 1978 (Chapter 380, Part II, FS), and the procedures outlined in the FDOT PD&E Manual, this project was reviewed by the FDEP for consistency with the Florida Coastal Management Program through the ETDM process. As documented in the latest ETDM Programming Screen Summary Report (published on November 28, 2016), the State of Florida has determined that this project is consistent with the Florida Coastal Zone Management Program.

2.3.7 Coastal Barrier Resources

In accordance with the Coastal Barrier Improvement Act of 1990 (CBIA), 16 U.S.C. 3501-3510, the coastal barrier resource data layer was reviewed in EST and the Venetian Causeway is not considered a Coastal Barrier Resource. It has been determined that this project is neither in the vicinity of, nor leads directly to a designated coastal barrier resource unit pursuant to the Coastal Barrier Resources Act of 1982 (CBRA) and the CBIA of 1990. Therefore, no impacts to Coastal Barrier Resources are anticipated as a result of this project.

2.3.8 Protected Species and Habitat

A Protected Species and Habitat Assessment was conducted to determine the potential effects to endangered, threatened and protected flora and fauna that may result from the proposed improvements to the Venetian Causeway Bridges. This evaluation was conducted in accordance with Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.), and the FDOT PD&E Manual. The Protected Species and Habitat Assessment is contained in the NRE located in the project file. See **Appendix K** for species distribution maps for the wood stork, Johnson's seagrass and West Indian Manatee.

The effect determinations for species with either of the proposed Build Alternatives are presented below and summarized below in **Table 2-3**.

Table 2-3 Effect Determinations for Federally and State Listed Species

Species Name	Listing Status	Occurrence Potential	Determination of Project Effect – Recommended Alternatives
Plants			
Johnson's seagrass (<i>Halophila johnsonii</i>)	FT	Low	<i>Not present</i>
Johnson's seagrass Critical Habitat	FT	--	<i>Likely to adversely affect, will not destroy or adversely modify</i>
Birds			
Black skimmer (<i>Rynchops niger</i>)	ST	Low	<i>No effect</i>
Least tern (<i>Sterna antillarum</i>)	ST	Low	<i>No effect</i>
Little blue heron (<i>Egretta caerulea</i>)	ST	Moderate	<i>No effect</i>
Piping plover (<i>Charadrius melodus</i>)	FT	Low	<i>No effect</i>
Reddish egret (<i>Egretta rufescens</i>)	ST	Low	<i>No effect</i>
Roseate spoonbill (<i>Ajaia ajaja</i>)	ST	Low	<i>No effect</i>
Wood stork (<i>Mycteria americana</i>)	FT	Low	<i>No effect</i>
Tricolored heron (<i>Egretta tricolor</i>)	ST	Moderate	<i>No effect</i>
Mammals			
West Indian manatee (<i>Trichechus manatus</i>)	FT	High	<i>May affect, not likely to adversely affect</i>
West Indian manatee – Critical Habitat	FT	--	<i>May affect, not likely to adversely affect</i>
Reptiles			
American crocodile (<i>Crocodylus acutus</i>)	FT	Low	<i>No effect</i>
Green sea turtle (<i>Chelonia mydas</i>)	FT	Low	<i>May affect, not likely to adversely affect</i>
Kemp's ridley sea turtle (<i>Lepidochelys kempii</i>)	FE	Low	<i>May affect, not likely to adversely affect</i>
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	FE	Low	<i>No effect</i>
Loggerhead sea turtle (<i>Caretta caretta</i>)	FT	Low	<i>May affect, not likely to adversely affect</i>
Hawksbill sea turtle (<i>Eretmochelys imbricata</i>)	FE	Low	<i>May affect, not likely to adversely affect</i>
Fish			
Smalltooth sawfish (<i>Pristis pectinata</i>)	FE	Low	<i>May affect, not likely to adversely affect</i>
Giant manta ray (<i>Manta birostris</i>)	FT	Low	<i>May affect, not likely to adversely affect</i>
Corals			
Elkhorn coral (<i>Acropora palmata</i>)	FT	Low	<i>Not present</i>
Staghorn coral (<i>Acropora cervicornis</i>)	FT	Low	<i>Not present</i>

Note: FE = Federally Endangered, FT = Federally Threatened, ST = State Threatened

Federally Listed Species

Federally protected species were reviewed, and field surveys conducted to determine their potential occurrence within the project area. No protected terrestrial plant species were identified, and the following species were evaluated:

Johnson's seagrass (*Halophila johnsonii*), Threatened - The Causeway project is located within federally-designated Critical Habitat for Johnson's seagrass. However, this species was not observed during the benthic resource field surveys performed. The only seagrasses observed within the project area were paddle grass (*Halophila decipiens*) and shoal grass (*Halodule wrightii*), species commonly found in association with Johnson's seagrass. Seagrasses were not observed immediately adjacent to any of the bridges proposed for the Rehabilitation or Replacement Alternatives, rather they were documented at the outer limits of the benthic survey area, more than 40 ft. from the bridge edges at the closest points and accounted for less than 1% of the surface coverage within the overall benthic survey area. If barges are proposed to assist in the Rehabilitation or Replacement Alternatives, protective measures will be implemented during construction to prevent temporary impacts to existing seagrass beds from temporary shading, scour and turbidity. A Barge Use Plan will be developed to outline the minimum clearance of construction barges, ensure barges are staged within the footprint of the existing bridge deck(s) when possible, and include durations for staging barges in the same location in order to avoid to the maximum extent practicable any construction impacts resulting from operating barges and floating platforms. The plan will also identify barge travel routes to and from the construction work zone.

Therefore, as noted in the NRE and the NMFS Biological Opinion no adverse impacts to this species are anticipated to occur with this project as this species was "**not present**" in the study area.

Wood stork (*Mycteria americana*), Threatened - Wood storks inhabit freshwater, brackish, and estuarine wetlands, primarily nesting in cypress and mangrove swamps. The urbanized nature of the surrounding areas of the project corridor provides little to no suitable wood stork foraging habitat. The project is not located within 18.6 miles of any Wood Stork Nesting Colonies (WSNC) and Core Foraging Area (CFA). Although wood storks may migrate through the project area, there are no emergent wetlands that could serve as CFA. It has been determined that the likelihood of this species occurring within the limits of this project is low. As noted in the NRE and pursuant to the United States Fish and Wildlife Service (USFWS) *Wood Stork Determination Key*, a determination of "**no effect**" was made for the wood stork.

Piping plover (*Charadrius melodus*), Threatened - Although the project is within the USFWS Consultation Areas for the piping plover, there is little to no suitable sandy beach or mudflat habitat for the piping plover present within the project corridor. No piping plovers were observed during field investigations. A determination of "**no effect**" was made for the piping plover.

West Indian manatee (*Trichechus manatus*), Threatened - The project lies within Biscayne Bay which is Federally Designated as Critical Habitat for the West Indian manatee. It is also within the USFWS Consultation Area for the species. The bay is a known corridor through which manatees frequently travel to and from warm water areas that are located near Virginia Key and Fisher Island, both of which are south of the project corridor. No foraging habitat (seagrasses) were observed within 40 feet of any existing bridge, and no West Indian manatees were observed during field surveys. Manatees will have unobstructed access to travel under the Causeway Bridges throughout all phases of construction through

the implementation of USFWS *Standard Manatee Conditions for In-Water Work*. Manatee protection measures will also be addressed in the environmental permitting process. With protection measures in place, no adverse impacts to the West Indian manatee are anticipated as a result of this proposed project. As noted in the NRE and pursuant to the USFWS determination key (*USACE Manatee Effect Determination Key April 2013*), a determination of “**may affect, not likely to adversely affect**” was made for the West Indian manatee and its Critical Habitat.

American crocodile (*Crocodylus acutus*), Threatened - The American crocodile is found primarily in mangrove swamps and along low-energy mangrove-lined bays, creeks, and inland swamps. The project corridor is within the USFWS Consultation Area for the species, and there is potential for this species to travel through the proposed project area. However, there is little foraging habitat and limited suitable basking or nesting habitat on the undeveloped spoil islands in and adjacent to the proposed project due to dense rip rap/concrete rubble placed to stabilize the shorelines. No American crocodiles were observed during field investigations. No adverse impacts to this species are anticipated as a result of this proposed project and a determination of “**no effect**” was made for the American crocodile.

Sea turtles – Four sea turtle species have potential for occurrence within the marine waters surrounding the project: Green sea turtle (*Chelonia mydas*), Threatened; Loggerhead sea turtle (*Caretta caretta*), Threatened; Kemp’s Ridley sea turtle (*Lepidochelys kempii*), Endangered; and Hawksbill sea turtle (*Eretmochelys imbricata*), Endangered. The potential for these species to migrate through the proposed project area exists. However, this area of Biscayne Bay has sparse foraging habitat and nesting beaches are not present. None of these species were observed during field investigations. It is anticipated that the proposed action will have no effect on Leatherback sea turtles (*Dermochelys coriacea*), Endangered, due to the species’ very specific life history strategy, which is not supported at the site. Leatherback sea turtles have a pelagic, deepwater life history, where they forage primarily on jellyfish. Protection of sea turtles during all phases of bridge construction will be accomplished through the implementation of *Sea Turtle and Smalltooth Sawfish Construction Conditions*. Therefore, as per the NRE and the NMFS Biological Opinion no adverse impacts to these species are anticipated as a result of the proposed project. A determination of “**may affect, not likely to adversely affect**” was made for the Green sea turtle, Loggerhead sea turtle, Kemp’s Ridley sea turtle, and Hawksbill sea turtle.

Smalltooth sawfish (*Pristis pectinata*), Endangered - Although smalltooth sawfish are year-round residents of peninsular Florida, they prefer sandy or muddy substrates, and are not likely to be present in the immediate project area where the bottom is rocky and hardened. No individuals were observed during field investigations. The protection of smalltooth sawfish during all phases of bridge construction will be accomplished through the implementation of the *Sea Turtle and Smalltooth Sawfish Construction Conditions*. In addition, due to noise concerns for this species associated with pile driving, all piles would be constructed using drill shafts. As noted in the NRE and the NMFS Biological Opinion a determination of “**may affect, not likely to adversely affect**” was made for the smalltooth sawfish.

Elkhorn coral (*Acropora palmata*), Threatened, and Staghorn coral (*Acropora cervicornis*), Threatened - These species are branching corals, both important Caribbean corals in terms of their contribution to reef growth and fish habitat. Conditions within the shallow waters in and adjacent to the project corridor are suitable for these species to colonize and thrive, but none were observed during the benthic surveys performed. Therefore, as noted in the NRE and the NMFS Biological Opinion no adverse impacts to these

species are anticipated to occur with this project as these species are “**not present**” in the study area. Other hard corals were observed encrusting the rip-rap areas around the undeveloped spoil islands of the Causeway; however, these corals are not federally listed species. A commitment was made to inventory all corals in the area of potential impact. The survey will identify which corals are suitable for relocation prior to construction. A coral relocation plan will be developed and coordinated with the environmental permitting agencies during the permitting process.

Giant manta ray (*Manta birostris*), Threatened - Effects to giant manta rays include the potential for injury from construction equipment or materials. Giant manta rays are highly mobile species and can avoid interactions with slow moving dredge types. In addition, they are likely to avoid areas during construction due to the noise and associated disturbances. Therefore, as per the NMFS Biological Opinion no adverse impacts to these species are anticipated as a result of the proposed project. A determination of “**may affect, not likely to adversely affect**” was made for the giant manta ray.

State Listed Species

State protected species were reviewed, and field surveys conducted to determine their potential occurrence within the project area. No protected terrestrial plant species were identified, and the following species were evaluated:

Tricolored heron (*Egretta tricolor*), Threatened - The tricolored heron is a medium-size heron with a long slender neck, two-toned body coloration on the head, neck, and body along with a white underside. Nesting occurs on mangrove islands or in freshwater willow thickets on islands or over standing water. Feeding areas consist of permanently and seasonally flooded wetlands, mangrove swamps, tidal creeks, ditches, and the edges of lakes and ponds. Due to the urbanized nature of the surrounding areas, little to no suitable foraging habitat is present. The use of the areas adjacent to the project as a foraging area is limited to shallow littoral zones immediately adjacent to the Causeway, which will be avoided during construction. Therefore, it has been determined that there will be ***“no effect anticipated”*** on the tricolored heron.

Little blue heron (*Egretta caerulea*), Threatened - The little blue heron is a medium-size bird with a purple to maroon-brown head and neck, small white patch on the throat and upper neck and a slate-blue body. It feeds in shallow freshwater, brackish, and saltwater habitats, and nests in woody vegetation such as: cypress, willow, maple, black mangrove, and cabbage palm. Due to the urbanized nature of the surrounding areas, little to no suitable foraging habitat is present. Therefore, it has been determined that there will be ***“no effect anticipated”*** on the little blue heron.

Roseate spoonbill (*Ajaia ajaja*), Threatened - Adult spoonbills exhibit bright pink bodies, white necks, and flat, spoon-shaped bills. The spoonbill nest on coastal mangrove islands or on man-made dredge spoil islands near suitable foraging habitat. They will also nest in willow heads located in freshwater and forage in shallow water of varying salinity. Foraging habitats include marine tidal flats and ponds, coastal marshes, mangrove-dominant inlets and pools as well as freshwater marshes and sloughs. Due to the urbanized nature of the surrounding areas, little to no suitable foraging habitat is present. Therefore, it has been determined that there will be ***“no effect anticipated”*** on the roseate spoonbill.

Reddish egret (*Egretta rufescens*), Threatened - This egret has a gray body and chestnut-colored plumes on its head, neck, and upper body. Reddish egret habitat is almost exclusively in coastal areas, with nesting on coastal mangrove islands or on dredge spoil islands. Foraging habitats include shallow water areas (less than six in. deep) of variable salinity as well broad, open, marine tidal flats and shorelines supporting little vegetation. Due to the urbanized nature of the surrounding areas, little to no suitable foraging habitat is present. Therefore, it has been determined that there will be ***“no effect anticipated”*** on the reddish egret.

Black skimmer (*Rynchops niger*), Threatened - The adult black skimmer is black above with white face and underparts. It has a bright red billed tipped with black and reddish legs. The bill of the adult black skimmer is long and flat, and the lower mandible juts a third beyond the upper mandible. The immature black skimmer is brownish and speckled above with a smaller bill and duller legs than the adult. The black skimmer inhabits bays, marshes, beaches, and protected ocean waters. The areas within and immediately adjacent to the project do not include mudflats, marshes, or beach habitat. Existing nearby beaches and mud flats will not be affected by the project. Therefore, it has been determined that there will be ***“no effect anticipated”*** on the black skimmer.

Least tern (*Sterna antillarum*), Threatened - The least tern is a small pale bird with a dark-tipped yellow bill, legs, and feet, and white forehead. The adult has a long black wedge on its outer wings. The immature least terns have dark bills, dark cheeks and napes, dusky crowns, dark shoulder bars, and duller legs than adults. Least terns inhabit beaches, bays, and sandbars. The areas within and immediately adjacent to the project do not include mudflats, marshes, or beach habitat. Existing nearby beaches and mud flats will not be affected by the project. Therefore, it has been determined that there will be ***“no effect anticipated”*** on the least tern.

Critical Habitat

The project is located within federally-designated Critical Habitat for the West Indian manatee and Johnson’s seagrass. Impacts to critical habitat are limited to the Replacement Build Alternative as a result of the proposed bridge deck widening which will result in the installation of drilled shafts for each bridge structure, as well as 0.82 acres of shading to Biscayne Bay. The proposed construction will be along the centerline of the existing bridges and no changes are anticipated in vehicular or boat volume or patterns as the result of this project. Both Build Alternatives will result in a net reduction in pollutants by eliminating the direct discharge of stormwater from the existing bridges into Biscayne Bay. If unanticipated Critical Habitat impacts should result from the construction of this project, the impacts will be mitigated pursuant to federal requirements. Therefore, a determination of ***“may affect, not likely to adversely affect”*** was made for the West Indian manatee Critical Habitat.

However, the new substructure for the fixed bridges associated with the Replacement Alternative will be constructed in areas outside the footprint of the existing bridge along with additional dredged area required for the bascule bridge substructure. These improvements are within areas designated as Johnson’s seagrass Critical Habitat. Therefore, these impacts will be considered as ***“likely to adversely affect, will not destroy or adversely modify”*** Johnson’s seagrass designated Critical Habitat. The FDOT and NMFS initiated formal consultation under Section 7 of the ESA. NMFS issued the Biological Opinion on November 3, 2020 which addresses avoidance and mitigation measures necessary to protect Johnson’s seagrass Critical Habitat.

Direct Impacts

Direct impacts to protected species and Critical Habitat are not anticipated as a result of the No-Action Alternative, as there are no construction activities involved only routine maintenance. The Rehabilitation Alternative is also not anticipated to have direct impacts. There are no coral species on any of the bridge approaches, pilings or other structures that would be impacted or removed. In addition, there were no seagrasses (including Johnson’s seagrass) observed within 40-50 ft. of any existing bridge structure. Direct impacts are limited to the Replacement Build Alternative as a result of the proposed bridge deck widening of 16 ft., 8 ft. to either side, which will result in 0.82 acres of shading to Biscayne Bay; however, no seagrass beds have been identified beneath the existing bridges.

Indirect Impacts

No indirect impacts to protected species or Critical Habitat are anticipated as a result of the No-Action Alternative as no construction activities are anticipated. One detrimental effect of this alternative would be the continued discharge of untreated surface water flows from the bridges directly into the water of

Biscayne Bay. No indirect impacts would occur as a result of the Rehabilitation Alternative. There are no protected species present on the pilings or other structures to be refurbished or restored and there were none present in the immediately adjacent habitats. Once work is completed, encrusting organisms would be able to establish on these new structures resulting in a slight increase in potential habitat for corals. The proposed conditions would be consistent with existing conditions within the corridor after construction is complete. Indirect impacts are anticipated from the Replacement Alternative as a result of the proposed bridge deck widening which will cause only a minor increase in the overall shaded area. Since there are currently no protected species present in these areas, no indirect effects are anticipated.

Cumulative Impacts

Since the proposed construction will be in the same footprint as the existing bridges, the cumulative effects of the overall project are expected to be negligible. No changes in traffic volume or traffic patterns are expected for vehicles on the bridges or boats within the navigable waterway so there should be no negative cumulative effect on the surrounding habitat. The Build Alternatives will provide a net reduction in direct pollutants by eliminating the direct discharge of stormwater from the existing bridges into Biscayne Bay. As such, the cumulative impacts to protected species and Critical Habitat are expected to be negligible.

Agency Communication

Discussion on potential protected species and Critical Habitat impacts was initiated with the USFWS, NMFS, and the FWC through the ETDM, Environmental Screening Tool (ETDM # 12756), as well as an interagency meeting on June 28, 2017. Consultation within USFWS was initiated in August 2019 and concurrence with the species effect determinations was received on October 5, 2019 (see **Appendix L**). Consultation with NMFS was initiated in January 2020. NMFS informed FDOT OEM on January 29, 2020 that the project will result in formal consultation under Section 7 of the ESA since the project occurs in Johnson's seagrass critical habitat. FDOT continued to coordinate with NMFS and provide project details to support the preparation of the Biological Opinion. Therefore, the formal consultation timeline began on June 5, 2020 with the submittal of the final project details requested by NMFS staff. The Biological Opinion was issued on November 3, 2020, located in the project file and in **Appendix M**.

Avoidance, Minimization and Mitigation

Through analysis and consultation with USFWS and NMFS, FDOT proposes several avoidance and minimization efforts such as implementing the USFWS *Standard Manatee Conditions for In-Water Work* and the NMFS *Sea Turtle and Smalltooth Sawfish Construction Conditions*. To address noise concerns for protected species, FDOT proposes that the bridge substructure be constructed using drill shafts and that no blasting or explosives will be used for removing the bridges or during the load testing for the drill shafts. In addition, the use of a vibratory hammer to install sheet pile or drill shaft caissons will be limited to daytime hours only. During final design, a benthic survey will be conducted to inventory all corals in the area of potential impact. The survey will identify which corals are suitable for relocation prior to construction. A coral relocation plan will be developed and coordinated with the environmental permitting agencies during the permitting process. To avoid impact to habitat, FDOT proposes to delineate the seagrass beds with surface buoys for the duration of the project so that barges and boats will avoid impacting them. In addition, FDOT will conduct seagrass surveys before, during and after the project to

ensure no adverse impacts to seagrass beds. A Barge Use Plan will be developed to outline the minimum clearance of construction barges, ensure barges are staged within the footprint of the existing bridge deck(s) when possible, and include durations for staging barges in the same location in order to avoid to the maximum extent practicable any construction impacts resulting from operating barges and floating platforms. The plan will also identify barge travel routes to and from the construction work zone. FDOT also proposed to prepare a Bridge Demolition/Debris Containment Plan which includes a disposal plan for all the bridge materials, which will be provided to the NMFS for their review and drilled shaft installation will have the appropriate containment to prevent concrete and chemical overflow into the surrounding waters. In addition, a water quality/turbidity monitoring plan will be implemented during construction. No mitigation is proposed for protected species or Critical Habitat.

2.3.9 Essential Fish Habitat

An Essential Fish Habitat (EFH) Assessment for the project was conducted in accordance with the FDOT PD&E Manual. The assessment fulfills the requirements set forth in the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as amended by the Sustainable Fisheries Act of 1996, and associated implementing regulations. The regional Fishery Management Council (FMC) that has jurisdiction over South Florida is the South Atlantic Fishery Management Council (SAFMC). The EFH Assessment is included within the NRE prepared for this project and is available in the project file.

The project occurs within the Biscayne Bay Aquatic Preserve and is a state-designated Outstanding Florida Water. It is located approximately two miles from Government Cut. The depth of the project area ranges from 0 to 15 feet. The project has the potential to directly and indirectly impact benthic resources and habitats that have been designated as EFH. Habitat identified within the project area included seagrass, coral, sponges, macroalgae, hardbottom, sand, and sand/shell hash; however, the majority of the project area is bare sand. Based on the information within the Fishery Management Plan (FMP) from the SAFMC, Biscayne Bay is designated as a Habitat Area of Particular Concern (HAPC) and contains EFH for several federally managed species within the following five FMPs: shrimp, snapper-grouper complex; spiny lobster; Red drum (*Sciaenops ocellata*); and, coral, coral reef, and Live/Hardbottom. Habitat Areas of Particular Concern (HAPC) are defined as specific subsets of EFH that provide critically important ecological functions or are especially vulnerable to degradation. **Table 2-4** identifies the HAPCs present within the project area and what FMPs these EFH habitats are considered HAPCs for:

Table 2-4 Habitat Areas of Particular Concern within Study Area

HAPC	FMP
Biscayne Bay	Corals, Spiny Lobster
Coral, Coral Reefs and Live/Hardbottom	Corals, Spiny Lobster
Seagrass Habitat	Snapper-Grouper, Red Drum

Direct Impacts

Minor direct impacts to the benthic habitat are anticipated from all project Build Alternatives (rehabilitation or replacement) from construction of underwater bridge structures. Regardless of Build

Alternative, the areas anticipated to be directly impacted are mainly limited to the shallow, subtidal zones, bridge pilings and rip-rap/rubble/hard debris areas. Direct impacts to this area would likely be to the sponge, octocoral and tunicate communities located on and adjacent to the bridge pilings and directly underneath the bridge edges. Minor impacts could also occur to a few hard (*Scleractinia*) corals that were documented in this area; these were primarily located on rip-rap and debris. No corals were identified on the bridge pilings or seawalls. These corals will be evaluated during the final design phase to determine if they are suitable for relocation prior to project construction. Several white mangroves are present along the shoreline of the islands; however, mangroves are not anticipated to be impacted by the project.

Direct impacts to the deeper water areas with sandy bottom are not anticipated, as these areas are located outside the project's impact footprint and no hard corals or any other protected, threatened or endangered marine resources were observed utilizing this area.

Minor impacts from direct shading as a result of proposed bridge deck widening of 16 ft. may include redistribution of the microalgae communities which should not require mitigation. Direct impacts from shading is not anticipated as none of the seagrass patches observed were located within 40 ft. of any existing bridge. All observed seagrasses within the Study Area were noted at depths of at least 7 ft. which makes these areas unlikely to be impacted by project barges. The observed species were predominately paddle grass, and one instance of shoal grass, at coverage estimates of 1 to 15 percent. Though the project is located within Critical Habitat for the federally-threatened Johnson's seagrass, this species was not observed.

Indirect Impacts

Indirect impacts to EFH include impacts to sponges, tunicates, and other encrusted organisms on the pilings and other structures to be refurbished, restored, or replaced. However, once work has been completed, the encrusting organisms would be able to establish on new piles and structures resulting in a slight increase in potential habitat for corals. The proposed project conditions would be consistent with the current conditions within the corridor after construction is complete. Indirect impacts to the microalgae communities are anticipated from the shading of 0.82 acres from the bridge deck widening; however, these communities will redistribute themselves. A Relocation and Monitoring Plan is proposed to be submitted to NMFS for the relocation of any coral, octocoral, and sponge. No seagrass was identified within 40 ft. of any existing bridge and no impacts are anticipated to seagrass. Indirect environmental effects associated with the replacement of the Venetian Causeway are likely to be minimal. The new construction will follow the same alignment as the existing Causeway, and vehicle capacity will not be increased. Therefore, the proposed action itself is not expected to promote new development, decrease water quality, nor encourage changes in existing or future land uses. Dominant land uses surrounding the project area consist of residential and commercial, and public and semi-public, which is not anticipated to change post-construction.

Cumulative Impacts

Since the proposed construction will be along the centerline of the existing bridges, the cumulative effects of the overall project are expected to be negligible. No changes in traffic volume or traffic patterns are expected for vehicles on the bridges or boats within the navigable waterway so there should be no negative cumulative effect on the surrounding habitat. In addition, the Build Alternatives will provide a

net reduction in direct pollutants by eliminating the direct discharge of stormwater from the existing bridges into Biscayne Bay. As such, the cumulative impacts to EFH are expected to be negligible.

Agency Communication

Discussion on potential EFH impacts was initiated with the screening of this project through the ETDM, Environmental Screening Tool (ETDM # 12756). NMFS provided comments on August 31, 2010 and October 4, 2017 (Programming Screen). NMFS conducted field visits on August 17, 2010 and June 27, 2017, as well as participated in an interagency meeting on June 28, 2017 (see **Appendix G**). On December 20, 2019, District 6 sent a letter to NMFS requesting EFH consultation. On January 28, 2020 NMFS responded to FDOT's request for EFH consultation outlining conservation recommendations and requesting a response from FDOT within 30 days. A response was submitted to NMFS on February 28, 2020 addressing the conservation recommendations and providing the *Conceptual Plan for Relocation and Monitoring of Sponges, Octocorals and Corals*. On March 10, 2020, NMFS stated that with the submittal of the conceptual relocation and monitoring plan, commitments to seagrass surveys and delineation, and commitment to contain debris and prohibit blasting, FDOT has fulfilled its obligations under the EFH provisions of the Magnuson-Stevens Act. Please refer to **Appendix M** for the coordination letters, the conceptual mitigation plan is in the project file. FDOT will continue to coordinate with the NMFS during the design and permitting phase as outlined in the conservation recommendations.

Avoidance, Minimization and Mitigation

Through analysis and consultation with NMFS, FDOT proposes several avoidance and minimization efforts which include preparation of a Conceptual Coral Relocation and Monitoring Plan, per FWC guidelines, for coral, octocoral, and sponges. During final design, a final coral relocation and monitoring plan will be developed based on an updated benthic survey that will inventory all corals in the area of potential impact. The survey will identify which corals are suitable for relocation prior to construction. In addition, FDOT proposes to conduct a final design benthic survey to assess the suitability for relocation of existing barrel sponges in the area of potential impact. The coral relocation plan will be developed and coordinated with the environmental permitting agencies during the permitting process. Barge spudding will be proposed to occur in close proximity to the bridges during construction to avoid unnecessary impacts to seagrasses. However, if any hard bottom or coral impacts are proposed due to barge spudding or other activities, those impacts will be included within the proposed Plan. A Barge Use Plan will be developed to outline the minimum clearance of construction barges, ensure barges are staged within the footprint of the existing bridge deck(s) when possible, and include durations for staging barges in the same location in order to avoid to the maximum extent practicable any construction impacts resulting from operating barges and floating platforms. The plan will also identify barge travel routes to and from the construction work zone. FDOT will also prepare a Bridge Demolition/Debris Containment Plan which includes a disposal plan for all the bridge materials, containment of concrete and chemical overflow during drilled shaft installation along with a water quality/turbidity monitoring plan to be implemented during construction. NMFS will be provided an opportunity to review the final plans during the design phase.

An EFH Assessment has been prepared and consultation has been completed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). It has been determined that this project will not have adverse effects to EFH. Should any changes occur during the design and

permitting process that affect the consultation, re-initiation of the consultation process will be coordinated with NMFS.

2.4 Physical

2.4.1 Highway Traffic Noise

A traffic noise study was conducted in accordance with the FDOT PD&E Manual and Title 23 CFR Part 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. The Noise Technical Memorandum was prepared for the project and is in the project file.

This project does not include any capacity improvements, substantial alignment modifications, or other improvements identified in Sections 18.1.3.1 - *Type I Projects* and 18.1.3.2 - *Type II Projects* of Chapter 18 of the FDOT PD&E Manual. Therefore, this is classified by FDOT as a Type III project and does not require further noise analysis or consideration of noise abatement.

2.4.2 Air Quality

An Air Quality Technical Memorandum has been prepared in accordance with the FDOT PD&E Manual and is in the project file. As of June 2005, Miami-Dade County is an area designated as attainment for all of the National Ambient Air Quality Standards (NAAQS) under the criteria provided in the Clean Air Act. The project is located in an area which is designated attainment for all of the NAAQS under the criteria provided in the Clean Air Act. Therefore, the CAA conformity requirements do not apply to the project. However, standard procedures will be implemented to minimize fugitive emissions during construction.

This project is not expected to create adverse impacts on air quality because the project area is in attainment for all NAAQS and because the project is expected to not change the LOS and not change delay and congestion on all facilities within the study area. Construction activities may cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to all applicable state regulations and to applicable *FDOT Standard Specifications for Road and Bridge Construction*.

2.4.3 Contamination

The FDOT has evaluated the proposed project corridor and has identified potential contaminated sites for the various proposed alternatives. Results of this evaluation will be utilized in the selection of a preferred alternative. When a specific alternative is selected for implementation, a site assessment will be performed to the degree necessary to determine levels of contamination and, if necessary, evaluated the options to remediate along with the associated costs. A Contamination Screening Evaluation Report (CSER) (December 2018) was completed in accordance with the FDOT PD&E Manual. This report evaluated potential and existing contamination sources within the project area and is in the project file. Each site identified within the designated buffers from the proposed improvements was evaluated for its potential impact and assigned a rating of High, Medium, Low, or No potential risk. A total of 18 potential contamination sites were identified (see **Appendix N**) Sites were rated based on their characteristics and distance from the proposed improvements.

Potential contamination sites located within 500-ft. of the project corridor, solid waste facilities within one-quarter mile, and Superfund/Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites within one mile of the project were evaluated for soil and groundwater contamination. Five of the sites were determined to have a High or Medium risk of potential contamination involvement with the project. The remaining 13 sites had No or Low risk. The Potential Contaminated Sites Table can be found below in **Table 2-5.** and contamination risks by alternative are summarized in **Table 2-6.**

The potential contamination types at the facilities reviewed include petroleum hydrocarbons, pesticides/herbicides, metals, corrosive/caustic materials and a variety of industry specific regulated compounds. Most of the potential contamination sources are adjacent to either the east or west approaches to the causeway. The potential for contamination involvement is equivalent for all build alternatives studied as construction near contamination risk sites will be required for bridge approaches for both rehabilitation and reconstruction alternatives.

The majority of potential contamination sites within 500-ft. of the project are considered to present Low risk based on their current and historical permit(s), site use, and regulatory status. This includes those sites which have no records of industrial or storage tank permits, no documented contamination events or have an agency approved SRCO/NFAP status as the result of successful remedial actions (other than petroleum contaminated sites). Sites are also assigned a Low rating based on their proximity to the project corridor if they held or currently hold a USEPA Hazardous Waste Generator permit (allowing for a business to handle, store, and properly dispose of hazardous substances), even if contamination concerns were not discovered in the records review.

No ROW acquisition is anticipated at this time. However, the project will be reevaluated during design to determine if any new contamination-related risks are present and to evaluate potential dewatering concerns. Level II Contamination Assessment investigations will be completed during the design phase for any areas that have proposed dewatering or subsurface work activities (e.g. pole foundations, drainage features) occurring adjacent to or at any of these sites. In addition, the District Contamination Impact Coordinator will coordinate with the District Structures Engineer, District Structures Maintenance Engineer, or District Facilities Engineer, as appropriate, regarding asbestos containing material or metal-based coatings surveys for structure/bridges within the project. Surveys will be conducted during the design phase, and based on the results, the District will determine the appropriate controls and disposal methods to be employed during construction.

If dewatering will be necessary during construction, a SFWMD Water Use Permit will be required. The contractor will be held responsible for ensuring compliance with any necessary dewatering permit(s). Any dewatering operations in the vicinity of potentially contaminated areas shall be limited to low-flow and short-term. A dewatering plan may be necessary to avoid potential contamination plume exacerbation. All permits will be obtained in accordance with Federal, State, and local laws and regulations.

Additionally, the contractor shall follow applicable FDOT *Standard Specifications for Road and Bridge Construction* for areas of unforeseen contamination. These specifications require that in the event any hazardous material or suspected contamination is encountered during construction, or any spills are caused by construction-related activities, the Contractor shall be instructed to stop work immediately and notify the FDOT Construction Project Manager.

Table 2-5 Potential Contamination Sites

MAP ID	Name	Address	Contamination Type	Contaminants of Concern/Location	Site ID	Risk Rating	
						Rehabilitation	Reconstruction
1	Auto Parts 2002 Corp. / DBA US1 Auto Parts	1720 Bay Road Miami 33170	County Small Quantity Generator	Petroleum, Waste Oil, Lubricants, Batteries/NA	Facility # 24750	Low	Low
2	Bay Road Animal Clinic of Miami	1730 Bay Road Miami Beach 33139	County Small Quantity Generator	Solvents/NA	Facility # 144276	Low	Low
3	Beach Auto Center, Inc. / Giant Motors	1750 Bay Road Miami Beach 33139	County Small Quantity Generator	Petroleum, Waste Oil, Lubricants, Batteries/NA	Facility# 26352 / 25128	Low	Low
4	Chevron Station / BP #0036736 / Chevron Property (former Gulf facility)	1403 Dade Blvd. Miami Beach 33139	FDEP Petroleum Storage Tank Site	Petroleum/Groundwater	Facility # 9046846 / 9100478 / 9046870	Medium	Medium
5	Maurice Gibb Park – Formerly Island View Park	18 th Avenue and Purdy Avenue, near 1700 Purdy Avenue Miami Beach 33139	FDEP Petroleum Contaminated Site	Petroleum/Groundwater & Soil	FDEP Facility # 9813745	High	High
6	Larry's Service Center	1769 Purdy Avenue Miami Beach 33139	EPA regulated RCRA site	Petroleum, Waste Oil, Lubricants, Batteries/NA	EPA Handler # FLR000152389	Low	Low
7	Belle Plaza	201 Island Avenue Miami Beach 33139	FDEP Petroleum Storage Tank Site	Petroleum/NA	FDEP Facility# 9805361	Low	Low
8	Miami Beach City Pump Station #10	28 Venetian Way, Belle Isle Miami Beach 33139	FDEP Petroleum Storage Tank Site	Petroleum/NA	FDEP Facility# 9401221	Low	Low

MAP ID	Name	Address	Contamination Type	Contaminants of Concern/Location	Site ID	Risk Rating	
						Rehabilitation	Reconstruction
9	9 Island Condominium	9 Island Avenue, Belle Isle Miami Beach 33139	FDEP Petroleum Storage Tank Site	Petroleum/NA	FDEP Facility# 9803130	Low	Low
10	Terrance Towers	3 Island Avenue Miami Beach 33139	FDEP Petroleum Storage Tank Contamination Site	Petroleum/Soil	FDEP Facility# 9806404	Medium	Medium
11	Lido Spa Hotel Health Resort	40 Island Avenue Miami Beach 33139	FDEP Petroleum Storage Tank Site	Petroleum/Groundwater & Soil	FDEP Facility# 9803801	Medium	Medium
12	Texaco #240210718	555 NE 15 th Street Miami 33132	Former Petroleum Storage Tanks Site	Petroleum/NA	EPA Facility# FLD984172908	Low	Low
13	Miami Herald Publishing Co.	1 Herald Plaza Miami 33132	Former hazardous materials handler and storer; former storage tank site	Petroleum, Solid Waste/NA	EPA Handler # FLD980565899 FDEP Facility# 8622094	Low	Low
14	Venetia Condo Crescent Heights	555 NE 15 th Street Miami 33132	FDEP Petroleum Storage Tank Site	Petroleum/NA	FDEP Facility# 9300721	Low	Low
15	Marriott Hotel and Marina Biscayne	1633 N. Bayshore Drive Miami 33132	FDEP Petroleum Storage Tank Contamination Site	Petroleum/Groundwater & Soil	FDEP Facility# 8628874	Medium	Medium
16	Grand Condo Association, Inc.	1717 N. Bayshore Drive Miami 33132	FDEP Petroleum Storage Tank Site	Petroleum/NA	FDEP Facility# 9300119	Low	Low
17	1000 Venetian Way Condos	1000 Venetian Way Miami 33139	FDEP Petroleum Storage Tank Site	Petroleum/NA	FDEP Facility# 9812031	Low	Low
18	Resorts World Miami Brownfield Site	1410, 1420, and 1431 N. Bayshore Drive; 360 NE 14 th Terrace; 425 and 435 NE 13 th Street; 1401 Biscayne Boulevard; and 1 Herald Plaza Miami	Brownfield	Petroleum/NA	N/A	Low	Low

Table 2-6 Contamination Risk

Project Alternatives	No	Low	Medium	High
Rehabilitation 4 and M1	0	13	4	1
Reconstruction 7 and M-4	0	13	4	1

2.4.4 Utilities and Railroads

Several utility companies have existing facilities located within the project study area. **Table 2-7** shows a list of the utility companies servicing the project study area.

Table 2-7 Existing Utilities

Utility Type	Utility Company
Electric	
	Central Support Facility
	Florida Power and Light – Downtown Miami
	Florida Power and Light – Dade
	Florida Power and Light – Subaqueous
	Florida Power and Light – Transmission
Communications	
	XO Communications
	AT&T/Distribution
	Hotwire Communications
Cable	
	Atlantic Broadband
	Comcast Cable
Fiber Optic	
	MCI
	Crown Castle
	Level 3 Communications
	Miami-Dade Enterprise Technology Services Dept.
	Fibernet Direct
	Florida Dept. of Transportation 6 ITS
Water and Sewer	
	City of Miami Beach
	Miami-Dade Water & Sewer
Gas	
	Teco Peoples Gas South Florida
	Florida Gas Transmission
Traffic/Street Lights	
	Dade County Public Works and Traffic
	City of Miami Beach

It is anticipated that most of the existing utility lines will be converted to sub-aqueous lines with either Build Alternative. Below is a list of the utility companies that will be performing these modifications:

- Florida Gas Transmission
- Florida Power and Light – Downtown Miami
- Florida Power and Light – Miami-Dade County
- Florida Power and Light – Transmission

The Conceptual Bridge and Roadway Plans for the two Build Alternatives were provided to the existing utility companies for coordination and identification of potential conflicts. The utility coordination exhibits are located in the project file. There are no railroads within the project study area. Coordination will continue with each of these utility companies through the final design phase of the project.

2.4.5 Construction

Construction activities for the replacement or rehabilitation Build Alternatives for the proposed Causeway Bridges will temporarily impact vehicular, navigational, pedestrian and bicycle traffic during construction. In addition, there will be short term air, noise and water quality impacts for residents and travelers within the project study area. For the Replacement Alternative, residents and travelers will be limited to one lane of two-way traffic during construction. Bicycle and pedestrian access will be maintained via a shared use path on all of the low-level bridges during construction; as well as on the temporary bridge to be installed during the replacement of Bridge 10. The closure of Bridge 10 will also result in temporary impacts to navigational traffic; however, vessels will be able to cross beneath the Causeway at Bridge 1 throughout the construction phase. For the Rehabilitation Alternative, one bridge will be closed at a time, without a temporary bridge and traffic detour, and bicycle and pedestrian access will be maintained during construction.

Construction activities may generate temporary noise and vibrations that impact those businesses and residents within the immediate project vicinity. Temporary noise impacts will occur from use of heavy equipment. In addition, construction activities may result in vibration impacts. Construction noise and vibration will be minimized by adherence to the controls listed in the latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction*. The air quality impacts will be short-term and will be mainly in the form of dust from earth work and unpaved roads.

Water quality impacts resulting from erosion and sedimentation will be controlled in accordance with the latest edition of FDOT's *Standard Specifications for Road and Bridge Construction*. The project is located in Biscayne Bay, an OFW. The proposed Build Alternatives cannot completely avoid impacts to existing natural resources within the project area; however, avoidance and minimization measures will be incorporated during the construction of the project to prevent any unnecessary impacts to these natural resources. Best Management Practices (BMPs) are to be implemented to prevent impacts to threatened and endangered species, wetlands and surface water features.

There are potential contaminated sites located along the project corridor. The majority of potential contamination sites are considered to present low risks. However, during design the project will be reevaluated to determine if any new contamination-related risks are present and to evaluate any potential

dewatering concerns. If dewatering is necessary during construction, a SFWMD Water Use permit will be required. Contamination and unforeseen contamination will be controlled in accordance with the latest edition of the FDOT's *Standard Specifications for Road and Bridge Construction*.

Maintenance of traffic and sequence of construction will be planned and scheduled to minimize traffic delays throughout the project. Signs will be used to provide notice of access to local business and other pertinent information to the traveling public.

2.4.6 Bicycles and Pedestrians

The existing roadway provides 6-ft. wide sidewalks on both sides, except for the bridges, which the sidewalks are 4-ft. wide. The existing bicycle facilities provide 4-ft. bicycle lanes on each side of the Venetian Way, except for the bridges and spoil island roadways where the existing 4-ft. shoulders serve as bicycle lanes. The City of Miami and the City of Miami Beach Bicycle Master Plan identify the Venetian Causeway as a significant bicycle corridor as it serves as one of the County's most well-traveled recreational and commuter bicycle routes. An 8-hour bicycle count revealed that the Venetian Causeway experiences noticeable bicycle traffic, with an average hourly volume of 85 bicycles. The community prefers the sidewalks to be as wide as possible as the bridges serve as a look out point for tourists.

The bicycle and pedestrian mobility facilities will be improved on the bridges for both Build Alternatives. For the Replacement Alternative, the bicycle lane width will increase from 4 ft. to 7 ft., and the sidewalk widths will increase from 4 ft. to 8 ft. The bicycle lanes will transition to 4 ft. at the connection to the roadway on the islands, except for Belle Isle which will transition to 5 ft. and the sidewalks from 8 ft. to 6 ft. The Rehabilitation Alternative consists of restriping Bridges 2 through 12. The bicycle lanes will remain at 4 ft. wide. The reduction in the width of the travel lanes from 12 ft. to 11 ft. allows for the increase in the width of the sidewalks from 4 ft. to 5 ft.

2.4.7 Navigation

There are two bascule bridges on the Venetian Causeway. These bascule bridges facilitate the passage of marine traffic. Bridge 1, the westernmost bridge, crosses the ICWW, which is an important navigational waterway in Florida. Bridge 10, the easternmost bridge, crosses Biscayne Bay and allows the passage of navigational traffic, including many private pleasure boats and sightseeing tour boats. The replacement Build Alternative of the fixed and bascule bridges will temporarily impact navigational access due to the closure of Bridge 10 during construction. However, the replacement Build Alternative will provide increased horizontal navigation clearance and improved navigation safety.

Currently, Bridge 1 provides 12 ft. of minimum vertical clearance above mean high water at the face of the fenders and 16 ft. at the center of the navigational channel. The bascule span provides unlimited vertical clearance with the span fully raised. The existing bridge meets the minimum vertical clearance requirement for navigation of 6 feet above mean high water line. There are no improvements proposed to Bridge 1.

Bridges 2 through 9, 11 and 12 are fixed bridges that provide 4 ft. 5 in. of maximum vertical clearance above mean high water line at the center of the middle span. These bridges are not navigable per USCG jurisdiction; however, the low level, fixed bridges are accessed by small water-craft at low tide.

The existing Bridge 10 bascule span provides 6 ft. of minimum vertical clearance above mean high water line at the fenders and 10 ft. at the center of the navigational channel with the span lowered. The existing horizontal clearance is 56 ft. The replacement Build Alternative would replace the existing Bridge 10 movable bridge with a new double leaf bascule bridge. This alternative will have unlimited vertical clearance in the raised position. There are no established official USCG vertical or horizontal guide clearances for this waterway crossing.

This project will require a USCG Bridge Permit. Coordination with the USCG has occurred throughout the study and alternatives development process and will continue through design and permitting phases of the project. USCG is a cooperating agency and has had the opportunity to review and provide comments on the EA.

2.5 Anticipated Permits

Below is a list of the anticipated permits required. Permit applications will be prepared during design.

- USCG Bridge Permit for the reconstruction or modification of any existing bridge or causeway, across United States navigable waters.
- USACE Section 404 Permit for impacts to wetlands and other surface waters.
- SFWMD Environmental Resource Permit for impacts to wetlands and other surface waters as well as the stormwater system.
- SFWMD Water Use Permit for dewatering.
- FDEP National Pollutant Discharge Elimination System Construction General Permit for impacts to greater than one acre of soil disturbance during construction.
- Miami-Dade County DRER Class I Coastal Construction Permit for construction in coastal areas.
- Miami-Dade County DRER Class II Drainage Permit for impacts to the stormwater system and discharge to Biscayne Bay; and,
- Miami-Dade County DRER Tree Permit for tree removals and/or relocations.

3.0 COMMENTS AND COORDINATION

The FDOT prepared a Public Involvement Plan, which is on file at District Six, and implemented a Public Involvement Program for the Venetian Causeway PD&E Study. The public involvement process was designed to include public input in the development of the project by encouraging and facilitating the involvement of the general public, citizen groups, interest groups and resource agencies.

3.1 Discussion of ETDM Programming Screen and Advance Notification

The Advance Notification (AN) package for the Venetian Causeway project was submitted for comment on September 28, 2011 to the Florida State Clearinghouse. The AN submittal initiated the AN process through the EST as part of the ETDM Programming Screen phase. The AN Package is in the project file.

Agency coordination for the Venetian Causeway project occurred through the ETDM Programming Screening (ETDM # 12756). The ETDM Programming Screen Summary Report was published on November

28, 2016. During the ETDM Screening, each agency had the opportunity to comment on and assign a *Degree of Effect* (DOE) to each project issue. A summary of the agency ratings is provided in **Table 3-1**. The ETDM Summary Report and comments from ETAT members are on file FDOT District Six.

Table 3-1 ETAT Degree of Effect Rankings

Environmental Issue	Agency	Degree of Effect
Natural		
Air Quality	EPA	Minimal
Coastal and Marine	NMFS	Substantial
Contaminated Sites	EPA	Minimal
	FDEP	Minimal
Farmlands	NRCS	None
Floodplains	EPA	None
Infrastructure	FDOT District Six	Minimal
Navigation	USCG	Substantial
Special Designations	FDEP	Moderate
	EPA	None
Water Quality and Quantity	FDEP	Moderate
	EPA	Minimal
	SFWMD	Minimal
Wetlands	USACE	Substantial
	EPA	Moderate
	FDEP	Moderate
	NMFS	Moderate
	USFWS	Moderate
Wildlife and Habitat	USFWS	Moderate
	FWC	Minimal
Cultural		
Historic and Archaeological Sites	Department of State	Substantial
Recreation Areas	FHWA	Moderate
	EPA	Minimal
	FDEP	None
Section 4(f) Potential	FDOT District Six	Moderate
Community		
Aesthetics	FDOT District Six	Moderate
Economic	FDOT District Six	Enhanced
Land Use	FDOT District Six	Minimal
	Department of Community Affairs	No Involvement
Mobility	FDOT District Six	Enhanced
Relocation	FDOT District Six	Moderate
Social	FDOT District Six	Moderate
	EPA	None
	Department of Community Affairs	No Involvement

Social

During the ETDM Screening, based on the historic designation of Venetian Causeway and the potential impacts on community character and cohesion resulting from the project, a Degree of Effect (DOE) of *Moderate* was assigned to Social Issues by FDOT District Six. EPA assigned a DOE of *None* and the Florida Department of Community Affairs assigned a DOE of *No Involvement*. Economic enhancements are anticipated as a result of the project by reducing escalating maintenance costs and providing a safe continuation of access to the economic focal points in Downtown Miami. FDOT District Six assigned a DOE of *Enhanced* for Economic Issues. Since the project is for the replacement or rehabilitation of existing bridges that are already a part of the local government's transportation system, the project will be consistent with the local government's comprehensive plans. FDOT District Six assigned a DOE of *Minimal* for Land Use Issues since the project is anticipated to have a minimal effect on the character of the area. The Florida Department of Community Affairs assigned a DOE of *No Involvement*. Due to the presence of historic resources and residential land use in the project area, a DOE of *Moderate* was assigned to Relocation Issues by FDOT District Six.

Cultural

FDOT District Six assigned a DOE of *Moderate* for Section 4(f) Potential Issues. There are numerous NRHP-listed sites and recreational resources within the project limits. The Florida Department of State (FDOS) commented that all twelve bridges (Venetian Causeway - DA4736) that are proposed for rehabilitation or replacement are listed in the NRHP. If the bridges are demolished there would be a substantial adverse effect to this resource group. The FDOS assigned a DOE of *Substantial* for Historic and Archaeological Site Issues. In addition to Venetian Causeway (DA4736), eight (8) recorded structures and one additional NRHP resource (Trinity Episcopal Cathedral) is within the project area. Due to agency concerns, FDOT District Six assigned a DOE of *Substantial*, as well. Due to the high number of recreation areas/features located within the vicinity of the project, a DOE of *Moderate* was assigned to Recreation Areas Issues by FDOT District Six. The EPA commented that the replacement of the bridge can provide a similar multimodal facility to allow the continuation of activities; however, the use of recreation areas will be impacted during construction and was assigned a DOE of *Minimal*. FHWA assigned a DOE of *Moderate* due to a DOA needed. Florida Department of Environmental Protection (FDEP) assigned a DOE of *None*.

Natural

Members of the ETAT commented on potential project impacts to wetlands and surface water communities. Both FDOT District Six and the USACE made the DOE of *Substantial*, while the EPA, FDEP, and NMFS found the DOE to be *Moderate*. These determinations were made prior to field surveys. Florida Department of Environmental Protection (FDEP) assigned as DOE of *Moderate* for Special Designations. Biscayne Bay is designated as an aquatic preserve and OFW under Rules 18-18 and 62-302.700(9), FAC. Any increase in stormwater runoff from the new bridge spans would be of concern. The agency recommended that the study include an evaluation of existing bridge/causeway stormwater treatment adequacy and details on the future stormwater treatment facilities. Retro-fitting of stormwater conveyance systems would help reduce impacts to water quality. The EPA assigned a DOE of *None* to this issue. For the Water Quality and Quantity DOE, the Florida Department of Environmental Protection (FDEP) commented that the project is located within Biscayne Bay, which is designated as an Aquatic

Preserve and OFW. While the proposed stormwater facility design will include the requirements for the water quality impacts as required by Chapter 24, Section 24-58 of the Miami-Dade County code, a DOE of *Moderate* has been assigned to the Water Quality and Quantity issue by FDEP and FDOT District Six. EPA and SFWMD assigned a DOE of *Minimal*. The EST and GIS analysis identified 132.4 acres (100%) of FEMA Flood Zone AE of FIRM 100-Year Floodplain data within the project area during the ETDM Screening process. Based on the proposed bridge design being adjusted to avoid or minimize impacts to floodplains, a DOE of *Minimal* was assigned by FDOT District Six for Floodplain Issues. The EPA assigned a DOE of *None*.

USFWS and FDOT District Six assigned a DOE of *Moderate* for Wildlife and Habitat. The FWC assigned a DOE of *Minimal*. The USFWS noted that the Biscayne Bay serves as Critical Habitat for the West Indian manatee and Johnson's seagrass. The USFWS *Standard Manatee Conditions for In-Water Work* must be followed during construction. The project is within the USFWS Consultation Areas for Atlantic Coast Plants, American crocodile, West Indian manatee, and piping plover. Existing bridges should be removed without the use of explosives. If use of explosives is necessary, further coordination with USFWS, FWC, and NMFS is required. The NMFS indicated that Biscayne Bay within the project area, has the following moderate to high quality habitat types: sand and shell bottom, corals, macroalgae, sponges, and seagrass. These bottom types typically provide foraging areas for managed fish species, manatees, sea turtles, and invertebrates as well as shelter and habitat for post-larval and juvenile fish species. The live/hardbottom and corals, and seagrasses are HAPCs and Biscayne Bay itself has been geographically designated a HAPC for the spiny lobster. NMFS also requires the relocation of corals if feasible and stated that FDOT consider relocation of barrel sponges at the site as a minimization effort. Less mitigation may be required if sponges and corals are relocated. NMFS determined the degree of effect for this project on the Coastal and Marine natural environment as *Substantial*. This early coordination occurred prior to field investigations and development of project alternatives.

Physical

During the ETDM Screening process, EPA and FDEP assigned a DOE of *Minimal* for Contamination Issues. EPA noted only four (4) petroleum tanks and four (4) RCRA regulated sites are identified within 500 ft. of the project. There are no known superfund sites or brownfield sites within the project study area. The USCG and FDOT District Six assigned a DOE of *Substantial* to Navigation Issues and the USACE assigned a DOE of *Moderate* due to the replacement of the east bascule bridge (Bridge 10). Bridge 10 crosses the East Channel of Biscayne Bay which is considered navigable waters under USCG jurisdiction which will require a USCG bridge permit. There are potential concerns regarding potential adverse impacts to recreational and commercial navigation and temporary impacts to navigation may occur during project construction as a result of potential bridge replacements or modifications. The USACE assigned a DOE of *Moderate*.

3.2 Coordination and Consultation

The following federal, state, regional, local, and community agencies and organizations were identified and contacted directly by the FDOT through the AN process in accordance with the FDOT PD&E Manual.

FEDERAL:

- Federal Highway Administration, Division Administrator
- Federal Emergency Management Agency – Regional Director
- National Register of Historic Places
- U.S. Army Corps of Engineers – Regulatory Branch, District Engineer
- U.S. Army Corps of Engineers – Field Office
- U.S. Coast Guard – Miami Zone
- U.S. Environmental Protection Agency – Regional 4
- U.S. Department of Housing and Urban Development
- U.S. Department of Interior – U.S. Fish and Wildlife Service Southeast Region
- U.S. Department of Interior – U.S. Geological Survey
- U.S. Department of Interior – Bureau of Land Management
- U.S. Department of Interior – USGS-FISC
- U.S. Department of Commerce National Oceanographic and Atmospheric Administration
- U.S. Department of Health and Human Services
- National Marine Fisheries Service
- Natural Resources Conservation Service
- U.S. Fish and Wildlife Service

STATE:

- Florida Department of Agriculture – Division of Forestry
- Florida Department of Agriculture and Consumer Services
- Florida Department of Environmental Protection
- Florida Department of State, State Historic Preservation – Division of Historical Resources
- Florida Fish and Wildlife Conservation Commission – Office of Environmental Services
- Florida Fish and Wildlife Conservation Commission – Division of Marine Fisheries
- Florida Department of Community Affairs
- Florida Department of State
- Florida Inland Navigation District

REGIONAL:

- Civic Organizations
 - Miami-Dade Chamber of Commerce
 - Greater Miami Chamber of Commerce

- Miami Beach Chamber of Commerce
- Transit/Transportation
 - Miami-Dade Transportation Planning Organization (TPO)
 - Miami-Dade Transit Bus Services Division
 - Miami-Dade County Department of Transportation and Public Works
 - Miami-Dade Expressway Authority
 - Florida's Turnpike Enterprise
- Infrastructure
 - SFWMD
 - Florida Power & Light
 - South Florida Regional Planning Council
 - South Florida Regional Transportation Authority

LOCAL:

- Municipalities/Government
 - City of Miami
 - City of Miami Beach
 - Miami-Dade County
 - Miami-Dade County Water and Sewer Department
 - Miami-Dade County Office of Emergency Management
 - Miami-Dade County Parks, Recreation and Open Spaces Department
 - Miami-Dade County Environmental Resources Management
 - Miami-Dade County Department of Regulatory & Economic Resources Miami-Dade County Public Works & Waste Management
 - Miami-Dade County, Office of Community and Economic Development
 - City of Miami Historic and Environmental Preservation Board
 - City of Miami Beach Historic Preservation Board
- Committees
 - Miami-Dade TPO Committees (Bicycle Pedestrian Access Committee, Freight Transportation Advisory Committee, Citizens Transportation Advisory Committee, Transportation Aesthetics Review Committee)
- Schools
 - Miami-Dade County Public Schools Annex Building
 - University of Miami

- Mechina High School of South Florida
- Miami International University of Art and Design
- Religious Institutions
 - Temple Beth Shmuel – the Cuban Hebrew Congregation
 - Talmudic University of Florida
 - Trinity Episcopal Cathedral
- Native American Tribes
 - Miccosukee Tribe of Indians of Florida
 - Seminole Tribe of Florida
 - Seminole Nation of Oklahoma
 - Mississippi Band of Choctaw Indians
 - Muscogee (Creek) Nation Poarch Band of Creek Indians

In 2014, a Public Involvement Plan (PIP) was developed for the project. The PIP is a living document that is updated regularly throughout the life of the project. Elected official and agency databases are updated regularly and included in the Appendix of the PIP.

- Local Elected and Appointed Officials
 - Florida State Senators for 11th Congressional District
 - Florida State Representative for District 109
 - Florida State Representative for District 113
- Miami-Dade County Board of Commissioners
 - District 1
 - District 2
 - District 3
 - District 4
 - District 5
 - District 6
 - District 7
 - District 8
 - District 9
 - District 10
 - District 11
 - District 12

- District 13
- Miami-Dade County Clerk of the Circuit Court
- Miami-Dade County Police Director
- Miami-Dade County Fire Rescue Chief
- Miami-Dade County Superintendent of Schools
- Port Miami, Director
- City of Miami
 - Mayor
 - Commissioner (District 1)
 - Commissioner (District 2)
 - Commissioner (District 3)
 - Commissioner (District 4)
 - Commissioner (District 5)
 - City Manager
 - City Clerk
 - Chief of Police
 - Recreation and Parks Director
 - Public Works Director
 - Preservation Officer
- City of Miami Beach
 - Mayor
 - Commissioner, Group 1
 - Commissioner, Group 2
 - Commissioner, Group 3
 - Commissioner, Group 4
 - Commissioner, Group 5
 - Commissioner, Group 6
 - City Manager
 - Public Works Director
 - Acting Environmental Resources Manager
 - Fire Chief
 - Parks and Recreation Director
 - Chief of Police

The following national, state and local public interest groups and organizations have been identified and contacted by the FDOT:

- Homeowner/Community Associations
 - Venetian Causeway Neighborhood Alliance
 - Venetian Islands Homeowners' Association
 - Bayshore Villas Homeowners' Association
 - Belle Isle Residents Association
 - Lido Isle Community Association
 - Hibiscus Island Homeowners' Association
 - Miami Beach HOA Presidents' Group

COOPERATING AGENCIES:

Through the ETDM process, the USCG accepted the role as a cooperating agency in a letter dated June 9, 2005, and also provided vertical and horizontal guide clearances. This project will require a USCG Bridge Permit. The FDOT has and is continuing to closely coordinate throughout the duration of the project with the USCG. The USCG reviewed the Draft EA but did not provide comments on the document. In addition, the USACE accepted responsibility as a cooperating agency due to potential dredge and fill activities that will require a Section 404 Permit. The USACE also reviewed the Draft EA but did not have comments on the document.

3.3 Public Kick-Off Meeting

On Wednesday June 25, 2014, over 70 residents and business owners attended the public kick-off meeting for the Venetian Causeway PD&E Study being developed by FDOT District Six. The meeting was held at the Miami Beach Regional Library from 6:00 p.m. to 8:00 p.m. The purpose of the meeting was to increase the public's understanding of the study and encourage participation in the process. The public was given information regarding the purpose of the project and an overview of existing conditions in the area. A study schedule was also discussed and distributed to the public at the meeting.

The public was given the opportunity to ask questions, express concerns and share thoughts with FDOT staff about the project. Topics of discussion during the meeting included preserving the historic design of the bridges, the construction of new bicycle lanes and environmental concerns.

3.4 Alternatives Public Workshop

The Alternatives Public Workshop (APW) was held on Wednesday, May 13, 2015 at the Miami Beach Botanical Garden from 7:00 p.m. to 9:00 p.m. At the meeting, proposed "Build" alternatives developed for the potential replacement or rehabilitation of the bridges, as well as the "No-Build" alternatives were presented to the public. The corresponding initial environmental impacts, details and any relevant topics for each of the alternatives was presented. This workshop gathered project information and public opinion to use in the selection of the recommended alternative. The public was given the opportunity to rank each alternative using a ballot. The ballot required the person filling out the ballot to:

1. Select either No-Build, Rehabilitation or Replacement as the desired action Rank the alternatives with the action selected. A “1” was assigned to the top ranked alternative for the selected action, “2” for the second ranked alternative, etc.
2. Rank the Maintenance of Traffic Options, with “1” being the most preferred.

The ballots were handed in at the Alternatives Public Workshop, e-mailed or mailed to the FDOT Project Manager, Dat Huynh by May 20, 2015. The following alternatives were considered for additional study:

- Alternative 4: Fixed Bridge Rehabilitation with Beam Strengthening
- Alternative M1: Bascule Bridge Rehabilitation
- Alternative T1: Typical Section Replacement with Venetian Railing
- Alternative 7: Fixed Bridge Replacement with Arched Beams
- Alternative M4: Movable Bridge Replacement with Double Leaf Bascule Bridge

3.5 Agency Coordination Meetings

On Wednesday, June 28, 2017, an Agency Coordination meeting took place at the FDOT District Six. The purpose of this meeting was to provide a project status update and to review the planned study activities to local project agencies. The following agencies were present during the coordination meeting:

- Florida Department of Transportation, District Six (FDOT)
- City of Miami Beach (CMB)
- Miami-Dade County (MDC)
- United States Army Corps of Engineers (USACE)
- South Florida Water Management District (SFWMD)
- United States Coast Guard (USCG)
- State Historic Preservation Office (SHPO)
- National Marine Fisheries Service (NMFS)

Miami-Dade County's DRER

The proposed stormwater improvements were discussed with the DRER on April 7, 2015 (see **Appendix I** for the meeting minutes). The project team discussed the stormwater management requirements and applicable permits that would be required by the agencies as well as the local water management jurisdiction for the proposed Venetian Causeway Bridges Build Alternatives. Also discussed was the water quality and quantity requirements, nutrient loading, drainage approach and floodplain encroachment. It was determined that a DERM Class I Coastal Construction Permit and DERM Class II Drainage Permit would be required.

SFWMD

The proposed stormwater improvements were discussed with SFWMD on April 15, 2015 (see **Appendix I** for the meeting minutes). The project team discussed the stormwater management requirements and

applicable permits that would be required by the agencies as well as the local water management jurisdiction for the proposed Venetian Causeway Bridges Build Alternatives. Also discussed was the water quality and quantity requirements, nutrient loading, drainage approach and floodplain encroachment. It was determined that a SFWMD ERP would be required.

FDEP

Coordination with FDEP occurred during the PD&E phase to gain input on the resource, discuss potential impacts and to identify the coordination necessary during the design and permitting phase. A coordination letter and attachments were sent to FDEP on March 31, 2020 and a response was received on May 28, 2020. A teleconference was held on July 1, 2020 to further discuss FDEP's response, discuss project status and how to proceed in the future project phases. FDOT will continue to coordinate with FDEP during the design phase and as part of the state permitting process as further described in **Section 2.3.2** (see **Appendix H** for correspondence).

3.6 Project Advisory Group (PAG) Meetings

The purpose of the PAG was to ensure that the range of stakeholder views regarding possible improvements to the Venetian Causeway Bridges are clearly understood and fully considered by the project team, and to help the project team explore how to address the issues and needs that may be identified through the Study. Originally, the PAG was called the Citizens Advisory Committee but later was renamed the Project Advisory Group.

Project Advisory Group Meeting No. 1

On Thursday, September 18, 2014 from 6:00 PM to 8:00 PM, over 20 residents and business owners attended the first PAG meeting. The purpose of the PAG was to allow stakeholders to provide input on the project as the study progressed. The PAG represented the communities and organizations in the immediate area of the project and ensured that a full range of views were considered during the Study. The meeting was publicly noticed, and held at 1000 Venetian Way, Club House, Miami Beach, FL 33139. There was a detailed presentation on the project that included: the status of the study, the existing conditions of the Causeway Bridges, the historic significance of the bridges, the new hurricane wave analysis and vessel impact load requirements on the bridges, and the proposed rehabilitation parameters for the bridges. It was explained that the immediate focus of the Study was the rehabilitation of the bridges and that the main purpose of the meeting was to ascertain the Rehabilitation Parameters to be utilized for the development of suitable Rehabilitation Alternatives. The Rehabilitation Parameters decided upon are as follows:

- Meet current safety standards
- Maintain National Register of Historic Places listing
- Minimize environmental impacts
- Rehabilitation Service Life – 25 years
- Typical Section – improve functionality
- Structural Capacity – meet current standards for:

- Load carrying capacity
- Foundation stability
- Hurricane resistance
- Vessel collision resistance
- Bridge Railings and End Treatments
 - Preserve historic character
 - Meet current standards
- At a minimum, maintain the existing bridge clearances
- Maintain traffic during construction
- Maintain utility services during construction

The PAG members were given the opportunity to interact with FDOT staff during the presentation, ask questions and express their opinions about the project. Topics of discussion included maintenance of traffic during the construction phase, the historical characteristics of the bridges, rehabilitation of the bridges, the impacts to the bridges during a hurricane, the proposed height of the handrails and impacts to the viewshed, and possible construction of a bicycle lane.

There were questions related to the proposed Venetian Causeway Emergency Bridge Repair Project being undertaken by Miami-Dade County; however, the attendees were advised that they should contact Miami-Dade County on that project as it is separate from this Study.

Project Advisory Group Meeting No. 2

On Tuesday, February 24, 2015, several stakeholders and agencies attended the second Project Advisory Group meeting at the 1000 Venetian Way Club House. The purpose of this meeting was to seek input from attendees on the alternatives being considered for the Study. The alternatives presented at the meeting included:

1. No Build
2. Transportation System Management
3. Rehabilitation
4. Replacement
5. Typical Section Alternatives
6. Railing Alternatives
7. Fixed Bridge Alternatives
8. Movable Bridge Alternatives

The presentation addressed the ability of the alternatives to safely carry vehicular traffic, pedestrians and bicyclists. The possible impacts of the different alternatives on the environment, historic resources, aesthetics, and the public were also presented. Attendees included 13 members of the PAG and three other interested persons. The PAG and the other attendees provided feedback on the alternatives

presented and engaged in dialogue with the FDOT project team regarding recommendations.

Project Advisory Group Meeting No. 3

On Wednesday, March 9, 2016, several stakeholders and agencies attended the third PAG meeting. During this meeting, the Alternatives Matrix/Ranking Ballots results from the Alternatives Public Workshop were reviewed and analyzed. An overview of the highest-ranking alternatives from the public was shared through renderings and a deliberation took place to gain feedback from the group regarding these alternatives. The life cycle cost and environmental impacts of the project were also shared with members of the advisory group.

Project Advisory Group Meeting No. 4

On Tuesday, May 16, 2017, several stakeholders and agencies attended the fourth PAG meeting. During this meeting, the project team discussed the project's Class of Action Determination, EA. The project team also re-examined Alternative 6 – High-Level and the Fixed Bridge as a replacement for the east bascule bridge. Various alternatives were presented to the advisory were being considered for additional study.

3.7 Cultural Resource Committee (CRC) Meetings

Cultural Resource Committee Meeting No. 1

There were 21 attendees at the first meeting of the CRC for this study on Wednesday, September 24, 2014 from 3:00 PM to 5:00 PM. The attendees included members of the community as well as representatives from the FHWA, the USCG, the State of Florida Historic Preservation Office, Miami-Dade Heritage Trust, the City of Miami and the City of Miami Beach.

The purpose of the meeting was to conduct and document good faith consultation with affected parties in compliance with Section 106 of the National Historic Preservation Act. The meeting was publicly noticed and held at 1000 Venetian Way, Club House, Miami Beach, Florida 33139. There was a detailed presentation on the progress and status of the project. The presentation included the information presented at the PAG meeting, the resulting Rehabilitation Parameters and information related to historic significance of the bridges. The CRC members were given the opportunity to ask questions, give comments and share their opinions with the FDOT staff and other governmental representatives about the project.

There were questions related to the proposed Venetian Causeway Emergency Bridge Repair Project being undertaken by Miami-Dade County; however, the attendees were advised that they should contact the County on that project, as it is separate from this Study.

Cultural Resource Committee Meeting No. 2

The second CRC for the project was held on Thursday, May 14, 2015 from 2:00 PM to 4:00 PM at the 1000 Venetian Way Club House. The purpose of this meeting was to conduct and document good faith consultation with affected parties in compliance with Section 106 of the National Historic Preservation Act. At the meeting, proposed alternatives developed during the study were presented to the public. Input and feedback on the alternatives were requested and the attendees were given the opportunity to rank each alternative using a ballot.

Cultural Resource Committee Meeting No. 3

The third CRC meeting for the project was held on March 6, 2018 from 7:00 PM to 9:00 PM at the 1000 Venetian Way Club House. The purpose of the meeting was to provide an update on the project status and explain the Class of Action Determination of an EA on November 10, 2016 by the FHWA and the NEPA Assignment, which went into effect on December 14, 2016. The project team provided a timeline of what has transpired to date during Project Scope Development and PD&E Study.

Cultural Resource Committee Meeting No. 4

The fourth, and final, CRC meeting for the project was held on May 5, 2020 from 3:00 PM to 5:00 PM via Go-To Virtual Meeting. The purpose of the meeting was to provide an update on the project status and present the details of the preferred alternative, the Replacement Build Alternative. The project team noted that in the Replacement Alternative the bridges will mimic the existing bridges by maintaining the low-profile bridges, the arched beams, the geometrically designed railing, the light fixtures and light poles. The project team also provided a timeline of what has transpired to date during the PD&E Study and outlined the next steps for agency coordination and development of a Memorandum of Agreement.

3.8 Public Hearing

A public hearing will be held in April 2021. The Public Hearing Transcript and Certification will be included in **Appendix O**.

3.9 Concluding Statement

FDOT will not make a final decision on the proposed action or any alternative until a public hearing or the opportunity for a public hearing has been provided for this project and comments received have been taken into consideration.

4.0 COMMITMENTS

During construction, the FDOT will comply with all provisions in the most recent version of the FDOT *Standards Specifications for Road and Bridge Construction*. In addition, the FDOT is committed to the following:

- During final design, a benthic survey will be conducted to inventory all corals in the area of potential impact. The survey will identify which corals are suitable for relocation prior to construction. A coral relocation plan will be developed and coordinated with the environmental permitting agencies during the permitting process.
- The final design benthic survey will assess the suitability for relocation of the existing barrel sponges in the area of potential impact.
- Barge spudding will occur in close proximity to the bridges during construction to avoid unnecessary impacts to seagrasses.
- No blasting or any explosives will be used in the removal of any bridge structures.

- The latest versions of the FWC Standard Manatee Conditions for In-Water Work, and NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions will be implemented for the protection of West Indian manatees, swimming sea turtles and smalltooth sawfish during all phases of bridge construction.
- The use of a vibratory hammer will occur during daytime hours only.
- Non-blasting load testing procedures will be used for the drilled shafts.
- As an avoidance measure, existing seagrass beds will be delineated within the project corridor with visible buoys to prevent barges and work boats from disturbing seagrass areas.
- Seagrass surveys (including reference areas) will be conducted before, during, and after construction to assess if impacts to seagrass occurred from the project.
- An estimate of the impacts of barge spudding will be prepared to determine if corals, sponges, and/or octocorals will be impacted. If so, a detailed mitigation plan that fully compensates for unavoidable adverse impacts to these habitats will be prepared and submitted to the NMFS for review and approval.
- If the bridges are replaced, a demolition plan that includes disposal of all the bridge materials will be provided to NMFS.
- NMFS will be provided an opportunity to review the final plans during the design phase.
- A Bridge Demolition/Debris Containment Plan which also includes a disposal plan for all the bridge materials will be developed. The plan will be provided to NMFS for their review.
- Drilled shaft installation will have the appropriate containment to prevent concrete and chemical overflow into the surrounding waters.
- A water quality/turbidity monitoring plan will be developed and implemented during construction to ensure turbidity levels beyond containment measures are maintained at 0 NTUs above ambient (background) levels.
- A Barge Use Plan will be developed during the design phase. The plan will outline the minimum clearance of construction barges, ensure barges are staged within the footprint of the existing bridge deck(s) when possible, and include durations for staging barges in the same location in order to avoid to the maximum extent practicable any construction impacts resulting from operating barges and floating platforms. The plan will also identify barge travel routes to and from the construction work zone.
- As the Official with Jurisdiction, coordination with FDEP Office of Greenways and Trails will occur during design regarding the temporary closure of the Florida Circumnavigational Saltwater Paddling Trail during construction of Bridge 10. Notification to users will be posted on the FDEP website regarding the temporary closure.
- The stipulations and mitigation measures outlined in the Section 106 Memorandum of Agreement, will be implemented prior to initiating any ground disturbing or demolition work, excluding geotechnical and other necessary pre-construction activities, associated with the Project.

Appendix A: Planning Consistency Documentation

Planning Requirements for Environmental Document Approvals with Segmented Implementation

Document Information:		
Date: 15-Jul-20	Document Type: EA	Document Status: In Progress
Project Name: Venetian Causeway		FM #: 422713-2-22-01
Project Limits: From North Bayshore Drive to Purdy Avenue		ETDM #: 12756
Are the limits consistent with the plans? Yes		
Identify MPO(s) (if applicable): Miami-Dade Metropolitan Planning Organization		Original PD&E FAP# 4042-411-C

Segment Information: Venetian Causeway					
Segment Limits: From North Bayshore Drive to Purdy Avenue				Segment FM #: 422713-2	
Currently Adopted CFP-LRTP	COMMENTS				
Y	Project is currently listed in 2045 LRTP an unfunded project ith a total Project Cost of \$131,462 million. See attached.				
PHASE	Currently Approved TIP	Currently Approved STIP	TIP/STIP \$	TIP/STIP FY	COMMENTS
PD&E	N	Y	---,---/616,542	2019 Total	See attached.
PE (Final Design)	N	N			The Fiscal Year 2018-2019 Adopted Budget and Multi-Year Capital Plan for Miami-Dade County Parks, Recreation and Open Spaces has allocated funds for the Venetian Causeway Bridge Replacement project. The budget includes \$4.75 million for the planning and design phases during FY 2018 - 2020, and \$13.5 million for the construction phase of the project during FY 2020 -2024. - 2020. See attached.
R/W	N	N			R/W phase not currently funded.
Construction	N	N			The Fiscal Year 2018-2019 Adopted Budget and Multi-Year Capital Plan for Miami-Dade County Parks, Recreation and Open Spaces has allocated funds for the Venetian Causeway Bridge Replacement project. The budget includes \$4.75 million for the planning and design phases during FY 2018 - 2020, and \$13.5 million for the construction phase of the project during FY 2020 -2024.

FDOT Preparer's Name: _____

Date: _____ **Phone #:** _____

Preparer's Signature: _____

Email: _____

***Attach: LRTP, TIP, STIP pages**

DTPW-Roads Projects
(Values in Millions YOE \$)

Facility	Limits From	Limits To	Description	Total Project Cost (2018 \$)	2020 - 2024 TIP Funding	Total 2045 Plan (YOE)	Planning Period I 2020 - 2025				Planning Period II 2026-2030				Planning Period III 2031-2035				Planning PeriodIV 2036-2045			
							PRE-ENG	ROW	CON/DB	O&M	PRE-ENG	ROW	CON/DB	O&M	PRE-ENG	ROW	CON/DB	O&M	PRE-ENG	ROW	CON/DB	O&M
Planning Period I																						
Medley Bridge / Canal Improvement Program			Improvements at; NW 121 Way, NW 116 Way, NW 105 Way, NW 79 Ave	\$ 0.263		\$ 5.950	\$ 1.190	\$ 1.488	\$ 3.273													
Medley Freight Access Roadway Improvements	US 27 (Okeechobee)	Medley	Bridge widening and canal improvements	\$ 0.263		\$ 2.271	\$ 0.063		\$ 0.250	\$ 0.065				\$ 0.358				\$ 0.421				\$ 1.113
NW 12 St	NW 107 Ave	SR 826 (Palmetto)	Widening; 4 to 6 lanes	\$ 20.000		\$ 24.639	\$ 4.760	\$ 5.950	\$ 13.090	\$ 0.028				\$ 0.154				\$ 0.180				\$ 0.477
SW 42 St	SW 162 Ave	SW 157 Ave	Widen from 2 to 4 lanes	\$ 4.394	\$ 2.197				\$ 1.930													
SW 117 Ave	US 1	SW 184 St	Road reconstruction/Traffic operational improvements	\$ 15.900	\$ 4.000	\$ 11.900			\$ 15.900													
SW 157 Ave	SW 42 St	SW 8 St	Widen from 2 to 4 lanes	\$ 17.393	\$ 17.393	\$ 8.628			\$ 11.870	\$ 0.032				\$ 0.178				\$ 0.209				\$ 0.554
SW 344 St	US-1	SW 172 Ave	Widen from 4 to 6 lanes	\$ 2.117	\$ 0.750	\$ 1.651	\$ 0.290		\$ 2.087	\$ 0.001				\$ 0.004				\$ 0.005				\$ 0.014
Planning Period II																						
NE 151 St	NE 10 Ave	West Dixie Hwy	Add 2 lanes and reconstruct	\$ 13.151		\$ 17.738					\$ 1.468	\$ 3.280	\$ 12.612	\$ 0.040				\$ 0.093				\$ 0.246
NE 159 St	NE 6 Ave	West Dixie Hwy	Add 2 lanes and reconstruct	\$ 14.332		\$ 19.675					\$ 1.879	\$ 0.686	\$ 16.353	\$ 0.079				\$ 0.186				\$ 0.492
NW 22nd Ave	NW 103 St	NW 119 St	Widen to 6 lanes	\$ 5.380		\$ 15.872					\$ 1.281	\$ 5.821	\$ 8.717	\$ 0.006				\$ 0.013				\$ 0.035
NW 97 Ave	NW 58 St	NW 52 St	Add 2 lanes and reconstruct	\$ 2.514		\$ 3.407					\$ 0.664	\$ 0.830	\$ 1.825	\$ 0.009				\$ 0.022				\$ 0.057
NW 107 Ave	NW 170 St	Broward County line	Extend NW 107 Ave to the County Line	\$ 34.804		\$ 45.530	\$ 8.283	\$ 8.480				\$ 2.079	\$ 25.268	\$ 0.149				\$ 0.349				\$ 0.923
NW 107 Ave	NW 25 St	NW 41 St	Add 2 lanes and reconstruct	\$ 15.007		\$ 19.863					\$ 1.173	\$ 8.460	\$ 10.177	\$ 0.006				\$ 0.013				\$ 0.035
NW South River Dr	NW 107 Ave	NW 74 Ave	Roadway and operational improvements	\$ 5.000		\$ 6.600					\$ 1.320	\$ 1.650	\$ 3.630									
SW 16 St	SR 826 (Palmetto Expressway)		Construct new 2 lane roadway	\$ 1.467		\$ 2.171					\$ 0.223		\$ 1.714	\$ 0.025				\$ 0.058				\$ 0.153
SW 24 St	SW 107 Ave	SW 87 Ave	Add 2 lanes and reconstruct	\$ 16.312		\$ 21.639					\$ 2.207		\$ 19.325	\$ 0.011				\$ 0.026				\$ 0.070
SW 24 St	SW 117 Ave	SW 107 Ave	Add 2 lanes and reconstruct	\$ 8.537		\$ 11.323					\$ 1.164		\$ 10.105	\$ 0.006				\$ 0.013				\$ 0.035
SW 42 St	HEFT	SW 137 Ave	Widen to 6 lanes	\$ 10.585		\$ 14.079					\$ 1.607		\$ 12.364	\$ 0.011				\$ 0.026				\$ 0.070
SW 72 St	SW 157 Ave	SW 117 Ave	Add 2 lanes and reconstruct	\$ 31.091		\$ 255.580					\$ 4.199		\$ 36.841	\$ 22.440				\$ 52.700				\$ 139.400
SW 77 Ave	SW 159 Terrace	SW 160 Terrace	Bridge over C-100A feeder canal	\$ 3.640		\$ 4.187						\$ 0.924	\$ 3.181	\$ 0.009				\$ 0.020				\$ 0.053
SW 102 Ave	SW 145 St	SW 146 St	Bridge over C-100 canal	\$ 4.550		\$ 6.244					\$ 1.360	\$ 0.132	\$ 4.514	\$ 0.025				\$ 0.058				\$ 0.195
SW 104 St	SW 147 Ave	SW 137 Ave	Add 2 lanes and reconstruct; widen 4 to 6 lanes	\$ 8.100		\$ 13.244					\$ 1.108	\$ 2.497	\$ 9.585	\$ 0.006				\$ 0.013				\$ 0.035
SW 104 St	Hammocks Blvd	SW 147 Ave	Add 2 lanes and reconstruct; widen 4 to 6 lanes	\$ 5.800		\$ 9.440					\$ 0.805	\$ 1.731	\$ 6.864	\$ 0.004				\$ 0.010				\$ 0.026
SW 107 Ave	Quail Roost Dr	SW 160 St	Add 2 lanes and reconstruct	\$ 11.997		\$ 16.498					\$ 1.475	\$ 1.686	\$ 12.675	\$ 0.069				\$ 0.163				\$ 0.431
SW 120 St	SW 99 Court	SW 99 Ave	Bridge over C-100C canal	\$ 3.800		\$ 5.251					\$ 1.122	\$ 0.132	\$ 3.762	\$ 0.025				\$ 0.058				\$ 0.153
SW 127 Ave	S of SW 224 St	W Dixie Highway	Construct new 2 lane roadway	\$ 0.563		\$ 0.828					\$ 0.085		\$ 0.658	\$ 0.009				\$ 0.021				\$ 0.055
SW 127 Ave	SW 144 St	SW 136 St	Add 2 lanes and new 4 lane road construction	\$ 6.370		\$ 8.592					\$ 0.749	\$ 1.218	\$ 6.435	\$ 0.020				\$ 0.047				\$ 0.123
Planning Period II (cont)																						
SW 136 St	Harrison St	SW 112 Ave	Bridge over C-100 canal	\$ 3.230		\$ 4.501					\$ 0.950	\$ 0.132	\$ 3.181	\$ 0.025				\$ 0.058				\$ 0.155
SW 137 Ave	US 1	SW 184 St	Add 2 lanes and reconstruct	\$ 11.069		\$ 16.220					\$ 1.451	\$ 1.771	\$ 11.389	\$ 0.168				\$ 0.395				\$ 1.046
SW 147 Ave	SW 184 St	SW 152 St	Add 2 lanes and reconstruct	\$ 13.858		\$ 18.582					\$ 1.867	\$ 0.381	\$ 16.044	\$ 0.030				\$ 0.071				\$ 0.189

DTPW-Roads Projects
(Values in Millions YOY \$)

Facility	Limits From	Limits To	Description	Total Project Cost (2018 \$)	2020 - 2024 TIP Funding	Total 2045 Plan (YOY)	Planning Period I 2020 - 2025				Planning Period II 2026-2030				Planning Period III 2031-2035				Planning PeriodIV 2036-2045			
							PRE-ENG	ROW	CON/DB	O&M	PRE-ENG	ROW	CON/DB	O&M	PRE-ENG	ROW	CON/DB	O&M	PRE-ENG	ROW	CON/DB	O&M
SW 152 Ave	US-1	SW 312 St	Add 2 lanes and reconstruct	\$ 11.639		\$ 16.310					\$ 1.593		\$ 13.770	\$ 0.099				\$ 0.233				\$ 0.615
Planning Period III																						
NW 72 Ave (Milam Dairy)	Hialeah Expy		Operational improvements	\$ 4.088		\$ 0.160									\$ 0.016		\$ 0.144					
NW 97 Ave	NW 122 St	NW 138 St	Widen to 4 lanes	\$ 10.909		\$ 17.021									\$ 1.676	\$ 7.617	\$ 7.617	\$ 0.018				\$ 0.094
NW 107 Ave	NW 106 St	NW 122 St	New 4L roadway	\$ 10.454		\$ 16.757									\$ 1.606	\$ 7.299	\$ 7.299	\$ 0.088				\$ 0.465
SW 72 St	SW 107 Ave		Intersection improvements	\$ 0.555		\$ 0.860									\$ 0.085		\$ 0.775					
SW 72 Ave	SW 56 St	SW 40 St	Widen to 4 lanes	\$ 2.231		\$ 10.905									\$ 0.624	\$ 2.835	\$ 7.335	\$ 0.018				\$ 0.094
SW 77 Ave	SW 173 St	SW 174 St	Bridge over C-100A feeder canal	\$ 3.180		\$ 5.021									\$ 1.101	\$ 0.155	\$ 3.674	\$ 0.015				\$ 0.077
SW 80 St	SW 72 Ave	US 1	Add 2 lanes and center turn lane and reconstruct	\$ 7.019		\$ 11.069									\$ 0.938	\$ 1.801	\$ 8.140	\$ 0.030				\$ 0.160
SW 117 Ave	SW 152 St	SW 104 St	Widen to 6 lanes	\$ 23.184		\$ 77.708					\$ 3.380				\$ 2.511	\$ 29.455	\$ 42.238	\$ 0.020				\$ 0.105
SW 122 Ave	SW 210 St	SW 212 St	Bridge over Black Creek canal	\$ 1.028		\$ 1.685									\$ 1.426	\$ 0.155	\$ 0.012	\$ 0.015				\$ 0.077
SW 127 Ave	SW 42 St	SW 26 St / Coral Way	Widen to 4 lanes	\$ 6.657		\$ 17.758									\$ 1.861	\$ 8.457	\$ 7.335	\$ 0.017				\$ 0.088
SW 200 St	US-1	Quail Roost Dr	Add 2 lanes and reconstruct	\$ 11.729		\$ 18.619									\$ 1.859	\$ 0.218	\$ 16.103	\$ 0.070				\$ 0.369
SW 312 St	SW 197 Ave	SW 187 Ave / NW 14 Ave	Add 2 lanes and reconstruct	\$ 29.611		\$ 46.190									\$ 2.358	\$ 5.724	\$ 37.816	\$ 0.047				\$ 0.246
US 27 (Okeechobee Rd)	NW 42 Ave (Le Jeune)		Improve access at intersection; Iron Triangle	\$ 0.263		\$ 0.408									\$ 0.082		\$ 0.326					
Planning Period IV																						
NW 32 Ave	NW 21 St	N River DR @ NW 26 St	New 4 lane road and bridge	\$ 65.189		\$ 121.964									\$ 10.013	\$ 35.570				\$ 13.153	\$ 60.197	\$ 3.031
NW 7th St	NW 79 Ave	NW 72 Ave	Widen from 2 to 4 Lanes & Reconstruct (Const. New 4 Lane Roadway under SR 826)	\$ 4.849		\$ 10.093													\$ 1.792		\$ 8.147	\$ 0.154
SW 102 Ave	SW 146 St	SW 145 St	New 2 Lane Roadway (Const. New Bridge over Canal C-100)	\$ 4.837		\$ 9.994													\$ 0.983	\$ 4.467	\$ 4.467	\$ 0.077
SW 137th Ave	SW 84 St	SW 56 St	Widen to 6 lanes	\$ 5.714		\$ 29.027													\$ 2.112	\$ 9.601	\$ 17.282	\$ 0.031
Unfunded Projects																						
NW 17 Ave Bridge at Miami River			Bridge	\$ 51.000																		
SW 312 St	SW 187 Ave / NW 14 Ave	SW 167 Ave / NE 12 Ave	Widen to 6 lanes	\$ 15.556																		
Electric Car Charging Stations			Countywide																			
MacArthur Causeway TSM&O	US-1	Ocean Dr	Exclusive transit lanes, barrier separated bicycle lanes/shared use path, and widened sidewalks connecting with Government Center																			
NW 25 St			Viaduct Extension																			
NW 36 St	NW 72 Ave		Grade separate E-W through lanes																			
NW 36 St / NW 41 St	SR 821 (HEFT)	NW 42 Ave (LeJeune)	Redesign NW 36 St / NW 41 St as a super arterial express street	\$ 175.880																		
NW 72 Ave	W 74 St	W 84 St	Widen and add center turn lane	\$ 4.200																		
SR 826 and US 1	Transitway	SR 826 Express Lanes	Direct access ramps																			
SR 836 (Dolphin Expressway)	HEFT	Downtown Miami CBD	Widening and bus only ramps, lanes and stations																			
SW 8 St	SW 137 Ave		Grade separate E-W through lanes																			
SW 8 St	SW 107 Ave		Grade separate E-W through lanes																			

DTPW-Roads Projects
(Values in Millions YOE \$)

Facility	Limits From	Limits To	Description	Total Project Cost (2018 \$)	2020 - 2024 TIP Funding	Total 2045 Plan (YOE)	Planning Period I 2020 - 2025				Planning Period II 2026-2030				Planning Period III 2031-2035				Planning PeriodIV 2036-2045			
							PRE-ENG	ROW	CON/DB	O&M	PRE-ENG	ROW	CON/DB	O&M	PRE-ENG	ROW	CON/DB	O&M	PRE-ENG	ROW	CON/DB	O&M
SW 32 Ave	US 1	SW 8 St	Widen 2 to 4 lanes	\$ 11.787																		
SW 42 St	Krome Ave	SW 167 Ave	New/Widen to 4 lanes; duplicate with PW 146 & PW 183 SW 42nd St already 4LN between SW 157th Ave and SW 147th Ave	\$ 12.527																		
SW 56th St	Krome Ave	SW 167 Ave	New 4 lane roadway	\$ 16.912																		
SW 67th Ave	SW 136 St	Snapper Creek	Widen from 2 to 4 lanes	\$ 4.453																		
SW 67th Ave	Snapper Creek	SW 40 St	Widen from 2 to 4 lanes	\$ 16.577																		
SW 72nd St	SW 117 Ave	SW 87 Ave	Widen to 6 lanes	\$ 23.936																		
SW 87 Ave	SW 163 Ter	SW 164 St	Bridge over C-100 canal	\$ 2.910																		
SW 88 St	Krome Ave	SW 162 Ave	Widen to 6 lanes	\$ 9.474																		
SW 117 Ave/SW 152 St (Coral Reef) Grade Separation	SW 128 St, SW 134 St, SW 136 St		Continuous flow (turbo) lanes - southbound SW 117 Ave																			
SW 120 St	Kendall Pkwy	SW 157 Ave	New 4 lane roadway	\$ 30.684																		
SW 248th St	US 1	SW 112 Ave	Widen to 4 lanes	\$ 17.771																		
US 1 S	SW 344 St	Downtown Miami	TSM&O																			
Venetian Csway Bridge	Bayshore Dr	Purdy Ave	Bridge replacement (11 Bridges)	\$ 131.462																		

FY 2018 - 19 Adopted Budget and Multi-Year Capital Plan

Parks, Recreation and Open Spaces

The Parks, Recreation and Open Spaces (PROS) Department builds, operates, manages and maintains one of the largest and most diverse park systems in the country consisting of over 270 parks and over 13,800 acres of passive and active park lands. The Department's five strategic objectives and priority areas include fiscal sustainability, placemaking/ design excellence, health and fitness, conservation and stewardship, and performance excellence. Parks embody key values that make them essential services to the community, they include: economic value and growth; health and environmental benefits; and social importance. These elements are critical to establishing and maintaining economic competitiveness and quality of life in Miami-Dade County. The Department provides opportunities for health, happiness and prosperity for residents and visitors of Miami-Dade County through the Board of County Commissioners-approved Parks & Open Spaces Master Plan, consisting of a connected system of parks, public spaces, natural and historic resources, greenways, blue-ways and complete streets, guided by principles of access, equity, beauty, sustainability, and multiple benefits.

The Department operates as both a countywide park system serving 2.7 million residents and as a local parks department for the unincorporated area serving approximately 1.2 million residents. The Department acquires, plans, designs, constructs, maintains, programs and operates County parks and recreational facilities; provides summer camps, afterschool and weekend programs for youth; provides programs for active adults, the elderly and people with disabilities; and provides unique experiences at Zoo Miami and seven Heritage Parks: Crandon, Deering Estate, Fruit and Spice, Greynolds, Haulover, Homestead Bayfront and Matheson Hammock Park. Additionally, PROS provides various community recreational activities including campgrounds, 17 miles of beaches, ballfields, tennis, volleyball, and basketball courts, an equestrian center, picnic shelters, playgrounds, fitness zones, swimming pools, recreation centers, sports complexes, a gun range, and walking and bicycle trails.

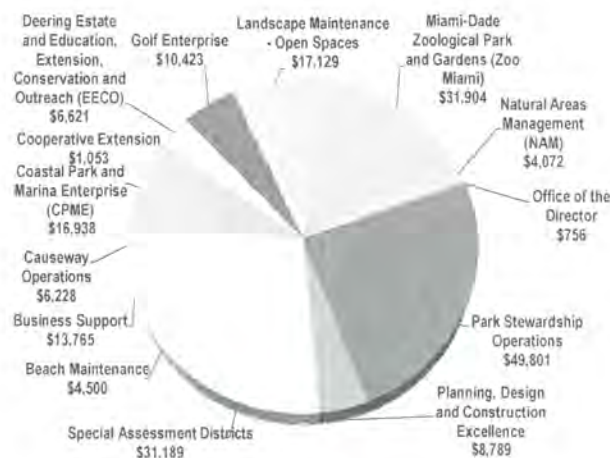
The Department manages 26,000 acres of environmentally endangered lands, and natural and environmental experiences are offered through five nature centers/preserves and Eco-Adventure programs. The Department provides education in agriculture, sustainable gardening, marine science, food and nutrition through Agriculture and Cooperative Extension services.

As part of both the Recreation and Culture and Neighborhood and Infrastructure strategic areas, the Department manages revenue generating facilities including six golf courses, one tennis center, six marinas, Deering Estate, Fruit & Spice Park, Trail Glades Range and Zoo Miami. The Department attracts regional, national and international events, including equestrian shows at the Ronald Reagan Equestrian Center and track and field meets. The Department also provides landscape maintenance, security guard services and street lighting for special assessment districts; administers toll collection on the Rickenbacker and Venetian Causeways; manages roadway landscape maintenance, roadside safety tractor mowing, and lot clearing services; and facilitates the planting of trees, palms, and landscaping to provide aesthetic enhancements, through Neat Streets and the Million Trees Miami initiative.

The Department coordinates many activities with a variety of stakeholders including residents, homeowners' associations, community councils, municipalities, groups involved in sports and recreational development, environmental groups, community-based organizations, and neighborhood groups.

FY 2018-19 Adopted Budget

Expenditures by Activity (dollars in thousands)



Revenues by Source (dollars in thousands)



FY 2018 - 19 Adopted Budget and Multi-Year Capital Plan

TROPICAL PARK (BUILDING BETTER COMMUNITIES BOND PROGRAM)

PROJECT #: 937040

DESCRIPTION: Construct areawide park improvements including equestrian and boxing center expansion, stadium upgrades, dog park, vehicle and pedestrian circulation improvements, landscaping, and utilities upgrades

LOCATION: 7900 SW 40 St
Unincorporated Miami-Dade County

District Located: 10
District(s) Served: Countywide

REVENUE SCHEDULE:	PRIOR	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	FUTURE	TOTAL
BBC GOB Financing	4,504	201	274	199	100	0	0	0	5,278
BBC GOB Series 2005A	962	0	0	0	0	0	0	0	962
BBC GOB Series 2008B	816	0	0	0	0	0	0	0	816
BBC GOB Series 2008B-1	260	0	0	0	0	0	0	0	260
BBC GOB Series 2011A	260	0	0	0	0	0	0	0	260
BBC GOB Series 2013A	7,011	0	0	0	0	0	0	0	7,011
BBC GOB Series 2014A	413	0	0	0	0	0	0	0	413
TOTAL REVENUES:	14,226	201	274	199	100	0	0	0	15,000
EXPENDITURE SCHEDULE:	PRIOR	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	FUTURE	TOTAL
Construction	12,469	201	274	199	100	0	0	0	13,243
Permitting	33	0	0	0	0	0	0	0	33
Planning and Design	1,484	0	0	0	0	0	0	0	1,484
Project Administration	240	0	0	0	0	0	0	0	240
TOTAL EXPENDITURES:	14,226	201	274	199	100	0	0	0	15,000

VENETIAN BRIDGE - PLANNING AND DESIGN

PROJECT #: 607640

DESCRIPTION: Plan and design a new bridge system for the Venetian Causeway

LOCATION: Venetian Cswy
Venetian Causeway/Roadway

District Located: 3, 4, 5
District(s) Served: Countywide

REVENUE SCHEDULE:	PRIOR	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	FUTURE	TOTAL
2008 Sunshine State Financing	291	0	0	0	0	0	0	0	291
Capital Asset Series 2010 Bonds	2,038	0	0	0	0	0	0	0	2,038
FDOT-County Incentive Grant Program	1,962	0	0	0	0	0	0	0	1,962
Road Impact Fees	50	0	0	0	0	0	0	0	50
TOTAL REVENUES:	4,341	0	0	0	0	0	0	0	4,341
EXPENDITURE SCHEDULE:	PRIOR	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	FUTURE	TOTAL
Planning and Design	4,091	250	0	0	0	0	0	0	4,341
TOTAL EXPENDITURES:	4,091	250	0	0	0	0	0	0	4,341

VENETIAN CAUSEWAY - BRIDGE REPLACEMENT MATCHING FUNDS

PROJECT #: 2000000266

DESCRIPTION: Provide matching funds for future bridge replacement

LOCATION: Venetian Cswy
Venetian Causeway/Roadway


District Located: 3, 4
District(s) Served: Countywide

REVENUE SCHEDULE:	PRIOR	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	FUTURE	TOTAL
Causeway Toll Revenue	1,500	2,000	2,500	2,500	2,500	2,500	6,000	0	19,500
TOTAL REVENUES:	1,500	2,000	2,500	2,500	2,500	2,500	6,000	0	19,500
EXPENDITURE SCHEDULE:	PRIOR	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	FUTURE	TOTAL
Construction	0	0	0	2,500	2,500	2,500	6,000	0	13,500
Planning and Design	1,500	2,000	2,500	0	0	0	0	0	6,000
TOTAL EXPENDITURES:	1,500	2,000	2,500	2,500	2,500	2,500	6,000	0	19,500

MIAMI-DADE TRANSPORTATION PLANNING ORGANIZATION
TRANSPORTATION IMPROVEMENT PROGRAM
ROAD IMPACT FEES (RIF)

Road Impact Fee District: **District 8**

Municipalities: **Miami Beach / Unincorporated Miami-Dade County**

TPO Project No.	Facility/Project Name		Bicycle Accom	Type of Work	Project Cost (\$000s)	Prior Years' Funding (\$000s)						
	From /Location	To /Location	Length (miles)									
Agency Project No.	Detailed Project Description				LRTP Ref							
	Status		Remarks									
PW000716	Venetian Causeway Bridge			Study				Funding (in \$000s)				
	Bayshore Drive	Purdy Avenue	0.0									
716	Study. Prior Years' Funding as follows: \$50,000 for PE.						Activity /Phase	Proposed		Tentative 3-Year Program		
			PD&E Study by FDOT. Additional funding by Causeways and FDOT.	6-20				2018 - 2019	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023
PW000726	West Avenue Bridge over Collins Canal			Bridge				Funding (in \$000s)				
			0.0									
726	Bridge. Prior Years' Funding as follows: \$5,011,000 for CST and R/W.						Activity /Phase	Proposed		Tentative 3-Year Program		
	Under construction		Joint Participation Agreement with City of Miami Beach. Additional funding by City of Miami Beach.					5-5	2018 - 2019	2019 - 2020	2020 - 2021	2021 - 2022

BOND - Capital Asset Acquisition Special Obligation Bonds
B.R. - Repayment of Capital Asset Acquisition Special Obligation Bonds
CIGP - County Incentive Grant Program
L RTP - Subject to Long Range Plan Amendment

PE Preliminary Engineering
CST Construction
CEI Construction Engineering Inspection
COMB Combined Funding in Prior Years

Totals reflect expenditures based on latest budgetary information of anticipated revenues, and may differ from actual amounts received.



FDOT Emergency Travel Alert: For information on the current situation, please visit the following page - [Alerts](#).



Florida Department of

TRANSPORTATION

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Web Application

Federal Aid Management Office Cynthia Lorenzo - Manager

STIP Project Detail and Summaries Online Report

Selection Criteria	
Current STIP	Detail Report
Financial Project:422713 2	Related Items Shown

HIGHWAYS										
Item Number: 422713 2 Project Description: VENETIAN CAUSEWAY FROM NORTH BAYSHORE DRIVE TO PURDY AVENUE										
District: 06		County: MIAMI-DADE		Type of Work: PD&E/EMO STUDY			Project Length: 2.687MI			
				Fiscal Year						
Phase / Responsible Agency				<2019	2019	2020	2021	2022	>2022	All Years
P D & E / MANAGED BY FDOT										
Fund Code:	ACSU - ADVANCE CONSTRUCTION (SU)				5,000					5,000
	CIGP - COUNTY INCENTIVE GRANT PROGRAM			1,384,448	300,000					1,684,448
	LF - LOCAL FUNDS			1,391,484						1,391,484
	LFP - LOCAL FUNDS FOR PARTICIPATING				300,000					300,000
	SU - STP, URBAN AREAS > 200K			93,323	11,542					104,865
Phase: P D & E Totals				2,869,255	616,542					3,485,797
Item: 422713 2 Totals				2,869,255	616,542					3,485,797
Project Totals				2,869,255	616,542					3,485,797
HIGHWAYS Totals				2,869,255	616,542					3,485,797
Grand Total				2,869,255	616,542					3,485,797

This site is maintained by the Federal Aid Management Office, located at 605 Suwannee Street, MS 21, Tallahassee, Florida 32399.

For additional information please e-mail questions or comments to:

Cynthia Lorenzo: cynthia.lorenzo@dot.state.fl.us or call 850-414-4448.

Appendix B: USCG Meeting Minutes

From: [Tompkins, Darayl CIV](#)
To: [Stephanie Romero](#)
Cc: [Overton, Randall D CIV](#); [Jennifer Zercher](#); [Tate, William G CIV](#); [Dragon, Barry CIV](#)
Subject: RE: Venetian Causeway PD&E (FM No. 422713-2-22-01) - High Level Fixed Bridge Alternative
Date: Friday, April 7, 2017 9:52:21 AM

Good morning Stephanie,

Please be aware that due to the 2 governing high-level fixed bridges on the waterway (I-195 East and MacArthur Causeway East) both having 35 ft vertical and 75 ft horizontal clearances between fenders, these clearances should be sufficient for the Venetian (East/Belle Isle Island) high-level proposed fixed bridge replacement alternative.

Thank you, enjoy your day
Darayl

-----Original Message-----

From: Stephanie Romero [<mailto:sromero@eacconsult.com>]
Sent: Thursday, April 06, 2017 12:04 PM
To: Tompkins, Darayl CIV
Cc: Rick Crooks; Rodney C. Devera
Subject: [Non-DoD Source] Venetian Causeway PD&E (FM No. 422713-2-22-01) - High Level Fixed Bridge Alternative

Darayl,

EAC would like to discuss vertical clearances for a High Level Fixed Bridge Alternative for the Venetian Causeway. This High Level Fixed Bridge Alternative will span from Rivo Alto Island to Belle Isle Island, eliminating the East Bascule Bridge.

Please let us know when we could have a meeting to discuss. I left a message earlier on your phone.

Look forward to hearing from you.

Thanks,

Stephanie Romero, P.E.
Structural Engineer

EAC Consulting, Inc.
www.eacconsult.com <https://urldefense.proofpoint.com/v2/url?u=http-3A__www.eacconsult.com_&d=DwMFag&c=0NKfg44GVknAU-

XkWXjNxQ&r=X6dATt7M311iw2zr7RgaZ2zuloIWc0XPNr2fKVlgyg8&m=0ox8AIOY2UcRSpFjTXoc1gxEvBP-HeNqzpf5k1GkFg&s=04HX33UazMPtV8DstEHSjXNS_BE6NcY0651Hnwbmpgg&e=>

815 NW 57th Avenue, Suite 402

Miami, FL 33126

Direct Dial: 305-265-5433

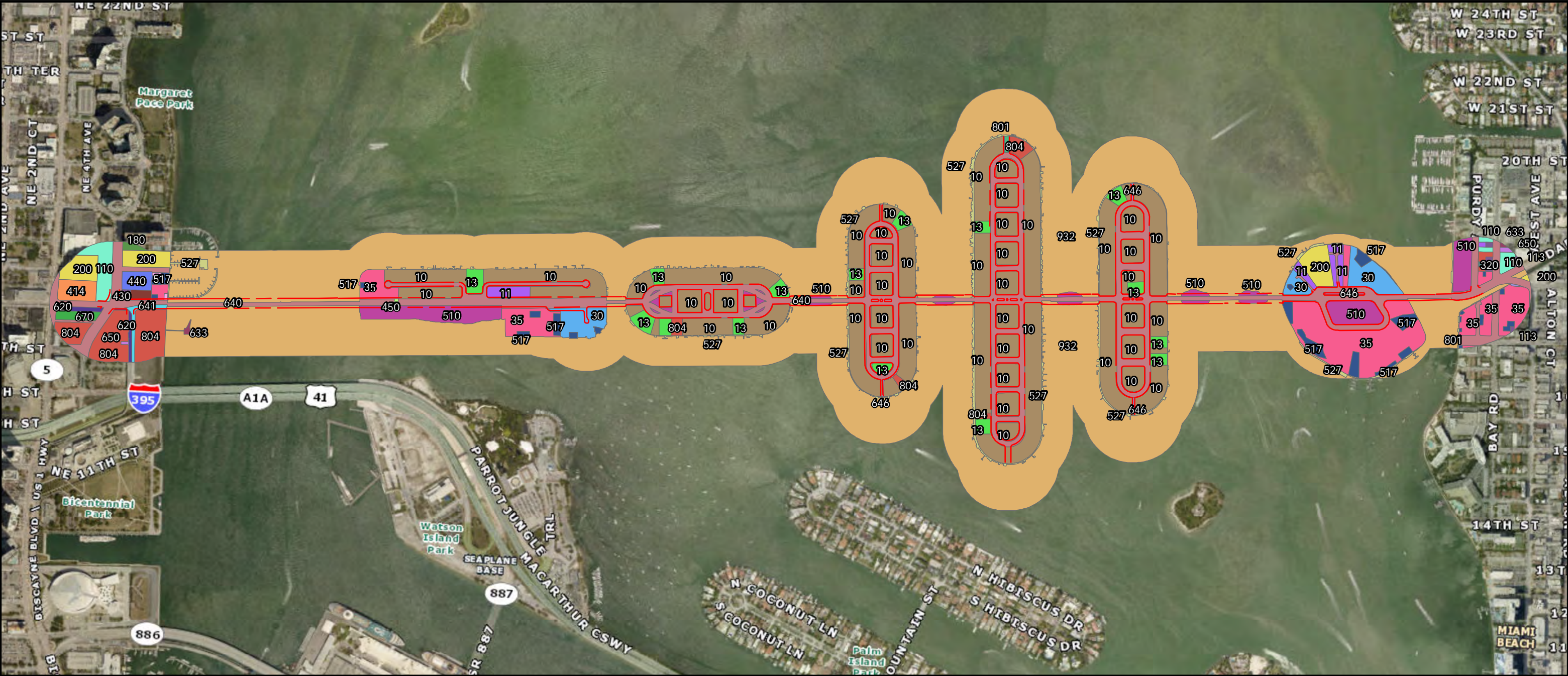
Main: 305-265-5400






























Fax: 305-264-8363

Email: sromero@eacconsult.com <<mailto:sromero@eacconsult.com>>

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Appendix C: Land Use Figures



	Project Right of Way		200 Transient Residential 6.48 ac		620 Railroads - Terminals, Trackage, and Yards. 0.98 ac
Land Use ID Description Acreage			320 Industrial 0.17 ac		633 Communications 0.22 ac
	10 Single-Family, Med.-Density (2-5 DU/Gross Acre) 108.69 ac		412 Private Schools 0.13 ac		640 Streets and Roads 61.87 ac
	11 Single-Family, High Density (Over 5 DU/Gross Acre) 2.89 ac		414 Colleges and Universities 1.94 ac		641 Paved Highways, Expressways and Ramps 0.88 ac
	13 Single-Family, Low-Density (Under 2 DU/Gross Acre) 8.87 ac		430 Hospitals, Nursing Homes and Adult Congregate Living Quarters 0.51 ac		646 Street Right-of-Way and Entrance Features 0.52 ac
	30 Multi-Family, Low-Density (Under 25 DU/Gross Acre) 7.11 ac		440 Houses of Worship and Religious 1.37 ac		650 Parking - Public and Private Garages and Lots 0.20 ac
	35 Multi-Family, High Density (Over 25 DU/Gross Acre) 24.66 ac		450 Governmental/Public Administration 6.81 ac		670 Road Maintenance and Storage Yards, and Motor Pools 0.92 ac
	110 Sales and Services 3.64 ac		510 Municipal Operated Parks 13.53 ac		801 Vacant Government 0.25 ac
	113 Office Building 0.67 ac		517 Private Recreational Facilities 5.15 ac		804 Vacant, Non-Protected, Privately-Owned 11.21 ac
	180 Multi-floor Residential with Commercial Use 0.35 ac		527 Marina complexes 8.22 ac		932 Coastal Water (Bay only) within the Biscayne Bay Urban Aquatic Preserve 332.66 ac

Appendix D: Section 4(f) Documentation

- D1 Determination of Applicability: Biscayne Bay Aquatic Preserve**
- D2 No Use Determination Form: Belle Isle Park**
- D3 No Use Determination Form: Maurice Gibbs Park**
- D4 Exception/Exemption Form: Florida Circumnavigational Saltwater Paddling Trail**
- D5 Programmatic Section 4(f) for Historic Bridges**

D1 Determination of Applicability: Biscayne Bay Aquatic Preserve

FLORIDA DEPARTMENT OF TRANSPORTATION
SECTION 4(f) DETERMINATION OF APPLICABILITY

650-050-45
Environmental
Management
06/17

Project Name:	Venetian Causeway Bridges PD&E Study		
FM#:	442713-2-22-01	ETDM#:	12756
FAP#:			
Project Review Date:	10/8/2020		
FDOT District:	6		
County(ies):	Miami-Dade		

A DOA IS REQUIRED FOR EACH SECTION 4(f) PROPERTY AND PROPOSED ALTERNATIVE.

Project Description including Section 4(f) Specific Information:

The Venetian Causeway Bridges PD&E Study extends along the Venetian Causeway from Bayshore Drive in the City of Miami to Purdy Avenue in the City of Miami Beach. The causeway is approximately 2.5 miles long and includes ten fixed span bridges and two bascule leaf span bridges over the Intracoastal Waterway. The corridor is tolled and is owned and operated by Miami-Dade County. The causeway bridges are mainly short span reinforced concrete arch beam bridges. Each bridge section consists of two 12-foot travel lanes with 4-foot bike lanes and 4-foot sidewalks on each side. In 1995, the bridges underwent a major rehabilitation consisting of concrete repairs to the superstructure arch beams and full replacement of all sidewalks and railings. The western bascule bridge and its spans 17 through 41 were also replaced. Presently, the bridges exhibit severe deterioration because of their proximity to the very aggressive marine environment. These bridges do not meet current design and safety requirements and are listed as structurally deficient and functionally obsolete.

The Proposed Alternative to meet current design and safety standards is replacement of fixed bridges 2 through 9, 11 and 12 utilizing Alternative 7, Arched Beams; and Alternative M4, Double Leaf Bascule for movable bridge 10. Bridge 1 will not be replaced under this alternative. The Arched Beam Superstructure replacement alternative was designed to mimic the dimensions and appearance of the original structure. This superstructure scheme would consist of precast prestressed concrete beams with approximate elevations similar to that of the existing beams. The proposed approach span cross section would be increased 16 feet from the existing 41-foot 10-inch wide section to a 57-foot 10-inch wide section. The cross section is a 57-foot 10-inch wide section with two 8-foot sidewalks, two 1-foot 6-inch shoulders, two 7-foot buffered bicycle lanes and two 11-foot travel lanes.

In Alternative M4, the Double Leaf Bascule Bridge replaces the existing movable bridge at Bridge 10. Advantages to double leaf bascule bridges include: unlimited vertical clearance in the raised position; the design can be laid out in a symmetrical arrangement which is an advantage when an "arched" look is desired; and they provide natural barriers to vehicular traffic when in the open position. The existing bascule span provides 6-foot minimum vertical clearance above mean high water at the face of the fenders and 10-foot at the center of the navigation channel with the span lowered. The existing horizontal clearance is 60 feet between fenders. A 75-foot horizontal clearance between fenders is proposed for the movable span replacement option. This provides improved safety along the Venetian Causeway and is consistent with bridges located to the north and south of the causeway. In order to span the proposed 75-foot wide navigation channel, the bascule span will require a minimum overall structure depth (controlled by the depth of the main girders) at the face of fenders of approximately 10 feet.

The Venetian Causeway Bridges are located within and over the Biscayne Bay Aquatic Preserve. Please see attached map for the boundaries of Biscayne Bay Aquatic Preserve.

Type of Property

Check all that apply:

- ☒ Public Parks and Recreation Areas
- ☐ Wildlife and Waterfowl Refuges
- ☐ Historic Sites

Description of Property: Biscayne Bay Aquatic Preserve (BBAP) is comprised of 67,000 submerged acres between Oleta River in Miami-Dade County and Card Sound Road Bridge in Monroe County. BBAP is managed by the Office of Coastal and Aquatic Management Areas (CAMA) under the Florida Department of Environmental Protection (FDEP). CAMA manages sites in Florida for the conservation and protection of natural and historic resources and resource-based public use that is compatible with the conservation and protection of lands. There are a variety of marine communities within the bay including expansive hardbottoms with corals, sponges and algae; mangrove-lined shores and seagrass

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SECTION 4(F) DETERMINATION OF APPLICABILITY

650-050-45
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beds. BBAP provides habitat for a wide variety of juvenile and adult marine species, as well as wading birds. In addition, BBAP offers water oriented recreational opportunities to the metropolitan areas of Southeast Florida and the Keys. The mission of BBAP is to protect the natural resources for the benefit of future generations and at the same time allow for traditional uses. The BBAP Management Plan (February 2013) was developed to protect the long-term health of the ecosystems and their resources and four management programs were created: managing natural and cultural resources; ecosystem science including monitoring and sampling in the bay; education and outreach programs; and promote and manage public use that supports the protection of the resources of the preserve. As documented in the BBAP Management Plan, the primary function of the BBAP is not for recreational purposes or functions of the property are not for park or recreational use, nor for refuge purposes and it does not represent a significant historic site. Therefore, this property does not qualify as a designated recreational facility.

Criteria of Selected Property Type(s):

☒ **Public Parks and Recreation Areas**

- Must be publicly owned which refers to ownership by local, state or federal government
 - Ownership can also include permanent easements and long-term lease agreements
- Must be open to the public during normal hours of operation
- The major purpose must be for park or recreation activities
- Must be designated or function as a significant park or recreational area.
 - Applies to the entire park or recreation area not just a specific feature

☐ **Wildlife and Waterfowl Refuge**

- Must be publicly owned which refers to ownership by local, state or federal government;
 - Ownership can also include permanent easements and long-term lease agreements;
- Must be open to the public but **refuges are able to restrict access for the protection of refuge habitat and species;**
- The major purpose must be for wildlife and waterfowl refuges;
- Must be designated or function as a significant as a wildlife and waterfowl refuges; -
 - Applies to the entire wildlife and waterfowl refuges not just a specific feature

☐ **Historic Sites-** includes historic buildings, historic transportation facilities, archeological sites, traditional cultural places, historic & archeological districts and historic trails.

- Must be of national, state or local significance and it must be eligible for listing or is listed on the National Register of Historic Places (NRHP); or
- If a site is determined not to be eligible OEM may determine that the application of Section 4(f) is otherwise appropriate when an official (such as the Mayor, president of a local historic society) provides information to support that the historic site is of local importance.

Does the identified resource meet all of the criteria for the selected property type?

Yes, continue to complete the form ☐

No, STOP Section 4(f) does not apply ☒

FLORIDA DEPARTMENT OF TRANSPORTATION
SECTION 4(F) DETERMINATION OF APPLICABILITY

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Identify the Official(s) with Jurisdiction (OWJ) contacted: _____

Date correspondence sent to the OWJ: [Click here to enter a date.](#)

Has the Official(s) with Jurisdiction (OWJ) responded?

Yes ☐ No ☐

Has the 30 day response period passed since the initial OWJ correspondence was sent?

Yes ☐ No ☐

Please answer the questions below about the resource:

Note: A potential source for this information can include the property management plan, resource website and/or communications with the OWJ (*be sure to document these communications in writing*).

What is the size and location of the property (*include a map of the resource*)?

Who/what organization owns/manages the property?

What is the primary function (activities, features and attributes) within the meaning of Section 4(f) of the facility or property?

Please describe the location of available appurtenances and facilities (e.g. tennis courts, pools, shelter houses, sports fields, beaches) on the property:

What is the function of/or the available activities on the property?

Access and Usage of the property by the Public:

Relationship to other similarly used lands/facilities in the vicinity:

Are there any unusual characteristics of the property that either limit or enhance the value of the resource? If so please explain:

Describe project activities that could potentially “use” the resource:

If applicable, give a general description of the history of the Historic Site, Archaeological Site or Historic District:

Based on the above information the recommended level of Section 4(f) evaluation for this property is:

Select the level of Section 4(f) evaluation: [Choose an Item](#)

FLORIDA DEPARTMENT OF TRANSPORTATION
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Reason the selected level is appropriate:



Supporting Documentation

The following items **must** be attached to this form:

1. A map of the resource based on the guidelines in the PD&E Manual Part 2, Chapter 7, including the proposed alternative being evaluated.
2. Statement of Significance from OWJ or FDOT's presumption of significance.
3. Determination of Eligibility or Listing in the National Register of Historic Places, Archaeological Site (*include criterion of eligibility*) or a Historic District if applicable.

Signatures

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 14, 2016, and executed by FHWA and FDOT.

Signature: Nicole Carter : 10/8/2020
Preparer Date

Signature: _____ : Click here to enter a date.
Environmental Manager, or designee Date

OEM

Concurrence: _____

Signature: Director Approval Not Required : Click here to enter a date.
Director of OEM, or designee Date



Image courtesy of Florida Department of Environmental Protection

D2 No Use Determination Form: Belle Isle Park

FLORIDA DEPARTMENT OF TRANSPORTATION
SECTION 4(f) NO USE DETERMINATION

650-050-49
 Environmental
 Management
 01/19

Name:	Venetian Causeway Bridges PD&E Study		
FM#:	422713-2-22-01	ETDM#:	12756
FAP#:			
Project Review Date:	11/13/2017		
FDOT District:	6		
County(ies):	Miami-Dade		

Project Description including Section 4(f) Specific Information:

The Venetian Causeway PD&E Study extends along the Venetian Causeway from Bayshore Drive in the City of Miami to Purdy Avenue in the City of Miami Beach. The causeway is approximately 2.5 miles long and includes ten fixed span bridges and two bascule leaf span bridges over the Intracoastal Waterway. The corridor is tolled and is owned and operated by Miami-Dade County. The causeway bridges are mainly short span reinforced concrete arch beam bridges. Each bridge section consists of two 12-foot travel lanes with 4-foot bike lanes and 4-foot sidewalks on each side. In 1995, the bridges underwent a major rehabilitation consisting of concrete repairs to the superstructure arch beams and full replacement of all sidewalks and railings. The western bascule bridge and its spans 17 through 41 were also replaced. Presently, the bridges exhibit severe deterioration because of their proximity to the very aggressive marine environment. These bridges do not meet current design and safety requirements and are listed as structurally deficient and functionally obsolete.

The Proposed Alternative to meet current design and safety standards is replacement of fixed bridges 2 through 9, 11 and 12 utilizing Alternative 7, Arched Beams; and Alternative M4, Double Leaf Bascule for movable bridge 10. Bridge 1 will not be replaced under this alternative. The Arched Beam Superstructure replacement alternative was designed to mimic the dimensions and appearance of the original structure. This superstructure scheme would consist of precast prestressed concrete beams with approximate elevations similar to that of the existing beams. The proposed approach span cross section would be increased 16 feet from the existing 41-foot 10-inch wide section to a 57-foot 10-inch wide section. The cross section is a 57-foot 10-inch wide section with two 8-foot sidewalks, two 1-foot 6-inch shoulders, two 7-foot buffered bicycle lanes and two 11-foot travel lanes.

In Alternative M4, the Double Leaf Bascule Bridge replaces the existing movable bridge at Bridge 10. Advantages to double leaf bascule bridges include: unlimited vertical clearance in the raised position; the design can be laid out in a symmetrical arrangement which is an advantage when an "arched" look is desired; and they provide natural barriers to vehicular traffic when in the open position. The existing bascule span provides 6-foot minimum vertical clearance above mean high water at the face of the fenders and 10-foot at the center of the navigation channel with the span lowered. The existing horizontal clearance is 60 feet between fenders. A 75-foot horizontal clearance between fenders is proposed for the movable span replacement option. This provides improved safety along the Venetian Causeway and is consistent with bridges located to the north and south of the causeway. In order to span the proposed 75-foot wide navigation channel, the bascule span will require a minimum overall structure depth (controlled by the depth of the main girders) at the face of fenders of approximately 10 feet.

Belle Isle Park is owned by the City of Miami Beach. The park is located in the center of Belle Island, the easternmost island on Venetian Causeway. The Proposed Alternative incorporates low profile bridges and replicated Venetian railing and light fixtures. This alternative maintains the low-level appearances of the Causeway and maintains pedestrian access to the spoil islands from the roadway. The vertical profile raises the vertical alignment of the bridges approximately 1-foot above the low member of the existing bridges to accommodate sea-level rise. Since the proposed project is limited to the bridges on Venetian Causeway and Miami Beach, there are no impacts within or adjacent to Belle Island Park.

Type of Property: Public Parks and Recreation Areas

Description of Property: Belle Isle Park is a 4 acre park owned by the City of Miami Beach. The park is located in the central portion of Belle Island, the easternmost residential island on Venetian Causeway. The property contains walking paths, benches and green space used for dog runs.

Establishing Section 4(f) Use of the Property

Will the property be "used" as defined in **Section 4(f)** Resources chapter of the FDOT PD&E Manual? Examples of a "use" include but are not limited to acquiring right of way, new easements, and temporary occupancy?

FLORIDA DEPARTMENT OF TRANSPORTATION
SECTION 4(F) NO USE DETERMINATION

650-050-49
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☐ Yes

☒ No

An explanation of the relationship between the Section 4(f) property and the project:

Belle Isle Park is a City of Miami Beach park located in the central portion of Belle Island, the easternmost residential island on Venetian Causeway. Since the proposed project is limited to the bridges on Venetian Causeway and Miami Beach, there are no impacts to Belle Isle Park. The park is not sensitive to noise impacts based upon the purpose and function of the park. However, while noise levels may increase during construction, impacts from noise will not substantially impair the protected activities, features, or attributes that qualify the property for protection under Section 4(f). There will be no temporary or permanent acquisitions of land from the park, and no proximity impacts that substantially impair the protected activities, features, and attributes of the park; therefore, there is no use of the property within the meaning of Section 4(f)


Documentation

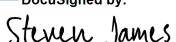
The following items **must** be attached to this form to ensure proper documentation of the Section 4(f) No Use:

1. DOA package (if used)
2. Required communications with the OWJ


Signatures

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 14, 2016, and executed by FHWA and FDOT.

DocuSigned by:  Prepare <small>8FF9C49DF8724AC...</small>	1/29/2021 5:21 PM EST _____ Date
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DocuSigned by:  <small>4A02F598412547E...</small> Environmental Manager, or designee	2/2/2021 11:06 AM EST _____ Date
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**OEM
 Concurrence:**

DocuSigned by:  <small>FF4084B99641E...</small> OEM Subject Matter Expert	2/5/2021 9:51 AM EST _____ Date
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**OEM
 Approval:**

Director Approval Not Required

 Director of OEM, or designee

 Date



MIAMI BEACH

City of Miami Beach, 1701 Meridian Avenue, Suite 401, Miami Beach, Florida 33139, www.miamibeachfl.gov

PARKS & RECREATION DEPARTMENT
Tel: 305.673.7730

December 08, 2017

Mr. Steven Craig James
District Environmental Administrator
Florida Department of Transportation, District Six
1000 NW 111th Avenue, Room 6109
Miami, FL 33172

Subject: Belle Isle Park
Statement of Significance
FDOT Financial Project ID: 422713-2-22-01
FDOT Project Description: Venetian Way from N. Bayshore Dr. to Purdy Ave.
County: Miami-Dade

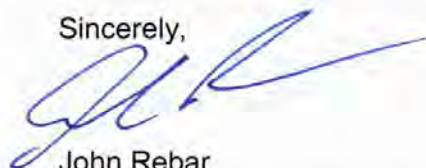
Dear Mr. James,

As the Official with Jurisdiction, please accept this letter as formal Statement of Significance for Belle Isle Park. This recreational resource is located within the City of Miami Beach, and it is a significant resource within the meaning of Section 4(f) regulations. Significance means that in comparing the availability and function of the recreation area, park or wildlife and waterfowl refuge area with the recreational, park and refuge objectives of that community, the land in question plays and important role in meeting those objectives.

Belle Isle Park is located in the center of Belle Island. This park features greenspace, walking paths, dog run area, and benches. Additionally there is an ongoing project to construct a 2-12 children's playground structure. Belle Isle Park is surrounded by high density residential units and this park serves as the primary recreation space for the area residents.

Should you have any questions or require additional information, please contact my office at 305-673-7730.

Sincerely,



John Rebar
Director
City of Miami Beach Parks and Recreation Department

ADMINISTRATION
1701 Meridian Ave., Suite 401
Miami Beach, Florida 33139
305.673.7730

PARKS MAINTENANCE
1701 Meridian Avenue
Miami Beach, Florida 33139
305.673.7720

SCOTT YAKOW YOUTH CENTER
2200 Sheridan Avenue
Miami Beach, Florida 33140
305.673.7767

FLAMINGO PARK
299 11th Street
Miami Beach, Florida 33139
305.521.5635 ext. 20

NORTH SHORE PARK & YOUTH CENTER
401 73rd Street
Miami Beach, Florida 33141
305.673.7715

D3 No Use Determination Form: Maurice Gibb Memorial Park

FLORIDA DEPARTMENT OF TRANSPORTATION
SECTION 4(f) NO USE DETERMINATION

650-050-49
 Environmental
 Management
 01/19

Name:	Venetian Causeway Bridges PD&E Study		
FM#:	422713-2-22-01	ETDM#:	12756
FAP#:			
Project Review Date:	10/8/2020		
FDOT District:	6		
County(ies):	Miami-Dade		

Project Description including Section 4(f) Specific Information:

The Venetian Causeway PD&E Study extends along the Venetian Causeway from Bayshore Drive in the City of Miami to Purdy Avenue in the City of Miami Beach. The causeway is approximately 2.5 miles long and includes ten fixed span bridges and two bascule leaf span bridges over the Intracoastal Waterway. The corridor is tolled and is owned and operated by Miami-Dade County. The causeway bridges are mainly short span reinforced concrete arch beam bridges. Each bridge section consists of two 12-foot travel lanes with 4-foot bike lanes and 4-foot sidewalks on each side. In 1995, the bridges underwent a major rehabilitation consisting of concrete repairs to the superstructure arch beams and full replacement of all sidewalks and railings. The western bascule bridge and its spans 17 through 41 were also replaced. Presently, the bridges exhibit severe deterioration because of their proximity to the very aggressive marine environment. These bridges do not meet current design and safety requirements and are listed as structurally deficient and functionally obsolete.

The Proposed Alternative to meet current design and safety standards is replacement of fixed bridges 2 through 9, 11 and 12 utilizing Alternative 7, Arched Beams; and Alternative M4, Double Leaf Bascule for movable bridge 10. Bridge 1 will not be replaced under this alternative. The Arched Beam Superstructure replacement alternative was designed to mimic the dimensions and appearance of the original structure. This superstructure scheme would consist of precast prestressed concrete beams with approximate elevations similar to that of the existing beams. The proposed approach span cross section would be increased 16 feet from the existing 41-foot 10-inch wide section to a 57-foot 10-inch wide section. The cross section is a 57-foot 10-inch wide section with two 8-foot sidewalks, two 1-foot 6-inch shoulders, two 7-foot buffered bicycle lanes and two 11-foot travel lanes.

In Alternative M4, the Double Leaf Bascule Bridge replaces the existing movable bridge at Bridge 10. Advantages to double leaf bascule bridges include: unlimited vertical clearance in the raised position; the design can be laid out in a symmetrical arrangement which is an advantage when an "arched" look is desired; and they provide natural barriers to vehicular traffic when in the open position. The existing bascule span provides 6 feet of minimum vertical clearance above mean high water at the face of the fenders and 10 feet at the center of the navigation channel with the span lowered. The existing horizontal clearance is 60 feet between fenders. A 75-foot horizontal clearance between fenders is proposed for the movable span replacement option. This provides improved safety along the Venetian Causeway and is consistent with bridges located to the north and south of the causeway. In order to span the proposed 75-foot wide navigation channel, the bascule span will require a minimum overall structure depth (controlled by the depth of the main girders) at the face of the fenders of approximately 10-feet.

Maurice Gibb Memorial Park, a City of Miami Beach park, is adjacent to the project corridor on the eastern side. The vertical alignment for bridges 2 through 8 and 12 was developed to increase the vertical clearance of the bridges over the bay approximately 1-foot to accommodate the potential for sea-level rise. This alignment will not negatively impact the adjacent intersections and driveways. Pedestrian access to Maurice Gibb Memorial Park will be maintained. Public parking surrounding Maurice Gibb Memorial Park will not be impacted by the project. Please see attached map for park boundaries, location of park amenities and proximity to the project corridor.

Type of Property: Public Parks and Recreation Areas

Description of Property: Maurice Gibb Memorial Park is a City of Miami Beach park located on 18th Street and Purdy Avenue on Miami Beach, adjacent to the eastern project terminus; however, there is no direct park access to and from the bridge. This park features walking paths, play structures, spring riders, arch climber, upper body equipment, tot swing, youth swings, and a tire swing. This park overlooks the Intracoastal Waterway and is adjacent to a boat launch and dock. It is also handicap accessible (with accessible swing) and is equipped with water fountains and restrooms at the Marine Patrol Building. Maurice Gibb Memorial Park is available to rent for events and parties.

Establishing Section 4(f) Use of the Property

FLORIDA DEPARTMENT OF TRANSPORTATION
SECTION 4(F) NO USE DETERMINATION

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Will the property be “used” as defined in **Section 4(f)** Resources chapter of the FDOT PD&E Manual? Examples of a “use” include but are not limited to acquiring right of way, new easements, and temporary occupancy?

☐ Yes

☒ No

An explanation of the relationship between the Section 4(f) property and the project:

Maurice Gibb Memorial Park is a City of Miami Beach park located on 18th Street and Purdy Avenue on Miami Beach, adjacent to the eastern project terminus. This park overlooks the Intracoastal Waterway and is adjacent to the eastern bridge approach. For the Reconstruction Alternative, the travel lanes of Dade Blvd. (south adjacent to the park) will be constructed two feet closer to Maurice Gibb Memorial Park but within the existing right of way. While noise levels may increase during construction, impacts from noise will not substantially impair the protected activities, features, or attributes that qualify the property for protection under Section 4(f). However, noise levels are not anticipated to substantially increase. There will be no temporary or permanent acquisitions of land from the park, and no proximity impacts that substantially impair the protected activities, features, and attributes of the park.


Documentation

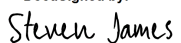
The following items **must** be attached to this form to ensure proper documentation of the Section 4(f) No Use:

1. DOA package (if used)
2. Required communications with the OWJ

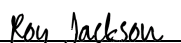
Signatures

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 14, 2016, and executed by FHWA and FDOT.

DocuSigned by:

 Nicole Carter
 Preparer
 1/29/2021 | 5:21 PM EST
 Date

DocuSigned by:

 Steven James
 Environmental Manager, or designee
 2/2/2021 | 11:06 AM EST
 Date

**OEM
 Concurrence:**

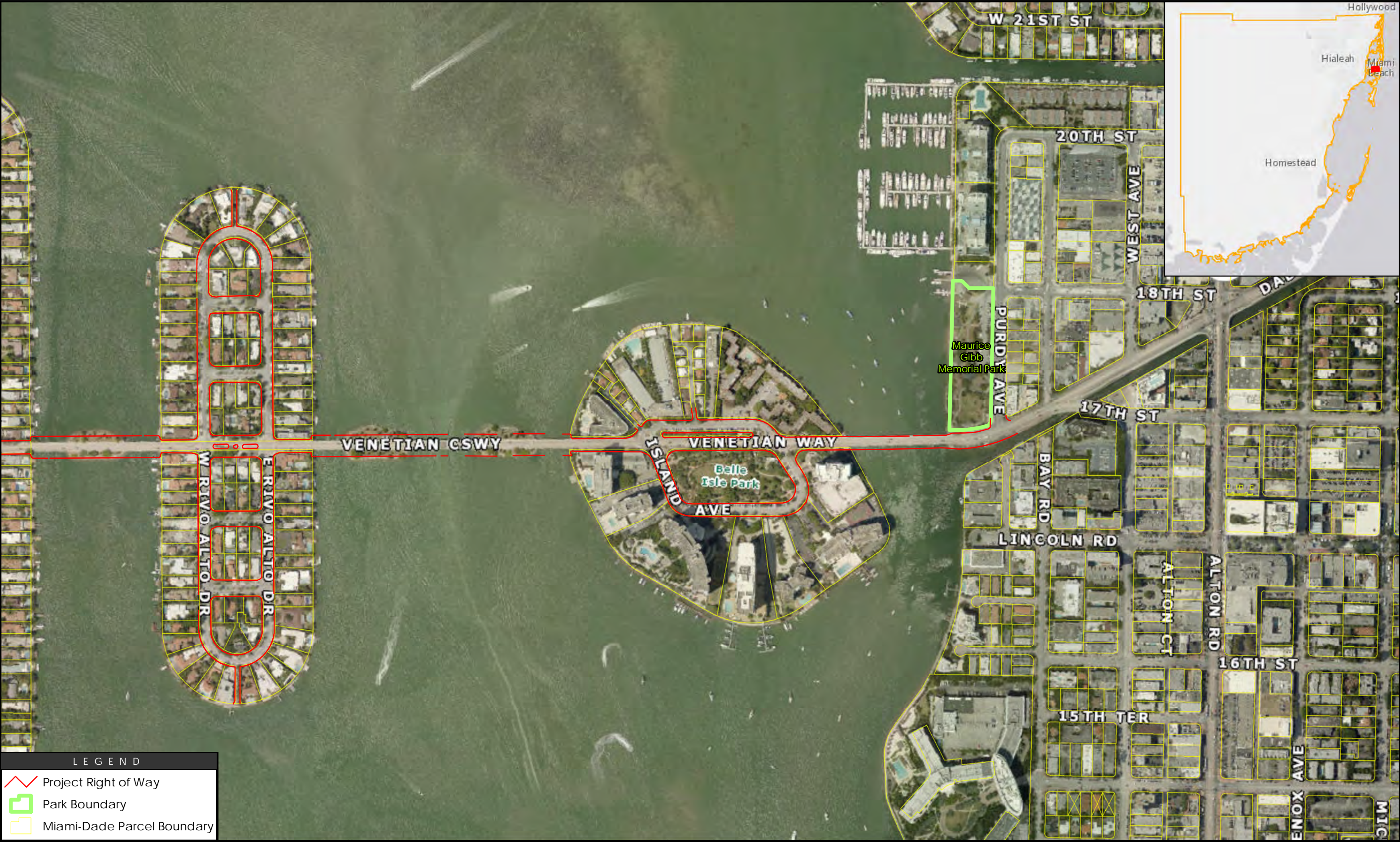
DocuSigned by:

 Roy Jackson
 OEM Subject Matter Expert
 2/5/2021 | 9:51 AM EST
 Date

**OEM
 Approval:**

Director Approval Not Required

Director of OEM, or designee

Date



MIAMI BEACH

PARKS & RECREATION DEPARTMENT

1700 Convention Center Drive Miami Beach, FL 33139 | Tel. 305.673.7730 | www.miamibeachfl.gov

July 31, 2017

Mr. Steven Craig James
District Environmental Administrator
Florida Department of Transportation, District Six
1000 NW 111th Avenue, Room 6109
Miami, FL 33172

Subject: Maurice Gibb Memorial Park
Statement of Significance
FDOT Project Financial Project ID: 422713-2-22-01
FDOT Project Description: Venetian Way from N. Bayshore Dr. to Purdy Ave.
County: Miami-Dade

Dear Mr. James:

As the Official with Jurisdiction, please accept this letter as a formal Statement of Significance for Maurice Gibb Memorial Park. This recreational resource is located within the City of Miami Beach, and it is a significant resource within the meaning of Section 4(f) regulations. Significance means that in comparing the availability and function of the recreation area, park or wildlife and waterfowl refuge area with the recreational, park and refuge objectives of that community, the land in question plays an important role in meeting those objectives.

Maurice Gibb Memorial Park is located on 18th Street and Purdy Avenue and is a "drop by park" meaning that we do not keep data on the number of visitors. This park features a 2 - 5 year old and 5 - 12 year old play structure, spring riders, arch climber, upper body equipment tot swing, youth swings, and a tire swing. This park overlooks the Intracoastal Waterway and is adjacent to a boat launch. It is also handicap accessible (with accessible swing) and is equipped with water fountains and restrooms located at the Marine Patrol Building. Maurice Gibb Memorial Park is also available to rent for events and parties.

Should you have any questions or require additional information, please contact my office 305-673-7730.

Sincerely,



John Rebar
Director of Parks and Recreation
City of Miami Beach

D4 Exception/Exemption Form: Florida Circumnavigational Saltwater Paddling Trail

SECTION 4(F) EXCEPTIONS/EXEMPTIONS DETERMINATION

Project Name:	Venetian Causeway Bridges PD&E Study		
FM#:	422713-2-22-01	ETDM#:	12756
FAP#:			
Project Review Date:	11/6/2020		
FDOT District:	6		
County(ies):	Miami-Dade		

Project Description including Section 4(f) Specific Information:

The Venetian Causeway PD&E Study extends along the Venetian Causeway from Bayshore Drive in the City of Miami to Purdy Avenue in the City of Miami Beach. The causeway is approximately 2.5 miles long and includes ten fixed span bridges and two bascule leaf span bridges over the Intracoastal Waterway. The corridor is tolled and is owned and operated by Miami-Dade County. The causeway bridges are mainly short span reinforced concrete arch beam bridges. Each bridge section consists of two 12-foot travel lanes with 4-foot bike lanes and 4-foot sidewalks on each side. In 1995, the bridges underwent a major rehabilitation consisting of concrete repairs to the superstructure arch beams and full replacement of all sidewalks and railings. The western bascule bridge and its spans 17 through 41 were also replaced. Presently, the bridges exhibit severe deterioration because of their proximity to the very aggressive marine environment. These bridges do not meet current design and safety requirements and are listed as structurally deficient and functionally obsolete.

The Proposed Alternative to meet current design and safety standards is replacement of fixed bridges 2 through 9, 11 and 12 utilizing Alternative 7, Arched Beams; and Alternative M4, Double Leaf Bascule for movable Bridge 10. Bridge 1 will not be replaced under this alternative. The Arched Beam Superstructure replacement alternative was designed to mimic the dimensions and appearance of the original structure. This superstructure scheme would consist of precast prestressed concrete beams with approximate elevations similar to that of the existing beams. The proposed approach span cross section would be increased 16 feet from the existing 41-foot 10-inch wide section to a 57-foot 10-inch wide section. The cross section is a 57-foot 10-inch wide section with two 8-foot sidewalks, two 1-foot 6-inch shoulders, two 7-foot buffered bicycle lanes and two 11-foot travel lanes.

In Alternative M4, the Double Leaf Bascule Bridge replaces the existing movable bridge at Bridge 10. Advantages to double leaf bascule bridges include: unlimited vertical clearance in the raised position; the design can be laid out in a symmetrical arrangement which is an advantage when an "arched" look is desired; and they provide natural barriers to vehicular traffic when in the open position. The existing bascule span provides 6 ft. minimum vertical clearance above mean high water at the face of the fenders and 10 feet at the center of the navigation channel with the span lowered. The existing horizontal clearance is 60 feet between fenders. A 75-foot horizontal clearance between fenders is proposed for the movable span replacement option. This provides improved safety along the Venetian Causeway and is consistent with bridges located to the north and south of the causeway. In order to span the proposed 75 ft. wide navigation channel, the bascule span will require a minimum overall structure depth (controlled by the depth of the main girders) at the face of the fenders.

The Florida Circumnavigational Saltwater Paddling Trail, a paddling trail within Biscayne Bay, traverses beneath the project corridor. Between the Miami mainland and Biscayne Island, the trail traverses beneath Bridge 1; between Rivo Alto and Belle Islands, the trail crosses between spoil islands 4 and 5 through the Miami Beach Channel, beneath Bridge 10. The proposed improvements regarding the vertical alignment to Bridge 10 may impact the trail. During design, coordination with FDEP's Office of Greenways and Trails shall occur regarding a detour to Bridge 1 while Bridge 10 is under construction. This alternate route can be announced on the Office of Greenways and Trails website. Please see attached map for locations of paddling trail segments and proximity to the project corridor

Type of Property: Public Parks and Recreation Areas

Description of Property: The Florida Circumnavigational Saltwater Paddling Trail begins at Big Lagoon State Park near Pensacola, extends around the Florida peninsula and Keys, and ends at Fort Clinch State Park near the Georgia border. This 1,515-mile sea kayaking trail is divided into 26 segments. Each segment is unique, ranging from the remote Big Bend Coast and Everglades/Florida Bay wilderness, to the more urbanized coastlines of Pinellas County and Fort Lauderdale. The trail is utilized by thousands of Florida residents and visitors and is a strategic long-term existing trail priority of the Florida Department of Environmental Protection, being coordinated by the Office of Greenways and Trails. Segment 16 of the trail, Biscayne Bay, intersects the project

SECTION 4(F) EXCEPTIONS/EXEMPTIONS DETERMINATION

within Biscayne Bay under Bridge 1 and between Rivo Alto and Belle Islands. The trail crosses between spoil islands 4 and 5 through the Miami Beach Channel, beneath Bridge 10.

Establishing Section 4(f) Exception Eligibility (from 23 CFR 774.13):**The facts of the case must match the circumstances as described below:**

- ☐ Restoration, rehabilitation or maintenance of transportation facilities that are on or eligible for the National Register when:
- (1) The Administration [FDOT] concludes, as a result of the consultation under 36 CFR 800.5, that such work will not adversely affect the historic qualities of the facility that caused it to be on or eligible for the National Register, and
 - (2) The OWJ over the Section 4(f) resource have not objected to the FDOT conclusion.
- ☐ Archaeological sites that are on or eligible for the National Register when:
- (1) The Administration [FDOT] concludes that the archaeological resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place. This exception applies both to situations where data recovery is undertaken and where the Administration [FDOT] decides, with agreement of the OWJ, not to recover the resource; and
 - (2) The OWJ over the Section 4(f) resource have been consulted and have not objected to the Administration [FDOT] finding.
- ☐ Designations of park and recreation lands, wildlife and waterfowl refuges, and historic sites that are made, or determinations of significance that are changed, late in the development of a proposed action. With the exception of the treatment of archaeological resources in §774.9(e) discovered during construction, the Administration [FDOT] may permit a project to proceed without consideration under Section 4(f) if the property interest in the Section 4(f) land was acquired for transportation purposes prior to the designation or change in the determination of significance, and if an adequate effort was made to identify properties protected by Section 4(f) prior to acquisition. However, if it is reasonably foreseeable that a property would qualify as eligible for the National Register prior to the start of construction, then the property should be treated as a historic site and does not qualify for the Section 4(f) exception.
- In applying this exception, the analyst must consider whether:
- (1) The property acquisition was completed prior to the designation or the change in the determination of significance.
 - (2) The Cultural Resources Assessment Survey (CRAS) report was considered complete and sufficient at the time of its submittal.
 - (3) The CRAS report identified the property in question as a resource that would require re-examination or that would become significant prior to construction.
 - (4) The property in question is an archaeological site important primarily for the information it contains.
- ☒ Temporary occupancies of land that are so minimal as to not constitute a use within the meaning of Section 4(f). The following conditions must be satisfied:
- (1) Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
 - (2) Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
 - (3) There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
 - (4) The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
 - (5) There must be documented agreement of the OWJ over the Section 4(f) resource regarding the above conditions.
- ☐ Park road or parkway projects under 23 U.S.C. 204 which is the Federal Lands Access Program, providing access to transportation facilities located on or adjacent to, or provide access to Federal Lands.
- ☐ Certain trails, paths, bikeways, and sidewalks, in the following circumstances:
- (1) Trail-related projects funded under the Recreational Trails Program, 23 U.S.C. 206(h)(2);

SECTION 4(F) EXCEPTIONS/EXEMPTIONS DETERMINATION

- (2) National Historic Trails and the Continental Divide National Scenic Trail, designated under the National Trails System Act, 16 U.S.C. 1241-1251, with the exception of those trail segments that are historic sites as defined in 23 CFR 774.17, such as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the NRHP. The term includes properties of traditional religious and cultural importance to an Indian tribe that are included in, or are eligible for inclusion in the NRHP.
- (3) Trails, paths, bikeways, and sidewalks that occupy a transportation facility right-of-way without limitation to any specific location within that right-of-way, so long as the continuity of the trail, path, bikeway, or sidewalk is maintained; and
- (4) Trails, paths, bikeways, and sidewalks that are part of the local transportation system and which function primarily for transportation unless they are historic.

- ☐ Transportation enhancement projects and mitigation activities, where:
- (1) The use of the Section 4(f) property is solely for the purpose of preserving or enhancing an activity, feature, or attribute that qualifies the property for Section 4(f) protection; and
- (2) The OWJ over the Section 4(f) resource agrees in writing to the use described in (1) of this section.

Establishing Section 4(f) Exemption Eligibility (Refer to Chapter 7.3.4 for further information and criteria)

- ☐ Section 1303 of the FAST Act incorporates the ACHP Program Comment exemption for common post-1945 concrete and steel bridges and culverts into Section 4(f), eliminating review requirements for these structures under Section 4(f). This exemption applies to specific types of bridges and culverts built after 1945, including various forms of reinforced concrete slab bridges, reinforced concrete beam and girder bridges, steel multi-beam bridges or multi-girder bridges, and culverts and reinforced concrete boxes (See Section V Program Comment).
- ☐ (Section 11502 (23 U.S.C. 138(f)/49 U.S.C. 303(h)) exempts from Section 4(f) review the use of rail. The exemption to **Section 4(f)** applies regardless of whether the railroad or rail transit line, or element thereof, is listed in or is eligible for listing in the National Register of Historic Places.

The exemption applies to the following resource types which might otherwise be considered abandoned or not in use:

- Railroad and transit lines over which service has been discontinued under the process described in 49 U.S.C. 10903;
- Railroad and transit lines that have been railbanked (a voluntary agreement between a railroad company and a trail agency to use an out-of-service rail corridor as a trail until a railroad might need the corridor again for rail service as described in 16 U.S.C. 1247(d)); and
- Railroad and transit lines that have been otherwise reserved for the future transportation of goods or passengers.

- ☐ 23 CFR 774.11(e)(2). The interstate highway system is exempt from being treated as a historic resource under Section 4(f), unless the U.S. Secretary of Transportation determines individual elements possess national or exceptional historic significance and should receive protection. Interstate highway-related facilities in Florida determined historically significant by the Secretary of Transportation and therefore not exempt under Section 4(f) are:
- I-275 Bob Graham/Sunshine Skyway Bridge
 - I-75 Alligator Alley- Milepost range 19.6-49.3
 - I-75 Snake Wall
 - I-95 Myrtle Avenue Overpass
- ☐ (23 CFR 774.11(h)) When a property formally reserved for a future transportation facility temporarily functions for park, recreation, or wildlife and waterfowl refuge purposes in the interim, the interim activity, regardless of duration, will not subject the property to Section 4(f).
- ☐ 23 CFR 774.11 (i) When a property is formally reserved for a future transportation facility before or at the same time a park, recreation area, or wildlife and waterfowl refuge is established and concurrent or joint planning or development of the transportation facility and the Section 4(f) resource occurs, then any resulting impacts of the transportation facility will not be considered a use as defined in §774.17. Examples of such concurrent or joint planning or development include, but are not limited to:

SECTION 4(F) EXCEPTIONS/EXEMPTIONS DETERMINATION

- Designation or donation of property for the specific purpose of such concurrent development by the entity with jurisdiction or ownership of the property for both the potential transportation facility and the Section 4(f) property; or
- Designation, donation, planning, or development of property by two or more governmental agencies with jurisdiction for the potential transportation facility and the Section 4(f) property, in consultation with each other.

Explanation supporting the Section 4(f) property meets all of the criteria of the Exception or Exemption

The Florida Circumnavigational Saltwater Paddling Trail begins at Big Lagoon State Park near Pensacola, extends around the Florida peninsula and Keys, and ends at Fort Clinch State Park near the Georgia border. This 1,515-mile sea kayaking trail is divided into 26 segments. The trail intersects the project within Biscayne Bay under Bridge 1 and between Rivo Alto and Belle Islands. The trail crosses between spoil islands 4 and 5 through the Miami Beach Channel, beneath Bridge 10. During construction, there will be an impediment to navigation during construction at Bridge 10. Access to Bridge 1 will be maintained, as work is not proposed on Bridge 1. During design, coordination with the Office of Greenways and Trails shall occur regarding this detour. During construction, through coordination with the Office of Greenways and Trails, the detour to Bridge 1 can be announced on FDEP's Office of Greenways and Trails website to ensure the continued connectivity of the paddling trail. Access post-construction will be unchanged from present conditions, as horizontal and vertical clearance between bridges will be maintained.

Documentation


The following items **must** be attached to this form to ensure proper documentation of the Section 4(f)

Exception/Exemption:

1. DOA package (if used)
2. Required communications with the OWJ (i.e. concurrence letters) for the Exception/Exemption as applicable

Signatures

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 14, 2016, and executed by FHWA and FDOT.

DocuSigned by:

Preparer
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1/29/2021 | 5:21 PM EST

Date

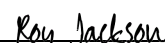
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Environmental Manager, or designee

2/2/2021 | 11:06 AM EST

Date

**OEM
Concurrence:**

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OEM Subject Matter Expert
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Date

**OEM
Approval:**

SECTION 4(F) EXCEPTIONS/EXEMPTIONS DETERMINATION

Director Approval Not Required

Director of OEM, or designee

Date





Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Rick Scott
Governor

Carlos Lopez-Cantera
Lt. Governor

Noah Valenstein
Secretary

July 31, 2017

Mr. Steven Craig James
District Environmental Administrator
Florida Department of Transportation, District Six
1000 NW 111th Avenue, Room 6109
Miami, FL 33172

Subject: Florida Circumnavigational Saltwater Paddling Trail
Statement of Significance
FDOT Project Financial Project ID: 422713-2-22-01
FDOT Project Description: Venetian Way from N. Bayshore Dr. to Purdy
Ave.
County: Miami-Dade

Dear Mr. James:

As the Official with Jurisdiction, please accept this letter as a formal Statement of Significance for the Florida Circumnavigational Saltwater Paddling Trail. This recreational resource is located within the waters of the State, and it is a significant trail within the meaning of Section 4(f) regulations. Significance means that in comparing the availability and function of the recreation area, park or wildlife and waterfowl refuge area with the recreational, park and refuge objectives of that community, the land in question plays an important role in meeting those objectives.

The trail is a strategic long-term priority of the Florida Department of Environmental Protection, being coordinated by the Office of Greenways and Trails. The trail is utilized by thousands of Florida residents and visitors per year who paddle it. Segment 16 of the trail, Biscayne Bay, intersects the subject project in Biscayne Bay between the Miami mainland and Biscayne Island; and between Rivo Alto and Belle Islands. Between the Miami mainland and Biscayne Island, the trail passes beneath Bridge 1; and between Rivo Alto and Belle Islands, the trail crosses between spoil islands 4 and 5 through the Miami Beach Channel, beneath Bridge 10.

Should you have any questions or require additional information, please contact my office 850-245-2061.

Sincerely,

A handwritten signature in blue ink that reads "Doug Alderson".

Doug Alderson
Assistant Chief, Office of Greenways and Trails
Florida Department of Environmental Protection

D5 Programmatic Section 4(f) for Historic Bridges

**Programmatic Section 4(f) Evaluation and Approval for FDOT Projects that
Necessitate the Use of Historic Bridges**

**Project Name: Venetian Causeway Bridges from Bayshore Drive (Miami)
to Purdy Avenue (Miami Beach)**

FM#: 422713-2-22-01 ETDM#: 12756 FAP#:

Project Review Date: TBD

FDOT District: 6

County: Miami-Dade County

Based upon the criteria and findings required by the Programmatic Section 4(f) Evaluation and Approval for FDOT Projects that Necessitate the Use of Historic Bridges the proposed Venetian Causeway Bridges from Bayshore Drive (Miami) to Purdy Avenue (Miami Beach) with FM No. 422713-2-22-0 meets the requirements set forth in Section 4(f) of the USDOT Act of 1966, as amended, that there is no feasible and prudent alternative to the use of Venetian Islands Resource Group and the proposed action includes all possible planning to minimize harm to the Venetian Islands Resource Group resulting from such use.

Project Description including Section 4(f) Specific Information:

The Venetian Causeway is approximately 2.5 miles long, and is primarily a two-lane undivided facility that provides a major link between the City of Miami and the City of Miami Beach in Miami-Dade County, Florida. The current Causeway follows the original route of the Collins Bridge, a wooden structure built in 1913. The Causeway includes ten fixed span bridges and two bascule leaf span bridges over the Intracoastal Waterway (Bridge Nos. 874459, 874460, 874461, 874463, 874465, 874466, 874471, 874472, 874473, 874474, 874477, and 874481) extending from North Bayshore Drive (City of Miami) to Purdy Avenue (City of Miami Beach). The bridges along the Causeway were originally built in 1926 with an anticipated design life of 50 years.

The Causeway bridges are mainly short span reinforced concrete arch beam bridges. Each bridge section consists of two 12-foot travel lanes with 4-ft bike lanes and 4-foot sidewalks on each side. Between 1996 and 1999, the twelve causeway bridges underwent major rehabilitation that included the concrete arched beams, decks, foundations and the full replacement of all sidewalks and railings. The rehabilitation and repairs to the concrete elements were anticipated to last for ten years. As part of the rehabilitation, the east bascule bridge (Bridge 874474) movable span and machinery was replaced. Spans 17 through 41 of the west bascule bridge (Bridge 874459), including the bascule span, was replaced with a higher profile and wider channel to accommodate navigational traffic. Presently, the bridges exhibit severe deterioration because of their proximity to the very aggressive marine environment.

As a result of the current project, the Venetian Islands Resource Group (8DA14395) was documented. This resource group subsumes the National Register-listed Venetian Causeway (8DA4736). As documented in the 1989 National Register nomination, the Causeway consists of "twelve bridges containing two bascule spans connected by a two lane road" (Welcher 1989). Due to severe deterioration, the bridges are in need of extensive rehabilitation or replacement. Each of the twelve bridges were given individual Florida Master Site File (FMSF) numbers and were included within the newly identified Venetian Islands Resource Group (8DA14395). In consultation with the State Historic Preservation Officer (SHPO), the FMSF site file for the Venetian Causeway (8DA4736) was converted from its current classification as a historic bridge to a resource group. More information

Venetian Causeway Bridges Project Development and Environment (PD&E) Study from Bayshore Drive (Miami) to Purdy Avenue (Miami Beach)

regarding the National Register-listed resource is found in the National Register Nomination form for Venetian Causeway (8DA4736), which is on file at the FMSF.

The resource group classification serves as a comprehensive tool for documenting the entire landscape of the Venetian Islands, including the bridges. While the Venetian Causeway remains National Register-listed, the individual bridges (8DA14373-8DA14384) were evaluated as part of the current project and are considered contributing resources within the Venetian Islands Resource Group (8DA14395). A 730-foot section portion of the westernmost bridge was replaced in 2015. The six islands and five earthen causeway landings of the Venetian Islands were included within this historic designed landscape. The resource group encompasses a designed landscape of man-made islands, bridges, and earthen causeways that resulted from developers' ambitious plans to create a residential development on Biscayne Bay. Between 1915 and 1926, the location and layout of the islands were carefully planned and arranged by real estate developers, particularly the Bay Biscayne Improvement Company, to create a "Venetian" landscape across Biscayne Bay. Employing the most advanced dredging and construction methods of the time, crews shaped islands and connected them using a series of earthen causeways and concrete bridges. The Venetian Islands Resource Group (8DA14395) was determined National Register-eligible under Criteria A and C in the categories of Community Planning and Development, Transportation, Architecture, and Engineering by the SHPO in 2019.

The bridges have a low rise and provide minimal clearance above the mean high water. The guardrails, one of the main decorative features of the bridges, are constructed of reinforced concrete in a pierced, ornamental geometric design that have square units with radiating diagonals forming an "x" pattern. This simple design forms a bold pattern while allowing a view of the bay from all of the bridges. The western terminus contains a pair of tapering octagonal concrete entrance towers topped by lights resembling miniature lighthouses. Inscribed in bas-relief on the towers are the words "Short Way" on the north tower, and "Venetian Way" on the south tower.

As contributing elements to the NRHP Venetian Islands Resource Group (8DA14395) the bridges (Bridge Nos. 874459, 874460, 874461, 874463, 874465, 874466, 874471, 874472, 874473, 874474, 874477, and 874481) were evaluated herein under Section 4(f).

I. Description of Project Scope/Purpose and Need Statement:

Project Scope

The Florida Department of Transportation (FDOT) District 6 is conducting a Project Development & Environment (PD&E) Study to address the identified structural and functional deficiencies of the 12 existing bridges that comprise the Venetian Causeway. The PD&E provides documented information on the type, design and location of improvement alternatives to the Venetian Causeway Bridges. Alternatives evaluated include No-Build and Build Alternatives. Potential build alternatives include replacement or rehabilitation of the bridges.

Purpose and Need

The purpose and need of the proposed project is to address identified structural and functional deficiencies of the 12 existing bridges (ten low-level fixed spans and two movable bascules) through potential alternatives such as replacement or rehabilitation.

The project will address the following needs:

Structural and Functional Deficiencies

The Venetian Causeway is classified as an urban minor arterial in Miami-Dade County, and is a significant transportation route connecting the City of Miami with the City of Miami Beach. The bridges along the Venetian Causeway were originally built in 1926 with an anticipated design life of 50 years. The bridges have exceeded their design life by over 40 years, and in most cases, are classified as Functionally Obsolete (FO). Due to the accelerated state of deterioration, inspection frequency has been increased from the biennial minimum (every other year) required by Federal Highway Administration (FHWA) to bi-annual (twice a year) inspections. Bridge Inspection Reports (conducted between October 2018 and January 2019) yielded sufficiency ratings between 16 and 37.6 on a scale of 100.0. Bridge 1 has a sufficiency rating of 67.6. Bridges with ratings of 50 or below are eligible for replacement funding from FHWA. *Refer to **Figure 1** Project Location Map for bridge locations.* The sufficiency rating of each bridge is shown in **Table 1**.

Venetian Causeway Bridges Project Development and Environment (PD&E) Study from Bayshore Drive (Miami) to Purdy Avenue (Miami Beach)



FIGURE 1: PROJECT LOCATION MAP

Bridge No.	FDOT Bridge No.	NBI Condition Rating						2019 Sufficiency Rating	Deficiency
		Deck	Superstructure		Substructure				
1	874459	7	Good	5	Fair	6	Good	67.6	Functionally Obsolete
2	874460	5	Fair	5	Fair	6	Fair	36.6	Functionally Obsolete
3	874461	5	Fair	5	Fair	6	Fair	23.6	Functionally Obsolete
4	874463	6	Satisfactory	5	Fair	6	Satisfactory	25.1	Functionally Obsolete
5	874465	5	Fair	5	Fair	6	Fair	23.6	Functionally Obsolete
6	874466	6	Satisfactory	5	Fair	6	Satisfactory	28.1	Functionally Obsolete
7	874471	5	Fair	6	Satisfactory	6	Fair	37.6	Functionally Obsolete
8	874472	6	Satisfactory	5	Fair	6	Satisfactory	25.1	Functionally Obsolete
9	874473	5	Fair	5	Fair	6	Fair	27.4	Functionally Obsolete
10	874474	5	Fair	5	Fair	5	Fair	32.2	Functionally Obsolete
11	874477	5	Fair	6	Satisfactory	6	Fair	34.3	Functionally Obsolete
12	874481	5	Fair	4	Poor	5	Fair	16	Structurally Deficient & Functionally Obsolete

TABLE 1: VENETIAN CAUSEWAY BRIDGE INVENTORY RATINGS

Bridges 2 through 11 are Functionally Obsolete (FO) and Bridge 12 is both FO and Structurally Deficient (SD). A bridge is considered FO if it has deck geometry, load carrying capacity, clearance or approach roadway alignment that no longer meet the criteria for the system of which the bridge is a part. FO bridges are those that do not have adequate lane widths, shoulder widths, or vertical clearances to serve the traffic demand - or those that may be occasionally flooded. Bridges are considered to be SD where: 1) significant load carrying elements are found to be in poor or worse condition due to deterioration or damage or, 2) the adequacy of the waterway opening provided by the bridge is determined to be extremely insufficient to the point of causing intolerable traffic interruptions.

Bridges 1 through 12 are FO since the existing sidewalks and bike lanes are substandard. The bicycle lanes and sidewalks are both 4-ft. wide, except at Bridge 1(spans 1 to 16) where the bicycle lanes are 5-ft. wide. Bridges 2 through 12 do not meet the current design and safety requirements; AASHTO HL-93 live load capacity, scour resistance, wave force resistance or vessel impact resistance standards. Bridge 12 is classified as SD; the superstructure is in poor condition and the bridge sufficiency rating is 16.

Bridges 2 through 12 exhibit advanced corrosion with section loss; unsound concrete in beams and slabs; failed repairs; and extensive deterioration from the corrosive marine environment. This is significant enough to warrant supplemental supports and/or load restrictions. Concrete delamination, spalls, cracking, and rebar corrosion are evident on the bridge deck, diaphragms, and sidewalks. Utility lines and supports on the bridges are deteriorated. The bridge inspection reports also cite:

- Under-deck cracks,
- Failure of compression joints,
- Delamination and cracks on pier walls and abutments,
- Corrosion and section loss of substructure members,
- Major deficiencies in the bridge tender's facility,
- Major deck pavement deterioration,
- Substandard signing,
- Pavement marking and signalization, and
- Major Americans with Disabilities Act (ADA) deficiencies on both sidewalks along the bridges.

Once initiated, corrosion cannot be remedied, and sufficiency ratings are only expected to decrease further over time.

The bridges exhibit severe deterioration because of their proximity to the very aggressive marine environment. Due to new design codes, they do not meet current design and safety requirements. The bridges are continuously being repaired to maintain them in operational condition. **See Table 2 for Bridge Repair Timeline.**

Financial information on the Venetian Causeway demonstrates that the Venetian Causeway costs more to operate, maintain and rehabilitate/repair, than the revenues collected. The County is trying to keep pace with the required maintenance of the bridges; however, the rate of deterioration requires constant expenditures to keep the bridges operational. The bridges require major rehabilitation or replacement in order to meet current design criteria and safety requirements.

Modal Interrelationships

Sidewalks and bicycle lanes exist on both sides of the Venetian Causeway along the entire corridor. Both the City of Miami and the City of Miami Beach Bicycle Master Plans identify

Venetian Causeway as a significant bicycle corridor as it serves as one of the County's most well-traveled recreational and commuter bicycle routes. The existing sidewalks and bike lanes are substandard. The bicycle lanes and sidewalks are both 4-ft. wide, except at Bridge 1 (spans 1 to 16) where the bicycle lanes are 5-ft. wide. The pedestrian and bicycle mobility need to be improved as part of this project.

Emergency Evacuation

The Venetian Causeway not only serves west-east travel between the City of Miami and the City of Miami Beach, but it also serves regional travel as it is one of only two routes leading from south Miami Beach that provides hurricane evacuation capabilities.

**Venetian Causeway Bridges Project Development and Environment (PD&E) Study
from Bayshore Drive (Miami) to Purdy Avenue (Miami Beach)**

TABLE 2: BRIDGE REPAIR TIMELINE

Bridge Construction/ Bridge Replacement	Year	Description
Original Construction	1926	The bridges along the causeway were originally built in 1926 with an anticipated design life of 50 years.
Undocumented Rehabilitation Projects	1926 - 1996	Numerous repairs were performed on the bridges during this time interval. Bridge records only exist since 1996.
Major Bridge Rehabilitation Project	1996 - 1999	The twelve causeway bridges underwent major rehabilitation that included the concrete arched beams, decks, foundations and the full replacement of all sidewalks and railings. The rehabilitation and repairs to the concrete elements were anticipated to last for ten years. As part of the rehabilitation, the east bascule bridge (Bridge 10) movable span and machinery was replaced. Spans 17 through 41 of the west bascule bridge (Bridge 1), including the bascule span, was replaced with a higher profile and wider channel to accommodate navigational traffic.
Bridge Load Restrictions	2004	As a result of the continued deterioration of the bridges, the FDOT authorized Miami-Dade County to post load restrictions on the bridges.
Venetian Causeway Streetscape Improvements Project	2009	The County conducted a Streetscape Improvements Project. This project included the reconstruction of the Causeway's roadway.
Major Bridge Rehabilitation Project	2009 - 2011	The County conducted another major rehabilitation project to repair the causeway's bridges. The scope of work for this rehabilitation included major repairs to the bridge support beams, diaphragms, deck undersides, and support piers.
PD&E Study Project	2011	FDOT in partnership with Miami-Dade County initiated the current PD&E Study to address the identified structural and functional deficiencies of the 12 existing bridges that comprise the Venetian Causeway.
Design-Build Emergency Repair Project	2015 - 2016	The Venetian Causeway underwent an Emergency Repair to replace the remaining original spans of Bridge 1 (spans 1 to 16). The bridges are continuously being repaired to maintain them in operational condition.
Bascule Bridge 10 Rehabilitation	2016	The County conducted rehabilitation project to repair Bascule Bridge 10. It included structural, mechanical, and electrical repairs to improve existing conditions.

II. Detailed explanation of how the Section 4(f) property will be used:

The proposed project includes the replacement of the bridges that are contributing elements to the National Register of Historic Places (NRHP) Venetian Islands Resource Group (8DA14395). The Replacement Alternative consists of the construction of new structures for bridges 2 through 12 (Bridge Nos. 874460, 874461, 874463, 874465, 874466, 874471, 874472, 874473, 874474, 874477, and 874481). Bridge 1 (Bridge No. 874459) was not included as part of the Replacement Alternative. Bridge 1 was already replaced during the major rehabilitation project in 1999, that replaced approximately two-thirds of the bridge - and the emergency repair design-build project in 2016, that replaced the remainder of the bridge.

The demolition of Bridges 2 through 12 will have an adverse effect on the Venetian Islands Causeway Resource Group. This adverse effect finding is primarily related to the bridge structures and will not affect other contributing resources or elements of the Resource Group. The State Historic Preservation Officer (SHPO) concurred with the findings from the Section 106 Evaluation and Determination of Effects Case Study. Minimization and mitigation measures will be implemented and documented in the Memorandum of Agreement (MOA).

The proposed replacement bridges will acknowledge the dimensions and appearance of the original structures. The Preferred Alternative incorporates low profile bridges - consisting of a wider typical section that accommodates wider sidewalks and bicycle lanes, the appearance of the historic railings, and the Venetian bridge lighting fixtures. The approach span bridge section is increased 16-ft. from the existing 41-ft. 10-in. wide section. The 57-ft. 10-in. wide bridge section includes two 8-ft. sidewalks, two 1-ft. 6-in. shoulders, two 7-ft. buffered bicycle lanes and two 11-ft. travel lanes. **See Figure 2 for Superimposed Typical Section.** The Superimposed Typical Section exhibits the Replacement Alternative Typical Section over the Existing Typical Section. The proposed bridge superstructures are arched beams with same span configurations designed to support current AASHTO HL-93 structural design loading.

The proposed drilled shaft foundations are designed to meet current standards for scour, wave force and vessel impact resistances. The raised profile of the new bridges accommodates sea-level rise as the bridges are raised approximately 1-ft above the existing low member elevations. At Bridge 10, the raised vertical profile provides 10.5-ft of vertical clearance at the fender, and 13.5-ft of vertical clearance at the centerline of the channel. The raised vertical profile at the bascule bridge maintains the bascule pier machinery above the 100-year storm surge elevation.

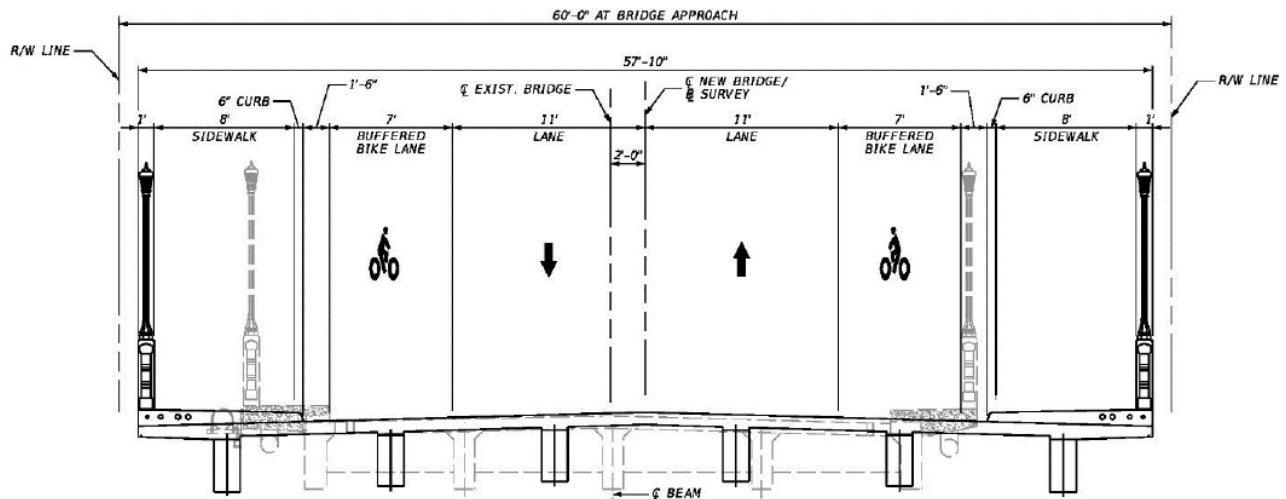


FIGURE 2: SUPERIMPOSED TYPICAL SECTION

III. Applicability Criteria of the Programmatic

All criteria must be met for this programmatic to apply.

- ☒ Yes ☐ No The bridge will be replaced or rehabilitated with Federal Funds.
- ☒ Yes ☐ No The project will require the “use” of a historic bridge which is on or eligible for listing in the National Register of Historic Places (NRHP).
- ☒ Yes ☐ No The bridge is NOT a National Historic Landmark (NHL).
-

IV. Identify additional Section 4(f) properties in the project area

Are there any additional Section 4(f) properties in the project area? ☒ Yes ☐ No

1. Collins Canal (8ADA11375)
2. Terrace Towers (8DA11754)
3. Belle Isle Park
4. The Florida Circumnavigational Saltwater Paddling Trail
5. Maurice Gibb Memorial Park

Comments: The 2019 CRAS resulted in the identification of three significant resources:

1. The Collins Canal (8ADA11375), located within the current historic Area of Potential Effect (APE) and was determined National Register-eligible on May 4, 2012.
2. The Terrace Towers (8DA11754), located within the current historic APE and were determined National Register-eligible by the SHPO on January 5, 2011.

☐ Yes ☒ No Are impacts to other protected Section 4(f) resources greater than *de minimis*?

Explain: The project will be constructed within the existing Venetian Causeway right-of-way and will have no adverse effect on the Collins Canal or Terrace Towers nor any of the recreational resource in the project area.

Belle Island is owned by the City of Miami Beach. The park is located in the center of Belle Island, the easternmost island on Venetian Causeway. The proposed project is limited to the bridges on Venetian Causeway and Miami Beach, there are no impacts within or adjacent to Belle Island Park.

The Florida Circumnavigational Saltwater Paddling Trail, a paddling trail within Biscayne Bay, traverses beneath the project corridor. Between the Miami mainland and Biscayne Island, the trail traverses beneath Bridge 1; between Rivo Alto and Belle Islands, the trail crosses between spoil islands 4 and 5 through the Miami Beach Channel, beneath Bridge 10. There will be a temporary occupancy of the paddling trail where it crosses beneath Bridge 10 while it is temporarily closed during construction. Users will continue to have access beneath Bridge 1 throughout construction.

Maurice Gibb Memorial Park, a City of Miami Beach park, is adjacent to the project corridor on the eastern side. It is approximately four acres and is located on 18th Street and Purdy Avenue. Temporary noise impacts are anticipated during construction adjacent to the park. The park will not be used for staging during construction, and access will be maintained. No right of way will be required from Maurice Gibb Memorial Park to construct the project. For the Replacement Alternative, the travel lanes of Dade Blvd. (south adjacent to the park) will be constructed two feet closer to Maurice Gibb Memorial Park but within the existing road

right of way. However, noise levels are not anticipated to substantially increase. There will be no use of the park, including temporary or permanent use of right-of-way, and proximity impacts such as access limitations will be avoided via appropriate Maintenance of Traffic during construction. Access to the park will be maintained at all times during construction, and during park hours.

V. Alternatives Considered/Findings

Alternatives were developed and evaluated based on the ability of each to meet the project needs and current design standards. The development and analysis of the alternatives included No-Build and Build Alternatives (Rehabilitation and Replacement).

The ability of the bridges to meet the following current design standards was evaluated:

Hurricane Resistance/ Wave Loading

The existing bridges are vulnerable to coastal storms and are below the 100-year Peak Storm Surge elevation of 11.6-ft. NAVD88. As such, the bridges will be subjected to wave loading. Storm surge heights range from 7.7-ft. NAVD (FEMA) to 11.6-ft. NAVD for the 100-year storm. Wave crest is storm surge plus 70% of the maximum wave height. As shown in **Figure 3** the Causeway fixed bridges are all below the wave crest elevation flooding the bridges in a 100-year storm event.

The bridges are also considered scour susceptible, as seen in **Figure 3**. The 100-year base flood event would expose the existing 14-in. concrete piles that are located at an average tip elevation of (-) 19.0-ft. NAVD. The scoured bed elevation after the 100-year storm was projected to be (-) 20.9-ft. NAVD — almost two feet below the pile tip elevation.

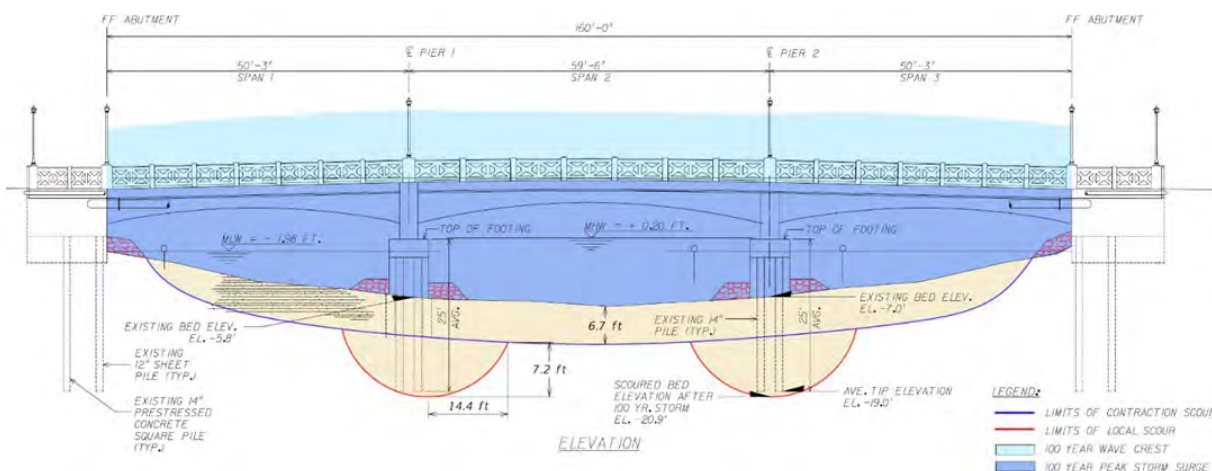


FIGURE 3: BRIDGE STORM SURGE, WAVE CREST AND SCOUR ELEVATIONS

Vessel Collision Classification

The design of bridges over navigable waters must include consideration for possible vessel collision from barges and ocean-going vessels. A probability-based vessel collision risk analysis using site specific vessel data was required. The risk of collapse is evaluated at a different threshold depending on the importance classification. The FDOT has established two different classifications for vessel collision: "Regular (Non-critical)" and "Critical." Miami-Dade County classified the bridges on the Venetian Causeway as "Critical." The existing bridges do not meet the current vessel collision resistance requirement for "Critical" bridges.

Load Carrying Capacity of Bridges

The existing bridges do not meet the current *AASHTO Standard Specifications for Movable Highway Bridges* HL-93 design load capacity. Design loading at the time the bridges were designed was based on HS-20 Truck loading. Bridges 3, 5, 7, 9 and 11 experienced advanced deck deterioration and recently had deck repairs. These short-term bridge deck repairs are handled often by the Miami-Dade County Department of Transportation and Public Works (DTPW) to maintain the bridges in operation, however, deterioration continues. The bridge deck repairs consist of new asphalt overlay with steel plate installations at locations where the deck failures have occurred. All bridges have a posted weight limit of 11.0 tons except bridge 12 which is posted at 16.0 tons. **See Figure 4** for *Bridge Deck Failure and Repair*.



FIGURE 4: BRIDGE DECK FAILURE AND REPAIR

Safety, Functionality and Area Needs

The Venetian Causeway is utilized by pedestrians and bicyclists for recreational and non-recreational purposes. A recent safety analysis report identified crashes on the bridges and on the corridor roadways, that include bicycle and pedestrian crashes due to the narrow bicycle lanes. Accommodating the needs of non-motorized traffic on the Venetian Causeway should be a priority in the design considerations, and all reasonable and technically feasible action should be taken to design proposed pedestrian and bicycle facilities according to current Greenbook guidelines.

The following alternatives shown in **Table 3 Viable Alternatives** were considered for this study:

TABLE 3: VIABLE ALTERNATIVES

NO-BUILD ALTERNATIVES	
1	No-Action – The bridges remain as is with routine maintenance only.
2	Transportation Systems Management & Operations (TSM&O) – The bridges remain as is with routine maintenance only. Transit, bicycle, pedestrian and other operational improvements would be made to facilitate transportation along the corridor.
BUILD ALTERNATIVES - REHABILITATION	
Fixed Bridge Alternatives The rehabilitation of the bridges would require that a rehabilitation alternative for the fixed bridges be selected.	
4	Fixed Bridge Rehabilitation with Beam Strengthening - Rehabilitation of the fixed bridges to improve safety and load carrying capacity. Includes beam strengthening to achieve a higher load carrying capacity.
Movable Bridge Alternative The rehabilitation alternative of the eastern movable bridge (Bridge 10).	
M1	Bascule Bridge Rehabilitation – Rehabilitation of the eastern movable bridge to improve safety and achieve a higher load carrying capacity.
BUILD ALTERNATIVES - REPLACEMENT	
Fixed Bridge Alternatives The replacement of the bridges would require that the structural system for the fixed bridges be selected.	
7	Arched Beams – This alternative provides low-level bridges, replicates the arched beams and maintains the look of the existing bridges
Movable Bridge Alternatives The replacement of the eastern movable bridge (Bridge 10) would require that the movable bridge type be selected.	
M4	Double Leaf Bascule Bridge – The existing bridge would be replaced in kind.

Considering the historical significance of the Causeway, all efforts were made to protect and preserve the bridges as a historic resource.

A Rehabilitation Alternative was developed that repaired and strengthened the bridges, provided hurricane hardening, and provided a cathodic protection system to mitigate future deterioration and extend the service life of the bridges for another 25 years. Hurricane hardening consisted of stronger foundations to resist wave forces and scour that occurs in a hurricane. The Rehabilitation Alternative was eliminated, since the substandard deck geometry would remain, and the 25-year service life resulted in a higher life-cycle cost.

A Replacement Alternative was also developed that addressed the deficiencies of the bridges and provided a service life of 75 years. The Replacement Alternative acknowledges the appearance of the existing bridges, satisfies the current design criteria, and will have a raised profile to address sea-level rise. The replacement of bridges 2-12 was determined to be the Preferred Alternative. It will only include the replacement of the bridges and the reconstruction of the corresponding bridge's roadway and touch down areas. The residential and spoil island's roadway was previously reconstructed as part of the Venetian Causeway Streetscape Improvements in 2009.

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The bridge Replacement Alternative proposes arched beams for the fixed bridges 2 through 9, as well as 11 and 12, and a double leaf bascule bridge for Bridge 10. Bridge 1 will remain in its existing condition - as the easternmost spans of this bridge were replaced in 1999, and the westernmost spans were replaced in 2016.

Throughout the course of the study, the Public Involvement Team conducted several meetings and workshops detailing the development and environmental aspects of the project. **See Table 4 for Public Involvement Meetings.** The purpose of these meetings was not only to share project information with stakeholders, but to also collect feedback from residents and business owners within the project area. Based on the stakeholder feedback given to the project team, data was collected and applied to improve project development and design.

TABLE 4: PUBLIC INVOLVEMENT MEETINGS

Meeting	Date	Description
Public Kick-Off Meeting	June 25, 2014	The purpose of the Public Kick-Off Meeting was to increase the public's understanding of the study and encourage participation in the process. The public was given information regarding the purpose of the project and an overview of existing conditions in the area. A study schedule was also discussed and distributed to the public at the meeting.
Project Advisory Group (PAG) Meeting No. 1	September 18, 2014	The purpose of the PAG Meeting No. 1 was to allow stakeholders to provide input on the project as the study progressed. The PAG represented the communities and organizations in the immediate area of the project, and ensured that a full range of views were considered during the study. There was a detailed presentation on the project that included: the status of the study, the existing conditions of the causeway bridges, the historic significance of the bridges, the new hurricane wave analysis and vessel impact load requirements on the bridges, and the proposed rehabilitation parameters for the bridges. It was explained that the immediate focus of the study was the rehabilitation of the bridges and that the main purpose of the meeting was to ascertain the Rehabilitation Parameters to be utilized for the development of suitable Rehabilitation Alternatives.
Cultural Resource Committee (CRC) Meeting No. 1	September 24, 2014	The purpose of the CRC Meeting No. 1 was to conduct and document good faith consultation with affected parties in compliance with Section 106 of the National Historic Preservation Act. There was a detailed presentation on the progress and status of the project. The presentation included the information presented at the PAG Meeting No. 1, the resulting Rehabilitation Parameters and information related to historic significance of the bridges. The

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Meeting	Date	Description
		CRC members were given the opportunity to ask questions, give comments and share their opinions with the FDOT staff and other governmental representatives about the project.
Project Advisory Group (PAG) Meeting No. 2	February 24, 2015	<p>The purpose of the PAG Meeting No. 2 was to seek input from attendees on the alternatives being considered for the study. The alternatives presented at the meeting included:</p> <ol style="list-style-type: none"> 1. No-Build 2. Transportation Systems Management & Operations (TSM&O) 3. Rehabilitation 4. Replacement 5. Typical Section Alternatives 6. Railing Alternatives 7. Fixed Bridge Alternatives 8. Movable Bridge Alternatives <p>The presentation addressed the ability of the alternatives to safely carry vehicular traffic, pedestrians and bicyclists. The possible impacts of the different alternatives on the environment, historic resources, aesthetics and the public were also presented.</p>
Alternatives Public Workshop (APW)	May 13, 2015	At the APW Meeting, proposed "Build" alternatives developed for the potential replacement or rehabilitation of the bridges, as well as the "No-Build" alternatives were presented to the public. The corresponding initial environmental impacts, details and any relevant topics for each of the alternatives was presented. This workshop gathered project information and public opinion to use in the selection of the Preferred Alternative. The public was given the opportunity to rank each alternative using a ballot.
Cultural Resource Committee (CRC) Meeting No. 2	May 14, 2015	The purpose of this CRC Meeting No. 2 was to conduct and document good faith consultation with affected parties in compliance with Section 106 of the National Historic Preservation Act. At the meeting, proposed alternatives developed during the study were presented to the public. Input and feedback on the alternatives was discussed and the attendees were given the opportunity to rank each alternative using a ballot.

**Venetian Causeway Bridges Project Development and Environment (PD&E) Study
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Meeting	Date	Description
Project Advisory Group (PAG) Meeting No. 3	March 9, 2016	During the PAG Meeting No. 3, the Alternatives Matrix/Ranking Ballots results from the Alternatives Public Workshop were reviewed and analyzed. An overview of the highest-ranking alternatives from the public was shared through renderings and a deliberation took place to gain feedback from the group regarding these alternatives. The life cycle cost and environmental impacts of the project were also shared with members of the advisory group.
Project Advisory Group (PAG) Meeting No. 4	May 16, 2017	During this meeting, the project team discussed the project's Class of Action Determination – Environmental Assessment. The project team also re-examined Alternative 6 – High-Level and the Fixed Bridge as a replacement for the east bascule bridge.
Cultural Resource Committee (CRC) Meeting No. 3	March 6, 2018	The purpose of CRC Meeting No. 3 was to provide an update on the project status and explain the Class of Action Determination of an Environmental Assessment (EA) on November 10, 2016 by the Federal Highway Administration (FHWA) and the NEPA Assignment, which went into effect on December 14, 2016. The project team provided a timeline of what has transpired to date during Project Scope Development and PD&E/NEPA Study.
Cultural Resource Committee (CRC) Meeting No. 4	May 20, 2020	The purpose of the meeting was to provide an update on the project status and present the details of the Preferred Alternative, the Replacement Build Alternative. The project team noted that in the Replacement Alternative the bridges will mimic the existing bridges by maintaining the low-profile bridges, the arched beams, the geometrically design railing, the light fixtures and light poles. The project team also provided a timeline of what has transpired to date during the PD&E Study and outlined the next steps for agency coordination and development of a Memorandum of Agreement.

These meetings and workshops helped the Project Team identify issues, concerns and potential solutions that appropriately improved project plans. Based on this feedback, the most prevalent alternatives were considered and analyzed as options for the project.

REFERENCES

Welcher, Vicki

1989 National Register of Historic Places, Venetian Causeway, Miami-Dade County, Florida, National Register # 89000852. Copies available from the Florida Department of State, Division of Historic Resources, Tallahassee, Florida.

No-Build Alternative *(Check all that apply)*

☒ **Structural Deficiencies**

The No-Build Alternatives - No-Action and Transportation System Management & Operations (TSM&O) - maintains the existing bridges and roadway approaches in their current condition. No improvements would be made to the structures, except for routine maintenance. The No-Build Alternatives do not correct the situation that causes the bridge to be considered functionally obsolete or structurally deficient. Normal maintenance is not considered adequate to address the lack of scour, wave force, and vessel collision resistance of the bridges.

☒ **Functional/Geometric Deficiencies**

The No-Build Alternatives - No-Action and TSM&O do not include modification or improvements to the existing bridges or approach roadway. Existing geometric features and other deficiencies, including substandard lane and sidewalk width would remain. No changes to the existing vertical navigational clearances would occur on Bridge 10. The No-Build Alternatives do not correct the situation that causes the bridges to be considered functionally or geometrically deficient.

☒ **Justification** *(Summary describing constraints posed by terrain; adverse social, economic and environmental effects; engineering and economic considerations; and preservation standards)*

The No-Action Alternative includes only routine maintenance performed as needed to keep the bridges open to traffic until safety issues, such as reduced capacity due to ongoing deterioration, would require them to be closed. Repair or replacement could be considered at a later date. The No-Action Alternative does not include modification or improvements to the existing bridges or approach roadway. Existing geometric features and other deficiencies, including substandard lane width and curbs would remain. No changes to the existing horizontal and vertical navigational clearances would occur. The routine maintenance that would be performed on the structures would include:

- Spall repairs;
- Structural steel cleaning and painting;
- Steel repairs; and
- Mechanical and electrical maintenance repairs.

The bridges are vulnerable to coastal storms and are below the 100-year Peak Storm Surge elevation of 11.6-ft. NAVD88. Storm surge heights range from 7.7-ft. NAVD(FEMA) to 11.6-ft. NAVD for the 100-year storm. Wave crest is storm surge plus 70% of the maximum wave height. The Causeway fixed bridges would be inundated in the 100-year storm event. The bridges are also scour susceptible. The 100-year base flood event is predicted to result in scour to an elevation (-)20.9-ft. NAVD, which is below average existing pile tip elevation of (-)19.0-ft. NAVD. This would result in bridge failure.

The No-Action Alternative would preserve the historic character of the Venetian Causeway, and does not appear to be an adverse effect to the significant resources under Section 106. There are also no impacts to noise and air quality and no potential for contamination involvement with the no action alternative.

The No-Action Alternative was deemed to be neither feasible nor prudent, as it does not

correct the bridges' structural and functional deficiencies, nor does it extend the anticipated service life of the bridges - which implies continued risk of bridge instability - and it increases the cost and frequency of maintenance of the existing structures. In addition, the lack of appropriate treatment of stormwater runoff will continue to degrade the natural habitat of Biscayne Bay. Over time, continued deterioration of structural elements will pose safety hazards to the public or place intolerable restrictions on travel.

The objective of the TSM&O Alternative is to identify strategies that reduce existing traffic congestion and prevent its occurrence in areas that are currently not congested. These strategies are designed to modify travel behavior and increase system efficiency without costly infrastructure improvements. TSM&O strategies are implemented when one or more of the following occurs:

- Insufficient funds available to meet system improvement needs;
- Increased construction costs for new roadways and transit facilities;
- Increased need to improve operational efficiency; or
- Changes in travel patterns.

TSM&O options generally include traffic signal and intersection improvements, access management and transit improvements. The TSM&O Alternative includes those types of activities designed to maximize the utilization and efficiency of the present system. The alternative components that were considered include the following:

- Traffic signal optimization;
- Traffic operational improvements to include signing and pavement marking improvements;
- Enhanced bus service;
- Facilitated pedestrian and bicyclist measures; and
- Limited repairs on the existing bridges to improve operation.

Similar to the No-Action Alternative, the TSM&O Alternative would preserve the historic character of the bridges and does not appear to be an adverse effect to the significant resources under Section 106, but maintains the existing bridges in their current condition. There are no impacts to noise and air quality and no potential for contamination involvement. The alternative provides some transportation operation improvements on the corridor, but was deemed to be neither feasible nor prudent as it does not correct the bridges' structural and functional deficiencies. In addition, the lack of appropriate treatment of stormwater runoff will continue to degrade the natural habitat of Biscayne Bay. Over time, continued deterioration of structural elements will pose safety hazards to the public or place restrictions on travel.

☒ Recommendation (Mandatory)

This alternative fails the Section 4(f) *prudent and feasible* standard, and is therefore not recommended.

Alternative: Build on New Location (parallel construction/conversion to one-way pair)

☒ Structural Deficiencies

The Build on New Location Alternative would correct all structural deficiencies but is not feasible due to right-of-way constraints.

☒ Functional/Geometric Deficiencies

The Build on New Location Alternative would correct all functional and geometric deficiencies but is not feasible due to right-of-way constraints.

☒ Justification

(Summary describing constraints posed by terrain; adverse social, economic or environmental effects; engineering and economic considerations; and preservation standards)

The Venetian Causeway serves as the only viable access to the residential islands located along the causeway. The procedures implementing the Section 4(f) standards require analysis to determine alternative corridors that would avoid impact to the historic bridges and provide access to the islands. Investigations were conducted to construct bridges on a new location or parallel to the existing bridges. The Build on New Location Alternative would correct all structural, functional and geometric deficiencies. The existing bridges are located in what is realistically the only sensible location, a new location option would result in new bridge landings/access, and would likely result in an adverse effect to the resource group, and thus a use under 4(f). This alternative is not feasible and prudent given the location of the islands and the causeway:

1. The existing bridges are located at the only feasible and prudent site.
2. Building new bridges away from the present site would result in significant social, economic and environmental impacts.
3. The new bridges would require additional right-of-way to connect to the islands.

Similarly, building adjacent bridges require additional right-of-way to connect to the islands and would result in major social, economic and environmental impacts.

☒ Recommendation (Mandatory)

This alternative is determined to fail the Section 4(f) *prudent and feasible* standard, and is therefore not recommended.

Alternative: Rehabilitation of Historic Bridge without Affecting the Integrity of

the Bridge

☒ **Structural Deficiencies**

The Rehabilitation Alternative partially corrects the situation that causes the bridges to be considered structurally deficient. It does not address the need for increased vertical clearance at bridge 10 in order to reduce traffic interruptions. It partially meets the current safety standards and extends the bridges' service life by 25 years. It does not address the substandard bicycle lanes. Given the age, use, structure type, and exposure conditions of the bridges, additional periodic repairs will also be anticipated. The bridges will still need to be monitored, inspected and maintained with this alternative, and will require replacement after 25 years.

☒ **Functional/Geometric Deficiencies**

The Rehabilitation Alternative does not correct the situation that causes the bridges to be considered functionally or geometrically deficient. The typical sections would have substandard bicycle lanes. In addition, the rehabilitation alternative would not include changes to the existing vertical navigational clearances on Bridge 10. This alternative requires significant yearly maintenance, does not adequately address all functional and geometric deficiencies, and has a service life of only 25 years.

☒ **Justification**

(Summary describing constraints posed by terrain; adverse social, economic or environmental effects; engineering and economic considerations; and preservation standards)

Rehabilitation of the Venetian Causeway bridges is directed towards maintaining their eligibility for listing on the NRHP. Specific details of historic elements to be retained will need to be established in accordance with the Secretary of Interior's Standards for Rehabilitation and in keeping with Section 106 of the National Historic Preservation Act (NHPA). It is anticipated that the concrete bridge railings, light standards and arched form of the concrete superstructure will need to be retained in order to maintain the existing historic character. The historical and aesthetic significance of the existing bridges as well as the need to protect and preserve the bridges was an important consideration in developing rehabilitation alternatives. The evaluation criteria for the Bridge Rehabilitation Alternatives shown in **Table 5**, were developed with input from the Venetian Causeway residents, the Project Advisory Group and Cultural Resource Committee.

The Rehabilitation Alternative improves the structural deficiencies, and some functional deficiencies of the bridges, and extends bridge service life by 25 years. The alternative includes deck replacement, beam strengthening, and foundation strengthening (to meet current structural criteria for live load capacity), scour, wave force, and vessel impact resistances. A program of inspection and routine maintenance will be required to protect the bridges from the harsh marine environment. After 25 years, the bridges would need to be replaced using the Replacement Alternative. This would result in major cost impacts - as the life cycle cost analysis for this alternative was estimated at \$179 million, which is \$83 million higher than the Replacement Alternative cost estimate of \$96 million. Additionally, the Venetian Causeway serves as the only viable access to the residential islands located along the Causeway, and the continued disruption to traffic for the continued maintenance and construction activities associated with the bridges has a major social and economic impact to the residents and users of the causeway.

TABLE 5: EVALUATION CRITERIA FOR BRIDGE REHABILITATION

Criteria	Description
Service Life	Provide for a minimum of 25 years of service life following rehabilitation. It is anticipated that a typical program of inspection and routine maintenance will be performed during the remaining life of the structures. Given the age, use, structure type, and exposure conditions, additional periodic repairs should also be anticipated.
Safety	Meet current safety standards except as noted herein and approved by Design Exception and Variation as required.
Design Speed	35 mph (Posted 30 mph)
Structural Capacity	<ul style="list-style-type: none"> • Live Load Capacity – AASHTO HL-93 design load • Scour Resistance – Meet Standards • Wave Force Resistance – Meet Standards (Classification – Extremely Critical) • Vessel Impact Resistance – Meet Standards (Classification –Critical)
Traffic Railings	Meet current safety standards.
Bridge & Navigation Clearances	Meet existing horizontal and vertical navigation and bridge clearances.

The Rehabilitation Alternative improves the structural deficiencies, and some functional deficiencies of the bridges, and extends bridge service life by 25 years. The alternative includes deck replacement, beam strengthening, and foundation strengthening (to meet current structural criteria for live load capacity), scour, wave force, and vessel impact resistances. A program of inspection and routine maintenance will be required to protect the bridges from the harsh marine environment. After 25 years, the bridges would need to be replaced using the Replacement Alternative. This would result in major cost impacts - as the life cycle cost analysis for this alternative was estimated at \$179 million, which is \$83 million higher than the Replacement Alternative cost estimate of \$96 million. Additionally, the Venetian Causeway serves as the only viable access to the residential islands located along the Causeway, and the continued disruption to traffic for the continued maintenance and construction activities associated with the bridges has a major social and economic impact to the residents and users of the causeway.

The functional impacts of the corridor will only improve slightly with reduced travel lanes that allow for 1-ft. wider sidewalks - that will meet current minimum sidewalk requirements of the Americans with Disabilities Act (ADA). The existing 4-ft. shoulders will remain as they are, and will not meet the minimum 5.5-ft shoulder requirement for bike lanes - therefore not meeting current safety standards. This alternative will not address the heavy bicycle traffic and the concerns of the residents for bicycle safety on the confined bridge section.

An evaluation matrix was developed to compare and contrast the performance of alternatives in meeting the evaluation criteria, and to quantify its impacts to the natural, social, cultural, and physical environment. Numerical ratings for specific and relevant qualitative and quantitative criteria included a direct comparison of each of the alternatives so that the Preferred Alternative could be identified. Evaluation Criteria include:

- Purpose and Need
- Current Safety Standards
- Service Life
- Typical Section Functionality
- Structural Capacity

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- Hurricane Resistance
- Vessel Collision Resistance
- Bridge Clearances
- Maintenance of Traffic during construction
- Utility Services
- Economic Impacts
- Constructability
- Pedestrian and Bicycle Facilities
- Environmental Impacts, and
- Project Costs

A workshop was held with representatives from FDOT, Miami-Dade County, the project team and the public (using the ballot results from the Alternatives Public Workshop). The alternatives were compared and ranked based on the extent to which each alternative met each evaluation criterion.

The anticipated degree of impact to each criterion was ranked from low to high on a scale of zero to five - zero representing no benefit or not applicable, and five representing the least impacts or most beneficial. **See Table 6.**

The total score was calculated for each alternative to indicate the degree to which the alternative satisfies the evaluation criterion. **See Table 7.**

The evaluation matrix is used to:

- Clarify the benefits and shortcomings of the alternatives;
- Summarize likely or potential impacts; and to
- Present a score to show how well each alternative meets the project's purpose and need, and satisfies the evaluation criteria.

TABLE 6: EVALUATION CRITERION RANKING

Score	Description
0	No Benefit or Not Applicable
1	Most impactful or least benefit
2	Very impactful or little benefit
3	Moderate impact or moderate benefit
4	Little impact or very beneficial
5	Least impactful or most benefit

The alternative with the highest numerical total points represented the most desirable alternative. As a result, the Rehabilitation Alternative was ranked second with 75 total points. Given the cost of this alternative, the extent of repairs that are likely to be required, and the ranking in the evaluation matrix, the Rehabilitation Alternative was eliminated from further consideration.

☒ Recommendation (Mandatory)

This alternative fails the Section 4(f) *prudent and feasible* standard, and is therefore not recommended.

TABLE 7: EVALUATION MATRIX

Venetian Causeway Bridges Project Development and Environment (PD&E) Study from Bayshore Drive (Miami) to Purdy Avenue (Miami Beach)

Criteria		No Build Alternatives				Build Alternatives			
						Rehabilitation		Replacement	
		Alt 1 - No-Action	Score	Alt 2 - Transportation System Management and Operations	Score	Alt 4 - Rehabilitation with Beam Strengthening and Alt M1 - Bascule Bridge Rehabilitation	Score	Alt 7 - Arched Beams with T1 - Venetian Railing and Alt M4 - Double Leaf Bascule Bridge	Score
Meets Purpose and Need		No	0	No	0	Yes	3	Yes	5
Meets Current Safety Standards		No	1	No	1	Partially	3	Yes	5
Service Life		0-3 years	1	0-8 years	1	25 years	2	75 years	5
Typical Sectional Functionality		Substandard sidewalks and bicycle lanes	1	Substandard sidewalks and bicycle lanes	1	Substandard sidewalks and bicycle lanes	2	Meets current criteria	5
Structural Capacity		H-15	1	H-15	1	HL-93	5	HL-93	5
Hurricane Resistance		Not Satisfied	0	Not Satisfied	0	Satisfied	5	Satisfied	5
Vessel Collision Resistance		Not Satisfied	0	Not Satisfied	0	Satisfied	5	Satisfied	5
Bridge Clearances		Remain	1	Remain	1	Remain	1	Improved (Raised 1')	2
Maintenance of Traffic During Construction		N/A	5	N/A	5	82 months	1	48 months (phased construction)	3
Utility Services		Remain	3	Remain	3	Remain	3	Improved	5
Economic Impact		None	1	None	1	None	3	Improved	5
Constructability		No Impact	5	Minimal	4	Major Impact	1	Some Impact	3
Pedestrian and Bicycle Facilities		Remain as is	1	Remain as is	1	Pedestrian - Improved Bicycle - Remain as is	2	Improved	5
Environmental Impacts									
NATURAL	Benthic Resources	no impact	5	no impact	5	impact to corals from scour protection, substructure & beam strengthening	3	impact to corals from scour protection, substructure replacement, spoil island shoreline	2
	Essential Fish Habitat	no impact	5	no impact	5	minimal impacts from construction means and methods	4	minimal impacts from construction means and methods/minimal impact to shoreline of spoil islands	3
	Threatened & Endangered Species	no impact	5	no impact	5	minimal impacts from construction means and methods	4	minimal impacts from construction means and methods	3
	Water Quality	Scuppers discharge to OFW	0	Scuppers discharge to OFW	0	Scuppers discharge to OFW	0	temporary impacts during construction/overall benefit	5
PHYSICAL	Noise Impacts	no impact	5	no impact	5	minimal impacts from construction means and methods	5	temporary impacts during construction	5
	Air Quality	no impact	5	no impact	5	minimal impacts from construction means and methods	5	temporary impacts during construction	5
	Contamination Impacts	Not Applicable	0	Not Applicable	0	Not Applicable	0	Not Applicable	0
Cultural and Historic	Historic - Section 106/4(f)	No Adverse Effect	5	No Adverse Effect	5	No Adverse Effect - some impact to resource	3	Adverse Effect - Resource replaced, National Register of Historic Places listing may be affected	1
SOCIAL and ECONOMIC	Aesthetic/Visual Impacts	utilities remain	3	utilities remain	3	utilities remain	4	wider section, bridge aesthetics replicated, utilities hidden, arch and railings remain	4
	Recreational Areas	Not Applicable	0	Not Applicable	0	Not Applicable	0	Not Applicable	0
	Community Cohesion	no impact	3	no impact	3	temporary impact to access during construction	3	temporary impact to access during construction	5
Project Costs									
Engineering Costs (Bridges only)		\$ -	5	\$ -	5	\$6.9 Million	3	\$11.7 Million	1
Construction Costs (Bridges only)		\$ -	5	\$ -	5	\$53 Million	3	\$90 Million	1
Yearly Maintenance Costs (first 25 years)		\$1.4 Million	1	\$1.4 Million	1	\$1.4 Million	1	\$100,000	5
Life Cycle Costs over 75 years		Unknown	0	Unknown	0	\$179 Million	1	\$96 Million	3
Total Points			67		66		75		101

Alternative: Replacement

☒ Structural Deficiencies

The Replacement Alternative corrects the situation that causes the bridge to be considered structurally deficient or significantly deteriorated. It addresses all the structural deficiencies and the need for wave loading, vessel collision, load carrying capacity for the bridges and provides an increased vertical clearance at Bridge 10 in order to reduce traffic interruptions. It meets all the current safety standards and extends the bridges' service life by 75 years.

☒ Functional/Geometric Deficiencies

The Replacement Alternative corrects the situation that causes the bridge to be considered functionally or geometrically deficient. It addresses the substandard bicycle lanes and sidewalks. In addition, the replacement alternative would include changes to the existing vertical navigational clearances at Bridge 10. This alternative does not require significant yearly maintenance, addresses all functional and geometric deficiencies, and has a service life of 75 years.

☒ Justification

(Summary describing constraints posed by terrain; adverse social, economic or environmental effects; engineering and economic considerations; and preservation standards)

As shown in the evaluation matrix, Alternative 7 with T1 and M4 received the highest score of 101. This alternative consists of the Replacement Alternative 7 Arched Beams with T1 Venetian Railing and M4 Double Leaf Bascule Bridge, and is the Preferred Alternative. The Preferred Alternative does not include work to Bridge 1.

The Replacement Alternative replaces existing bridges 2 through 12 with new structures. Bridge 1 has already been replaced and is not included. The new bridge structures will be built along the same alignment, and will meet all the governing design regulations (including those for vehicle loading, wave force resistance, and vessel impact resistance). The structures will be designed to be durable and corrosion resistant. The resulting corridor will be improved as the functionally obsolete aspects of the existing bridges would be eliminated and safer bridges provided. The new bridges will provide 75 years of service life, minimize the cost of bridge maintenance activities - and the disruption it causes to normal traffic flow on the corridor for residents and commuters.

The vertical alignment for low-level fixed bridges 2 through 8 and 12 was developed to increase the vertical clearance of the bridges over the bay, address sea-level rise, and meet ADA and design criteria for this class of roadway - without negatively impacting the adjacent intersections and driveways or encroach on adjacent properties. The arched beams of the fixed bridges will mimic the dimensions and appearance of the original structure. The new bridge typical sections will be increased by 16-ft., from the existing 41-ft.10-in. to 57-ft. 10-in., to provide wider sidewalks and bicycle lanes. No right-of-way acquisition is anticipated.

The higher vertical clearances at Bascule Bridge 10 and the improved channel will result in improved navigational traffic on Biscayne Bay for the boating community and fewer bridge openings. This will improve the response time of emergency vehicles that use the

bridge crossings, and that frequently get delayed at present during the frequent openings caused by the existing lower vertical clearance.

This alternative will have minimal environmental impacts overall. There are no impacts to noise and air quality, and the potential for contamination is limited to the work associated with the bridge approaches at the east and west project termini. With no right-of-way acquisition required, there are no permanent impacts to the community. There will be minimal disruption to the traveling public during construction, since traffic will continue to use the bridges as they are replaced. There is no proposed permanent impact to access or connectivity along the corridor. There will be no use of the three Section 4(f) recreational resources along the corridor, which are, Belle Isle Park, Maurice Gibbs Memorial Park, and Florida Circumnavigational Saltwater Paddling Trail. This alternative results in 0.71 acres of permanent shading of Biscayne Bay, and another surface water and essential fish habitat - due to the widening of the bridges. Temporary shading from barge use may also occur during construction. However, no impacts to wetlands located along the causeway or impacts to listed species are anticipated. Best Management Practices (BMPs) and Standard Construction Conditions for In-Water Work for the West Indian Manatee, small tooth sawfish, and sea turtles will be employed during construction - to minimize impacts to water quality and species.

The Replacement Alternative will have an adverse effect on the significant historic resources - due to removal of the original bridges. However, measures to minimize harm will be provided. These measures include a project design that acknowledges the historic appearance of the bridges; incorporating a low profile of the bridges and appearance of the original structure; using arched beams with same span configurations; geometrically designed concrete bridge railings that recognize the historic railing design; including historically sensitive bridge lighting fixtures; and incorporating a historically sensitive bridge tender house design for the New East Bascule Bridge.

The Replacement Alternative resulted in the highest numerical ranking in the Evaluation Matrix with 101 total points. As such it was determined to be the Preferred Alternative. The Replacement Alternative is the least expensive alternative, considering annualized capital and maintenance costs. The life-cycle cost analysis for this alternative was estimated at \$96 million. It provides a service life of 75 years, meets all current design criteria, and improves the bicycle and pedestrian mobility facilities.

☒ Recommendation (Mandatory)

This alternative meets the Section 4(f) *prudent and feasible* standard and **is recommended.**

VI. Measures to Minimize Harm

Verify that the project includes all possible planning to minimize harm.

- ☐ For bridges that are to be rehabilitated, the historic integrity of the bridge is preserved, to the greatest extent possible, consistent with unavoidable transportation needs, safety, and load requirements;
- ☒ For bridges that are to be rehabilitated to the point that the historic integrity is affected or that are to be moved or demolished, the FDOT ensures that, in accordance with the Historic American Engineering Record (HAER) standards, or other suitable means developed through consultation, fully adequate records are made of the bridge;
- ☒ For bridges that are to be replaced, the existing bridge is made available for an alternative use, provided a responsible party agrees to maintain and preserve the bridge; and
- ☒ For bridges that are adversely affected, agreement among the SHPO, ACHP (if participating) and FDOT is reached through the Section 106 process of the NHPA on measures to minimize harm and those measures are incorporated into the project. This programmatic Section 4(f) evaluation does not apply to projects where such an agreement cannot be reached.

Comments:

The proposed action will require demolition and complete replacement of the existing historic Venetian Causeway bridges 2 through 12. The historic elements of the Causeway includes the octagonal concrete entrance towers; the low profile of the bridges; the concrete arched beams; the geometrically designed bridge railings; the lighting poles and fixtures; and the historically designed East Bridge Tender House. The original railings were replaced - as part of the 1996 to 1999 rehabilitation of the bridges - with railings that mimic the appearance of the original. The existing light poles and fixtures are a replicate of the original, and were constructed as part of the 1996 to 1999 rehabilitation.

Measures to minimize harm include:

- Historic bridge recordation in accordance with Historic American Buildings Survey/ Historic American Engineering Record (HABS/HAER) Standards, including Level II documentation and photographs.
- A project design that acknowledges the historic appearance of the bridges; incorporating low profile bridges; arched beams with same span configurations; geometrically designed concrete bridge railings that recognize the historic railing design; historically sensitive bridge lighting fixtures; and historically sensitive bridge tender house design for the New East Bascule Bridge.
- The bridges to be replaced will be made available for an alternative use, if feasible. The octagonal entrance towers will not be marketed as they will remain in the western entrance of the Causeway - as part of the Venetian Islands Resource Group (8DA14395). The concrete arched beams are unsuitable, as they are severely deteriorated and covered with repairs. The railings are not original but could be dismantled and marketed.

Venetian Causeway Bridges Project Development and Environment (PD&E) Study from Bayshore Drive (Miami) to Purdy Avenue (Miami Beach)

The Project Team will coordinate and consult with the Office of Environmental Management (OEM) and with the State Historic Preservation Officer (SHPO) to discuss a feasible marketing approach. The measures to minimize harm were developed in consultation with the SHPO.

VII. Mitigation Commitment

Describe and attach the mitigation agreed to in consultation with SHPO and other consulting parties.

[A copy of the executed Memorandum of Agreement (MOA) will be attached and prepared with input from affected parties. This document will include measures to minimize harm and mitigate adverse effects to the Venetian Island Resource Group.]

VIII. Documentation

The following MUST be attached to this checklist to ensure proper documentation of the Historic Bridge Programmatic Section 4(f):

1. Brief project description
2. Eligibility Determination of Historic Bridge
3. Historic Bridge Report
4. A detailed map of the Section 4(f) property including:
 - a. Current and proposed ROW
 - b. Property Boundaries
5. Photographs of the bridge detailing conditions cited in alternatives analysis
6. Executed Memorandum of Agreement resolving adverse effects or signed concurrence letter from the Florida SHPO
7. Any letters with consulting parties
8. Detour Map (as needed)

A Historic Bridge Replacement Programmatic Section 4(f) Documentation Report was included as part of the project file.

IX. Summary and Approval

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 14, 2016, and executed by FHWA and FDOT.

The proposed project meets all the applicable criteria set forth in the Programmatic Section 4(f) Evaluation and Approval requirements for FHWA funded projects which necessitate the use of Historic Bridges (see [Section 4\(f\) Reference Resources Page](#)). All alternatives set forth in the subject programmatic were fully evaluated and the findings made are clearly applicable to this project. There are no feasible and prudent alternatives to the use of the historic bridge; and

The project includes all possible planning to minimize harm to the historic property. FDOT will include the measures to minimize harm as environmental commitments as part of the NEPA Document for the proposed project.

**Venetian Causeway Bridges Project Development and Environment (PD&E) Study
from Bayshore Drive (Miami) to Purdy Avenue (Miami Beach)**

X. Approval Signatures

District: I have reviewed this evaluation and all attached documentation and confirm that the proposed project meets the requirements of 23 CFR 774 for a Historic Bridge Programmatic Section 4(f) finding.

Signature: _____ Date: _____
Preparer

Signature: _____ Date: _____
Environmental Manager, or designee

OEM Concurrence: Based upon the above considerations, this a Use of Historic Bridge Programmatic Section 4(f) satisfies the requirements of 23 CFR 774.

Signature: _____ Date: _____
Director of OEM or designee

**MEMORANDUM OF AGREEMENT
BETWEEN
THE FLORIDA DEPARTMENT OF TRANSPORTATION AND
THE FLORIDA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE
VENETIAN CAUSEWAY FROM NORTH BAYSHORE DRIVE (CITY OF
MIAMI) TO PURDY AVENUE (CITY OF MIAMI BEACH) PROJECT,
MIAMI-DADE COUNTY, FLORIDA**

WHEREAS, Pursuant to 23 United States Code (U.S.C.) § 327 and the implementing Memorandum of Understanding (MOU) executed on December 14, 2016, the Florida Department of Transportation (FDOT) has assumed Federal Highway Administration's (FHWA) responsibilities under the National Environmental Policy Act (NEPA) for highway projects on the State Highway System (SHS) and Local Agency Program (LAP) projects off the SHS; and

WHEREAS, in accordance with the MOU, FDOT's assumption of FHWA's responsibilities under NEPA for highway projects includes assumption of responsibilities for compliance with 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108); and

WHEREAS, FDOT proposes to provide federal financial assistance to Miami-Dade County for the Venetian Causeway improvement project from North Bayshore Drive (City of Miami) to Purdy Avenue (City of Miami Beach) (Financial Management Number 422713-2-22-01) (**the Project**); and

WHEREAS, FDOT has determined that **the Project** represents an undertaking in accordance with 36 CFR § 800.3(a); and

WHEREAS, **the Project** includes the replacement of 11 of the 12 bridge structures listed in the National Register of Historic Places (NRHP) which contribute to the Venetian Islands Resource Group (Florida Master Site File [FMSF] No. 8DA04736), a resource group determined eligible for listing in the NRHP; and

WHEREAS, Miami-Dade County will be designing and constructing the Project, FDOT has consulted with Miami-Dade County regarding the effects of the proposed project on historic properties pursuant to the requirements of 36 CFR Part 800 and has designated Miami-Dade County as a concurring party to this agreement; and

WHEREAS, FDOT has defined **the Project's** area of potential effects (APE) for historic properties as the existing bridges, the related earthen structures, and the parcels immediately adjacent to the current bridge touch down points (see *Attachment A*); and

WHEREAS, FDOT has consulted with the Florida State Historic Preservation Officer (SHPO) pursuant to the requirements of 36 CFR Part 800 and has determined that **the Project** will have an adverse effect on the Venetian Islands Resource Group (FMSF 8DA04736), which is

eligible for listing in the NRHP and locally designated by the Cities of Miami and Miami Beach as a historic landmark, and includes the Historic Venetian Causeway Bridges, which are listed in the NRHP; and

WHEREAS, FDOT has consulted with the City of Miami, the City of Miami Beach, the United States Coast Guard, the United States Army Corps of Engineers, the Miami Design Preservation League, and Dade Heritage Trust regarding the effects of **the Project** on historic properties; and

WHEREAS, FDOT has provided opportunities for public review and comment regarding the effects of **the Project** on historic properties; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1) FDOT has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect determination with specified documentation and has invited the ACHP to comment and participate in consultation, and the ACHP has chosen not to participate pursuant to 36 CFR § 800.6(a)(1)(iii); and

NOW, THEREFORE, FDOT and the SHPO agree that **the Project** shall be implemented in accordance with the following stipulations to take into account the effect of **the Project** on historic properties.

STIPULATIONS

Prior to initiating any ground disturbing or demolition work, excluding geotechnical and other necessary pre-construction activities, associated with **the Project**, FDOT shall ensure that the following measures are carried out:

I. PROJECT DESIGN

- A. Miami-Dade County shall design **the Project** to limit construction impacts to within the right-of-way and elevations delineated on the Preferred Alternative (included in **Attachment B**). The design of the replacement bridges will reference the historic appearance of the original bridges by incorporating a low profile and appearance of the original structures, using arched beams with the same span configurations, geometrically designed concrete bridge railings that recognize the historic railing design, historically sensitive bridge lighting fixtures, and historically sensitive Bridge Tender House design for the New East Bascule Bridge (Bridge 10). The two (2) historic octagonal entrance towers will not be affected as part of **the Project** and shall remain in their current location.
- B. Miami-Dade County shall ensure that the design of **the Project** will comply with the FDOT Design Manual and Standard Plans.
- C. Should there be any alterations to the project design that could result in adverse effects to historic properties that are not addressed in this agreement, FDOT shall notify SHPO and other appropriate consulting parties and provide the parties with an opportunity to review and comment on the alterations.

II. DOCUMENTATION OF THE VENETIAN CAUSEWAY RESOURCE GROUP

- A. Based on coordination with the U.S. Department of the Interior and the NPS Interior Region 2 Office, and prior to authorizing any demolition or other activity that could adversely affect the bridges and the earthen causeway landings that are components of the Venetian Causeway Resource Group (8DA04736), the Venetian Causeway Bridges (8DA14373-8DA14384) and the earthen causeway landings shall be documented in accordance with the standards and guidelines of the Historic American Landscapes Survey (HALS) Level II

(<https://www.nps.gov/hdp/standards/HALS/HALSHistoryGuidelines.pdf>).

FDOT will ensure that all documentation is completed by Miami-Dade County and accepted by the NPS prior to demolition. The documentation will be prepared, but not limited to, the following:

1. Detailed written historical and descriptive data prepared in accordance with format guidelines containing a construction history of the overall causeway, bridges, and earthen causeway landings, descriptions of the resources including alterations, a description of the overall causeway and changes, any historical photographs in the supplementary materials section where available and produced in accordance with the U.S. Copyright Act, as amended, and a site plan; and
 2. Reproduction of existing “as built” and existing drawings included within the written data; and
 3. Large-format (4” x 5” or larger negative size) photographs of the overall causeway, bridges, and earthen causeway landings processed for archival permanence in accordance with photographic specifications (<https://www.nps.gov/hdp/standards/PhotoGuidelines.pdf>); and
 4. Photo locations keyed to the site plan and included with the “Index to Photographs”
- B. Miami-Dade County shall provide the draft HALS documentation (non-archival format, electronic version) to FDOT District 6 for submittal to NPS, FDOT Office of Environmental Management (OEM), and SHPO for concurrent review.
- C. Prior to demolition of the structure, final edits shall be made and FDOT District 6 will submit the final documentation as follows:
1. An archival copy to the NPS Southeast Regional Office, per HALS guidelines (<https://www.nps.gov/hdp/standards/Transmittal.pdf>); and
 2. An archival copy and an electronic copy to the Florida SHPO for inclusion in the FMSF; and
 3. Non-archival and electronic copies to OEM, Miami-Dade County, City of Miami, City of Miami Beach, and History Miami.

III. PUBLIC RECOGNITION AND EDUCATION

- A. In consultation with SHPO and consulting parties, and through the Florida Division of Historical Resources Marker Program, Miami-Dade County shall develop text for and install four (4) Florida Historical Markers along the Venetian Causeway. Florida Historical Markers will include a narrative description of the history and significance of the Venetian Causeway Resource Group (8DA04736) to the development of Miami and Miami Beach; these markers shall be incorporated into the overall design of **the Project**.
- B. Two (2) of the Historical Markers will be placed at the Western end of the Venetian Causeway (one on the north and south side of the roadway) and the other two (2) Historical Markers will be placed at the Eastern end of the Causeway (one on the north and south side of the roadway).

IV. MIAMI-DADE COUNTY BRIDGE CONTEXT

- A. Miami-Dade County shall produce a historical context report for bridges in Miami-Dade County that will extend until 1975, for the purpose of providing a consolidated source of information on area historic bridges.
- B. The report will also compile information from previous studies and reports and provide an inventory of bridges in Miami-Dade County.
- C. Copies of the final documentation shall be provided by Miami-Dade County to FDOT District 6, OEM, SHPO, City of Miami, City of Miami Beach, and History Miami.

V. PROFESSIONAL STANDARDS

All archaeological and historic preservation work carried out pursuant to this Agreement shall be conducted by, or under the direct supervision of, a person or persons meeting the Secretary of the Interior's Professional Qualification Standards for Archaeology and Historic Preservation as set forth at 62 FR 33708-33723 (June 20, 1997) and 36 CFR Part 61 Appendix A.

VI. DURATION

This Memorandum of Agreement will expire if its terms are not carried out within seven (7) years from the date of execution. Prior to expiration, the parties may agree to extend the timeframe for fulfillment of the terms by letter agreement.

VII. POST-REVIEW DISCOVERIES

If properties are discovered that may be historically significant, or if unanticipated effects on historic properties are found, FDOT and Miami-Dade County shall implement the Post Review Discovery Plan established in Stipulation X of the March 15, 2016 Programmatic Agreement among the ACHP, SHPO, and FDOT, as amended on June 4, 2017.

In the unlikely event that human skeletal remains or associated burial artifacts are uncovered within the project area during construction, all work in that area must stop. The individual in charge of the activity that leads to the discovery must notify the Project Engineer and the FDOT District 6 Cultural Resources Coordinator. The discovery must be reported to local law enforcement and the appropriate medical examiner. The medical examiner will determine whether the State Archaeologist should be contacted per the requirements of Section 872.05, Florida Statutes, and Rule 1A-44.004, Florida Administrative Code (FAC).

VIII. REVIEW STIPULATION

Miami-Dade County, FDOT/OEM shall afford the SHPO and other consulting parties, as appropriate and including the NPS, a 30-day period for review and comment following the receipt of delivery of the design plans and documentation stipulated in Sections II, III, and IV described above. Any objections to the findings or plans proposed in these submittals will be addressed in accordance with Stipulation IX, below.

IX. DISPUTE RESOLUTION

Should any signatory to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, FDOT/OEM shall consult with such party to resolve the objection. If FDOT/OEM determines that such objection cannot be resolved, FDOT/OEM shall:

- A. Forward all documentation relevant to the dispute, including FDOT/OEM's proposed resolution, to the ACHP. The ACHP shall provide FDOT/OEM its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FDOT/OEM shall prepare a written response that considers any timely advice or comments regarding the dispute from the ACHP, signatories, and concurring parties, and provide them with a copy of this written response. FDOT/OEM will then proceed according to its final decision.
- B. Make a final decision on the dispute and proceed accordingly if the ACHP does not provide its advice regarding the dispute within thirty (30) days. Prior to reaching such a final decision, FDOT/OEM shall prepare a written response that considers any timely comments regarding the dispute from the signatories to the MOA and provide them and the ACHP with a copy of the written response.
- C. Fulfill its responsibility to carry out all other actions subject to the terms of

this MOA that are not the subject of the dispute and remain unchanged.

X. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The signatories must signify their acceptance of the proposed changes to the MOA in writing within 30 days of their receipt. The amendment will be effective on the date a copy signed by the signatories is filed with the ACHP. In accordance with 36 CFR § 800.6(b)(7), if the ACHP was not a signatory to the original agreement, and the signatories execute an amended agreement, FDOT/OEM shall file the amended agreement with the ACHP.

XI. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories in an effort to amend the MOA per Stipulation X, above. If within thirty (30) days (or another time agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on **the Project**, FDOT/OEM must either (a) execute a MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. FDOT/OEM shall notify the signatories as to the course of action it will pursue.

Execution of this MOA by Miami-Dade County, FDOT OEM, and SHPO and implementation of its terms is evidence that Miami-Dade County and FDOT have taken into account the effects of this undertaking on historic properties per the requirements of Section 106 (Public Law 113-287 [Title 54 U.S.C. 306108]), and 36 CFR Part 800 (Protection of Historic Properties).

SIGNATORIES:

FLORIDA STATE HISTORIC PRESERVATION OFFICER

Date
Timothy A. Parsons
Director, Division of Historical Resources
State Historic Preservation Officer

FLORIDA DEPARTMENT OF TRANSPORTATION

Date
Jason Watts
Director, Office of Environmental Management

CONCURRING PARTIES:

FLORIDA DEPARTMENT OF TRANSPORTATION, DISTRICT SIX

_____ Date

Daniel Iglesias, P.E.

Director of Transportation Development

MIAMI-DADE COUNTY

_____ Date

Alice N. Bravo, P.E.

Director, Miami-Dade County Department of Transportation and Public Works

DRAFT

Appendix E: Section 106 Coordination

- E1 SHPO Concurrence Letter – June 25, 2019**
- E2 SHPO Effects Letter – February 18, 2020**
- E3 ACHP Letter – August 24, 2020**
- E4 Memorandum of Agreement**

E1 SHPO Concurrence Letter



Florida Department of Transportation

RON DESANTIS
GOVERNOR

1000 NW 111th Avenue
Miami, FL 33172-5800

KEVIN J. THIBAUT, P.E.
SECRETARY

April 17, 2019

Timothy A. Parsons, Ph.D.
Director, Division of Historical Resources, and
State Historic Preservation Officer
R.A. Gray Building
500 S. Bronough Street
Tallahassee FL 32399-0250

2019 APR 23 A 9:25
BUREAU OF
HISTORIC PRESERVATION

Attn: Dr. Adrienne Daggett, Transportation Compliance Review Program

Re: Cultural Resource Assessment Survey (CRAS) for the Venetian Causeway
Bridges from North Bayshore Drive in the City of Miami to Purdy Avenue in the
City of Miami Beach, Miami-Dade County, Florida
Financial Planning ID [FPID] No. 422713-2-22-01

Dear Dr. Parsons,

Please find the Cultural Resource Assessment Survey (CRAS) for the Venetian Causeway Bridges from North Bayshore Drive in the City of Miami to Purdy Avenue in the City of Miami Beach, Miami-Dade County, Florida (Financial Planning ID [FPID] No. 422713-2-22-01). The purpose of the proposed project is to address identified structural and functional deficiencies of the twelve existing bridges through potential alternatives such as replacement or rehabilitation. The objective of this CRAS was to identify cultural resources and assess their eligibility for listing in the National Register of Historic Places (National Register) according to the criteria set forth in 36 CFR Section 60.4.

The Venetian Causeway is approximately 2.5 miles long and is primarily a two-lane undivided facility that provides a major link between the City of Miami and the City of Miami Beach in Miami-Dade County, Florida. The Causeway includes ten fixed span bridges and two bascule leaf span bridges over the Intracoastal Waterway (bridge numbers 874459, 874460, 874461, 874463, 874465, 874466, 874471, 874472, 874473, 874474, 874477, and 874481) extending from North Bayshore Drive (City of Miami) to Purdy Avenue (City of Miami Beach). The purpose of the proposed project is to address identified structural and functional deficiencies of the twelve existing bridges through potential alternatives such as replacement or rehabilitation.

This assessment complies with Section 106 of the *National Historic Preservation Act (NHPA)* of 1966 (Public Law 89-665, as amended), as implemented by 36 CFR 800 -- *Protection of Historic Properties* (incorporating amendments effective August 5, 2004); Stipulation VII of the *Programmatic Agreement among the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation (ACHP), the Florida Division of Historical Resources (FDHR), the State Historic Preservation Officer (SHPO), and the FDOT Regarding Implementation of the Federal-Aid Highway Program in Florida* (Section 106 Programmatic Agreement, effective March 2016, amended June 7, 2017); Section 102 of the *National Environmental Policy Act (NEPA)* of 1969, as amended (42 USC 4321 et seq.), as implemented by the regulations of the Council on Environmental Quality (CEQ) (40 CFR Parts 1500–1508); Section 4(f) of the *Department of Transportation Act of 1966*, as amended (49 USC 303 and 23 USC 138); the revised Chapter 267, *Florida Statutes (F.S.)*; and the standards embodied in the FDHR's *Cultural Resource Management Standards and Operational Manual* (February 2003), and Chapter 1A-46 (*Archaeological and Historical Report Standards and Guidelines*), *Florida Administrative Code*. In addition, this report was prepared in conformity with standards set forth in Part 2, Chapter 8 (*Archaeological and Historical Resources*) of the *FDOT Project Development and Environment Manual* (effective June 14, 2017). All work also conforms to professional guidelines set forth in the *Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation* (48 FR 44716, as amended and annotated).

The archaeological APE consists of bridges and associated abutments located on man-made land. The substructural features associated with the bridges are also in an area of Biscayne Bay that has been subjected to dredging and disturbance resulting from installation of underwater cables and pipelines. Based on this, subsurface testing for archaeological sites was not conducted and the archaeological portions of the investigation focused on providing relevant documentation to support the low potential for archaeological sites.

The historic resources survey identified a total of 42 historic resources. There were two previously recorded buildings (8DA11740 and 8DA11754), two previously recorded linear resources (8DA11375 and 8DA12366), two newly recorded resource groups (8DA14395 and 8DA15805), twelve newly identified bridges (8DA14373-8DA14384) and twenty-four newly identified buildings (8DA14385-8DA14393, 8DA15806-8DA15821). The National Register-listed resource, Venetian Causeway (8DA4736), was converted to the Venetian Islands Resource Group (8DA14395) and includes the twelve individual bridges (8DA14373-8DA14384) that make up the Causeway, as well as six man-made islands and five earthen causeway landings that are contributing features within the historic designed landscape.

Two previously recorded resources are considered or determined to be National Register-ineligible. The previously recorded building, Venetian Isles Apartment (8DA11740), has not been evaluated by the SHPO, however the previous surveyor determined that the building was National Register-ineligible. Given its common design and lack of historic significance, this building is considered ineligible for listing in the National Register individually or as part of a historic district. The previously recorded

linear resource, Collins Canal Seawall (8DA12366), was determined to be National Register-ineligible by the SHPO on May 4, 2012.

Two previously recorded resources have been determined to be National Register-eligible. The previously recorded building, Terrace Towers (8DA11754), was determined to be National Register-eligible by the SHPO on January 5, 2011. It is considered eligible for listing in the National Register as the work of a master under Criterion C. The previously recorded linear resource, Collins Canal (8DA11375), was determined to be National Register-eligible by the SHPO on May 4, 2012. It is considered eligible for listing in the National Register under Criteria A and C in the categories of Transportation, Engineering, and Community Planning and Development.

As a result of the current project, the Venetian Islands Resource Group (8DA14395) was documented. This resource group subsumes the National Register-listed Venetian Causeway (8DA4736). Due to severe deterioration, the bridges are in need of rehabilitation or replacement, and spans of the westernmost bridge were recently replaced following consultation with SHPO. Each of the twelve bridges were given individual FMSF numbers and were included within the newly identified Venetian Islands Resource Group (8DA14395). In consultation with the SHPO/FMSF, the FMSF for the Venetian Causeway (8DA4736) will be converted from its current classification as a historic bridge to a resource group. The resource group classification serves as a comprehensive tool for documenting the entire landscape of the Venetian Islands, including the bridges.

While the Venetian Causeway remains National Register-listed, the individual bridges (8DA14373-8DA14384) were evaluated as part of the current project and are considered contributing resources within the Venetian Islands Resource Group (8DA14395). Additionally, the six islands and five earthen causeway landings of the Venetian Islands were included within this historic designed landscape. The resource group encompasses a designed landscape of man-made islands, bridges, and earthen causeways that resulted from developers' ambitious plans to create a residential development on Biscayne Bay. Despite the replacement of spans of the westernmost bridge in 2015, the Venetian Islands Resource Group (8DA14395) is considered National Register-eligible under Criteria A and C in the categories of Community Planning and Development, Transportation, Architecture, and Engineering.

The twenty-four newly identified historic buildings (8DA14385-8DA14393, 8DA15806-8DA15821) and one newly identified historic resource group (8DA15805) are considered National Register-ineligible, individually or as part of a historic district.

We kindly request that this cover letter and enclosed document be reviewed, and concurrence provided by your office. This information is provided in accordance with the provisions contained in 36 CFR, Part 800, as well as the provisions contained in the revised F.S. Chapter 267. If you have any questions regarding the subject project, please contact me at Barbara.Culhane@dot.state.fl.us or (305) 470-5231.

Sincerely,

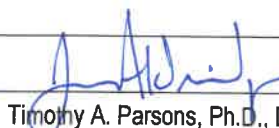


Barbara B. Culhane, M.S., A.I.C.P.
District Cultural Resources Coordinator/
Environmental Supervisor II

The Florida State Historic Preservation Officer finds the attached Cultural Resource Assessment Survey Report complete and sufficient and ☒ concurs/ ☐ does not concur with the recommendations and findings provided in this cover letter for SHPO/FDHR Project File Number 2016-42858. Or, the SHPO finds the attached document contains _____ insufficient information.

In accordance with the Programmatic Agreement among the FHWA, ACHP, FDHR, SHPO, and FDOT Regarding Implementation of the Federal-Aid Highway Program in Florida, if providing concurrence with a finding of No Historic Properties Affected for a project as a whole, or to No Adverse Effect on a specific historic property, SHPO shall presume that FHWA will proceed with a *de minimis* Section 4(f) finding at its discretion for the use of land from the historic property.

SHPO Comments:

For  Deputy SHPO

Timothy A. Parsons, Ph.D., Director, and
State Historic Preservation Officer
Florida Division of Historical Resources

6/25/2019
[DATE]

E2 SHPO Effects Letter



Florida Department of Transportation

RON DESANTIS
GOVERNOR

1000 NW 111th Avenue
Miami, FL 33172-5800

KEVIN J. THIBAUT, P.E.
SECRETARY

February 4, 2020

Timothy A. Parsons, Ph.D.
Director, Division of Historical Resources, and
State Historic Preservation Officer
R.A. Gray Building
500 S. Bronough Street
Tallahassee FL 32399-0250

2020 FEB -7 P 2:22
RECEIVED
BUREAU OF
HISTORIC PRESERVATION

Attn: Dr. Adrienne Daggett, Transportation Compliance Review Program

Re: Revised Section 106 Evaluation and Determination of Effects Case Study Report for the Venetian Causeway Bridges from North Bayshore Drive in the City of Miami to Purdy Avenue in the City of Miami Beach, Miami-Dade County, Florida (Financial Planning ID [FPID] No. 422713-2-22-01)

Dear Dr. Parsons,

Please find the revised Section 106 Evaluation and Determination of Effects Case Study Report for the Venetian Causeway Bridges from North Bayshore Drive in the City of Miami to Purdy Avenue in the City of Miami Beach, Miami-Dade County, Florida ([FPID] No. 422713-2-22-01). This report, which should replace the effects document (SHPO/FDHR number 2016-4285C) that was submitted to your office in October of 2019, was prepared for the Florida Department of Transportation (FDOT), District 6 by Janus Research. In accordance with the provisions of Section 106 of the *National Historic Preservation Act (NHPA)* of 1966 (Public Law 89-665, as amended), as implemented by 36 CFR 800 -- *Protection of Historic Properties* (incorporating amendments effective August 5, 2004), this case study report documents potential effects of the proposed improvements to the *National Register of Historic Places* (National Register)-listed and eligible resources identified during the *Cultural Resources Assessment Survey (CRAS)* for the Venetian Causeway Bridges from North Bayshore Drive in the City of Miami to Purdy Avenue in the City of Miami Beach.

The 2019 CRAS resulted in the identification of three significant resources: Collins Canal (8DA11375), Terrace Towers (8DA11754), and the Venetian Islands Resource Group (8DA14395). This report was prepared as part of a project studying several alternatives for the rehabilitation or replacement of the twelve historic Venetian Causeway bridges, which are all contributing to the Venetian Islands Resource Group (8DA14395). In a letter dated June 25, 2019, the State Historic Preservation Officer (SHPO) concurred with the findings of the 2019 CRAS.

Various alternatives were evaluated during the PD&E Study. The No-Action and TSM&O Alternatives would result in no effect to any of the identified significant resources. The Rehabilitation Alternatives would result in impacts to the contributing bridges, and therefore, the Venetian Islands Resource Group. The Collins Canal (8DA11375) and Terrace Towers (8DA11754) will not be adversely affected by the Rehabilitation Alternatives.

The preferred alternative includes Replacement Alternative 7 for the fixed bridges, Railing Alternative T1, and Replacement Alternative M4 for the easternmost moveable bridge. This alternative will result in an adverse effect to the contributing bridges and the Venetian Islands Resource Group. Due to the removal of the bridges, the Preferred Alternative will have an adverse effect on the Venetian Islands Causeway Resource Group (8DA14395). This adverse effect finding is primarily related to the bridge structures and will not affect other contributing resources or elements of the Resource Group. In consideration of available project information, the Preferred Alternative will have no adverse effect on the Collins Canal (8DA11375) or Terrace Towers (8DA11754).

During the course of this project, Section 106 consultation took place during three Cultural Resources Committee (CRC) meetings on September 24, 2014, May 14, 2015, and March 6, 2018 with the SHPO, United States Coast Guard, Federal Highway Administration (FHWA), FDOT Office of Environmental Management (OEM), FDOT District 6, Cities of Miami and Miami Beach, Miami-Dade County, Dade Heritage Trust, Miami Design Preservation League, and the consultant project team. These meetings focused on the Section 106 process, proposed alternatives, the historic resources, and potential effects. Further consultation will take place during the development of minimization and mitigation measures, and these will be documented in a Memorandum of Agreement (MOA).

We kindly request that this cover letter and enclosed document be reviewed, and concurrence provided by your office. This information is provided in accordance with the provisions contained in 36 CFR, Part 800, as well as the provisions contained in the revised F.S. Chapter 267. If you have any questions regarding the subject project, please contact me at Barbara.Culhane@dot.state.fl.us or (305) 470-5231.

Sincerely,



Barbara B. Culhane, M.S., A.I.C.P.
District Cultural Resources Coordinator/
Environmental Supervisor II

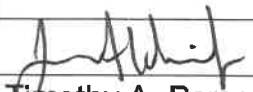
The Florida State Historic Preservation Officer finds the attached Section 106 Evaluation and Determination of Effects Case Study complete and sufficient and ☒ concurs/ ☐ does not concur with the recommendations and findings provided in this cover letter for

SHPO/FDHR Project File Number 2016-4285D.

Or, the SHPO finds the attached document contains _____
insufficient information.

In accordance with the Programmatic Agreement among the FHWA, ACHP, FDHR, SHPO, and FDOT Regarding Implementation of the Federal-Aid Highway Program in Florida, if providing concurrence with a finding of No Historic Properties Affected for a project as a whole, or to No Adverse Effect on a specific historic property, SHPO shall presume that FHWA will proceed with a *de minimis* Section 4(f) finding at its discretion for the use of land from the historic property.

SHPO Comments:

For  Deputy SHPO
Timothy A. Parsons, Ph.D., Director, and
State Historic Preservation
Officer
Florida Division of Historical
Resources

2/18/2020
[DATE]

E3 ACHP Letter



August 24, 2020

Ms. Barbara B. Culhane, M.S., A.I.C.P.
District Cultural Resources Coordinator/
Environmental Supervisor II
Florida Department of Transportation
1000 NW 111 Ave., Rm. 6109
Miami, FL 33172

Ref: *Proposed Venetian Causeway from North Bayshore Drive to Purdy Avenue Project*
Miami-Dade County, Florida
ACHP Project Number: 15766

Dear Ms. Culhane:

The Advisory Council on Historic Preservation (ACHP) has received your notification and supporting documentation regarding the adverse effects of the referenced undertaking on a property or properties listed or eligible for listing in the National Register of Historic Places. Based upon the information provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and it is determined that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the Florida State Historic Preservation Officer (SHPO), and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA, and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with the notification of adverse effect. If you have any questions or require further assistance, please contact Sarah Stokely at (202) 517-0224 or by email at sstokely@achp.gov.

Sincerely,

LaShavio Johnson
Historic Preservation Technician
Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION

401 F Street NW, Suite 308 • Washington, DC 20001-2637
Phone: 202-517-0200 • Fax: 202-517-6381 • achp@achp.gov • www.achp.gov

E4 Memorandum of Agreement

**MEMORANDUM OF AGREEMENT
BETWEEN
THE FLORIDA DEPARTMENT OF TRANSPORTATION AND
THE FLORIDA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE
VENETIAN CAUSEWAY FROM NORTH BAYSHORE DRIVE (CITY OF
MIAMI) TO PURDY AVENUE (CITY OF MIAMI BEACH) PROJECT,
MIAMI-DADE COUNTY, FLORIDA**

WHEREAS, Pursuant to 23 United States Code (U.S.C.) § 327 and the implementing Memorandum of Understanding (MOU) executed on December 14, 2016, the Florida Department of Transportation (FDOT) has assumed Federal Highway Administration's (FHWA) responsibilities under the National Environmental Policy Act (NEPA) for highway projects on the State Highway System (SHS) and Local Agency Program (LAP) projects off the SHS; and

WHEREAS, in accordance with the MOU, FDOT's assumption of FHWA's responsibilities under NEPA for highway projects includes assumption of responsibilities for compliance with 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108); and

WHEREAS, FDOT proposes to provide federal financial assistance to Miami-Dade County for the Venetian Causeway improvement project from North Bayshore Drive (City of Miami) to Purdy Avenue (City of Miami Beach) (Financial Management Number 422713-2-22-01) (**the Project**); and

WHEREAS, FDOT has determined that **the Project** represents an undertaking in accordance with 36 CFR § 800.3(a); and

WHEREAS, **the Project** includes the replacement of 11 of the 12 bridge structures listed in the National Register of Historic Places (NRHP) which contribute to the Venetian Islands Resource Group (Florida Master Site File [FMSF] No. 8DA04736), a resource group determined eligible for listing in the NRHP; and

WHEREAS, Miami-Dade County will be designing and constructing the Project, FDOT has consulted with Miami-Dade County regarding the effects of the proposed project on historic properties pursuant to the requirements of 36 CFR Part 800 and has designated Miami-Dade County as a concurring party to this agreement; and

WHEREAS, FDOT has defined **the Project's** area of potential effects (APE) for historic properties as the existing bridges, the related earthen structures, and the parcels immediately adjacent to the current bridge touch down points (see *Attachment A*); and

WHEREAS, FDOT has consulted with the Florida State Historic Preservation Officer (SHPO) pursuant to the requirements of 36 CFR Part 800 and has determined that **the Project** will have an adverse effect on the Venetian Islands Resource Group (FMSF 8DA04736), which is

eligible for listing in the NRHP and locally designated by the Cities of Miami and Miami Beach as a historic landmark, and includes the Historic Venetian Causeway Bridges, which are listed in the NRHP; and

WHEREAS, FDOT has consulted with the City of Miami, the City of Miami Beach, the United States Coast Guard, the United States Army Corps of Engineers, the Miami Design Preservation League, and Dade Heritage Trust regarding the effects of **the Project** on historic properties; and

WHEREAS, FDOT has provided opportunities for public review and comment regarding the effects of **the Project** on historic properties; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1) FDOT has notified the Advisory Council on Historic Preservation (ACHP) of the adverse effect determination with specified documentation and has invited the ACHP to comment and participate in consultation, and the ACHP has chosen not to participate pursuant to 36 CFR § 800.6(a)(1)(iii); and

NOW, THEREFORE, FDOT and the SHPO agree that **the Project** shall be implemented in accordance with the following stipulations to take into account the effect of **the Project** on historic properties.

STIPULATIONS

Prior to initiating any ground disturbing or demolition work, excluding geotechnical and other necessary pre-construction activities, associated with **the Project**, FDOT shall ensure that the following measures are carried out:

I. PROJECT DESIGN

- A. Miami-Dade County shall design **the Project** to limit construction impacts to within the right-of-way and elevations delineated on the Preferred Alternative (included in **Attachment B**). The design of the replacement bridges will reference the historic appearance of the original bridges by incorporating a low profile and appearance of the original structures, using arched beams with the same span configurations, geometrically designed concrete bridge railings that recognize the historic railing design, historically sensitive bridge lighting fixtures, and historically sensitive Bridge Tender House design for the New East Bascule Bridge (Bridge 10). The two (2) historic octagonal entrance towers will not be affected as part of **the Project** and shall remain in their current location.
- B. Miami-Dade County shall ensure that the design of **the Project** will comply with the FDOT Design Manual and Standard Plans.
- C. Should there be any alterations to the project design that could result in adverse effects to historic properties that are not addressed in this agreement, FDOT shall notify SHPO and other appropriate consulting parties and provide the parties with an opportunity to review and comment on the alterations.

II. DOCUMENTATION OF THE VENETIAN CAUSEWAY RESOURCE GROUP

- A. Based on coordination with the U.S. Department of the Interior and the NPS Interior Region 2 Office, and prior to authorizing any demolition or other activity that could adversely affect the bridges and the earthen causeway landings that are components of the Venetian Causeway Resource Group (8DA04736), the Venetian Causeway Bridges (8DA14373-8DA14384) and the earthen causeway landings shall be documented in accordance with the standards and guidelines of the Historic American Landscapes Survey (HALS) Level II

(<https://www.nps.gov/hdp/standards/HALS/HALSHistoryGuidelines.pdf>).

FDOT will ensure that all documentation is completed by Miami-Dade County and accepted by the NPS prior to demolition. The documentation will be prepared, but not limited to, the following:

1. Detailed written historical and descriptive data prepared in accordance with format guidelines containing a construction history of the overall causeway, bridges, and earthen causeway landings, descriptions of the resources including alterations, a description of the overall causeway and changes, any historical photographs in the supplementary materials section where available and produced in accordance with the U.S. Copyright Act, as amended, and a site plan; and
 2. Reproduction of existing “as built” and existing drawings included within the written data; and
 3. Large-format (4” x 5” or larger negative size) photographs of the overall causeway, bridges, and earthen causeway landings processed for archival permanence in accordance with photographic specifications (<https://www.nps.gov/hdp/standards/PhotoGuidelines.pdf>); and
 4. Photo locations keyed to the site plan and included with the “Index to Photographs
- B. Miami-Dade County shall provide the draft HALS documentation (non-archival format, electronic version) to FDOT District 6 for submittal to NPS, FDOT Office of Environmental Management (OEM), and SHPO for concurrent review.
- C. Prior to demolition of the structure, final edits shall be made and FDOT District 6 will submit the final documentation as follows:
1. An archival copy to the NPS Southeast Regional Office, per HALS guidelines (<https://www.nps.gov/hdp/standards/Transmittal.pdf>); and
 2. An archival copy and an electronic copy to the Florida SHPO for inclusion in the FMSF; and
 3. Non-archival and electronic copies to OEM, Miami-Dade County, City of Miami, City of Miami Beach, and History Miami.

III. PUBLIC RECOGNITION AND EDUCATION

- A. In consultation with SHPO and consulting parties, and through the Florida Division of Historical Resources Marker Program, Miami-Dade County shall develop text for and install four (4) Florida Historical Markers along the Venetian Causeway. Florida Historical Markers will include a narrative description of the history and significance of the Venetian Causeway Resource Group (8DA04736) to the development of Miami and Miami Beach; these markers shall be incorporated into the overall design of **the Project**.
- B. Two (2) of the Historical Markers will be placed at the Western end of the Venetian Causeway (one on the north and south side of the roadway) and the other two (2) Historical Markers will be placed at the Eastern end of the Causeway (one on the north and south side of the roadway).

IV. MIAMI-DADE COUNTY BRIDGE CONTEXT

- A. Miami-Dade County shall produce a historical context report for bridges in Miami-Dade County that will extend until 1975, for the purpose of providing a consolidated source of information on area historic bridges.
- B. The report will also compile information from previous studies and reports and provide an inventory of bridges in Miami-Dade County.
- C. Copies of the final documentation shall be provided by Miami-Dade County to FDOT District 6, OEM, SHPO, City of Miami, City of Miami Beach, and History Miami.

V. PROFESSIONAL STANDARDS

All archaeological and historic preservation work carried out pursuant to this Agreement shall be conducted by, or under the direct supervision of, a person or persons meeting the Secretary of the Interior's Professional Qualification Standards for Archaeology and Historic Preservation as set forth at 62 FR 33708-33723 (June 20, 1997) and 36 CFR Part 61 Appendix A.

VI. DURATION

This Memorandum of Agreement will expire if its terms are not carried out within seven (7) years from the date of execution. Prior to expiration, the parties may agree to extend the timeframe for fulfillment of the terms by letter agreement.

VII. POST-REVIEW DISCOVERIES

If properties are discovered that may be historically significant, or if unanticipated effects on historic properties are found, FDOT and Miami-Dade County shall implement the Post Review Discovery Plan established in Stipulation X of the March 15, 2016 Programmatic Agreement among the ACHP, SHPO, and FDOT, as amended on June 4, 2017.

In the unlikely event that human skeletal remains or associated burial artifacts are uncovered within the project area during construction, all work in that area must stop. The individual in charge of the activity that leads to the discovery must notify the Project Engineer and the FDOT District 6 Cultural Resources Coordinator. The discovery must be reported to local law enforcement and the appropriate medical examiner. The medical examiner will determine whether the State Archaeologist should be contacted per the requirements of Section 872.05, Florida Statutes, and Rule 1A-44.004, Florida Administrative Code (FAC).

VIII. REVIEW STIPULATION

Miami-Dade County, FDOT/OEM shall afford the SHPO and other consulting parties, as appropriate and including the NPS, a 30-day period for review and comment following the receipt of delivery of the design plans and documentation stipulated in Sections II, III, and IV described above. Any objections to the findings or plans proposed in these submittals will be addressed in accordance with Stipulation IX, below.

IX. DISPUTE RESOLUTION

Should any signatory to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, FDOT/OEM shall consult with such party to resolve the objection. If FDOT/OEM determines that such objection cannot be resolved, FDOT/OEM shall:

- A. Forward all documentation relevant to the dispute, including FDOT/OEM's proposed resolution, to the ACHP. The ACHP shall provide FDOT/OEM its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, FDOT/OEM shall prepare a written response that considers any timely advice or comments regarding the dispute from the ACHP, signatories, and concurring parties, and provide them with a copy of this written response. FDOT/OEM will then proceed according to its final decision.
- B. Make a final decision on the dispute and proceed accordingly if the ACHP does not provide its advice regarding the dispute within thirty (30) days. Prior to reaching such a final decision, FDOT/OEM shall prepare a written response that considers any timely comments regarding the dispute from the signatories to the MOA and provide them and the ACHP with a copy of the written response.
- C. Fulfill its responsibility to carry out all other actions subject to the terms of

this MOA that are not the subject of the dispute and remain unchanged.

X. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The signatories must signify their acceptance of the proposed changes to the MOA in writing within 30 days of their receipt. The amendment will be effective on the date a copy signed by the signatories is filed with the ACHP. In accordance with 36 CFR § 800.6(b)(7), if the ACHP was not a signatory to the original agreement, and the signatories execute an amended agreement, FDOT/OEM shall file the amended agreement with the ACHP.

XI. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories in an effort to amend the MOA per Stipulation X, above. If within thirty (30) days (or another time agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on **the Project**, FDOT/OEM must either (a) execute a MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. FDOT/OEM shall notify the signatories as to the course of action it will pursue.

Execution of this MOA by Miami-Dade County, FDOT OEM, and SHPO and implementation of its terms is evidence that Miami-Dade County and FDOT have taken into account the effects of this undertaking on historic properties per the requirements of Section 106 (Public Law 113-287 [Title 54 U.S.C. 306108]), and 36 CFR Part 800 (Protection of Historic Properties).

SIGNATORIES:

FLORIDA STATE HISTORIC PRESERVATION OFFICER

Date
Timothy A. Parsons
Director, Division of Historical Resources
State Historic Preservation Officer

FLORIDA DEPARTMENT OF TRANSPORTATION

Date
Jason Watts
Director, Office of Environmental Management

CONCURRING PARTIES:

FLORIDA DEPARTMENT OF TRANSPORTATION, DISTRICT SIX

_____ Date

Daniel Iglesias, P.E.

Director of Transportation Development

MIAMI-DADE COUNTY

_____ Date

Alice N. Bravo, P.E.

Director, Miami-Dade County Department of Transportation and Public Works

DRAFT

ATTACHMENT A:
Project's Area of Potential Effects (APE)

DRAFT

ATTACHMENT B:
Preferred Alternative Roadway and Bridge Conceptual Plans

DRAFT

Appendix F: Wetland Figures



Biscayne Bay

Island "B"

Island "D"

Biscayne Island

San Marco Island
Venetian Causeway

San
Marino
Island

Di
Lido
Island

Rivo
Alto
Island

Belle
Island

Island "A"

Watson
Island

Island "C"

Island "E"



Florida Department of Transportation
District 6
1000 NW 111th Avenue
Miami-Dade, FL 33172

**VENETIAN CAUSEWAY
PD&E Study
From North Bayshore Dr to Purdy Ave
Miami-Dade County, FL
Section 32-33, Township 53, Range 42**

Legend

— Project Corridor - Venetian Causeway

OSW 1

Wetlands

0 900 1,800 3,600 Feet

Wetland Figure
Overveiw



Biscayne Bay

Biscayne Island

Venetian Causeway

OSW 1

Wetland 1

Wetland 2




Florida Department of Transportation
District 6
1000 NW 111th Avenue
Miami-Dade, FL 33172

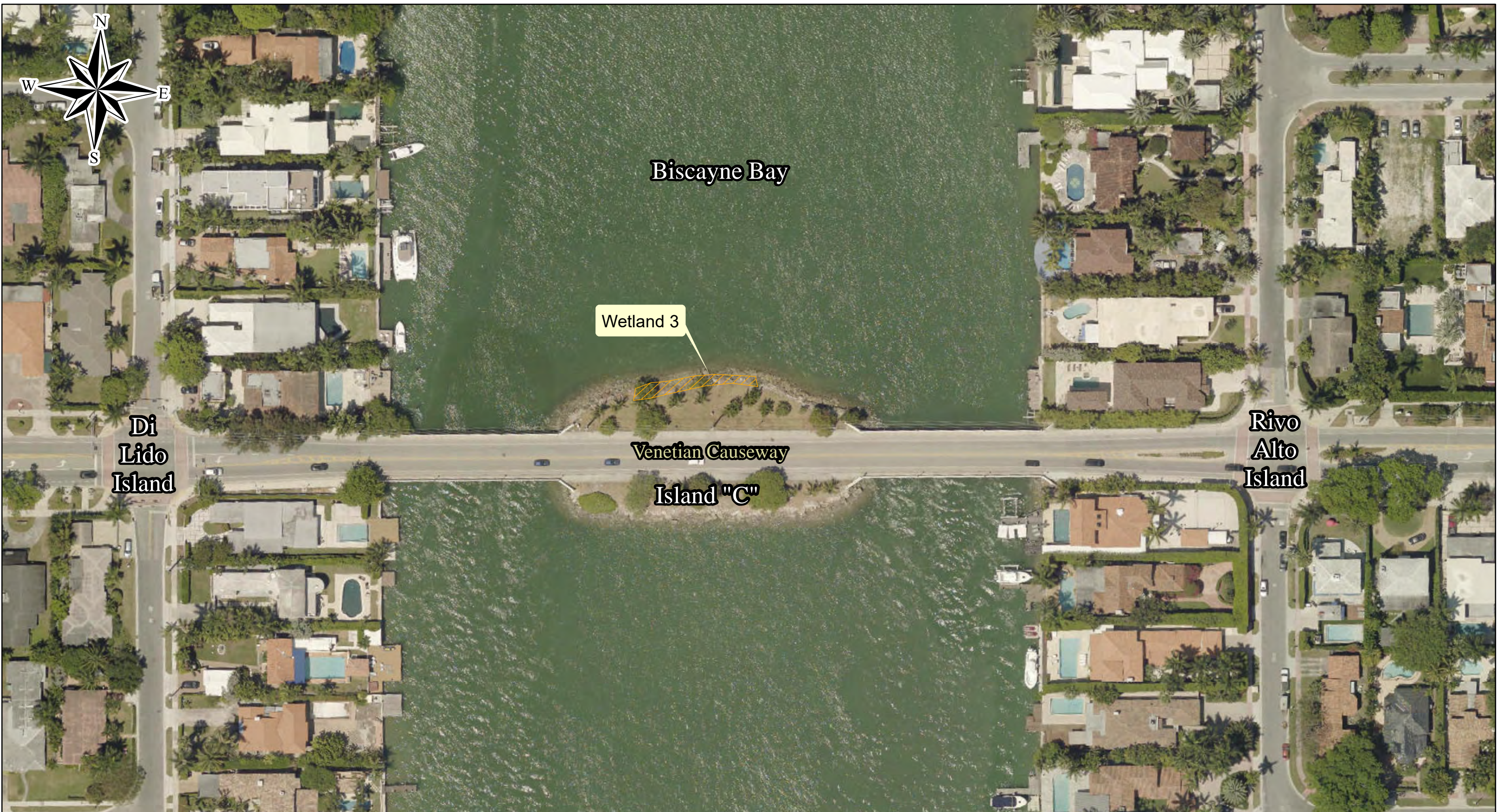
**VENETIAN CAUSEWAY
PD&E Study
From North Bayshore Dr to Purdy Ave
Miami-Dade County, FL
Section 32-33, Township 53, Range 42**

Legend

 OSW 1  Wetlands

 Feet
0 200 400 800

Wetland Figure
1 of 3




Florida Department of Transportation
District 6
1000 NW 111th Avenue
Miami-Dade, FL 33172

**VENETIAN CAUSEWAY
PD&E Study
From North Bayshore Dr to Purdy Ave
Miami-Dade County, FL
Section 32-33, Township 53, Range 42**

Legend

 Wetlands

 Feet
0 75 150 300

Wetland Figure
2 of 3



Biscayne Bay

Wetland 4

Venetian Causeway

Belle Island

Island "C"

Island "D"



Florida Department of Transportation
District 6
1000 NW 111th Avenue
Miami-Dade, FL 33172

VENETIAN CAUSEWAY
PD&E Study
From North Bayshore Dr to Purdy Ave
Miami-Dade County, FL
Section 32-33, Township 53, Range 42

Legend

 Wetlands

0 75 150 300 Feet

Wetland Figure
3 of 3

Appendix G: Interagency Meeting Minutes

MEETING MINUTES

Agency Coordination Meeting
June 28, 2017
Project Development & Environment (PD&E) Study
Venetian Causeway
from North Bayshore Drive to Purdy Avenue in Miami-Dade County
Financial Project Number: 422713-2-22-01
ETDM Number: 12756

ATTENDEES

Florida Department of Transportation, District Six (FDOT)

- Dat Huynh, P.E., Project Manager
- Hong Benitez, P.E.
- Shereen Yee Fong **(Teleconference)**
- Brittany Bianca **(Teleconference)**

City of Miami Beach (CMB)

- Pedro Fuentes
- Josiel Ferrer, E.I.
- Deborah Tackett **(Teleconference)**

Miami-Dade County (MDC)

- Mike Bauman
- Dennis Fernandez
- Angus Laney
- Michael Ruiz
- Sarah Cody **(Teleconference)**

United States Army Corps of Engineers (USACE)

- Tarrie Ostrofsky **(Teleconference)**

South Florida Water Management District

- Mindy Parrott **(Teleconference)**

United States Coast Guard (USCG)

- Randall Overton **(Teleconference)**

State Historic Preservation Office (SHPO)

- Ginny Jones **(Teleconference)**

National Marine Fisheries Service (NMFS)

- Jennifer Schull **(Teleconference)**

United States Fish and Wildlife Service (USFWS)

- John Wrublik **(Teleconference)**

Consultant Project Team (CPT)

- Please see attached sign-in sheets.

MEETING LOCATION

- 1000 NW 111th Avenue (ROW Conference Room), Miami, FL 33172

MEETING SUMMARY

- Formal meeting began at 1:41 p.m.
- Mr. Dat Huynh, P.E. (FDOT) began the meeting with an introduction of project team and agency attendees.
- Mr. Huynh followed the introductions with an overview of the National Environmental Policy Act (NEPA) Assignment and explained that the Office of Environmental Management (OEM) is acting as the lead federal agency on the project.
- Mr. Randy Overton (USCG) made a comment regarding the order of the wording on a slide in the "Project Team" portion of the presentation related to the definition of a cooperating agency versus a participating agency. Mr. Huynh provided an overview of the difference between a cooperating agency and a participating agency involved in the project. Mr. Overton stated that the definitions were reversed on the slide. Mr. Huynh responded to Mr. Overton and stated that FDOT will make the correction on all past, present and future project documentation.
- Mr. Huynh reviewed the presentation agenda:
 - Purpose and Need for Project
 - Project Status
 - Alternatives Analysis
 - Viable Alternatives
 - Estimated Costs
 - Maintenance of Traffic
 - Anticipated Schedule
 - Environment
 - Evaluation Matrix
 - Next Steps
- Purpose and Need for Project
 - Mr. Huynh explained that the purpose of the proposed project is to address identified structural and functional deficiencies of the twelve existing bridges (ten low-level fixed spans and two movable bascules), through potential alternatives such as No-Build, Replacement or Rehabilitation. He continued by presenting a chart that detailed the structural and functional deficiencies of all twelve Venetian bridges.
- Ms. Sarah Cody (MDC), asked what the differences were between Functionally Obsolete and Structurally Deficient. Mr. Huynh explained to Ms. Cody that Functionally Obsolete doesn't meet the current standards and does not include structural components of the bridge.
- Project Status
 - Mr. Huynh gave an update on the project status and explained the Class of Action Determination of an Environmental Assessment (EA) on November 10, 2016 by the Federal Highway Administration (FHWA) and the NEPA Assignment, which went into effect on December 14, 2016. Mr. Huynh turned the meeting over to Rick Crooks, P.E., (CPT) to cover the remaining agenda items.
- Alternatives Analysis
 - Mr. Crooks detailed the Alternatives Analysis and showed the flowchart and screening matrix of the various Alternatives that were evaluated and presented at the Alternatives Public Workshop (APW). Ms. Cody (MDC) mentioned the importance of maintaining the historic railing of the various bridges. Mr. Crooks continued the presentation by discussing the various alternatives that were developed and evaluated to meet the project needs. During the APW a ballot was used to access the preferences of the attendees. The CPT also conducted an Alternatives Screening and

provided the results in a matrix. The results of the alternatives screening were comparable to the results of the ballots.

- Viable Alternatives
 - Based on the results of the Alternatives Screening the Viable Alternatives to be considered for additional study were determined as follows:
 - No-Build:
 - Alternative 1 – Do Nothing
 - Alternative 2- Transportation Systems Management and Operations (TSM&O)
 - Build Alternatives:
 - Rehabilitation Alternative 4 – Fixed Bridge Rehabilitation with Beam Strengthening
 - Replacement Alternative T1- Venetian Railing
 - Rehabilitation Alternative M1- Bascule Bridge Rehabilitation
 - Replacement Alternative 7 – Arched Beams
 - Replacement Alternative T1- Venetian Railing
 - Replacement Alternative M4 – Double Leaf Bascule Bridge
- Estimated Costs
 - Mr. Crooks provided a review of the estimated costs and service life for the No-Build, Rehabilitation and Replacement Alternatives. Mr. Crooks also evaluated the Life Cycle Cost for each Alternative.
- Maintenance of Traffic
 - Mr. Crooks continued by detailing the Maintenance of Traffic (MOT) options for each bridge alternative and the individual bridge detours.
- Anticipated Schedule
 - Mr. Crooks presented the Anticipated Schedule for the various Alternatives and explained the construction process for each bridge alternative.
- Environment
 - Mr. Crooks presented the environmental impacts of the No-Build versus the Build Alternative and pointed out that given the extensive nature of the Rehabilitation Alternative, the impacts were similar.
 - The Historic Resource Impacts of No-Build vs. Build Alternatives were also presented. The No-Build Alternatives results in No Adverse Effects/Impacts to the historic resources, the Rehabilitation may likely result in Adverse Effects/Impacts and Replacement in Adverse Effects/Impacts to the historic resources.
 - Mr. Jeff Marcus (CPT) further elaborated on the specific environmental impacts.
- Evaluation Matrix
 - Mr. Crooks continued the presentation by reviewing the Evaluation Matrix that would be used to analyze and score the No-Build and Build Alternatives.
- Next Steps
 - Mr. Crooks concluded the presentation by outlining the next steps in the PD&E process.
- Mr. Huynh discussed any requirements needed by the cooperating agencies involved in the project. Mr. Overton (USCG), stated that he would provide the project team with the Coast Guard Bridge Application Guide, which details all the requirements needed by the

Coast Guard. Ms. Tarrie Ostrofsky (USACE) explained that her agency would regulate any discharges associated with any of the approaches.

- Mr. Marcus (CPT) asked if a replacement were chosen over rehabilitation, would it affect the permitting and jurisdiction of the USCG and the USACE. Mr. Overton (USCG), replied to Mr. Marcus' question by stating that it all depends on the scope of the work and the extent of rehabilitation.
- Mr. Huynh acknowledged any agency questions and comments. Mr. Michael Ruiz (MDC) requested an explanation of the construction timeline for the different bridge alternatives. Mr. Crooks and Mr. Huynh explained the overall timeline of the various alternatives.
- Mr. Huynh continued the meeting by explaining the next steps in the Project Development and Environment (PD&E) study process. He explained that the project team is preparing the draft documents for internal review before they are submitted to OEM, USCG and USACE.
- The meeting adjourned at 3:07 p.m.



AGENCY COORDINATION MEETING: PROJECT TEAM

Project: Venetian Causeway PD&E Study/FM No. 422713-2-22-01

Meeting Date: Wednesday, June 28, 2017

Facilitator: Florida Department of Transportation (FDOT) District Six

Place/Room: Florida Dept. of Transportation, D6

	Name/Nombre	Representing/ Representando (Name of business/group) (Nombre de su empresa o grupo)	Phone/Teléfono	E-Mail/Correo Electrónico	Initial/ Inicial	Would you like to receive electronic information? Yes/No ¿Quisiera recibir información electrónica? Si/No
1.	Benitez, P.E., Hong	FDOT District Six	470-5219	hong.benitez@dot.state.fl.us	H/B	
2.	Bowen, Winsome	EAC Consulting				
3.	Carter, Nicole	Stantec				
4.	Crooks, P.E., Rick	EAC Consulting	305 265 5455	RCROOKS@EACCONSULT.COM	R/C	
5.	Culhane, Barbara	FDOT District Six				
6.	Cunningham, Courtney	The Brand Advocates, Inc.				
7.	Cunningham, Tasha	The Brand Advocates, Inc.				
8.	Dagley, P.E., Dinesh	EAC Consulting				
9.	Devera, P.E., Rodney	EAC Consulting				
10.	Englert, P.E., Jim	AECOM				



AGENCY COORDINATION MEETING: PROJECT TEAM

Project: Venetian Causeway PD&E Study/FM No. 422713-2-22-01

Meeting Date: Wednesday, June 28, 2017

Facilitator: Florida Department of Transportation (FDOT) District Six

Place/Room: Florida Dept. of Transportation, D6

	Name/Nombre	Representing/ Representando (Name of business/group) (Nombre de su empresa o grupo)	Phone/Teléfono	E-Mail/Correo Electrónico	Initial/ Inicial	Would you like to receive electronic information? Yes/No ¿Quisiera recibir información electrónica? Si/No
11.	Greenberg, P.E., Daniel	EAC Consulting				
12.	Hardin, Ken	Janus Research				
13.	Huynh, P.E., Dat	FDOT District Six				✓
14.	Marcus, Ph. D, Jeff	Stantec	305 445 2900	Jeff.Marcus@stantec.com		
15.	Myrick Mitchell	The Brand Advocates, Inc.	(305) 301-1053	Myrick.Mitchell@brandadvocates.com		✓
16.	Perdomo, P.E., Maria	FDOT District Six				
17.	Riverol, P.E., Elsa N.	FDOT District Six				
18.	Romero, P.E., Stephanie	EAC Consulting	(305) 265-5400	sromero@eacconsult.com		
19.	Scannell, Bill	Concor Florida				



AGENCY COORDINATION MEETING: PROJECT TEAM

Project: Venetian Causeway PD&E Study/FM No. 422713-2-22-01

Meeting Date: Wednesday, June 28, 2017

Facilitator: Florida Department of Transportation (FDOT) District Six

Place/Room: Florida Dept. of Transportation, D6

	Name/Nombre	Representing/ Representando (Name of business/group) (Nombre de su empresa o grupo)	Phone/Teléfono	E-Mail/Correo Electrónico	Initial/ Inicial	Would you like to receive electronic information? Yes/No ¿Quisiera recibir información electrónica? Si/No
20.	Touchstone, Bradley	Touchstone Architecture				
21.	Varela, Margolles, Aileen	FDOT District Six				
	Dennis Fernandez	DTPW	(786) 465-5264	dennis.fernandez@miamidade.gov	DF	Yes



Meeting Date: Wednesday, June 28, 2017

Place/Room: Florida Dept. of Transportation, D6

[illegible]

Appendix H: FDEP Correspondence

- H1 FDEP Aquatic Preserve Letter – March 9, 2020**
- H2 FDEP Response E-Mail – May 28, 2020**
- H3 FDEP Meeting Notes – July 1, 2020**

H1 FDEP Aquatic Preserve Letter



Florida Department of Transportation

RON DESANTIS
GOVERNOR

1000 NW 111th Avenue
Miami, FL 33172-5800

KEVIN J. THIBAUT, P.E.
SECRETARY

March 9, 2020

Alex Reed
Director, Office of Resilience and Coastal Protection
Florida Department of Environmental Protection
3900 Commonwealth Boulevard
Mail Station 235
Tallahassee, FL 32399-3000

**SUBJECT: Request for Aquatic Preserve & Outstanding Florida Water
Concurrence**
Project Name: Venetian Causeway from North Bayshore Drive to Purdy
Avenue
ETDM#: 12756
County: Miami-Dade

Dear Mr. Reed,

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study for improvements to Venetian Causeway from North Bayshore Drive to Purdy Avenue (approximately 2.5 miles) in Miami-Dade County, Florida. The project is to address identified structural and functional deficiencies of the twelve (12) existing bridges that comprise Venetian Causeway through potential alternatives such as rehabilitation or replacement. FDOT is currently evaluating two (2) build alternatives and the No Action Alternative. The build alternatives consist of the rehabilitation or replacement of Bridges 2 through 12, as Bridge 1 underwent emergency repair in 2016. The Venetian Causeway, including all eleven (11) bridges, lies within the limits of the Biscayne Bay Aquatic Preserve, an Outstanding Florida Water (OFW). Please see attached figures showing project location and boundaries of the aquatic preserve and OFW.

The Rehabilitation Alternative with beam strengthening would correct physical and design criteria deficiencies of the existing bridges to extend their service life. This rehabilitation alternative includes deck replacement, beam strengthening and foundation strengthening. The rehabilitation of the movable span Bridge 10 includes modifications to the existing bridge to improve safety aspects and eliminate structural, mechanical

Alex Reed
March 9, 2020
Page 2

and electrical deficiencies. This rehabilitation alternative would not include changes in the horizontal or vertical clearance. The bridge deck would not be widened; therefore, the existing sidewalks and lane configurations would remain the same.

The Replacement Alternative includes an arched beam superstructure replacement that mimics the dimensions and appearance of the original structure with a bridge span that will be widened 8 feet on either side of the bridge, a total of 16 feet wider than the existing bridge deck. Total direct shading from the wider bridge footprint will be 0.82 acres. The substructure will be replaced as well, and 48-inch drilled shafts will be installed to support the new bridge. The vertical alignment of the new fixed bridges would be raised a minimum of 1-foot above the existing clearance to Biscayne Bay to address sea-level rise. This alternative would also replace the existing Bridge 10 movable bridge with a new double leaf bascule bridge. A 75-foot horizontal clearance between fenders is proposed for the movable span replacement option which provides improved safety at the Venetian Causeway site and is consistent with bridges located to the north and south of the Causeway.

The current PD&E study was reviewed through FDOT's Efficient Transportation Making (ETDM) process where members of the Environmental Technical Advisory Team (ETAT) provide input/comments. The ETDM Programming Screening Summary report was first published on February 12, 2012 and again on November 28, 2016 (ETDM #12756) along with the Advanced Notification Package (September 28, 2011). The ETDM report includes agency comments, GIS analysis and additional project information and can be accessed at the following website: <http://etdmpub.fl-etat.org/est>. The project's class of action is an Environmental Assessment.

During the ETDM Programming Screen, the Florida Department of Environmental Protection (FDEP) assigned as Degree of Effect (DOE) of *Moderate* for Special Designations. Biscayne Bay is designated as an aquatic preserve and OFW under Rules 18-18 and 62-302.700(9), Florida Administrative Code. FDEP noted that any increase in stormwater runoff from the new bridge spans would be of concern and recommended that the study include an evaluation of existing bridge/causeway stormwater treatment adequacy and details on the future stormwater treatment facilities. Retrofitting of stormwater conveyance systems would help reduce impacts to water quality. The US Environmental Protection Agency (EPA) assigned a DOE of *None* to Special Designations. The overall DOE for Water Quality and Quantity was *Moderate*. Comments were provided by South Florida Water Management District (SFWMD), the FDEP, and USEPA under the Water Quality and Quantity section. FDEP noted that the proposed stormwater facility design will include the water quantity requirements for the water quality impacts as required by Chapter 24, Section 24-58 of the Miami-Dade County code. SFWMD stated that an Environmental Resource Permit will be required, and some bridges may qualify for a Noticed General Permit for Minor Bridge Alteration, Replacement, Maintenance and Operation.

Alex Reed
March 9, 2020
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In accordance with the FDOT PD&E Manual, the environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016 and executed by Federal Highway Administration (FHWA) and FDOT.

As part of the PD&E process, an evaluation of existing stormwater treatment adequacy and improvements to handle increased impervious surface area was completed for both build alternatives. Currently, no stormwater treatment mechanisms are provided on any of the bridges, and stormwater discharges directly into Biscayne Bay via existing scuppers. The proposed stormwater system improvements associated with both build alternatives eliminate the existing scuppers and will route runoff to the bridge approaches. Stormwater will be collected in curb inlets and will no longer drain directly into the bay. Runoff will be treated and attenuated in storm water management facilities located in the existing roadway or new systems in the existing spoil islands. The proposed stormwater system meets the design and performance criteria established for the treatment and attenuation of discharges to OFWs under Rule 40E-4, F.A.C. and will include, at a minimum, the water quality requirements for the water quality impacts as required by the SFWMD in Chapter 62-302, FAC. It is therefore anticipated that no permanent adverse effects will occur to the water quality within the aquatic preserve as a result of the project.

During construction, the contractor will comply with all provisions in the most recent version of the *FDOT Standards Specifications for Road and Bridge Construction*. Best Management Practices (BMPs) including a National Pollutant Discharge Elimination System (NPDES) Stormwater Management Plan, erosion control measures, and turbidity controls, will be employed to avoid and minimize any temporary impacts to water quality. FDOT also commits to minimizing impacts to natural resources to the greatest extent possible including the following: 1) Corals and barrel sponges in the area of potential impact will be inventoried and those suitable will be relocated prior to construction; 2) Barge spudding will occur in close proximity to the bridges during construction to avoid unnecessary impacts to seagrasses.

Following completion of this PD&E Study, coordination with environmental regulatory agencies will continue through the final design phase and permitting process. The following permits are anticipated to be required for the project:

- US Coast Guard (USCG) Bridge Permit
- US Army Corps of Engineers (USACE) Section 404/Section 10 Department of the Army Permit
- SFWMD Environmental Resource Permit
- Miami-Dade County Department of Regulatory and Economic Resources (DRER) Class I Coastal Construction Permit

Alex Reed
March 9, 2020
Page 4

As the overall stormwater system improvements will benefit water quality in the aquatic preserve and OFW, and only temporary impacts to water quality may occur during construction which will be minimized with the implementation of BMPs, FDOT is requesting your concurrence that no adverse impacts to the Biscayne Bay Aquatic Preserve or OFW are anticipated as a result of the proposed project. We kindly request that you provide a response within 30 days of receiving this letter. If you have any questions, please contact me at (305) 470-5221 or steven.james@dot.state.fl.us or Barbara Culhane, at (305) 470-5231 or barbara.culhane@dot.state.fl.us. Thank you for your assistance with this project.

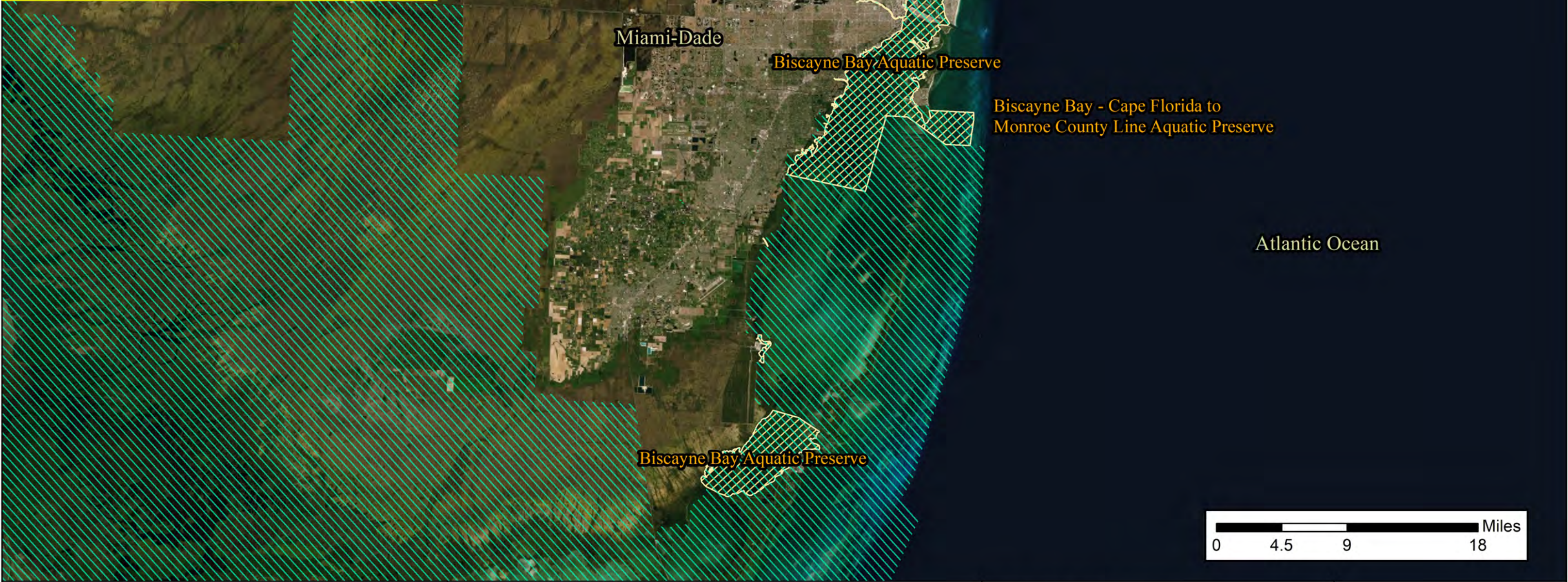
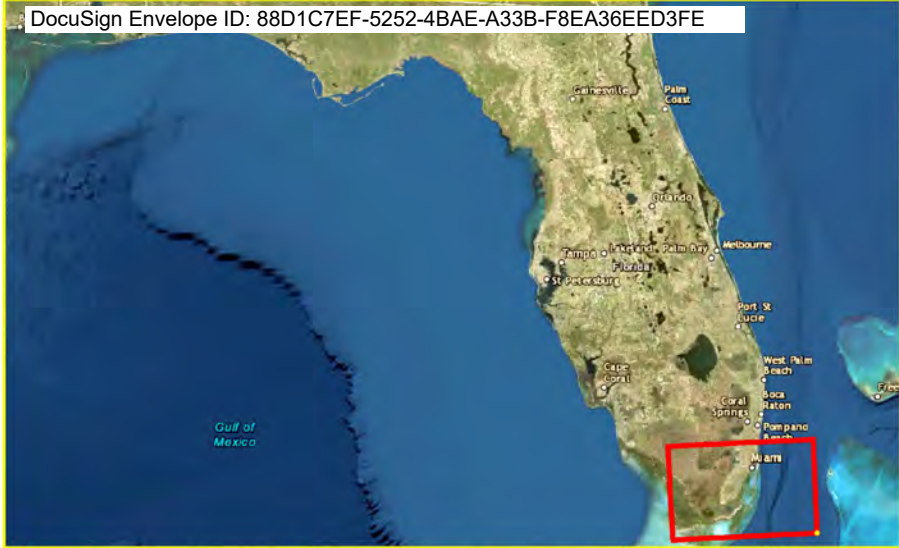
Sincerely,

Steven Craig James, RLA
Environmental Manager

DocuSigned by:
Steven James
44A2F58851B5476...



Attachments

CC: Dat Huynh, PE – FDOT
Barbara Culhane - FDOT
Rick Crooks, PE - EAC
Nicole Carter - Stantec



**VENETIAN CAUSEWAY
PD&E Study
From North Bayshore Dr to Purdy Ave
Miami-Dade County, FL
Section 32-33, Township 53, Range 42**

Legend


-  Outstanding Florida Waters (OFWs)
-  Florida Aquatic Preserves
-  Project Corridor


**Project Location
Overview**



VENETIAN CAUSEWAY
PD&E Study
From North Bayshore Dr to Purdy Ave
Miami-Dade County, FL
Section 32-33, Township 53, Range 42

Legend

 Project Corridor - Venetian Causeway

 Feet

0 650 1,300 2,600

Project Location
Map



H2 FDEP Response E-Mail

From: [Eldredge, Laura](#)
To: [Carter, Nicole](#)
Cc: [Pearson, Earl](#)
Subject: RE: Request for Aquatic Preserve & Outstanding Florida Water Concurrence - Miami-Dade County - Venetian Causeway - ETDM# 12756
Date: Thursday, May 28, 2020 12:20:01 PM

Hi Nicole, thanks for sending this along. I'm not sure what happened as I don't have the previous emails in my inbox. Possibly try Laura.Eldredge@FloridaDEP.gov from now on and I will make sure to add your email as an approved contact.

Based on the information that I can see on the attached "documentsprint.pdf", I cannot state that there would be no adverse impacts to the AP for this project. Without this being a permit application, I cannot make formal recommendations but here are several informal points from my quick review of the document provided. All of these points would be reviewed and officially discussed during the Environmental Resource Permitting process with the SFWMD, with further consultation by BBAP.

- The replacement alternative mentions a bridge widening that would increase potential shading impacts and might require mitigation. Increasing the elevation of bridge structures is a common practice to help alleviate shading pressures on the AP and is also a future planning strategy for sea level rise and storm surge protections.
- As an OFW, BBAP has a 0 NTU turbidity requirement for all activities within, above, and on surface waters. These activities would require turbidity limiting strategies, turbidity monitoring, and BMPs in place.
- Any alteration of the bridge supports would also require benthic habitat surveys along with possible mitigation due to potential infilling or loss of bottom/ water column habitat. Also the installation of the new drilled shafts would need to be regulated to limit bottom impacts to the AP. Avoidance of areas with aquatic vegetation or other natural resources would be recommended.
- The stormwater runoff evaluation and potential increase in conveyance to a treatment facility is welcomed. Thank you for your work to meet the criteria of an OFW and Chp. 62-302, F.A.C.
- Impacts to aquatic vegetation, corals, and sponges may require mitigation, relocation, and/or restoration plans.
- Spudding of a barge would adversely impact the bottom habitat and may be included in a mitigation plan. Spudding would be recommended to areas outside of surveyed benthic resources.
- I would also recommend looking through Chp 18-18, F.A.C. specifically as the regulatory requirements are stricter than in other APs around the state and require more information in the permit application.
- Other recommendations or requirements for this activity might come forward during the permit application phase as future discussions progress.

Thanks for reaching out during this preapplication phase, and I look forward to working with you on the application and any more guidance you need.

Laura



Laura Eldredge, MS



Florida Department of Environmental Protection
Biscayne Bay Aquatic Preserves
Manager

Laura.Eldredge@FloridaDEP.gov

1277 NE 79th St., Miami, FL 33138
305-795-3486

From: Carter, Nicole <nicole.carter@stantec.com>

Sent: Wednesday, May 27, 2020 9:27 AM

To: FloridaCoasts <FloridaCoasts@dep.state.fl.us>

Cc: Eldredge, Laura <Laura.Eldredge@dep.state.fl.us>; Huynh, Dat <Dat.Huynh@dot.state.fl.us>;

Culhane, Barbara J <Barbara.Culhane@dot.state.fl.us>; steven.james@dot.state.fl.us

Subject: RE: Request for Aquatic Preserve & Outstanding Florida Water Concurrence - Miami-Dade County - Venetian Causeway - ETDM# 12756

**Caution Possible Malware: Please use caution with links and
attachments.**

Good Morning Mr. Reed,

On behalf of FDOT District 6, we would like to follow up on the request below regarding the Venetian Causeway Bridges PD&E Study. The FDOT is requesting your concurrence that no adverse impacts to the Biscayne Bay Aquatic Preserve or OFW are anticipated as a result of the proposed project. Please see the attached letter which summarizes the project improvements as they relate to water quality and work within the aquatic preserve. Should you have any questions please contact me at Nicole.carter@stantec.com or 786-502-0706.

Thank you for your assistance with this project.

Nicole Carter, MS

Principal

Direct: 305 445-2900 x 2329

Mobile: 786 502-0706

Fax: 305 445-3366

nicole.carter@stantec.com

Stantec

901 Ponce de Leon Boulevard, Suite 900

Coral Gables FL 33134-3070



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From: James, Steven C. <Steven.James@dot.state.fl.us>

Sent: Tuesday, March 31, 2020 8:31 PM

To: FloridaCoasts@FloridaDEP.gov

Cc: Laura.Eldredge@dep.state.fl.us; Huynh, Dat <Dat.Huynh@dot.state.fl.us>; Culhane, Barbara J <Barbara.Culhane@dot.state.fl.us>; Carter, Nicole <nicole.carter@stantec.com>

Subject: Request for Aquatic Preserve & Outstanding Florida Water Concurrence - Miami-Dade County - Venetian Causeway - ETDM# 12756

Hello Mr. Reed, The Florida Department of Transportation (FDOT) District Six is conducting a Project Development and Environment (PD&E) Study in Miami-Dade County for improvements to Venetian Causeway from North Bayshore Drive to Purdy Avenue which is within the waters of the Biscayne Bay Aquatic Preserve and designated Outstanding Florida Waters. Please see the attached letter which summarizes the project improvements as they relate to water quality and work within the Aquatic Preserve. The FDOT is requesting your concurrence that no adverse impacts to the Biscayne Bay Aquatic Preserve or OFW are anticipated as a result of the proposed project. We kindly request that you provide a response within 30 days of receiving this letter. If you have any questions, please contact me at (305) 470-5221 or steven.james@dot.state.fl.us or Barbara Culhane, at (305) 470-5231 or barbara.culhane@dot.state.fl.us. Thank you for your assistance with this project.

Steven Craig James, RLA 1451

District Environmental Manager

Planning and Environmental Management Office

Florida Department of Transportation, District Six

Adam Leigh Cann Building

1000 NW 111th Avenue, Room 6109

Miami, Florida 33172

Office (305) 470-5221

steven.james@dot.state.fl.us



H3 FDEP Meeting Notes

Biscayne Bay Aquatic Preserve (BBAP) & Outstanding Florida Waters (OFW) Coordination Meeting

FM# 4227132: VENETIAN CAUSEWAY PD&E STUDY

Date/Time: July 1, 2020 / 1:30 PM

Place: Microsoft Teams Meeting

Attendees: Laura Eldredge, FDEP; Barbara Culhane, FDOT; Nicole Carter, Stantec

The meeting was held to further discuss the project involvement with the Biscayne Bay Aquatic Preserve and Outstanding Florida Waters (OFW) and to clarify FDEP's response to FDOT's letter dated March 31, 2020 requesting coordination related to impacts to the aquatic preserve and OFW.

To begin the meeting, Nicole provided an overview of the Venetian Causeway PD&E Study, status of the alternatives analysis and agency coordination, and overall project schedule. We provided details of the preferred build alternative, the replacement alternative. We also described the minimal benthic resources identified in the project area as a result of the benthic surveys conducted in 2014 and 2017; commitments to further avoid and minimize impacts during design; and, to implement best management practices during construction.

Barbara asked how the FDEP provides input into the state permitting process when the SFWMD is the agency issuing the Environmental Resource Permit. Laura noted that they are brought in to comment which can be informal coordination or a more formal process. FDEP prefers to be brought in at the early stages of the permitting process to ensure the aquatic preserve impacts are properly addressed. We discussed the potential impacts to the aquatic preserve which include impacts to bay bottom from removal and replacement of the substructure, widening of the superstructure and spudding. Nicole and Barbara described how we have addressed natural resource impacts during the study and will further re-assess impacts and develop mitigation, if required, during the design and permitting phase. We also discussed the ETDM process; FDEP's comments were originally provided in 2012. Laura was not aware of that process and the ETDM Programming Summary report was provided for her reference following the meeting.

Laura requested that Rule 18-18, FAC be followed which outlines the requirements for aquatic preserves and each item addressed in the permit application.

Appendix I: Stormwater Coordination Meeting Minutes

- I1 DERM Stormwater Management Meeting – April 7, 2105**
- I2 SFWMD Stormwater Management Meeting – April 15, 2015**

I1 DERM Stormwater Management Meeting Minutes

Meeting Minutes
Venetian Causeway
Project Development and Environment Study
FM No. 422713-2-22-01
Stormwater Management Meeting, April 7, 2015
2:30 PM – 3:30 PM

Attendees:

Name	Organization	Phone Number	E-Mail Address
Maria Molina	DERM	(305) 372-6769	molinm@miamidade.gov
Camilo Ignacio	DERM	(305) 372-6681	ignacc@miamidade.gov
Daniel Greenberg	EAC Consulting, Inc.	(305) 265-5440	dgreenberg@eacconsult.com
Rodney Devera	EAC Consulting, Inc.	(305) 265-5462	rdevera@eacconsult.com

Author: Rodney Devera

Submit Date: 4/21/2015

Location: DERM's Overtown Offices, 6th Floor

This meeting was held to discuss the stormwater management requirements and applicable permits that would be required by Miami-Dade's Department of Regulatory Economic Resources' (DRER) Division of Environmental Resource Management (DERM), the local water management jurisdiction, for the proposed Venetian Causeway Bridges build alternatives. The following items were discussed:

1. Project Description

- a. The Florida Department of Transportation (FDOT) District Six initiated a Project Development & Environment (PD&E) Study to examine the potential replacement or rehabilitation of the 12 existing bridges that comprise the Venetian Causeway (Venetian Way).
- b. The bridges are owned and maintained by Miami-Dade County (County).
- c. The bridges were originally built in 1926 and have been designated as historic landmarks by the City of Miami and City of Miami Beach. They are also listed on the National Register of Historic Places (NRHP).
- d. The causeway is approximately 2.5 miles long and is primarily a two-lane undivided facility that provides a major link between the City of Miami and the City of Miami Beach in Miami-Dade County, Florida. The causeway includes 10 fixed span bridges and two (2) bascule leaf span (movable) bridges over the Intracoastal Waterway, Biscayne Bay.

2. Existing Conditions

- a. Each bridge section consists of 2-12' travel lanes with 4' bike lanes and 4' sidewalks on each side.
- b. Presently, the bridges exhibit severe deterioration because of their proximity to the very aggressive marine environment.
- c. These bridges do not meet current design and safety requirements.
- d. The two (2) existing bascule bridges, located at the western and eastern end of the causeway, have open grate leaf decks where run-off drains directly to the Biscayne Bay.
- e. The 10 fixed bridges have existing scuppers where run-off drains directly to the Biscayne Bay.
- f. No water quality is presently being provided for any run-off from the bridges.
- g. Biscayne Bay is designated as an Outstanding Florida Water (OFW).

3. Proposed Build Alternatives

- a. Rehabilitation
 - i. Includes deck replacement and possibly beam and foundation strengthening.
 - ii. The existing overall deck width will remain; therefore no net increase in impervious area.
- b. Replacement
 - i. Includes superstructure and substructure replacement.
 - ii. The width of the deck will increase, therefore there will be a net increase in impervious area.

4. Existing Permit(s)

- a. South Florida Water Management District (SFWMD) issued a Standard General Permit, Permit No. **13-04594-P** and Application No. **090211-4**, on June 5, 2009.
 - i. Project Name: Venetian Causeway Streetscape Improvements
 - ii. Permittee: County
 - iii. Project Description: A retrofit project involving the construction and operation of approximately 4,900 LF of French Drain prior to outfalling to the Biscayne Bay.

5. Water Management Jurisdictions and Permits

a. DERM

i. DERM stated a Class I and Class II permit will be required.

1. Class I: This permit is required for any work in, on, over or upon tidal waters or coastal wetlands anywhere in the County including any of the municipalities located within the County.
2. Class II: This permit is required for any control run-off discharge to any surface water in the County.

b. SFWMD

i. DERM stated SFWMD will issue the applicable Environmental Resource Permit (ERP) since the County will be the permittee; however asked EAC to confirm with them.

6. Water Quality

a. OFW

i. Biscayne Bay is an OFW; therefore an additional **50 percent** of determined WQ volume is required.

b. Roadway in Spoil Islands

- i. DERM stated if the existing roadway will be widened, then water quality is only required for the net increase of the impervious area.
- ii. If the roadway will be reconstructed, then water quality is required for the entire new roadway.

c. Volumetric Requirements

- i. Due to project's seasonal high water table and outfall to an OFW, wet detention volume shall be provided as follows:
 1. **150 percent** times the **first inch** of run-off times the project area
or
 2. **150 percent** times **2.5 inches** times the percentage of impervious area, whichever is greater.

d. Nutrient Loading

i. A pre versus post development nutrient loading analysis may be required; however DERM will defer to SFWMD.

e. Approach

- i. Scuppers draining directly to the Biscayne Bay are not allowed in the new fixed bridge decks for either of the build alternatives. It is preferred to have no scuppers and to have the run-off flow to the existing stormwater management system.
- ii. DERM stated it is allowable for the movable bridges to have open grate decks which directly discharge to Biscayne Bay for either of the build alternatives; however said to also verify with SFWMD.
- iii. DERM suggests the use of conventional water quality approaches such as French Drain, linear ponds etc.; however said to also verify with SFWMD.

7. Water Quantity
 - a. DERM stated they will defer to SFWMD's Water Quantity requirements.
8. Floodplain Encroachment
 - a. The project limits are within Zone AE (between elevations 9' and 10'NAVD).
 - b. Applicable Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Numbers are as follows:
 - i. 12086C0312L, 12086C0316L and 12086C0317L
 - c. DERM and EAC are in agreement that no impacts to the floodplain are anticipated based on the proposed build alternatives.
9. Sovereign Submerged Lands (SSL)
 - a. EAC and DERM are presently not aware of any existing easement for the 12 bridges.
10. City of Miami Beach Tailwater (TW) Elevation Design Criteria
 - a. DERM stated the City of Miami Beach has amended their *Stormwater Management Master Plan* (Commission adopted 11/14/12) by changing the TW elevation design criteria from 0.5' NAVD to 2.7' NAVD per a Commission Memorandum dated 2/12/14.
 - b. DERM stated this TW change is to aid the City of Miami Beach's on-going effort to address sea level rise.
 - c. EAC stated a draft hydraulic modeling has been performed for each of the 12 bridges based on the 50-year design (9.5' NAVD 88), 100-year base (11.6' NAVD 88) and 500-year greatest (16.1' NAVD 88) flood events which have stage elevations exceeding the new TW elevation.
 - d. DERM and EAC agreed the new TW should not have an effect on the hydraulic and coastal methodologies for analyzing the bridges.
11. Other Permitting Agencies and Suggestions
 - a. DERM suggested the EAC Team to coordinate other applicable permits with the following authorities:
 - i. SFWMD
 - ii. United States Coast Guard (USCG)
 - iii. United States Army Corps of Engineers (USACE)
 - b. EAC stated they have kept the above authorities informed of the project and coordination is on-going.

12. Next Steps

Action Items				
Item No.	Description	Assigned to	Due	Completed
1.	Meet with SFWMD to share the stormwater management discussion that was held with DERM and to obtain other permit requirements from SFWMD.	Rodney	4/17/15	Yes
2.	Coordination and follow-up discussions with permitting agencies and authorities such as SFWMD, DERM, USCG and USACE.	EAC Project Team	On-going until PD&E completion.	

If anyone has a conflict with the accuracy of the information contained in these minutes, please contact the author within 5 days of the submittal date.

cc: Attendees and team members, file

I2 SFWMD Stormwater Management Meeting Minutes

Meeting Minutes
Venetian Causeway
Project Development and Environment Study
FM No. 422713-2-22-01
Stormwater Management Meeting, April 15, 2015
2:00 PM – 3:00 PM

Attendees:

Name	Organization	Phone Number	E-Mail Address
Eduardo Lopez	SFWMD	(561) 682-6959	elopez@sfwmd.gov
Jeff Meyer	SFWMD	(561) 682-6118	jemeyer@sfwmd.gov
Daniel Greenberg	EAC Consulting, Inc.	(305) 265-5440	dgreenberg@eacconsult.com
Rodney Devera	EAC Consulting, Inc.	(305) 265-5462	rdevera@eacconsult.com

Author: Rodney Devera

Submit Date: 4/20/2015

Location: EAC Consulting, Inc.'s (EAC) Miami office

This meeting was held to discuss the stormwater management requirements and applicable permits that would be required by South Florida Water Management District (SFWMD) for the proposed Venetian Causeway Bridges build alternatives. The following items were discussed:

1. Project Description
 - a. The Florida Department of Transportation (FDOT) District Six initiated a Project Development & Environment (PD&E) Study to examine the potential replacement or rehabilitation of the 12 existing bridges that comprise the Venetian Causeway (Venetian Way).
 - b. The bridges are owned and maintained by Miami-Dade County (County).
 - c. The bridges were originally built in 1926 and have been designated as historic landmarks by the City of Miami and City of Miami Beach. They are also listed on the National Register of Historic Places (NRHP).
 - d. The causeway is approximately 2.5 miles long and is primarily a two-lane undivided facility that provides a major link between the City of Miami and the City of Miami Beach in Miami-Dade County, Florida. The causeway includes 10 fixed span bridges and two (2) bascule leaf span (movable) bridges over the Intracoastal Waterway, Biscayne Bay.
2. Existing Conditions
 - a. Each bridge section consists of 2-12' travel lanes with 4' bike lanes and 4' sidewalks on each side.
 - b. Presently, the bridges exhibit severe deterioration because of their proximity to the very aggressive marine environment.

- c. These bridges do not meet current design and safety requirements.
 - d. The two (2) existing bascule bridges, located at the western and eastern end of the causeway, have open grate leaf decks where run-off drains directly to the Biscayne Bay.
 - e. The 10 fixed bridges have existing scuppers where run-off drains directly to the Biscayne Bay.
 - f. No water quality is presently being provided for any run-off from the bridges.
 - g. Biscayne Bay is designated as an Outstanding Florida Water (OFW).
3. Proposed Build Alternatives
- a. Rehabilitation
 - i. Includes deck replacement and possibly beam and foundation strengthening.
 - ii. The existing overall deck width will remain; therefore no net increase in impervious area.
 - b. Replacement
 - i. Includes superstructure and substructure replacement.
 - ii. The width of the deck will increase, therefore there will be a net increase in impervious area.
4. Existing Permit(s)
- a. SFWMD issued a Standard General Permit, Permit No. **13-04594-P** and Application No. **090211-4**, on June 5, 2009.
 - i. Project Name: Venetian Causeway Streetscape Improvements
 - ii. Permittee: County
 - iii. Project Description: A retrofit project involving the construction and operation of approximately 4,900 LF of French Drain prior to outfalling to the Biscayne Bay.
5. Water Management Jurisdictions and Permits
- a. SFWMD
 - i. Will issue the applicable Environmental Resource Permit (ERP) since the County will be the permittee.
 - ii. Based on our discussion, it is anticipated an Individual Permit will be required.

- b. Miami-Dade's Department of Regulatory Economic Resources' (DRER) Division of Environmental Resource Management (DERM)
 - i. DERM is the local water management jurisdiction.
 - ii. Class I: This permit is required for any work in, on, over or upon tidal waters or coastal wetlands anywhere in the County including any of the municipalities located within the County.
 - iii. Class II: This permit is required for any control run-off discharge to any surface water in the County.
- 6. Water Quality
 - a. OFW
 - i. Biscayne Bay is an OFW; therefore an additional **50 percent** of the determined Water Quality volume is required.
 - b. Volumetric Requirements
 - i. Due to project's seasonal high water table and outfall to an OFW, wet detention volume shall be provided based on whichever is greater than the following:
 - 1. **150 percent** times the **first inch** of run-off times the project area
 - or
 - 2. **150 percent** times **2.5 inches** times the percentage of impervious area
 - c. Nutrient Loading
 - i. A pre versus post development nutrient loading analysis may be required.
 - d. Approach
 - i. Scuppers draining directly to the Biscayne Bay are not allowed in the new fixed bridge decks for either of the build alternatives. It is preferred to have no scuppers and to have the run-off flow to the existing stormwater management system.
 - ii. SFWMD stated it is allowable for the movable bridges to have open grate decks which directly discharge to Biscayne Bay for either of the build alternatives.
 - iii. SFWMD suggests the use of conventional water quality approaches such as French Drain, linear ponds, etc.
 - iv. If the latter approaches are not feasible, then other options such as continuous deflection separators (vortex) will need to be further discussed with SFWMD prior to implementation.
- 7. Water Quantity
 - a. Design Storm
 - i. 25-year 3-day pre. vs. post
 - ii. SFWMD concern is any increase in the outfall discharge in the post condition and how it may affect the aquatic resources at the outfalls.
- 8. Floodplain Encroachment
 - a. The project limits are within Zone AE (between elevations 9' and 10'NAVD).

- b. Applicable Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Numbers are as follows:
 - i. 12086C0312L, 12086C0316L and 12086C0317L
 - c. SFWMD and EAC are in agreement that no impacts to the floodplain are anticipated based on the proposed build alternatives.
- 9. Environmental Concerns
 - a. Maintenance of Traffic (MOT) and Construction Methodology
 - i. The MOT schemes and Construction Methodology such as a temporary bridge, barge and collection of debris during construction will need to be reviewed by SFWMD.
 - ii. SFWMD needs to review any potential impacts to the submerged aquatic resources and marine life beneath and in proximity to the project site.
- 10. Sovereign Submerged Lands (SSL)
 - a. EAC and SFWMD are presently not aware of any existing easement for the 12 bridges.
 - b. SFWMD stated they can submit an inquiry to the Florida Department of Environmental Protection (FDEP) and provide the results to EAC.
- 11. Other Permitting Agencies and Suggestions
 - a. SFWMD suggested the EAC Team to coordinate other applicable permits with the following authorities:
 - i. Federal Highway Administration (FHWA)
 - ii. United States Coast Guard (USCG)
 - iii. United States Army Corps of Engineers (USACE)
 - iv. The Florida Fish and Wildlife Conservation Commission (FWC)
 - b. EAC stated they have kept the above authorities informed of the project and coordination is on-going.
 - c. SFWMD suggest to review the requirements they imposed for the 7 Mile Bridge as a reference project.
- 12. Next Steps

Action Items				
Item No.	Description	Assigned to	Due	Completed
1.	Submit inquiry to FDEP to obtain information of any existing easements of the 12 bridges crossing over SSL.	Jeff/Rodney	4/27/15	Yes
2.	Coordination and follow-up discussions with permitting agencies and authorities such as FHWA, SFWMD, DERM, USCG, USACE and FWC.	EAC Project Team	On-going until PD&E completion.	

If anyone has a conflict with the accuracy of the information contained in these minutes, please contact the author within 5 days of the submittal date.

cc: Attendees and team members, file

Appendix J: EPA Sole Source Aquifer Letter



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

FEB 18 2020

Mr. Dat Huynh, PE
Project Manager
Florida Department of Transportation, District 6
1000 North West 111th Avenue, Room 6111A
Miami, Florida 33172

Subject: Sole Source Aquifer Review/Concurrence for Venetian Causeway from North Bayshore Drive to Purdy Avenue, ETDM#: 12756.

Dear Mr. Huynh:

The U.S. Environmental Protection Agency, Region 4 received the Florida Department of Transportation's (FDOT) February 03, 2020 request to review the **Venetian Causeway from North Bayshore Drive to Purdy Avenue, ETDM#: 12756** project (Project) pursuant to Section 1424(e) of the Safe Drinking Water Act (SDWA), 42 U.S.C. § 300h-3. The objective of the EPA's review is to determine if the Project lies within the boundaries, including recharge and streamflow source zones, of an EPA designated Sole Source Aquifer (SSA), and to determine if the Project poses potential adverse health or environmental impacts. A SSA is the sole or principal water source for a designated area.

The Project has been determined to lie **inside** the designated boundaries of the Biscayne Sole Source Aquifer and based on the information provided, may cause a significant impact to the aquifer system when the Project's bridge foundations are installed and/or construction dewatering is undertaken. However, with proper implementation of best management practices (BMPs), these potential impacts can be adequately reduced or properly mitigated. To that effect, when installing bridge foundations, the FDOT must adhere to the list of BMPs provided as items 1 and 2 below. The dewatering operation BMPs are listed in item 3 below:

1. FDOT Design Manual Chapter 320 Stormwater Pollution Prevention Plan (SWPPP)
2. FDOT Standard Specification for Road and Bridge Construction,
 - a. Section 6 – Control of Materials
 - b. Section 104 – Prevention, Control, And Abatement of Erosion and Water Pollution
 - c. Section 455 – Structures Foundations
3. U.S. Bureau of Reclamation Engineering Geology Field Manual – Chapter 20 Water Control. <https://www.usbr.gov/tsc/techreferences/mands/geology/fieldmanual-vol2/Chapter20.pdf>

Furthermore, all debris from any demolition of the existing structures must be properly contained and removed from the site prior to construction of the new structure. If applicable, all county flood plain management plans and public notification processes must be followed. During construction, it is the EPA's understanding and expectation that those responsible for the Project will strictly adhere to all Federal, State, and local government permits, ordinances, planning designs, construction codes,

operation, maintenance, and engineering requirements, and any contaminant mitigation recommendations outlined by federal and state agency reviews. All best management practices for erosion and sedimentation control must also be followed and State and local environmental offices must be contacted to address proper drainage and storm water designs. Additionally, the project manager should contact State and local environmental officials to obtain a copy of any local Wellhead Protection Plans. The following website provides information regarding the Florida Department of Environmental Protection's Source Water Assessment and Protection Program.
<http://www.dep.state.fl.us/swapp/Default.htm>

The EPA finds that, if the conditions outlined above are adhered to, this Project should have no significant impact to the aquifer system. Please note that this "no significant impact" finding has been determined based on compliance with the requirements outlined above and, on the information provided. Further, this finding only relates to Section 1424(e) of the SDWA, 42 U.S.C. § 300h-3. If there are any significant changes to the Project, the EPA Region 4 office should be notified for further review. Other regulatory groups within the EPA responsible for administering other programs may, at their own discretion and under separate cover, provide additional comments.

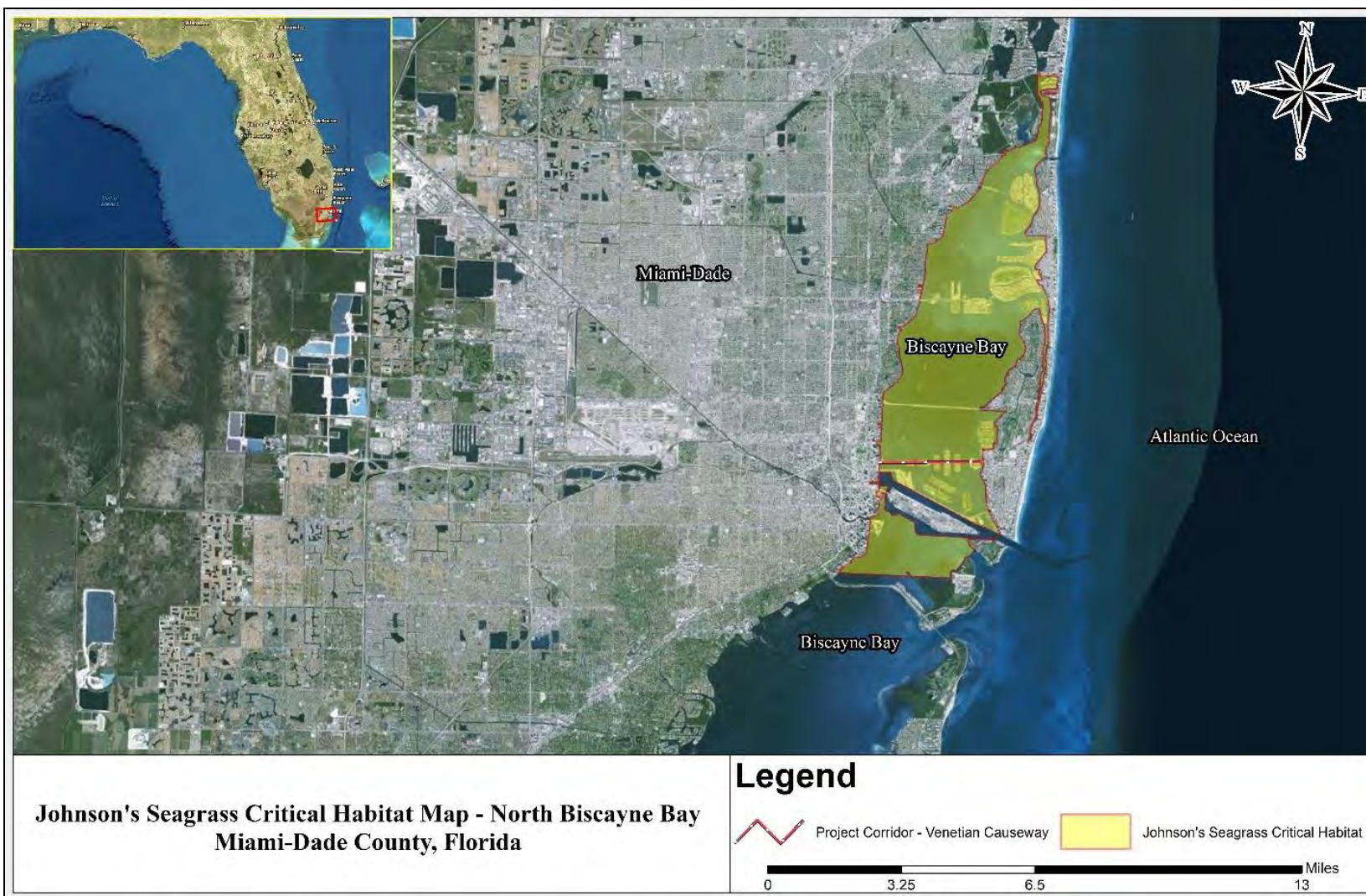
Thank you for your concern with the environmental impacts of this Project. If you have any questions, please contact Mr. Khurram Rafi at 404-562-9283 or Rafi.Khurram@epa.gov or Mr. Larry Cole at 404-562-9474 or Cole.Larry@epa.gov.

Sincerely,

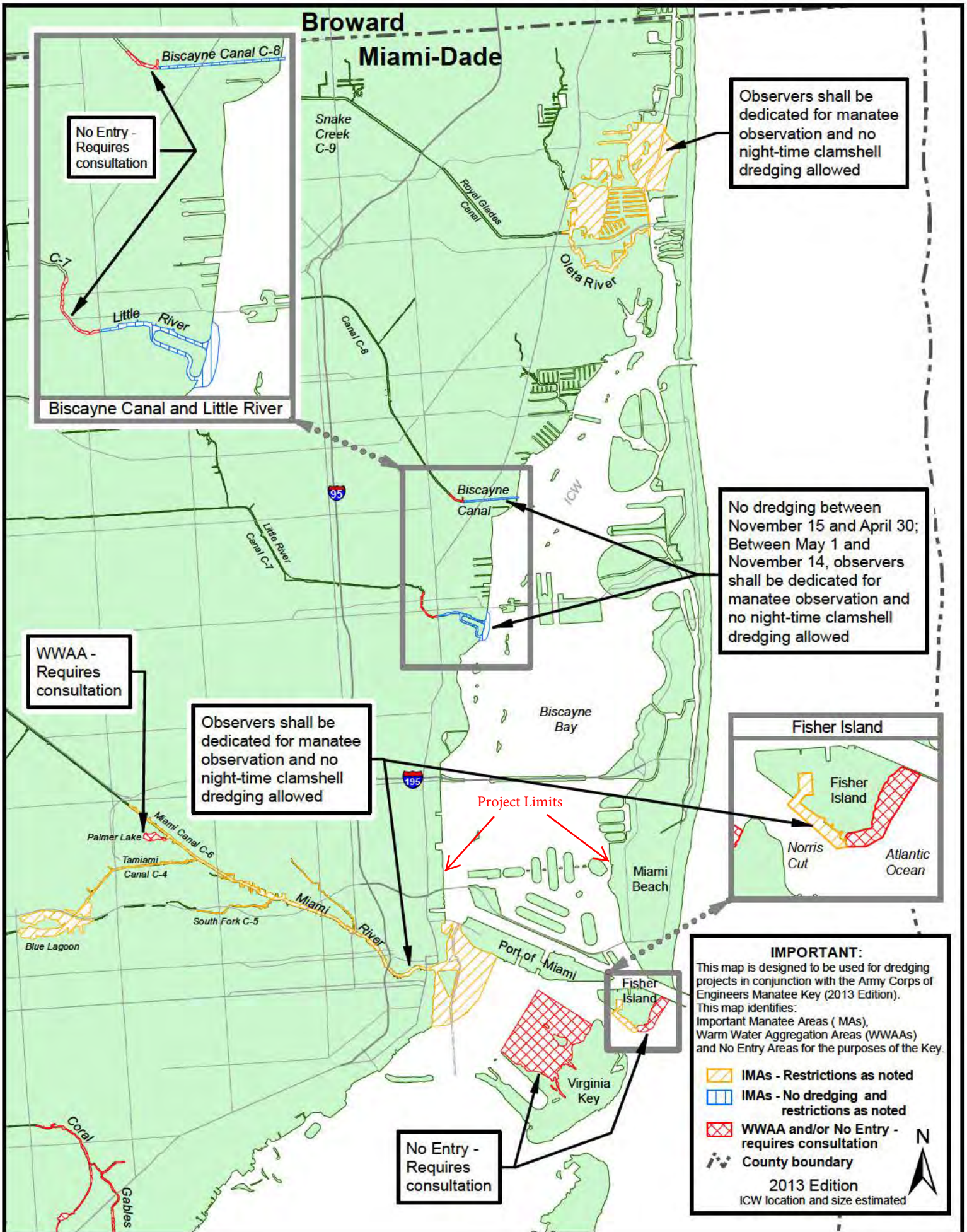
A handwritten signature in blue ink, appearing to read "Alanna M. Conley".

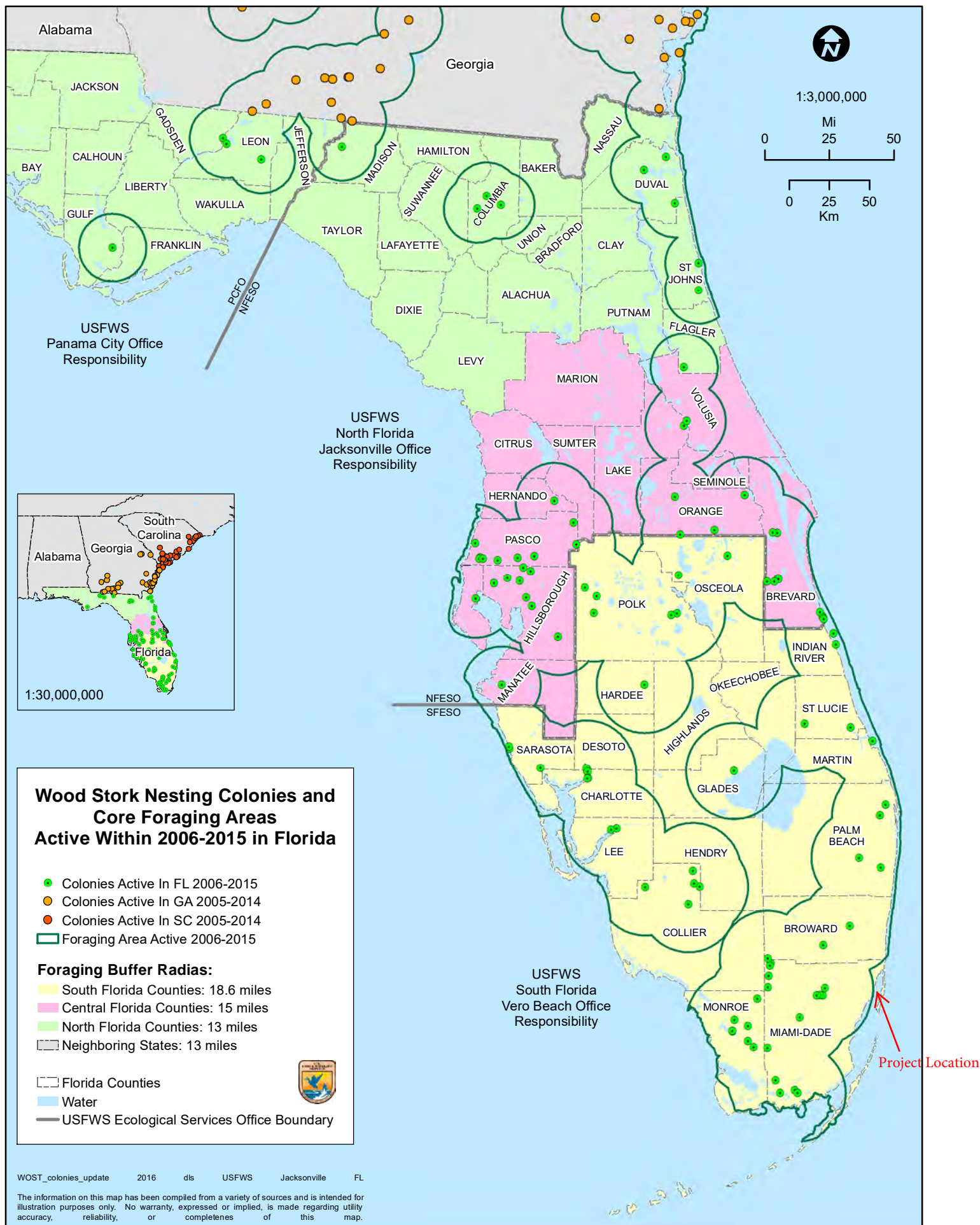
Alanna M. Conley, Chief
Groundwater, UIC and GIS Section
Safe Drinking Water Branch
EPA, Region 4, Atlanta, GA

Appendix K: Species Distribution Maps



Miami-Dade County - North





Appendix L: Section 7 USFWS Consultation

- L1 USFWS Consultation Letter – August 22, 2019**
- L2 USFWS Concurrence Letter – October 5, 2019**

L1 USFWS Consultation Letter



Florida Department of Transportation

RON DESANTIS
GOVERNOR

1000 NW 111th Avenue
Miami, FL 33172-5800

KEVIN J. THIBAUT, P.E.
SECRETARY

August 22, 2019

Mr. John Wrublik
U.S. Fish and Wildlife Service
South Florida Ecological Services Office
1339 20th Street
Vero Beach, FL 32256-7517

Subject: **ESA Section 7 Consultation/Concurrence Request Letter**
Project Name: Venetian Causeway
Limits: From North Bayshore Drive to Purdy Avenue
Financial Management No. 422713-2-22-01
ETDM No. 12756
County: Miami-Dade

Dear Mr. Wrublik,

The Florida Department of Transportation (FDOT) District Six conducted a Protected Species and Habitat Evaluation as part of the Natural Resource Evaluation (NRE) for the above-referenced Project Development & Environment (PD&E) Study, in accordance with Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended, and the FDOT PD&E Manual. The PD&E study limits for this project include the Venetian Causeway from north of Bayshore Drive to Purdy Avenue Miami-Dade County, Florida. The purpose of this project is to address structural and functional deficiencies of the 12 existing bridges that comprise the Venetian Causeway. The Protected Species and Habitat Evaluation documents project involvement with protected species and habitat and determines the potential effects that the proposed improvements may have on those species.

This project was screened through the Efficient Transportation Decision Making (ETDM) Environmental Screening Tool (EST) and the programming screen was published on February 14, 2012 (ETDM No. 12756). Under the guidance of the United States Fish and Wildlife Service (USFWS), the following Federally listed species were identified having the potential to occur within the project study area and were evaluated in the NRE: West Indian manatee (*Trichechus manatus*); piping plover (*Charadrius melodus*);

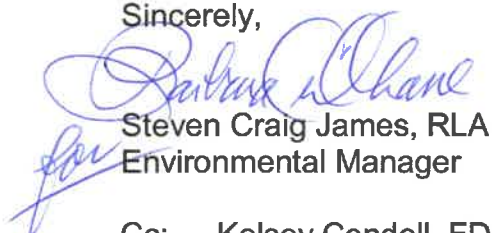
wood stork (*Mycteria americana*); and, American crocodile (*Crocodylus acutus*). The project occurs within the USFWS's designated Critical Habitat for the West Indian manatee; however, the FDOT will implement the *Standard Manatee Conditions for In-Water Work* to minimize impacts to this species and its critical habitat to the greatest extent possible. By implementing avoidance and minimization techniques, along with Best Management Practices (BMPs), and Standard Protection Measures, the FDOT made an effect determination of **may affect, not likely to adversely affect** (MANLAA) for the West Indian manatee.

The effect determination for each of the Federally listed species under the purview of the USFWS with the potential to occur in the project area is shown in the **Effect Determinations for Federally Listed Species** table below:

Effect Determinations for Federally Listed Species	
Species Name	Determination of Project Effect – Recommended Alternatives
Birds	
Wood stork (<i>Mycteria americana</i>)	No effect
Piping plover (<i>Charadrius melodus</i>)	No effect
Mammals	
West Indian manatee (<i>Trichechus manatus</i>)	May affect, not likely to adversely affect
Reptiles	
American Crocodile (<i>Crocodylus acutus</i>)	No effect

We ask that USFWS review the enclosed NRE for this project and provide concurrence with FDOT's determinations for these species. We appreciate the coordination effort and input already provided and look forward to continued consultation on this project. If you have any questions, feel free to contact either Kelsey Condell at (305) 470-5405, kelsey.condell@dot.state.fl.us or me at (305) 470-5221, steven.james@dot.state.fl.us. Thank you for your assistance with this project.

Sincerely,


Steven Craig James, RLA
Environmental Manager

Cc: Kelsey Condell, FDOT
Dat Hyunh, FDOT
Nicole Carter, Stantec

L2 USFWS Concurrence Letter

41420-2010 - CPA - 0473

Miami Dade

FDOT

Florida Department of Transportation

RON DESANTIS
GOVERNOR

1000 NW 1st Street
Miami, FL 33139



U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960
772-562-3909 Fax 772-562-4288

FWS Log No. 04EF2000-2010-CPA-0473

The U.S. Fish and Wildlife Service has reviewed the information provided and finds that the proposed action is not likely to adversely affect any federally listed species or designated critical habitat protected by the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et. seq.). A record of this consultation is on file at the South Florida Ecological Service Office.

This fulfills the requirements of section 7 of the Act and further action is not required. If modifications are made to the project, if additional information involving potential effects to listed species becomes available, or if a new species is listed, reinitiation of consultation may be necessary.

Roxanna Hinzman, Field Supervisor

10/5/19

Date

August 22, 2019

Mr. John Wrublik
U.S. Fish and Wildlife Service
South Florida Ecological Services Office
1339 20th Street
Vero Beach, FL 32256-7517

Subject: **ESA Section 7 Consultation/Concurrence Request Letter**
Project Name: Venetian Causeway
Limits: From North Bayshore Drive to Purdy Avenue
Financial Management No. 422713-2-22-01
ETDM No. 12756
County: Miami-Dade

Dear Mr. Wrublik,

The Florida Department of Transportation (FDOT) District Six conducted a Protected Species and Habitat Evaluation as part of the Natural Resource Evaluation (NRE) for the above-referenced Project Development & Environment (PD&E) Study, in accordance with Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended, and the FDOT PD&E Manual. The PD&E study limits for this project include the Venetian Causeway from north of Bayshore Drive to Purdy Avenue Miami-Dade County, Florida. The purpose of this project is to address structural and functional deficiencies of the 12 existing bridges that comprise the Venetian Causeway. The Protected Species and Habitat Evaluation documents project involvement with protected species and habitat and determines the potential effects that the proposed improvements may have on those species.

This project was screened through the Efficient Transportation Decision Making (ETDM) Environmental Screening Tool (EST) and the programming screen was published on February 14, 2012 (ETDM No. 12756). Under the guidance of the United States Fish and Wildlife Service (USFWS), the following Federally listed species were identified having the potential to occur within the project study area and were evaluated in the NRE: West Indian manatee (*Trichechus manatus*); piping plover (*Charadrius melodus*);

Appendix M: Section 7 and EFH NMFS Consultation

- M1 NMFS Consultation Letter – December 20, 2019**
- M2 Initial EFH Response Letter – January 28, 2020**
- M3 FDOT EFH Recommendation Response Letter – February 28, 2020**
- M4 Final EFH Response Letter – March 10, 2020**
- M5 NMFS Biological Opinion – November 03, 2020**

M1 NMFS Consultation Letter



Florida Department of Transportation

RON DESANTIS
GOVERNOR

1000 NW 111th Avenue
Miami, FL 33172-5800

KEVIN J. THIBAUT, P.E.
SECRETARY

December 20, 2019

Ms. Jennifer Schull
NOAA Fisheries Southeast Regional Office
Habitat Conservation Division
400 N. Congress Avenue STE 110
West Palm Beach, FL 33401

Subject: **Essential Fish Habitat and ESA Section 7 Consultation/Concurrence Request Letter**
Project Name: Venetian Causeway
Limits: From North Bayshore Drive to Purdy Avenue
Financial Management No. 422713-2-22-01
ETDM No. 12756
County: Miami-Dade

Dear Ms. Schull,

The Florida Department of Transportation (FDOT) District Six conducted an Essential Fish Habitat (EFH) analysis as part of the Natural Resource Evaluation (NRE) for the above-referenced Project Development & Environment (PD&E) Study, in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), pertinent National Marine Fisheries Service (NMFS) guidelines, and the FDOT PD&E Manual. The purpose of this assessment was to document project involvement with EFH designated by the NMFS' South Atlantic Fishery Management Council (SAFMC). A Protected Species and Habitat Evaluation was also conducted for those species under NMFS jurisdiction, in accordance with Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended, and the FDOT PD&E Manual

The PD&E study limits for this project include the 12 Bridges of the Venetian Causeway which traverse over Biscayne Bay from North Bayshore Drive to Purdy Avenue in Miami-Dade County, FL. The purpose of this project is to address structural and functional deficiencies of these 12 existing bridges that comprise the Venetian Causeway. The NRE documents project involvement with EFH, protected species and

their habitat and determines the potential effects that the proposed improvements may have on these resources.

An EFH assessment, which included in-water biological characterization surveys (conducted in August 2014 and again in July 2017) around each of the 12 project bridges, was performed for the project area within Biscayne Bay. The following seven (7) EFH types were identified within the project area and are listed below with their associated Fisheries Management Plans (FMPs):

1. Estuarine & Marine Submerged Aquatic Vegetation (SAV) (Shrimp, Red Drum, Snapper-Grouper, and Spiny Lobster FMPs);
2. Unconsolidated Bottom (Red Drum, Snapper-Grouper, and Spiny Lobster FMPs);
3. Live/Hardbottom (Snapper-Grouper and Spiny Lobster FMPs);
4. Shallow Subtidal bottom (Spiny Lobster FMP);
5. Sponges (Spiny Lobster FMP);
6. Algal Communities (Spiny Lobster FMP);
7. Rough, hard, exposed, stable substrate (Coral FMP).

Regardless of the design alternative, no direct or indirect impacts to Estuarine and Marine SAV EFH are anticipated as these resources were only documented outside the anticipated work zone and were all found at depths that would not be impacted by barge routes. In addition, FDOT has committed to restricting barge spudding to the areas in close proximity to the existing bridges during construction to avoid unnecessary impacts to SAV. As this EFH type will not be adversely impacted, no impacts would be expected to the FMP for the Red Drum.

Temporary impacts to the following EFH types are anticipated during project construction: Unconsolidated bottom, Live/Hardbottom, Sponges, Algal Communities and Rough, hard exposed stable substrate. Impacts to these EFH types may have a temporary effect on species within the following FMPs: Shrimp, Snapper-Grouper, Spiny Lobster and Corals. FDOT has also committed to relocating all suitable corals and barrel sponges within the area of potential impact prior to construction; this will alleviate any potential impacts to species within the Corals FMP. Temporary displacements of species included in the Shrimp, Spiny Lobster and Snapper-Grouper FMPs may occur during project construction; however, these species are anticipated to return to the project area post-construction as the EFH types that currently exist within the construction limits are anticipated to naturally re-establish. Therefore, no impacts to species within the Shrimp, Spiny Lobster or Snapper-Grouper FMPs are anticipated from this project.

Overall, adverse impacts to EFH are anticipated to be '**Minimal**' from this project as they are generally expected to be temporary displacements with no substantial loss or degradation of any EFH or any Habitat Area of Particular Concern (HAPC). Additionally, no species within any of the FMPs regulated by the SAFMC are anticipated to be adversely impacted due to the small size of the project and the minor, temporary nature of the anticipated EFH impacts. Temporary displacements of individuals within the species included in the aforementioned FMPs will be minimized through sequential construction methodology. No long-term, adverse impacts are anticipated for the geographically designated, marine HAPC, Biscayne Bay as a result of this project as the proposed work is not expected to promote new development, impact water quality or encourage changes in existing/future land use. Therefore, it is anticipated that cumulative impacts to EFH from the proposed project, when combined with other past, present and future projects, would be inconsequential.

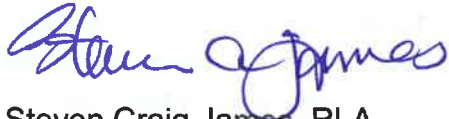
As part of the Protected Species and Habitat Evaluation the following Federally listed species under the purview of the NMFS were identified and determined to potentially occur within the project area: Johnson's seagrass, green sea turtle, loggerhead sea turtle, Kemp's Ridley sea turtle, leatherback sea turtle, hawksbill sea turtle, smalltooth sawfish, Elkhorn coral, and Staghorn coral. No direct impacts to any of these listed species are anticipated as a result of the project for any of the proposed alternatives. By implementing avoidance and minimization techniques, along with Best Management Practices (BMPs), and the *Sea Turtle and Smalltooth Sawfish Construction Conditions*, the FDOT made an effect determination of **may affect, not likely to adversely affect (MANLAA)** for each of these species (See summary table below). The project also occurs within Johnson's seagrass critical habitat. However, impacts to this seagrass species are not anticipated as this species had not been documented within the project area during either of the field surveys. Therefore, the effect determination for this species and its critical habitat is **MANLAA**.

Effect Determinations for Federally Listed Species	
Species Name	Determination of Project Effect – Recommended Alternatives
Plants	
Johnson's seagrass (<i>Halophila johnsonii</i>)	May affect, not likely to adversely affect
Reptiles	
Green turtle (<i>Chelonia mydas</i>)	May affect, not likely to adversely affect
Loggerhead sea turtle (<i>Caretta caretta</i>)	May affect, not likely to adversely affect
Kemp's Ridley sea turtle (<i>Lepidochelys kempii</i>)	May affect, not likely to adversely affect
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	May affect, not likely to adversely affect
Hawksbill sea turtle (<i>Eretmochyles imbricata</i>)	May affect, not likely to adversely affect
Fish	
Smalltooth sawfish (<i>Pristis pectinata</i>)	May affect, not likely to adversely affect
Corals	
Elkhorn coral (<i>Acropora palmata</i>)	May affect, not likely to adversely affect
Staghorn coral (<i>Acropora cervicornis</i>)	May affect, not likely to adversely affect

The FDOT will utilize BMPs to minimize any temporary impacts that may occur during construction, including a Turbidity Monitoring Plan to contain any turbidity within the construction zone to prevent and minimize effects. The FDOT will continue to coordinate with the NMFS throughout the design phase and environmental permitting process.

We ask that NMFS review the enclosed NRE and provide written concurrence with FDOT's findings for EFH, protected species and their habitat, including any Conservation Recommendations. We appreciate the coordination effort and input already provided and look forward to continued consultation on this project. If you have any questions, please feel free to contact either Kelsey Condell at (305) 470-5405, kelsey.condell@dot.state.fl.us or me at (305) 470-5221, steven.james@dot.state.fl.us. Thank you for your assistance with this project.

Sincerely,



Steven Craig James, RLA
Environmental Manager

Cc: Kelsey Condell, FDOT
Dat Hyunh, FDOT
Nicole Carter, Stantec

M2 Initial EFH Response Letter



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
<https://www.fisheries.noaa.gov/region/southeast>

January 28, 2020

F/SER47:JS/pw

(Sent via Electronic Mail)

Steven Craig James, Environmental Manager
Florida Department of Transportation, District 6
1000 NW 111th Street
Miami, FL 33172-5800

Dear Mr. James:

On December 20, 2019, NOAA's National Marine Fisheries Service (NMFS) received from the Florida Department of Transportation, District 6 (FDOT), a request for essential fish habitat (EFH) consultation regarding FDOT's efforts to rehabilitate or replace the 12 bridges (including two bascules) comprising the 2.5 miles of Venetian Causeway in Miami-Dade County (Financial Management Number 422713-2-22-01). Miami-Dade County owns the causeway. FDOT is considering three alternatives – no action, rehabilitation, and replacement. If replaced, the proposed replacement bridges would be 16 feet wider than the existing bridges to accommodate pedestrians and cyclists, but maintain the same centerline as the existing bridges. FDOT's consultation request included a Natural Resource Evaluation (NRE) report dated August 22, 2019. FDOT concludes the impacts to EFH will be minimal. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the NMFS provides the following comments and recommendations pursuant to authorities of the Fish and Wildlife Coordination Act and Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

Project History

The NMFS screened this project through the Efficient Transportation Decision Making (ETDM) Environmental Screening Tool (ETDM No. 12756), providing Planning Screen comments on August 30, 2010, and Programming Screen comments October 04, 2017. The NMFS conducted site visits August 17, 2010, and June 27, 2017, and participated in an interagency meeting on June 28, 2017. FDOT or its representatives conducted benthic surveys August 2014 and July 2017. These surveys covered the immediate project area as well as a 60-foot buffer around the existing bridges. Initially, FDOT requested EFH consultation on August 22, 2019. However, after discussion with the NMFS, FDOT withdrew the request so it could provide information that is more complete.

Essential Fish Habitat within the Project Area

The project occurs within the Biscayne Bay Aquatic Preserve. Ault et al. (2001)¹ identified over 325 fish and macroinvertebrate species in Biscayne Bay and concluded the Bay plays an important role as a primary nursery area for many fishes and macroinvertebrates. The project study area is approximately two miles from Government Cut. The habitats impacted by this project are readily accessible to federally managed fishery species. Project area depths range from 0 to 15 feet. Seagrass, coral, sponges, macroalgae, hardbottom, sand, and sand/shell hash occur within the project area. The South Atlantic Fishery Management Council (SAFMC) designates one or more of these habitats as EFH under the

¹ Ault, J.S., S.G. Smith, G.A. Meester, J. Juo, and J.A. Bohnsack. 2001. Site Characterization for Biscayne National Park: Assessment of Fisheries Resources and Habitats. NOAA Technical Memorandum NMFS-SEFSC-468. 156 pp. Available on-line at: http://www.aoml.noaa.gov/general/lib/tm_468.pdf



fishery management plans for shrimp; the snapper/grouper complex; spiny lobster; and coral, coral reef and hardbottom. In addition, Biscayne Bay is a state-designated Outstanding Florida Water and a SAFMC-designated Habitat Area of Particular Concern (HAPC) under the fishery management plans mentioned previously. HAPCs are subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially important ecologically, or located in an environmentally stressed area. The habitats affected by this project provide important forage and refuge habitat for a variety of federally managed fishery species and their prey. Seagrasses and/or corals also help maintain water quality (*e.g.*, pollution uptake), stabilize sediments, attenuate wave action, and produce and export detritus (decaying organic material), an important component of marine and estuarine food chains. The SAFMC provides additional information on EFH, HAPCs, and their support of federally managed fishery species in the *Fishery Ecosystem Plan of the South Atlantic Region*.

While most of the habitat around the project area is bare sand with limited amounts of macroalgae and seagrass, there are significant areas of riprap and hardbottom that harbor flourishing communities of sponges, tunicates, octocorals and hard corals. The hard coral community is dominated by *Siderastrea* spp. The bridge structure itself supports high densities of sponges, tunicates, and other encrusting organisms. No corals were seen on the bridge pilings or seawalls. While mangroves are present along the shoreline of the islands connected by the bridges, the NMFS does not expect this project to affect mangroves.

Impacts to Essential Fish Habitat

The NMFS expects FDOT to either repair or replace the Venetian Causeway Bridges. Bridge replacement will be done sequentially using phased construction so traffic will not be rerouted. New bridges will be 16 feet wider than the existing bridges and result in additional shading of 0.82 acres of bay bottom. Benthic resource surveys included a 60-foot buffer around the existing bridges. It is expected final impacts will be less than the upper limits in the NRE.

Benthic surveys observed 0.06 acres of seagrass comprised primarily of paddle grass (*Halophila decipiens*) and some shoal grass (*Halodule wrightii*) within the 60-foot project buffer. Seagrass coverage estimates are 1 to 15 percent. The NRE describes seagrass near the outer edges of the 60-foot buffer (55 to 60 feet from the existing bridges) in more than seven feet of water and postulates the project work will avoid the seagrass. The NMFS recommends delineating the seagrass beds with surface buoys for the duration of the project so project barges and boats avoid impacting the beds. Updated seagrass surveys, with reference sites, should occur before, during, and after the project to ensure no adverse impacts to seagrass beds. Since there is no seagrass growing adjacent to the current bridges, no new shading impacts from the new bridge are expected. FDOT agrees all barges will have a minimum clearance of 12 inches, be staged within the footprint of the old bridge deck when possible, and not remain in the same location for more than two weeks.

FDOT proposes to avoid all impacts to corals and barrel sponges by relocating them from the active construction area. As per Florida Fish and Wildlife Conservation Commission guidance, certain octocorals should be relocated as well. The NMFS requests FDOT prepare a coral, octocoral, and sponge relocation and monitoring plan for the NMFS to review. FDOT should also review if there will be any hardbottom or coral impacts due to barge spudding and incorporate those impacts into a relocation and/or mitigation plan, if needed. The NMFS agrees relocating corals, sponges, and octocorals from the project area is the most efficient approach for ensuring the survival of these fishery resources.

Impacts to EFH may result from several sources including repairing, extracting, and cutting piles; installing drilled shafts; operating barges; shading; and increasing turbidity. The project may affect a maximum of 0.88 acres of wetlands and surface waters from construction activities and new shading, if FDOT replaces the bridges. While the NRE does not quantify impacts to sand and sand/shell hash

habitat, the NMFS expects these impacts will not require mitigation. Some new shading of macroalgae communities is expected, but these communities are expected to quickly repopulate in the surrounding waters, and should not require mitigation. FDOT has agreed to use best management practices to control turbidity and sedimentation.

The current Venetian Causeway bridges have scuppers, allowing stormwater to drain directly into Biscayne Bay. If FDOT replaces the bridges, the new bridges will have stormwater collection and treatment to improve water quality prior to release into Biscayne Bay.

Final construction plans for the project are not available; therefore, the NMFS is limited in its ability to comment on construction impacts. It will be critical to carefully locate in-water construction equipment as to not impact coral and seagrass habitat. FDOT should avoid to the maximum extent practicable any construction impacts resulting from operating barges, boats, or floating platforms and from installing the piles. Drilled shaft installation should have appropriate containment to prevent concrete and chemical overflow into the surrounding waters. Drilled shaft testing should not employ blasting (e.g., static testing) to avoid acoustic impacts to marine resources. If the old bridge structures are demolished, they should be removed without blasting or allowing debris to fall into the water. Debris should be removed from the project area and be disposed in an appropriate location.

Compensatory Mitigation

Because the applicant proposes to avoid and minimize impacts to seagrass and coral resources, no mitigation for this project is proposed at this time.

EFH Conservation Recommendations

Section 305(b)(4)(A) of the Magnuson-Stevens Act requires NMFS to provide EFH conservation recommendations when an activity is expected to adversely impact EFH. Therefore, NMFS recommends the following to ensure the conservation of EFH and associated fishery resources:

- As an avoidance measure, FDOT should delineate existing seagrass beds within the project corridor with visible buoys to prevent barges and work boats from disturbing seagrass areas. Seagrass surveys (including reference areas) should be conducted before, during, and after construction to assess if impacts to seagrass occurred from the project.
- FDOT should develop a sponge, coral, and octocoral relocation and monitoring plan in accordance with Florida Fish and Wildlife Conservation Commission Coral and Octocoral Mitigation Relocation recommendations (dated 9/20/18 or later) and submit the plan to the NMFS for review and approval.
- Because FDOT has not quantified impacts of barge spudding on hardbottom communities, FDOT should estimate these impacts to determine if corals, sponges, and/or octocorals will be impacted. If so, a detailed mitigation plan that fully compensates for unavoidable adverse impacts to these habitats should be prepared and submitted to the NMFS for review and approval.
- If the bridges are replaced, FDOT should provide the NMFS with a demolition plan that includes disposal of all the bridge materials.

Section 305(b)(4)(B) of the Magnuson-Stevens Act and implementing regulation at 50 CFR Section 600.920(k) require the action agency to provide a written response to this letter within 30 days of its receipt. If it is not possible to provide a substantive response within 30 days, an interim response should be provided to NMFS. A detailed response then must be provided prior to final approval of the action. The detailed response must include a description of measures proposed by the action agency to avoid, mitigate, or offset the adverse impacts of the activity. If the response is inconsistent with the EFH

conservation recommendations, the action agency must provide a substantive discussion justifying the reasons for not following the recommendations.

Conclusion

The NMFS will continue to work with FDOT and other agencies as the project progresses into permitting, and the NMFS looks forward to reviewing the completed coral, octocoral, and sponge relocation and monitoring plan as well as the other conservation recommendations provided in this letter. We appreciate the opportunity to provide these comments. Please direct related correspondence to the attention of Jennifer Schull, NMFS liaison in our West Palm Beach Field Office, located at 400 North Congress Avenue, Suite 270, West Palm Beach, FL 33401, 561-440-1748, Jennifer.Schull@noaa.gov.

Sincerely,

/ for

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

cc: FDOT District 6, Steven.James@dot.state.fl.us, Dat.Huynh@dot.state.fl.us,
Barbara.Culhane@dot.state.fl.us
Stantec, Nicole.Carter@stantec.com
COE, Mark.M.Tamblyn@usace.army.mil
F/SER47, jennifer.schull@noaa.gov

M3 FDOT EFH Recommendation Response Letter



Florida Department of Transportation

RON DESANTIS
GOVERNOR

1000 NW 111th Avenue
Miami, FL 33172-5800

KEVIN J. THIBAUT, P.E.
SECRETARY

February 28, 2020

(Sent via Electronic Mail)

United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
West Palm Beach Field Office
400 North Congress Avenue
Suite 270
West Palm Beach, Florida 33401

RE: Essential Fish Habitat Consultation, Conservation Recommendations
Venetian Causeway, Project Development and Environment Study
From North Bayshore Drive to Purdy Avenue, Miami-Dade County, Florida
FM ID #: 422713-2-22-01
ETDM #: 12756

Dear Ms. Schull:

The Florida Department of Transportation, District 6 (FDOT), has reviewed NOAA's National Marine Fisheries Service (NMFS) January 28, 2020 letter and provides this written response to your request for details on proposed avoidance and minimization efforts to Essential Fish Habitat (EFH) for the Venetian Causeway Project. FDOT is completing its Project Development and Environment (PD&E) Study of three proposed alternatives (no build, rehabilitation, and replacement) and seeks concurrence from NMFS on its EFH Consultation. The preferred alternative seeks to replace the Venetian Causeway Bridges 2 through 12 and widen the bridges by 16 feet (ft.) to accommodate pedestrians and cyclists, while maintaining the same centerline as the existing bridges.

FDOT has reviewed the EFH conservation recommendations provided by NMFS and will incorporate the following avoidance and minimization efforts into the project design as project development progresses from PD&E into design and construction. These activities include:

- Seagrass surveys (including reference area) will be conducted prior to work commencement, during construction (when safe conditions allow), and after construction to assess if impacts to seagrass occurred as a result of the project.
- Prior to construction activities, FDOT will delineate seagrass beds located within the project corridor with visible buoys to identify protected areas that must be avoided by barges and work boats.
- During design, FDOT will develop a *Sponge, Coral, and Octocoral Relocation and Monitoring Plan* in accordance with the Florida Fish and Wildlife Conservation Commission's (FWC) Coral and Octocoral Mitigation Relocation recommendations (dated 9/20/18 or later). A Conceptual Plan is attached for NMFS review. No corals were identified on the seafloor where barges are anticipated to spud based on benthic surveys (2014 and 2017); however, FDOT acknowledges that impacts are not completely quantified for the preferred alternative. Therefore, FDOT will reinitiate consultation with NMFS during design and as part of project permitting with final impacts to corals, sponges, and/or octocorals and include compensatory actions for unavoidable impacts if identified. These actions will be included as part of the *Relocation and Monitoring Plan* for NMFS review and approval.
- The preferred alternative includes the replacement of bridges 2 through 12. FDOT will create a Demolition/Debris Containment Plan, as is required by permitting, during its design phase. The Plan will be provided to NMFS and will include disposal of all the bridge materials. The bridges are located within Outstanding Florida Waters and as such FDOT will remove debris from the project area, ensuring that it is disposed of in an appropriate manner and location. In addition, FDOT will not employ blasting for drill shaft testing or for the removal of bridge materials to avoid acoustic impacts to marine resources.

In addition to addressing NMFS conservation recommendations, FDOT will adhere to its *Standard Specification for Road and Bridge Construction* which includes utilizing best management practices (BMPs) to control turbidity and sedimentation, as well as concrete curing for installation. FDOT will also require construction barges have a minimum clearance of 12 inches, be staged within the footprint of the bridge deck(s) when possible, and not remain in the same location for more than two weeks in order to avoid to the maximum extent practicable any construction impacts resulting from operating barges and floating platforms.

On the basis of the conservation measures provided and the implementation of BMPs, as well as the assurance to reinitiating consultation through the submittal of the *Sponge, Coral, and Octocoral Relocation and Monitoring Plan* during design, FDOT has made a determination of ***minimal*** effect. We respectfully request concurrence from your agency with regard to this finding.

If you have any questions, please feel free to contact either Barbara Culhane at (305) 470-5231, barbara.culhane@dot.state.fl.us or me at (305) 470-5221, steven.james@dot.state.fl.us. Thank you for your assistance with this project.

Best regards,



Steven Craig James, RLA
District Environmental Manager
Planning and Environmental Management Office
Florida Department of Transportation, District Six


cc: Barbara Culhane - FDOT
Dat Hyunh, P.E. - FDOT


Attachments:

- Project Location Map
- Conceptual Plan for Sponge, Coral, and Octocoral Relocation and Monitoring



Legend

 Project Corridor - Venetian Causeway

 Feet
 0 650 1,300 2,600

M4 Final EFH Response Letter



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
<https://www.fisheries.noaa.gov/region/southeast>

March 10, 2020

F/SER47:JS/pw

(Sent via Electronic Mail)

Steven Craig James, Environmental Manager
Florida Department of Transportation, District 6
1000 NW 111th Street
Miami, FL 33172-5800

Dear Mr. James:

NOAA's National Marine Fisheries Service (NMFS) reviewed the letter from the Florida Department of Transportation District 6 (FDOT), dated February 28, 2020, regarding the rehabilitation or replacement of the 11 of the 12 bridges comprising the Venetian Causeway in Miami-Dade County (Financial Management Number 422713-2-22-01 and ETDM Number 12756). The letter included the report *Conceptual Plan for Relocation and Monitoring of Sponges, Octocorals and Corals*. The letter, report, and subsequent email correspondence reply to the conservation recommendations (CRs) made by NMFS on January 28, 2020, to protect Essential Fish Habitat (EFH). The NMFS recommended:

1. As an avoidance measure, FDOT should delineate existing seagrass beds within the project corridor with visible buoys to prevent barges and work boats from disturbing seagrass areas. Seagrass surveys (including reference areas) should be conducted before, during, and after construction to assess if impacts to seagrass occurred from the project.
2. FDOT should develop a sponge, coral, and octocoral relocation and monitoring plan in accordance with Florida Fish and Wildlife Conservation Commission Coral and Octocoral Mitigation Relocation recommendations (dated 9/20/18 or later) and submit the plan to the NMFS for review and approval.
3. Because FDOT has not quantified impacts of barge spudding on hardbottom communities, FDOT should estimate these impacts to determine if corals, sponges, and/or octocorals will be impacted. If so, a detailed mitigation plan that fully compensates for unavoidable adverse impacts to these habitats should be prepared and submitted to the NMFS for review and approval.
4. If the bridges are replaced, FDOT should provide the NMFS with a demolition plan that includes disposal of all the bridge materials.

FDOT has adequately addressed the CRs by committing to avoiding and minimizing impacts to fishery resources. FDOT affirmed its commitment to the seagrass survey and delineation of seagrass beds, and the demolition plan will prohibit blasting. FDOT has also committed to conducting fine-scale benthic surveys to quantify the composition and locations of sponge, octocoral, coral, and seagrass. These surveys will inform development of the final relocation monitoring and mitigation plans, including any impacts from spudding. Lastly, FDOT has committed to providing the NMFS an opportunity to review the final plans as the project continues towards the permitting phase.

NMFS provides the following comments on *Conceptual Plan for Relocation and Monitoring of Sponges, Octocorals and Corals*:

- P6: *Xestospongia muta* and other large sponges that provide habitat should be included in the relocation plan.



- P4: Octocorals should be included in the description of Community 2 as evidenced by Photo 17 in Appendix E.
- P6/7: The table for the monitoring schedule is inconsistent with the monitoring schedule in the text. The table appears to be missing the 1-week and 3-month monitoring events and subsequent reports.
- P7: Within the reports, quantitative as well as qualitative assessments of each coral colony should be conducted (#5), and other relocated species should be included as well.

This plan, along with any requirements for mitigation, will be refined as the project progresses towards permitting. The NMFS is available to provide technical assistance to ensure the adequacy of the benthic survey design, relocation plan, monitoring plan and schedule, and mitigation calculations that may be required.

Section 305(b)(4)(B) of the Magnuson-Stevens Act and 50 CFR 600.920(k)(1) require federal agencies to provide the NMFS with a detailed response when EFH conservation recommendations are provided and for the response to include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. With the submittal of the conceptual relocation and monitoring plan, commitments to seagrass surveys and delineation, and commitment to contain debris and prohibit blasting, FDOT has fulfilled its obligations under the EFH provisions of the Magnuson-Stevens Act.

The NMFS appreciates the opportunity to provide these comments and looks forward to working with FDOT to finalize EFH avoidance, minimization, and mitigation. Please direct related correspondence to the attention of Ms. Jennifer Schull at our West Palm Beach Office, 400 N Congress Ave, Suite 270, West Palm Beach, Florida 33401, at 561-440-1748, or at Jennifer.schull@noaa.gov.

Sincerely,

/for

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

cc: COE, Mark.M.Tamblyn@usace.army.mil
FDOT District 6, Steven.James@dot.state.fl.us, Dat.Huynh@dot.state.fl.us,
Barbara.Culhane@dot.state.fl.us, Andrew.Jungman@dot.state.fl.us,
Stantec, Nicole.Carter@stantec.com
F/SER47, Jennifer.schull@noaa.gov

M5 NMFS Biological Opinion



UNITED STATES DEPARTMENT OF COMMERCE
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F/SER31:JS
SERO-2019-03788

Mr. Steven Craig James
Environmental Manager
Florida Department of Transportation, District 6
1000 NW 111th Avenue
Miami, Florida 33172-5800

Ref: SERO-2019-03788, Venetian Causeway Bridges, Miami-Dade County, Florida

Dear Mr. James:

The enclosed Biological Opinion (Opinion) was prepared by the National Marine Fisheries Service (NMFS) pursuant to Section 7(a)(2) of the Endangered Species Act (ESA). This consultation is being carried out with the Florida Department of Transportation (FDOT) pursuant to the Surface Transportation Project Delivery Program, 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016, and executed by FDOT and the Federal Highway Administration (FHWA). Under these authorities, FHWA has assigned, and FDOT has assumed, the responsibilities of the Secretary under the National Environmental Policy Act (NEPA) with respect to one or more highway projects within the State, and associated consultation responsibilities of the FHWA under the Endangered Species Act.

The Opinion considers the effects of a proposal to replace 11 of the 12 bridges comprising the Venetian Causeway. NMFS concludes that the proposed action may affect, but is not likely to adversely affect, green sea turtle (North and South Atlantic DPSs), hawksbill sea turtle, Kemp's ridley sea turtle, loggerhead sea turtle (Northwest Atlantic DPS), giant manta ray, and smalltooth sawfish (United States DPS). NMFS concludes that the proposed action is likely to adversely affect, but will not destroy or adversely modify, Johnson's seagrass designated critical habitat.

This project has been assigned the tracking number SERO-2019-03788 in the NMFS Environmental Consultation Organizer (ECO). Please refer to the ECO number in all future inquiries regarding this consultation. Please direct questions regarding this Opinion to Jennifer Schull, Consultation Biologist, by phone at (561) 440-1748, or by email at Jennifer.Schull@noaa.gov.

Sincerely,

Roy E. Crabtree, Ph.D.
Regional Administrator

Enclosure:
Biological Opinion

File: 1514-22.L.4



**Endangered Species Act - Section 7 Consultation
Biological Opinion**

Action Agency: Federal Highway Administration

Applicant: Florida Department of Transportation, District 6

Activity: Venetian Causeway Bridge Replacements, Miami-Dade County, Florida

Consulting Agency: National Oceanic and Atmospheric Administration (NOAA),
National Marine Fisheries Service (NMFS),
Southeast Regional Office, Protected Resources Division (PRD),
St. Petersburg, Florida

Consultation Tracking Number SERO-2019-03788

Approved by:

Roy E. Crabtree, Ph.D., Regional Administrator
NMFS, Southeast Regional Office
St. Petersburg, Florida

Date Issued:

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Acronyms and Abbreviations

CFR	Code of Federal Regulations
DPS	Distinct Population Segment
ECO	NMFS Environmental Consultation Organizer
ESA	Endangered Species Act
EST	Environmental Screening Tool
ETDM	Efficient Transportation Decision Making
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
Opinion	Biological Opinion
PRD	NMFS Southeast Regional Office Protected Resources Division
U.S.	United States
USACE	U.S. Army Corps of Engineers

Units of Measurement

ac	acre(s)
ft ²	square foot/feet
in	inch(es)
m	meter(s)
mi	miles

Introduction

Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 et seq.), requires that each federal agency ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. Section 7(a)(2) requires federal agencies to consult with the appropriate Secretary in carrying out these responsibilities. The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and the United States (U.S.) Fish and Wildlife Service share responsibilities for administering the ESA.

Consultation is required when a federal action agency determines that a proposed action “may affect” listed species or designated critical habitat. Consultations on most listed marine species and their designated critical habitat are conducted between the action agency and NMFS. Informal consultation is concluded after NMFS determines that the action is not likely to adversely affect listed species or critical habitat. Formal consultation is concluded after NMFS issues a Biological Opinion (“Opinion”) that identifies whether a proposed action is likely to jeopardize the continued existence of a listed species, or destroy or adversely modify critical habitat, in which case reasonable and prudent alternatives to the action as proposed must be identified to avoid these outcomes. The Opinion states the amount or extent of incidental take of the listed species that may occur, develops measures (i.e., reasonable and prudent measures) to reduce the effect of take, and recommends conservation measures to further the recovery of the species. No incidental destruction or adverse modification of designated critical habitat may be authorized, and thus there are no reasonable and prudent measures – only reasonable and prudent alternatives that must avoid destruction or adverse modification.

This document represents NMFS’s Opinion based on our review of impacts associated with the proposed action within Miami-Dade County, Florida. This Opinion analyzes the project’s effects on threatened and endangered species and designated critical habitat, in accordance with Section 7 of the ESA. We based our Opinion on project information provided by the Florida Department of Transportation (FDOT) and other sources of information, including the published literature cited herein.

1 CONSULTATION HISTORY

The following is the consultation history for ECO number SERO-2019-03788:

- August 17, 2010 – NMFS conducted a site visit.
- August 30, 2010 – NMFS uploaded Planning Screen comments to the FDOT Environmental Screening Tool (EST) (Efficient Transportation Decision Making (ETDM) #12756).
- October 4, 2011 – NMFS uploaded Programming Screen comments to the FDOT EST (ETDM #12756).
- June 27, 2017 – NMFS conducted a site visit with FDOT and its consultants.
- June 28, 2017 – NMFS participated in an inter-agency conference call with FDOT, its consultants, and other federal and state agencies.

- August 27, 2019 – FDOT, designated by the FHWA as the non-federal representative, requested informal consultation with NMFS.
- September 5, 2019 – FDOT withdrew its informal consultation request because information to complete the consultation was incomplete.
- September 16, 2019, October 9, 2019, and November 22, 2019 – NMFS, FDOT, and FDOT consultants participated in pre-application calls to discuss project details.
- December 20, 2019 – FDOT renewed its request for informal consultation with NMFS.
- February 5, 2020 - NMFS requested additional information from FDOT.
- March 24, 2020 – FDOT responded to the request for additional information (dated March 13, 2020), but the response was incomplete.
- April 6, 2020 – FDOT/NMFS convened a conference call to discuss the information that had been provided and additional information needs.
- June 5, 2020 – FDOT provided additional information and formal consultation was initiated that day.

2 DESCRIPTION OF THE PROPOSED ACTION AND ACTION AREA

2.1 Proposed Action

The Florida Department of Transportation (FDOT or the applicant) proposes to demolish, remove, and replace 11 of the 12 bridges that comprise the Venetian Causeway, a 2.5 mile (mi) corridor connecting the City of Miami to the City of Miami Beach, Florida (Financial Management Number: 422713-2-22-01). The Venetian Causeway includes ten fixed span bridges and two bascule leaf span bridges over the Intracoastal Waterway extending from North Bayshore Drive (City of Miami) to Purdy Avenue (City of Miami Beach). The current bridges were originally built in 1926 and are structurally deficient and deteriorating. While the bridges have been rehabilitated and repaired over the course of several years, the bridges exhibit severe deterioration because of their proximity to an aggressive marine environment. Due to their deteriorated condition and inability to adequately serve traffic demand, bridges 2 through 12 have been classified as functionally obsolete or structurally deficient. Bridge 1 has been replaced in phases and is not considered functionally obsolete or structurally deficient and is not part of the proposed action.

The project will be completed sequentially with work occurring on only 1 bridge at a time in order to maintain traffic flow. Existing bridges to be replaced will be cut into pieces and removed from the project site by cranes placed on the bridge approaches (on land) and on barges (over water). No blasting or explosives will be used. Dredging will be required for the removal of the existing substructure to 2 feet (ft) below the mudline and for clearing area for the new bascule piers. New bridge sections will be constructed using barges and land based construction. Barges will not be allowed to spud within seagrass habitat. Up to 4 barges will be used at a time over the course of the project.

Once completed, the new bridges will be supported by 282 48-inch (in) drilled shafts. Up to 980 linear feet of sheet piles (either 22-in or 24-in long, each) will be used to support existing structures during construction. The sheet piles and drilled shaft caissons will be installed using vibratory hammer. Vibratory hammer will only be used during daylight hours and a maximum of 5 sheet piles or 1 drilled shaft caisson will be installed per day.

The new fixed span bridges (bridges 2-9, and 11-12) will be widened by approximately 16 ft and raised 1 ft above the existing clearance. The bascule bridge (bridge 10) will be widened by approximately 16 ft and will have a vertical clearance of 13.5 ft above mean high water in the closed position. Up to 8,536 square feet (ft²) of material will be dredged in association with this project using an excavator, and turbidity barriers will surround the work area. All dredged spoils will be disposed of in an off-site upland location. Approximately 2,400 ft² of riprap will be installed at the 10 fixed bridge approaches where they meet the causeways and the sheet piles will be installed 2 ft behind the riprap. Construction is expected to take 1,460 calendar days (48 months). The applicant will comply with *NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions*.¹ Upon completion, the proposed action may result in additional vehicular traffic, since 1 of the bridges has been de-rated and heavier vehicles are not allowed at this time.

2.2 Action Area

The proposed project site is located along the Venetian Causeway connecting the City of Miami with the City of Miami Beach in Miami-Dade County, Florida (25.790616°N, 80.164336°W [North American Datum 1983 (NAD83)] in Biscayne Bay, approximately 2 mi north of Government Cut, the nearest opening to the Atlantic Ocean (Figure 1).

The project site consists of 12 bridges connecting highly-developed spoil islands and causeways. The FDOT proposes to replace 11 of the bridges. The water depth at the project site ranges from 8 ft – 15 ft. The shoreline is comprised of riprap, rubble, and hard debris in the shallow water, and gives way to sand/shell and scattered rubble habitat that supports macroalgae, sponges, octocorals, and tunicates. The area experiences high-velocity currents. FDOT and its contractors performed a benthic survey in July 2017. Approximately 0.06 acres (ac) of seagrass (paddle grass and shoal grass) was documented within the project corridor (but not within 40 ft of any existing bridge). The project is within designated critical habitat for Johnson's seagrass, but no Johnson's seagrass was observed. White and red mangroves were also observed within the corridor, but no impacts to mangroves are expected from this project. In addition, no ESA-listed corals are present in the project site.

¹ NMFS. 2006. Sea Turtle and Smalltooth Sawfish Construction Conditions revised March 23, 2006. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division, Saint Petersburg, Florida. [Sea Turtle and Smalltooth Sawfish Construction Conditions](#).

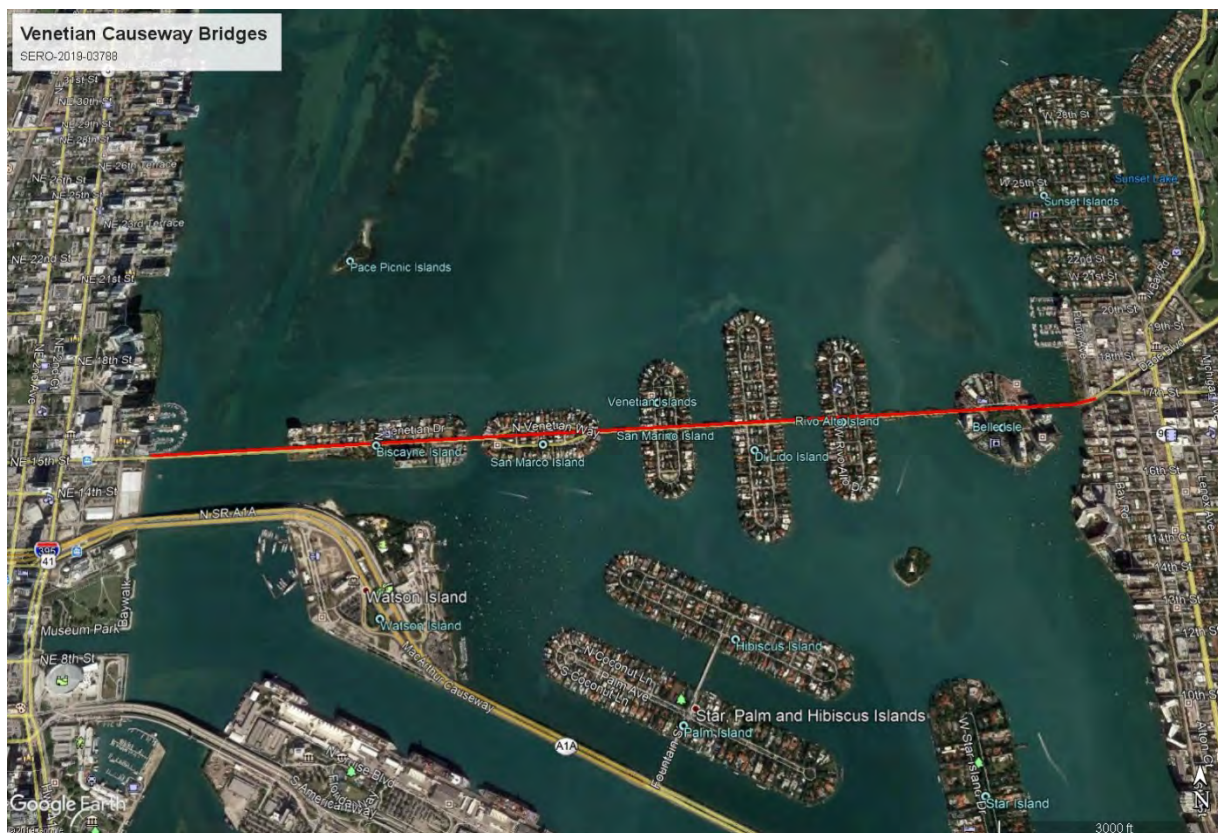


Figure 1. Image of the project location (red line) and surrounding area (©2020 Google)

The action area is defined by regulation as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action” (50 Code of Federal Regulations [CFR] 402.02). As such, the action area includes the areas in which construction will take place, as well as the immediate surrounding areas that may be affected by noise generated from pile driving. Thus, the action area is equivalent to the radius of noise effects to ESA-listed species that are expected to result from the installation of steel sheet piles and caissons using a vibratory hammer, which in this case is a 706.8-ft behavioral noise radius.

3 STATUS OF LISTED SPECIES AND CRITICAL HABITAT]

Table 1 provides the effect determinations for ESA-listed species the FDOT and/or NMFS believe may be affected by the proposed action.

Table 1. Effects Determination(s) for Species the Action Agency and/or NMFS Believe May Be Affected by the Proposed Action

Species	ESA Listing Status ²	FDOT Effect Determination	NMFS Effect Determination
Sea Turtles			
Green (North Atlantic [NA] distinct population segment [DPS])	T	NLAA	NLAA
Green (South Atlantic [SA] DPS)	T	NLAA	NLAA
Kemp's ridley	E	NLAA	NLAA
Leatherback	E	NLAA	NE
Loggerhead (Northwest Atlantic [NWA] DPS)	T	NLAA	NLAA
Hawksbill	E	NLAA	NLAA
Fish			
Smalltooth sawfish (U.S. DPS)	E	NLAA	NLAA
Giant manta ray	T	ND	NLAA
Invertebrates and Marine Plants			
Elkhorn coral (<i>Acropora palmata</i>)	T	NLAA	NP
Staghorn coral (<i>Acropora cervicornis</i>)	T	NLAA	NP
Johnson's seagrass	T	NLAA	NP

We believe the proposed action will have no effect on leatherback sea turtles due to the species' very specific life history strategy, which is not supported at the site. Leatherback sea turtles have a pelagic, deepwater life history, where they forage primarily on jellyfish. We would not expect elkhorn or staghorn coral or Johnson's seagrass to be affected by the proposed action because these species were not observed during the benthic survey of this site. Giant manta rays may be found within the action area but an effects determination was not made by the action agency.

Table 2 provides the effects determinations for designated critical habitat occurring in the action area that FDOT and NMFS believe may be affected by the proposed action.

Table 2. Effects Determinations for Designated Critical Habitat the Action Agency and/or NMFS Believe May Be Affected by the Proposed Action

Critical Habitat	Unit	FDOT Effect Determination	NMFS Effect Determination
Johnson's seagrass	Unit J	Likely to adversely affect	Likely to adversely affect, will not destroy or adversely modify

² E = endangered; T = threatened; NLAA = may affect, not likely to adversely affect; NE = no effect; NP = not present, ND = no determination

3.1 Potential Routes of Effect Not Likely to Adversely Affect Listed Species

We believe that sea turtles (green, Kemp's ridley, loggerhead and hawksbill), giant manta rays, and smalltooth sawfish may be found in or near the action area and may be affected by the proposed action covered in this Opinion. We have identified the following potential adverse effects to these species and concluded that they are not likely to be adversely affected by the proposed action for the reasons described below.

Effects to sea turtles (green, Kemp's ridley, loggerhead and hawksbill), giant manta rays, and smalltooth sawfish include the potential for injury from construction equipment or materials. We believe this effect is extremely unlikely to occur. Because these species are highly mobile, we expect these species to move away from the action area if disturbed. The applicant's implementation of *NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions*¹ will further reduce the risk of injuries by requiring all construction workers to watch for sea turtles and smalltooth sawfish. Operation of any mechanical construction equipment will cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of moving equipment. Activities will not resume until the protected species has departed the project area of its own volition.

NMFS has previously determined in dredging Opinions (NMFS 1991; NMFS 1995; NMFS 1997; NMFS 2003) that non-hopper type dredging methods (e.g., clamshell or bucket dredging, cutterhead dredging, pipeline dredging) are slower than hopper dredge equipment and unlikely to adversely affect sea turtles and smalltooth sawfish. While giant manta rays were not considered in those previous Opinions, like sea turtles and smalltooth sawfish, giant manta rays are highly mobile species and can avoid interactions with these slow moving dredge types. Further, NMFS believes that sea turtles, giant manta rays and smalltooth sawfish are likely to avoid the areas during construction due to the noise and associated disturbances. Thus, NMFS believes that because this proposed action will use either clamshell or other form of mechanical dredging, it is extremely unlikely that an ESA-listed species could be injured or lethally entrained in the dredge equipment.

The action area contains shallow water habitat that may be used by sea turtles, giant manta rays, and smalltooth sawfish. Sea turtles, giant manta rays, and smalltooth sawfish may be affected by their inability to access the habitat within the action area due to their avoidance of construction activities, noise and associated disturbances, and physical exclusion from the action area due to turbidity barriers. We believe habitat displacement effects to sea turtles, giant manta rays, and smalltooth sawfish will be insignificant given the proposed action will be temporary and intermittent (e.g., construction on each bridge will be sequential over a 4-year time period and vibratory hammer work will occur during daylight hours only) and will only occur within a relatively small area adjacent to otherwise open water and useable habitat. In addition, because these species are mobile, we expect that they will move away from construction activities and use adjacent areas in Biscayne Bay with similar habitat.

Sea turtles and smalltooth sawfish may temporarily lose forage habitat such as seagrass and encrusting marine organisms such as sponges, tunicates, corals, sea-whips, gorgonians, and algae that are established on concrete pilings, seawalls, riprap, and rubble throughout the project corridor. Giant manta rays may temporarily lose forage habitat in open water. We believe loss

of forage habitat will be insignificant given the availability of similar habitat nearby and the reasonable expectation that these organisms will recruit and grow within the project corridor after completion of the project.

Effects to listed species as a result of noise created by construction activities can physically injure animals in the affected areas or change animal behavior in the affected areas. Injurious effects can occur in 2 ways. First, immediate adverse effects can occur to listed species if a single noise event exceeds the threshold for direct physical injury. Second, effects can result from prolonged exposure to noise levels that exceed the daily cumulative exposure threshold for the animals, and these can constitute adverse effects if animals are exposed to the noise levels for sufficient periods. Behavioral effects can be adverse if such effects interfere with animals migrating, feeding, resting, or reproducing, for example. Our evaluation of effects to listed species as a result of noise created by construction activities is based on the analysis prepared in support of the Opinion for SAJ-82.³ The noise analysis in this consultation evaluates effects to ESA-listed fish and sea turtles identified by NMFS as potentially affected in the table above.⁴

Based on our noise calculations, which use the best available data for calculating injuries to ESA-listed species fish and sea turtles, installation of 24-in metal sheet piles by vibratory hammer will not result in any form of injurious noise effects. Installation of 24-in metal sheet piles by vibratory hammer could result in behavioral effects at radii of 52 ft (16 meters (m)) for sea turtles and 243 ft (74 m) for ESA-listed fishes. Given the mobility of sea turtles and ESA-listed fish species, we expect them to move away from noise disturbances. Because there is similar habitat nearby, we believe this effect will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during pile installation. Since installation will occur only during the day, these species will be able to resume normal activities during quiet periods between pile installations and at night. Therefore, installation of metal sheet piles by vibratory hammer will not result in any injurious noise effect, and we anticipate any behavioral effects will be insignificant.

Based on our noise calculations, which use the best available data for calculating injuries to ESA-listed species fish and sea turtles, installation of 48-in metal drilled shaft caissons⁵ by vibratory hammer will not cause single-strike or peak-pressure injurious noise effects. However, the cumulative sound exposure level over the course of a day may cause injury to ESA-listed fishes and sea turtles up to 1.7 ft (0.5 m) away from the pile. Due to the mobility of sea turtles and ESA-listed fish species, and because the project occurs in open water, we expect them to move away from noise disturbances. Because we anticipate the animal will move away, we believe that an animal's suffering physical injury from noise is extremely unlikely to occur. An animal's movement away from the injurious sound radius is a behavioral response, with the same effects discussed below.

³ NMFS. Biological Opinion on Regional General Permit SAJ-82 (SAJ-2007-01590), Florida Keys, Monroe County, Florida. June 10, 2014.

⁴ While NMFS does not have information regarding noise effects specific to giant manta rays, we believe that effects to giant manta rays from pile driving noise would be very similar to effects on smalltooth sawfish (which are considered in SAJ-82), because both species are elasmobranchs and lack swim bladders.

⁵ Noise calculations for 48-in metal drilled shaft caissons are based on 72-in diameter steel pipe.

The installation of metal caissons by vibratory hammer could also result in behavioral effects at radii 706.8 ft (215.4 m) for ESA-listed fishes and 152.3 ft (46.4 m) for sea turtles. Due to the mobility of sea turtles and ESA-listed fish, we expect them to move away from noise disturbances in this open-water environment. Because there is similar habitat nearby in Biscayne Bay, we believe behavioral effects will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during metal caisson installation. Since only one caisson will be installed per day and installation will occur only during the day, these species will be able to resume normal activities during quiet periods between installations and at night. Therefore, we anticipate any behavioral effects will be insignificant.

3.2 Designated Critical Habitat Likely To Be Adversely Affected

The term “critical habitat” is defined in Section 3(5)(A) of the ESA as (i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (1) essential to the conservation of the species and (2) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. “Conservation” is defined in Section 3(3) of the ESA as “...the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point at which listing under the ESA is no longer necessary.”

3.2.1 Johnson’s Seagrass Critical Habitat

Description

NMFS designated Johnson’s seagrass critical habitat on April 5, 2000 (65 FR 17786; see also, 50 CFR 226.213). The specific areas occupied by Johnson’s seagrass and designated by NMFS as critical habitat are those with 1 or more of the following criteria:

1. Locations with populations that have persisted for 10 years
2. Locations with persistent flowering populations
3. Locations at the northern and southern range limits of the species
4. Locations with unique genetic diversity
5. Locations with a documented high abundance of Johnson’s seagrass compared to other areas in the species’ range

Ten areas (Units) within the range of Johnson’s seagrass (approximately 200 kilometers of coastline from Sebastian Inlet to northern Biscayne Bay, Florida) are designated as Johnson’s seagrass critical habitat (Table 3). The total range-wide acreage of critical habitat for Johnson’s seagrass is roughly 22,574 ac (NMFS 2002).

Table 3. Designated Critical Habitat Units for Johnson's Seagrass

Unit	Location/Area
A	A portion of the Indian River, Florida, north of the Sebastian Inlet Channel
B	A portion of the Indian River, Florida, south of the Sebastian Inlet Channel
C	A portion of the Indian River Lagoon, Florida, in the vicinity of the Fort Pierce Inlet
D	A portion of the Indian River Lagoon, Florida, north of the St. Lucie Inlet
E	A portion of Hobe Sound, Florida, excluding the federally marked navigation channel of the Intracoastal Waterway
F	A portion of the south side of Jupiter Inlet, Florida
G	A portion of Lake Worth, Florida, north of Bingham Island
H	A portion of Lake Worth Lagoon, Florida, located just north of the Boynton Inlet
I	A portion of northeast Lake Wyman, Boca Raton, Florida, excluding the federally marked navigation channel of the Intracoastal Waterway
J	A portion of northern Biscayne Bay, Florida, including all parts of the Biscayne Bay Aquatic Preserve excluding the Oleta River, Miami River, and Little River beyond their mouths, the federally marked navigation channel of the Intracoastal Waterway, and all existing federally authorized navigation channels, basins, and berths at the Port of Miami to the currently documented southernmost range of Johnson's seagrass, Central Key Biscayne

Critical Habitat Unit Impacted by this Action

This consultation focuses on an activity that occurs in Unit J, which encompasses the northern portion of Biscayne Bay from Northeast 163rd Street south to Central Key Biscayne at 25°45'N (Figure 2). This portion of Biscayne Bay is bound by heavy residential and commercial development, though a few areas of mangrove shoreline remain. Dredge and fill projects have resulted in a number of spoil islands and channels too deep for seagrass growth. Biscayne Bay supports a diversity of biological communities including intertidal wetlands, seagrasses, hard bottom, assemblages, and open water. Unit J is wholly within the Biscayne Bay Aquatic Preserve.

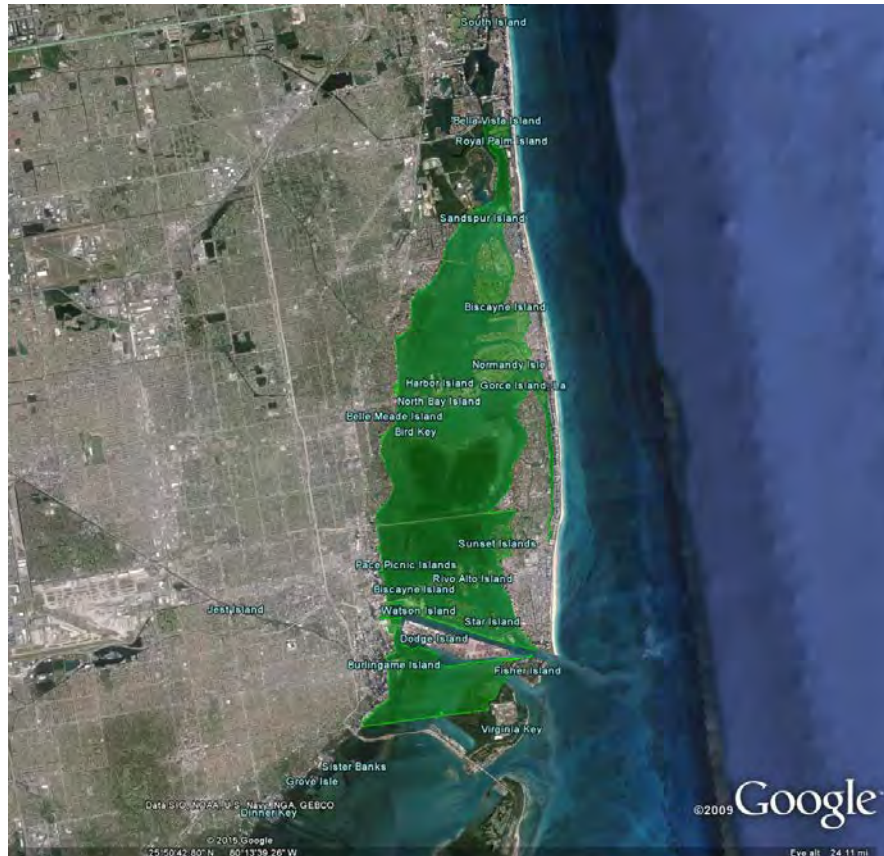


Figure 2. Johnson's seagrass critical habitat Unit J (©2015 Google, Data SIO, NOAA, U.S. Navy, NGA, GEBCO)

Essential Features of Critical Habitat

NMFS identified 4 habitat features essential for the conservation of Johnson's seagrass: (1) adequate water quality, defined as being free from nutrient over-enrichment by inorganic and organic nitrogen and phosphorous or other inputs that create low oxygen conditions; (2) adequate salinity levels, indicating a lack of very frequent or constant discharges of fresh or low-salinity waters; (3) adequate water transparency, which would allow sunlight necessary for photosynthesis; and (4) stable, unconsolidated sediments that are free from physical disturbance. All 4 essential features must be present in an area for it to function as critical habitat for Johnson's seagrass.

Status and Threats

A wide range of activities, many funded authorized or carried out by federal agencies, have and will continue to affect the essential habitat requirements of Johnson's seagrass. These are generally the same activities that may affect the species itself, and include: (1) vessel traffic and the resulting propeller dredging; (2) dredge and fill projects; (3) dock, marina, and bridge construction; (4) water pollution; and (5) land use practices (shoreline development, agriculture, and aquaculture).

Vessel traffic has the potential to affect Johnson's seagrass critical habitat by reducing water transparency. Operation of vessels in shallow water environments often leads to the suspension of sediments due to the spinning of propellers on or close to the bottom. Suspended sediments reduce water transparency and the depth to which sunlight penetrates the water column. Populations of Johnson's seagrass that inhabit shallow water and water close to inlets where vessel traffic is concentrated, are likely to be most affected. This effect is expected to worsen with increases in boating activity.

The dredging of bottom sediments to maintain, or in some cases create, inlets, canals, and navigation channels can directly affect essential features of Johnson's seagrass critical habitat. Dredging results in turbidity through the suspension of sediments. As discussed previously, the suspension of sediments reduces water transparency and the depth to which sunlight can penetrate the water column. The suspension of sediments from dredging can also re-suspend nutrients, which could result in over-enrichment and/or reduce dissolved oxygen levels. Further, dredging can destabilize sediments and alter both the shape and depth of the bottom within the dredged footprint. This may affect the ability of the critical habitat to function through the removal or modification of essential features.

Dock, marina, and bridge construction leads to loss of habitat via construction impacts (e.g., pile installation) and shading. Similar to dredging, installation of piles for docks or bridges can result in increased turbidity that can negatively impact water transparency over short durations. Additionally, installed piles also replace the stable, unconsolidated bottom sediments essential for the species. Completed structures can have long-term effects on critical habitat in the surrounding area because of the shade they produce. While shading does not affect water transparency directly, it does affect the amount and/or duration of sunlight that can reach the bottom. The threat posed by dock, marina, and bridge construction is especially apparent in coastal areas where Johnson's seagrass is found.

Other threats include inputs from adjacent land use. Johnson's seagrass critical habitat located in proximity to rivers, canal mouths, or other discharge structures is affected by land use within the watershed. Waters with low salinity that are highly colored and often polluted are discharged to the estuarine environment. This can impact salinity, water quality, and water transparency, all essential features of Johnson's seagrass critical habitat. Frequent pulses of freshwater discharge to an estuarine area may decrease salinity of the habitat and provoke physiological stress to the species. Nutrient over-enrichment, caused by inorganic and organic nitrogen and phosphorous loading via urban and agricultural land run-off, stimulates increased algal growth, decreased water transparency, and diminished oxygen content within the water. Low oxygen conditions have a demonstrated negative impact on seagrasses and associated communities. Discharges can also contain colored waters stained by upland vegetation or pollutants. Colored waters released into these areas reduce the amount of sunlight available for photosynthesis by rapidly reducing the amount of shorter wavelength light that reaches the bottom. In general, threats from adjacent land use will be ongoing, randomly occurring events that follow storm events.

4 ENVIRONMENTAL BASELINE

By regulation, the environmental baseline for an Opinion refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions that are contemporaneous with the consultation in process. The consequences to the listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline (50 CFR 402.02).

4.1 Status of Designated Critical Habitat within the Action Area

As discussed above, this Opinion focuses on an activity occurring in Unit J of Johnson's seagrass designated critical habitat, which encompasses the northern portion of Biscayne Bay from North East 163rd Street south to Central Key Biscayne at 25°45'N. The project site is the Venetian Causeway, a grouping of 12 consecutive bridges connecting the City of Miami to City of Miami Beach across developed man-made islands and small spoil islands. A benthic assessment was performed in July 2017. Johnson's seagrass was not observed. The depth within the action area ranges from 8-15 ft. The substrate is sand/shell bottom with riprap and rubble.

4.2 Factors Affecting Johnson's Seagrass Designated Critical Habitat Within the Action Area

Federal Actions

A wide range of activities funded, authorized, or carried out by federal agencies may affect the essential features of designated critical habitat for Johnson's seagrass. These include actions permitted or implemented by the U.S. Army Corps of Engineers (USACE) such as dredging, dock/marina construction, bridge/highway construction, residential construction, shoreline stabilization, breakwaters, and/or the installation of subaqueous lines or pipelines. Other federal activities that may affect Johnson's seagrass critical habitat include actions by the Environmental Protection Agency and the USACE to manage freshwater discharges into waterways, management of Biscayne Bay Aquatic Preserve, regulation of vessel traffic to minimize propeller dredging and turbidity, and/or other activities by the U.S. Coast Guard and U.S. Navy. Although these actions have adversely affected Johnson's seagrass critical habitat, none of these past actions have destroyed or adversely modified Johnson's seagrass critical habitat. Other than the proposed action, the following federally permitted projects in Table 4 are known to have occurred or have had effects to Johnson's seagrass designated critical habitat within the action area, as per a review of the NMFS Protected Resources Division's (PRD's) completed consultation database by the consulting biologist on August 25, 2020. All of these projects resulted in a determination of may affect, and is likely to adversely affect, but not destroy or adversely modify Johnson's seagrass designated critical habitat.

Table 4. Federal Actions within Action Area with Impacts to Johnson’s Seagrass Critical Habitat

Action Agency Identifier	NMFS Identifier	Name of Project	Biological Opinion Date	Project Summary	Impact to Johnson’s Seagrass Critical Habitat
SAJ-2016-00350	SER-2016-18002	Karim Masri – Dock Project	7/21/2017	Installation of wood, concrete and metal dock and piles and 1 new boat slip	390 ft ² (0.009 ac)
SAJ-2016-01403	SERO-2019-01951	Venetian Land Ventures	8/27/2020	Installation of wood dock and piles and 1 new boat slip	303.16 ft ² (0.007 ac)
SAJ-2015-02850	SER-2016-17781	Andre Radandt-Docking Project	7/19/2017	Installation of wood, concrete and metal dock and piles	499.5 ft ² (0.011 ac)
SAJ-2014-00162	SER-2014-13935	Richard & Maria Moraes – Dock Project	11/17/15	Installation of wood dock and piles and reduction from 2 boat slips to 1	740 ft ² (0.017 ac)
SAJ-2014-00390	SER-2014-14568	Michael Comras – Docking Project	7/1/15	Installation of wood dock and piles and 3 new boat slips	1084 ft ² (0.025 ac)
SAJ-2012-03476	SER-2013-11220	Mark Gold – Seawall/Dock Project	4/10/17	Installation of concrete and metal dock, seawall, and one boat slip	968 ft ² (0.022 ac)
SAJ-2007-02395	SER-2016-17648	Marcos Macias – Dock Project	4/7/17	Installation of wood dock and 5 boat slips	3259 ft ² (0.075 ac)

Private Recreational Vessel Traffic

Marina and dock construction increases recreational vessel traffic within areas of Johnson’s seagrass critical habitat, which increases suspended sediments from propellers and could result in propeller dredging. As mentioned above, suspended sediments are known to adversely affect Johnson’s seagrass critical habitat by reducing the water transparency essential feature. Shading from dock structures and vessel mooring also affects the water transparency essential feature of the designated critical habitat. Propeller dredging and installation of piles and dock support structures may adversely affect Johnson’s seagrass critical habitat and permanently remove the unconsolidated sediments essential feature of the critical habitat.

Marine Pollution and Environmental Contamination

The project is located in a highly-developed coastal area in Biscayne Bay. This can lead to freshwater discharges and nutrient over-enrichment due to coastal runoff and man-made canal discharges into the bay. Freshwater discharge from canals may affect the salinity essential feature of the designated critical habitat while excess nutrients can lead to decreased water transparency and decreased dissolved oxygen content in the water.

State and Federal Activities That May Benefit Johnson's Seagrass Critical Habitat in the Action Area

State and federal conservation measures exist to protect Johnson's seagrass and its habitat under an umbrella of management and conservation programs that address seagrasses in general (Kenworthy et al. 2006). These conservation measures must be continually monitored and assessed to determine if they will ensure the long-term protection of the species and the maintenance of environmental conditions suitable for its continued existence throughout its geographic distribution.

5 EFFECTS OF THE ACTION ON CRITICAL HABITAT

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02).

The action area is within the boundary of Johnson's seagrass critical habitat (Unit J), and all 4 essential features are present at the project site. The 4 habitat features essential to the conservation of Johnson's seagrass are: (1) adequate water quality, defined as being free from nutrient over-enrichment by inorganic and organic nitrogen and phosphorous or other inputs that create low oxygen conditions; (2) adequate salinity levels, indicating a lack of very frequent or constant discharges of fresh or low-salinity waters; (3) adequate water transparency, which would allow sunlight necessary for photosynthesis; and (4) stable, unconsolidated sediments that are free from physical disturbance. All 4 essential features must be present in an area for it to function as critical habitat for Johnson's seagrass and the loss of 1 essential feature of Johnson's seagrass critical habitat will result in a total loss in the conservation function of the critical habitat in that area.

The adequate water quality and adequate water transparency essential features of Johnson's seagrass critical habitat may be affected by increased turbidity due to dredging, drilled shaft installation and vibratory hammer installation of caissons and sheet piles; however, we believe this effect will be insignificant. Best Management Practices (BMPs) for controlling turbidity will be used wherever practical. Any outstanding turbidity is expected to be temporary, and will be contained by turbidity curtains when practical, and will dissipate quickly due to high current velocities in the area.

We believe the proposed action will have no effect on the adequate salinity levels essential feature of Johnson's seagrass designated critical habitat because the proposed action lacks any potential to affect adequate salinity levels in the action area.

The proposed action is likely to adversely affect Johnson's seagrass critical habitat by removing the adequate water transparency essential feature due to shading from the widened bridges. In addition, we believe the proposed action is likely to adversely affect Johnson's seagrass critical habitat by removing or disrupting the stable, unconsolidated sediments essential feature by construction of the new bridges, dredging, and installing riprap.

First, we consider loss of the adequate water transparency essential feature. The adequate water transparency essential feature of Johnson's seagrass critical habitat may be affected by shading from the new, wider bridges. We only expect adverse effects in the area immediately underneath the bridges, as any shading to nearby areas will be temporary in nature (i.e., shading and light transmission will change over the course of the day) and therefore insignificant. In order to calculate adverse impacts from shading from the bridges, we consider the area of the new bridges (128,937.6 ft²) minus the area of the existing bridges (93,218.4 ft²), which is already shaded and not functioning as critical habitat. Thus, we believe the new bridges will adversely affect 35,719.2 ft² of Johnson's seagrass critical habitat from the permanent removal of the adequate water transparency essential feature.

Next, we consider the permanent loss of the stable, unconsolidated sediments essential feature from 1) the removal of the existing bridge structures and substructures, 2) the installation of drilled shafts, 3) dredging, 4) installation of riprap, and 5) installation of sheet piles. The existing piles occupy approximately 632 ft² of the seafloor will be cut -2 ft below the seafloor which would open up new stable, unconsolidated sediments for colonization by Johnson's seagrass. The new drilled shaft piles to support the bridges will occupy 3,542 ft² of seafloor. However, it is not necessary to calculate the impact to the stable unconsolidated sediments essential feature of critical habitat from installation of drilled shafts because the piles are located under the bridge decking within the shaded footprint of the new bridges (which has already been counted as a loss of critical habitat from the permanent removal of the adequate water transparency essential feature). While the project will require 8,536 ft² of dredging, 5,090 ft² of this dredging is within the shading of the existing bridge footprint and is not functioning as critical habitat. Therefore, the additional impact to the stable unconsolidated sediments essential feature from dredging will be 3,446 ft² (8,536 ft²-5,090 ft²). The project is expected to install 2,400 ft² of riprap around the bridge approaches on the causeways resulting in the permanent loss of 2,400 ft² of the stable unconsolidated sediments essential feature. None of the riprap will be installed under the shaded area of the existing bridges. Finally, there will be 980 linear feet of new metal sheet piles installed to support the bridges during construction. The sheet piles are approximately 0.6 inches (.05 ft) thick, which will occupy 49 ft² of seafloor. Therefore, the installation of metal sheet piles will impact 49 ft² of the stable unconsolidated sediments essential feature.

Barges will be used throughout the duration of this project and will be spudding throughout the project corridor within Johnson's seagrass critical habitat. The cumulative footprint of this spudding is expected to be 2,234 ft². However, these impacts will be short in duration and are not expected to have permanent impacts to critical habitat. Therefore, these temporary spudding impacts are insignificant and are not included in the estimates of permanent impacts to critical habitat.

Together, installation of riprap, metal sheet piles and dredging will adversely affect 5,895 ft² of Johnson's seagrass critical habitat by permanently removing the stable, unconsolidated sediments essential feature from additional areas that will not be impacted by shading from the bridges.

Combining the total impacts to Johnson's seagrass critical habitat from the loss of the stable, unconsolidated sediments essential feature (5895 ft²) and the adequate water transparency essential feature (35,719.2 ft²), we believe the project will adversely affect 41,614.2 ft² (0.96 ac)⁶ of Johnson's seagrass critical habitat.

6 CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this Biological Opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA and 50 CFR 402.14.

NMFS is not aware of any future projects that may contribute to cumulative effects. Within the action area, major future changes are not anticipated beyond the ongoing activities and processes described in the environmental baseline. The present human uses of the action area are expected to continue, though some may occur at increased levels, frequency, or intensity in the near future. Dock and marina construction will likely continue at current rates, with associated loss and degradation of seagrass habitat, including Johnson's seagrass critical habitat. Because these activities are subject to USACE permitting and thus, the ESA Section 7 consultation requirement, they do not lead to cumulative non-federal effects to be discussed in this section. NMFS and the USACE have developed protocols to encourage the use of light-transmitting materials in future construction of docks constructed in or over submerged aquatic vegetation, marsh or mangrove habitat.^{7,8,9} Even if all new docks are constructed in full compliance with the NMFS and USACE's guidance, NMFS acknowledges that shading impacts, and thus, impacts to the water transparency essential feature, to Johnson's seagrass will continue via dock construction. As NMFS and the USACE continue to encourage permit applicants to design and construct new docks in full compliance with the construction guidelines discussed above, and the recommendations in Adam (2012), Landry et al. (2008), and Shafer et al. (2008), NMFS believes that shading impacts to Johnson's seagrass will be reduced in the short- and long-term. Moreover, even with some shading from grated construction materials, researchers have found all 4 essential features necessary for Johnson's seagrass to persist under docks constructed of grated decking (Landry et al. 2008).

⁶ 1 square foot = 0.0000229568 acres. Therefore, 41,614.2 ft² x (0.0000229568 ac/1ft²) = 0.9553 ac.

⁷ Project Design Criteria A2.17 in U.S. Army Corps of Engineers Jacksonville District's Programmatic Biological Opinion (JAXBO) issued by NMFS on November 20, 2017 (SER-2015-17616)

⁸ Dock Construction Guidelines in Florida for Docks or Other Minor Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat U.S. Army Corps of Engineers/National Marine Fisheries Service, dated August 2001

⁹ Key for Construction Conditions for Docks or Other Minor Structures Constructed in or Over Johnson's Seagrass (*Halophila johnsonii*) National Marine Fisheries Service/U.S. Army Corps of Engineers, dated October 2002

Upland development and associated runoff will continue to degrade the water quality essential feature necessary for Johnson's seagrass critical habitat. Flood control and imprudent water management practices will continue to result in freshwater inputs into estuarine systems, thereby degrading and altering the water quality and salinity essential features of Johnson's seagrass critical habitat.

Increased recreational vessel traffic will continue to result in damage to Johnson's seagrass and its designated critical habitat by improper anchoring, propeller scarring, and accidental groundings. Nonetheless, we expect that ongoing boater education programs and posted signage about the dangers to seagrass habitat from propeller scarring and improper anchoring may reduce impacts to Johnson's seagrass designated critical habitat, including that in Unit J.

7 DESTRUCTION/ADVERSE MODIFICATION ANALYSIS

NMFS's regulations define *destruction or adverse modification* to mean "a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species." (50 CFR 402.02). NMFS will generally conclude that a Federal action is likely to "destroy or adversely modify" designated critical habitat if the action results in an alteration of the quantity or quality of the essential physical or biological features of designated critical habitat, or that precludes or significantly delays the capacity of that habitat to develop those features over time, and if the effect of the alteration is to appreciably diminish the value of critical habitat for the conservation of the species. This analysis takes into account the geographic and temporal scope of the proposed action, recognizing that "functionality" of critical habitat necessarily means that it must now and must continue in the future to support the conservation of the species and progress toward recovery. Destruction or adverse modification does not depend strictly on the size or proportion of the area adversely affected, but rather on the role the action area serves with regard to the function of the overall designation, and how that role is affected by the action.

Recovery for Johnson's seagrass as set forth in the final recovery plan (NMFS 2002), will be achieved when the following recovery objectives are met:

- (1) The species' present geographic range remains stable for at least 10 years, or increases.
- (2) Self-sustaining populations are present throughout the range at distances less than or equal to the maximum dispersal distance to allow for stable vegetative recruitment and genetic diversity.
- (3) Populations and supporting habitat in its geographic range have long-term protection (through regulatory action or purchase acquisition).

We evaluated the proposed action's expected effects on critical habitat to determine whether it will be able to continue to provide its intended functions in achieving these recovery objectives and supporting the conservation of the species.

The first recovery objective for Johnson's seagrass is for the present range of the species to remain stable for 10 years or to increase during that time. In the 5-year review (2007) of the status of the species, NMFS concluded that the first recovery objective had been achieved as of 2007. In fact, the species range had increased slightly northward at that time. We have no

information indicating range stability has decreased since then. We determined that the proposed action will adversely affect a total of 41,614.2 ft² (0.96 ac) of Johnson's seagrass designated critical habitat. However, the action area is not at a boundary of the species' range, the affected area is very small, and the loss of this area for potential colonization will not affect the stability of the species' range now or in the future. Thus, we believe the proposed action's effects will not affect the critical habitat's ability to contribute to range stability for Johnson's seagrass.

The second recovery objective for Johnson's seagrass requires that self-sustaining populations be present throughout the range at distances less than or equal to the maximum dispersal distance for the species. Due to its asexual reproductive mode, self-sustaining populations are present throughout the range of species. As discussed above in the Designated Critical Habitat Likely to be Adversely Affected section, there are approximately 22,574 ac of Johnson's seagrass critical habitat. The loss of 41,614.2 ft² (0.96 ac) of designated critical habitat for Johnson's seagrass would equate to a loss of 0.0042% of Johnson's seagrass critical habitat ($0.96 \text{ ac} \div 22,574 \text{ ac} \times 100$). In addition, within the action area, 7 additional projects removed 0.00075% of Johnson's seagrass critical habitat ($0.17 \text{ ac} \div 22,574 \text{ ac} \times 100$). Together, these projects removed 0.005% of critical habitat in the action area $[(0.17 \text{ ac} + 0.96 \text{ ac}) \div 22,574 \text{ ac} \times 100]$. The loss from this project, alone and in combination with the other projects in the action area, will not affect the conservation value of available critical habitat to an extent that it would affect Johnson's seagrass self-sustaining populations by adversely affecting the availability of suitable habitat in which the species can disperse in the future. Drifting fragments of Johnson's seagrass can remain viable in the water column for 4-8 days (Hall et al. 2006), and can travel several kilometers under the influence of wind, tides, and waves. Because of this, we believe that the permanent removal of critical habitat due to the proposed actions will not appreciably diminish the conservation value of critical habitat in supporting self-sustaining populations.

The third, and final, recovery objective is for populations of Johnson's seagrass and supporting habitat in the geographic range of Johnson's seagrass to have long-term protection through regulatory action or purchase acquisition. Though the affected portions of the project site will not be available for the long-term, thousands of acres of designated critical habitat are still available for long-term protection, which would include areas surrounding the action area.

Based on the above analysis, we conclude that the adverse effects on Johnson's seagrass critical habitat due to the proposed action will not impede achieving the 3 recovery objectives listed above and, therefore will not appreciably diminish the value of critical habitat for the conservation of the species.

8 CONCLUSION

After reviewing the current status of Johnson's seagrass designated critical habitat, the environmental baseline, the effects of the proposed action, and the cumulative effects, it is our opinion that the loss of 41,614.2 ft² (0.96 ac) from the proposed action will not interfere with achieving the relevant habitat-based recovery objectives for Johnson's seagrass. It is our opinion that the proposed action will not impede the critical habitat's ability to support Johnson's

seagrass conservation, despite permanent adverse effects. Therefore, we conclude that the action, as proposed, is likely to adversely affect, but is not likely to destroy or adversely modify, Johnson's seagrass designated critical habitat.

8.1 INCIDENTAL TAKE STATEMENT

NMFS does not anticipate that the proposed action will incidentally take any species and no take is authorized. Nonetheless, any take of any ESA-listed species shall be immediately reported to takereport.nmfsser@noaa.gov. Refer to the present Biological Opinion by title, Venetian Causeway Bridge Replacement, issuance date, NMFS ECO tracking number, SERO-2019-03788, and Financial Management Number 422713-2-22-01. At that time, consultation must be reinitiated.

8.2 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

NMFS believes the following conservation recommendations are reasonable, necessary, and appropriate to conserve and recover Johnson's seagrass. NMFS strongly recommends that these measures be considered and adopted.

1. NMFS recommends that FDOT, in coordination with seagrass researchers and industry, support ongoing research on light requirements and transplanting techniques to preserve and restore Johnson's seagrass, and on collection of plants for genetics research, tissue culture, and tissue banking.
2. NMFS recommends that a report of all current and proposed FDOT projects in the range of Johnson's seagrass be prepared and used by FDOT to assess impacts on the species from these projects, to assess cumulative impacts, and to assist in early consultation that will avoid and/or minimize impacts to Johnson's seagrass and its critical habitat. Information in this report should include location and scope of each project and identify the federal lead agency for each project. The information should be made available to NMFS.
3. NMFS recommends that FDOT conduct and support research to assess trends in the distribution and abundance of Johnson's seagrass. Data collected should be contributed to the Florida Fish and Wildlife Conservation Commission's Florida Wildlife Research Institute to support ongoing geographic information system mapping of Johnson's seagrass and other seagrass distribution.
4. NMFS recommends that the FDOT prepare an assessment of the effects of other actions under its purview on Johnson's seagrass for consideration in future consultations.

9 REINITIATION OF CONSULTATION

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of taking specified in the proposed action is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the Biological Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the identified action.

10 LITERATURE CITED

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Appendix N: Potential Contaminated Sites Figure





Notes:
1. Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet
2. Source data: FDEP / FDOT
3. Imagery: Miami-Dade County GIS

Venetian Causeway
Potential Contamination Site Map
August 2017

Florida Department of Transportation
1000 N.W. 111th Ave.
Miami, FL 33172



Appendix O: Public Hearing Transcript and Certification (Pending)