

DRAFT LOCATION HYDRAULICS MEMORANDUM

Florida Department of Transportation

District 1

SR 789 (Ringling) Project Development & Environment (PD&E) Study

from Bird Key to Sarasota Harbour West

Sarasota County, Florida

Financial Management Number(s): 436680-1-22-01 & 436680-1-32-01

ETDM Number: 14384

Date: February 2024

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 May 26, 2022 and executed by the Federal Highway Administration and FDOT.

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

JASON W. DUNN, PE

ON THE DATE ADJACENT TO THE SEAL.

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PROFESSIONAL ENGINEER CERTIFICATION

Location Hydraulics Memorandum

Project: SR 789 (Ringling) PD&E Study from Bird Key Drive to Sarasota Harbour West

ETDM Number: 14384

Financial Project ID: 436680-1-22-01 & 436680-1-32-01

Federal Aid Project Number: TBD

This location hydraulics memorandum contains engineering information that fulfills the purpose and need for the SR 789 (Ringling) Project Development & Environment Study from Bird Key Drive to Sarasota Harbour West in Sarasota County, Florida. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Hardesty & Hanover, LLC, and that I have prepared or approved the evaluation, findings, opinions, conclusions or technical advice for this project.

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

JASON W. DUNN, PE

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), District One, is conducting a Project Development and Environment (PD&E) Study which will investigate reconstruction and/or rehabilitation of the SR 789 Little Ringling bridges over the Coon Key Waterway in Sarasota. The project will not add additional travel lanes. Bicycle, pedestrian, and transit accommodations shall be incorporated into the design along the roadway and bridge crossing. The project limits are from Bird Key Drive to Sarasota Harbour West. The project segment is 0.741 miles in length. As part of the PD&E study, a location hydraulics memorandum is necessary in order to present a summary of data collection and preliminary hydraulic analyses for the proposed improvements performed within the regulatory floodplains.

1.0 PROJECT SUMMARY

1.1 Project Description

This project involves the reconstruction of the SR 789 (John Ringling Causeway) bridges [Structure Numbers 170022 and 170951]. The limits of the improvements are from Bird Key Drive to Sarasota Harbour West in Sarasota County, shown on **Figure 1-1**. The purpose of the study is to address structural integrity and operational deficiencies. SR 789 is classified as an Urban, Minor Arterial and consists of a four-lane, divided typical section between Bird Key Drive and Sarasota Harbour West, a distance of 0.741 miles. SR 789 serves as the only connection from downtown Sarasota to St. Armands Key and Lido Key. Although SR 789 is designated as a north-south route, within the project limits SR 789 runs in a generally east-west direction. See **Figure 1-2** for the Quadrangle Map.

The existing twin bridges were constructed in 1958 and cross the Coon Key Waterway, a navigable waterway without a defined channel. The existing deck elevation at the center of the bridges is approximately 15.73 feet (ft). The bridges are spaced 100 ft apart (center to center) and each bridge is 1,006 ft-10-inches (-in) long (19 spans of 48 ft each, and 2 spans at 47 ft-5-in). Each bridge has two 12-foot (-ft) travel lanes and a 5-ft wide sidewalk on both sides. There are currently no shoulders or designated bicycle facilities across the bridges.

1.2 Purpose and Need

The purpose of the project is to address structural integrity and operational deficiencies of the SR 789 bridges [Structure Numbers 170022 and 170951]. The ultimate goal of the project is to identify the optimal solution for a bridge structure in need of repair due to deteriorating conditions and to accommodate greater multimodal transportation access. The project has evaluated alternatives for reconstruction or rehabilitation, with consideration of bicycle/pedestrian and transit facilities, of 0.741 miles of roadway that provides a connection between nearby neighborhoods and recreational facilities (Bird Key Park, West Causeway Park and the Sarasota Yacht Club). The need for the project is based on the following criteria:

1.2.1 Bridge Deficiencies: Operational and Structural

The current concrete prestressed girder bridges are the second bridges that have existed at this location, replacing the original bridge in 1958. Several sections of the deck were replaced on the northbound bridge in 2016 along with a variety of other repair-type work throughout the years. The SR 789 bridges, located between downtown Sarasota and St. Armands Key and Lido Key, are more than fifty-years old, the typical expected design life for transportation infrastructure of this era, and are operationally deficient, particularly for transit. SR 789, including the bridges, is identified as a constrained roadway by the Sarasota / Manatee Metropolitan Planning Organization (MPO), meaning it does not preclude any type of improvement in the future, but it identifies that the corridor has physical, or policy challenges associated with a widening/capacity project.

**Figure 1-1
Project Location Map**



Figure 1-2 Quadrangle Map



Based on a January 2023 FDOT bridge inspection report, the northbound SR 789 bridge carrying traffic west to St. Armands, received a sufficiency rating of 76.9 and a health index of 68.0, while the southbound bridge carrying traffic east to the mainland, based on a July 2023 inspection report, received a sufficiency rating of 77.7 and a health index of 71.04, as measured on scales of 0-100.

Sufficiency rating is an overall rating of a bridge's fitness to remain in service and whether it will be repaired or replaced. A bridge with a sufficiency rating of 80 or less is generally eligible for bridge rehabilitation funding. The health index is a tool that measures the overall condition of a bridge and typically includes about 10 to 12 different elements that are evaluated by the department. A health index below 85 generally indicates that some repairs are needed, although it doesn't mean the bridge is unsafe. A low health index may also indicate that it would be more economical to replace the bridge than repair it. Both bridges do not meet current road design and safety standards. The bridge conditions are as follows:

Northbound (170022)

- Overall Condition: Fair
- Deck: Fair
- Superstructure: Satisfactory
- Substructure: Satisfactory
- Deck Geometry Appraisal: Substandard typical section elements
- Countermeasures have been installed to mitigate a potential problem with scour.

Southbound (170951)

- Overall Condition: Good
- Deck: Satisfactory
- Superstructure: Good
- Substructure: Satisfactory
- Deck Geometry Appraisal: Substandard typical section elements
- Countermeasures have been installed to mitigate a potential problem with scour.

1.2.2 Modal Interrelationships

SR 789 serves as the primary connection between downtown Sarasota and St. Armand's Key and Lido Key and is frequently used by bicyclists and pedestrians to access the adjacent parks and recreational facilities [Bird Key Park, West Multi-Use Recreational Trail (MURT) Bird Key / Coon Key Phase I, John Ringling Boulevard Trail and Longboat Key Trail]. The Longboat Key Trail SUN Trail exists throughout most of the project; however, it does not currently exist on either of the bridges over the Coon Key Waterway. While there are 5-ft wide sidewalks on both sides of the bridges, there are currently no shoulders or designated bicycle facilities across the bridges. Due to the minimal sidewalk width, there are often conflicts between pedestrians and bicyclists.

Overall, the proposed project intends to enhance mobility by evaluating alternatives for reconstruction or rehabilitation with consideration of bicycle/pedestrian and transit facilities within the study limits.

1.2.3 Safety

Serving as part of the emergency evacuation route network designated by the Florida Division of Emergency Management and City of Sarasota, SR 789 plays a critical role in facilitating traffic during emergency evacuation periods as the primary connection between downtown Sarasota and St. Armand's Key and Lido Key. The entire project corridor is located in the City of Sarasota's Hurricane Evacuation Zone "A."

The City of Sarasota Climate Adaptation Plan (December 4, 2017) studied and evaluated climate threats to public infrastructure to understand how sea level rise, storm surge, extreme precipitation, and extreme heat might impact the City of Sarasota's transportation network, stormwater management, water supply, wastewater systems, public lands, and critical buildings. Thirty-four transportation assets were evaluated of which 15 were deemed most vulnerable, including SR 789 [Project ID T15, pg. 31]. When prioritizing transportation vulnerabilities, the SR 789 bridge received a risk score of 64.4 (on a scale of 0-100). The potential reconstruction or rehabilitation of the SR 789 (Little Ringling) bridges would make it more resilient to climate vulnerabilities.

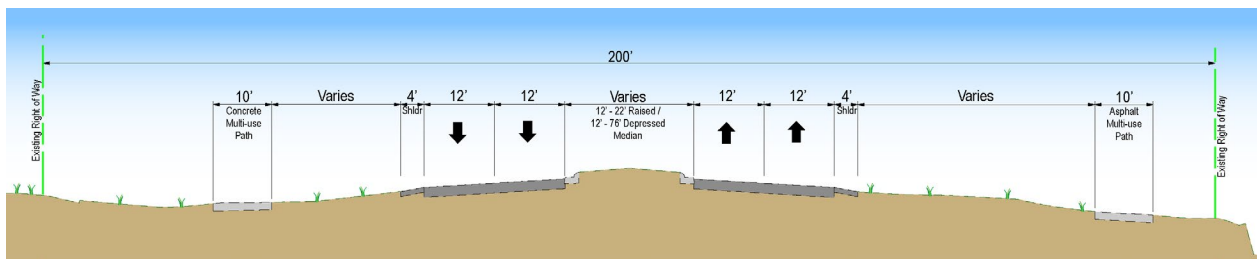
2.0 EXISTING CONDITIONS

2.1 Existing Roadway Conditions

2.1.1 Bird Key Drive to the Bridge

The existing typical section includes two 12-ft wide travel lanes in each direction, separated by a curb and gutter and flush landscaped median ranging in width from a minimum of 12 ft to a maximum of 76 ft. This section of roadway also includes 4-ft wide paved shoulders and a 10-ft multi-use path on the north side and a meandering 10-ft multi-use path within Bird Key Park that connects to the existing bridges, shown on **Figure 2-1**.

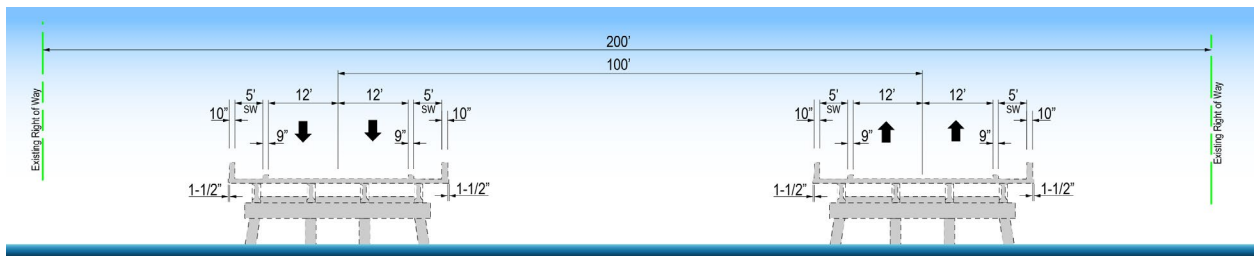
Figure 2-1
SR 789 Existing Roadway Typical Section - Bird Key Drive to the Bridge



2.1.2 Bridge Crossing Typical Section

The existing twin bridge typical section includes two 12-ft wide travel lanes, 5-ft sidewalks separated by a 9-inch (-in) raised curb for conduits and 10-in railings on both sides. No shoulders or bicycle lanes are currently provided on the bridge. The total width of each bridge is 37 ft 5-in. The clear space between the twin bridges is 62 ft 7-in, shown on **Figure 2-2**.

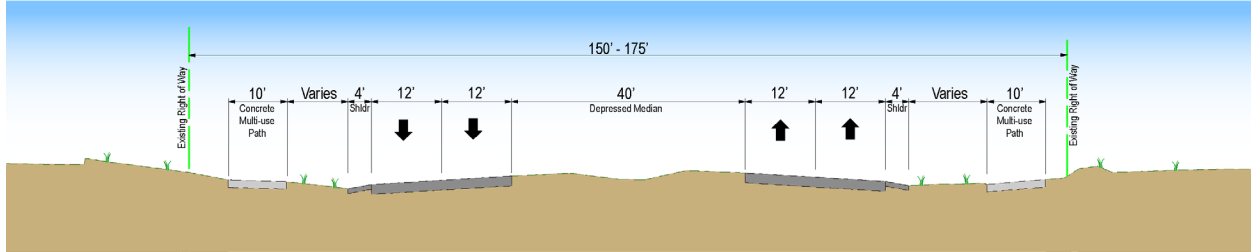
Figure 2-2
SR 789 Existing Twin Bridge Typical Section



2.1.3 Bridge to Sarasota Harbour West

The existing typical section includes two 12-ft wide travel lanes in each direction, separated by a 40-ft depressed landscaped median. This section of roadway also includes 4-ft wide paved shoulders, and 10-ft shared-use paths on both sides, shown on **Figure 2-3**. An existing overhead power line is located within the median.

Figure 2-3
SR 789 Existing Roadway Typical Section - Bridge to Sarasota Harbour West



2.2 Watershed Characteristics

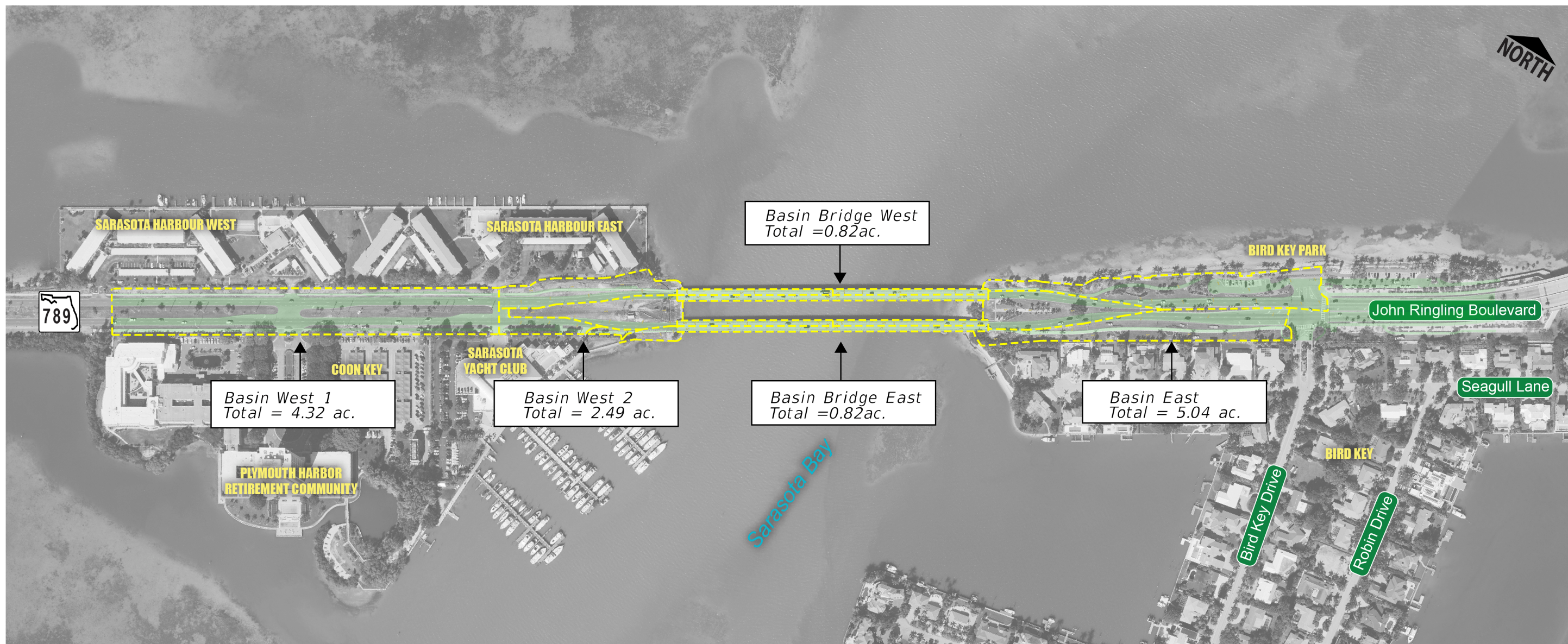
This project is located in the Sarasota Bay Watershed. The Florida Department of Environmental Protection (FDEP) defines the project in WBID 1968B, impaired for bacteria and WBID 1968C, impaired for nutrients. The Sarasota Bay is also listed as an Outstanding Florida Water (OFW). Runoff from the existing bridge deck directly discharges to the Sarasota Bay via existing scuppers. Runoff from the roadway, east and west of the bridge, flows to adjacent grassed swales and landscaped medians which are graded to drain toward the Sarasota Bay.

Since all portions of the project drain toward the bay, there is one overall drainage basin (13.5 acres) in the existing condition. See **Figure 2-4** for existing sub catchment areas and drainage patterns. There is one existing stormwater management facility for the Sarasota Yacht Club adjacent to the project limits on the south west side of the bridge. The existing SR 789 roadway within the project limits is currently an untreated impervious surface.

2.3 Existing Soils

This project is located in sandy soils adjacent to bay waters. Per the National Resources Conservation Service (NRCS) Soil Survey of Sarasota County, two soil types were identified along the project corridor on both Bird Key (eastern project limits) and Coon Key (western project limits). These soil types were identified as Canaveral fine sand, 0 to 5 percent slopes (map symbol 6) and St. Augustine fine sand (map symbol 39), both having a high infiltration rate (low runoff potential). Groundwater conditions will vary with seasonal conditions and environmental factors such as wet season rainfall patterns, tides and man-made drainage features. See **Figure 2-5** for the NRCS Soils map. The water table at the time of the SPT borings was approximately 0.3 ft. NAVD88. Based on permit plans for the Plymouth Harbor Assisted Living Facility (ERP 978.004), the estimated seasonal high groundwater table is 2.02 ft. NAVD88 (converted from NGVD29). Two Double Ring Infiltration Tests were performed on April 20th, 2023 near proposed pond locations on each side of the bridges. The results showed very low infiltration rates in the existing soil: PB-1 0.19 in/hr and PB-2 0.16 in/hr.

Figure 2-4
Existing Basin Map



**Figure 2-5
USGS NRCS Soils Map**



2.4 Floodplains

Per FEMA FIRM 12115C0129F (11/04/16), the project is located in Zone VE with a base flood elevation of 13.0 ft. NAVD88. This Zone VE designation indicates the bridge will experience high surge and wave climate. The bridge approaches and roadway improvements are in Zone AE with a base flood elevation of 11 to 12 ft. NAVD88. There were no documented flooding complaints identified at the drainage kick-off meeting. There are no regulatory floodways within the project limits. See **Figure 2-6** showing the FEMA floodplains within the project limits, referenced from the FEMA National Flood Hazard Layer (NFHL) Viewer.

2.5 Existing Permits

There are two existing Environmental Resource Permits (ERP) at the bridge over Sarasota Bay. ERP 40867.0 – FDOT Pile Jacket Installation and ERP 40404 – Bridge Scour Countermeasures have been permitted through the Southwest Florida Water Management District (SWFWMD). The Ringling Causeway bridge (ERP 18555.01) permit provides details of the permitted dry retention pond at the eastern end of Bird Key. The as-builts show the bottom elevation of the pond at elevation 2.27 ft. NAVD88 and mean high water at 0.1 ft. NAVD88 (converted from metric and NGVD). Additionally, there is a Self Cert Permit for the Sarasota Yacht Club pedestrian walkway that covers the adjacent stormwater management facility (Station 113+00 RT) and there are several ERP permit exemptions for pedestrian improvements.

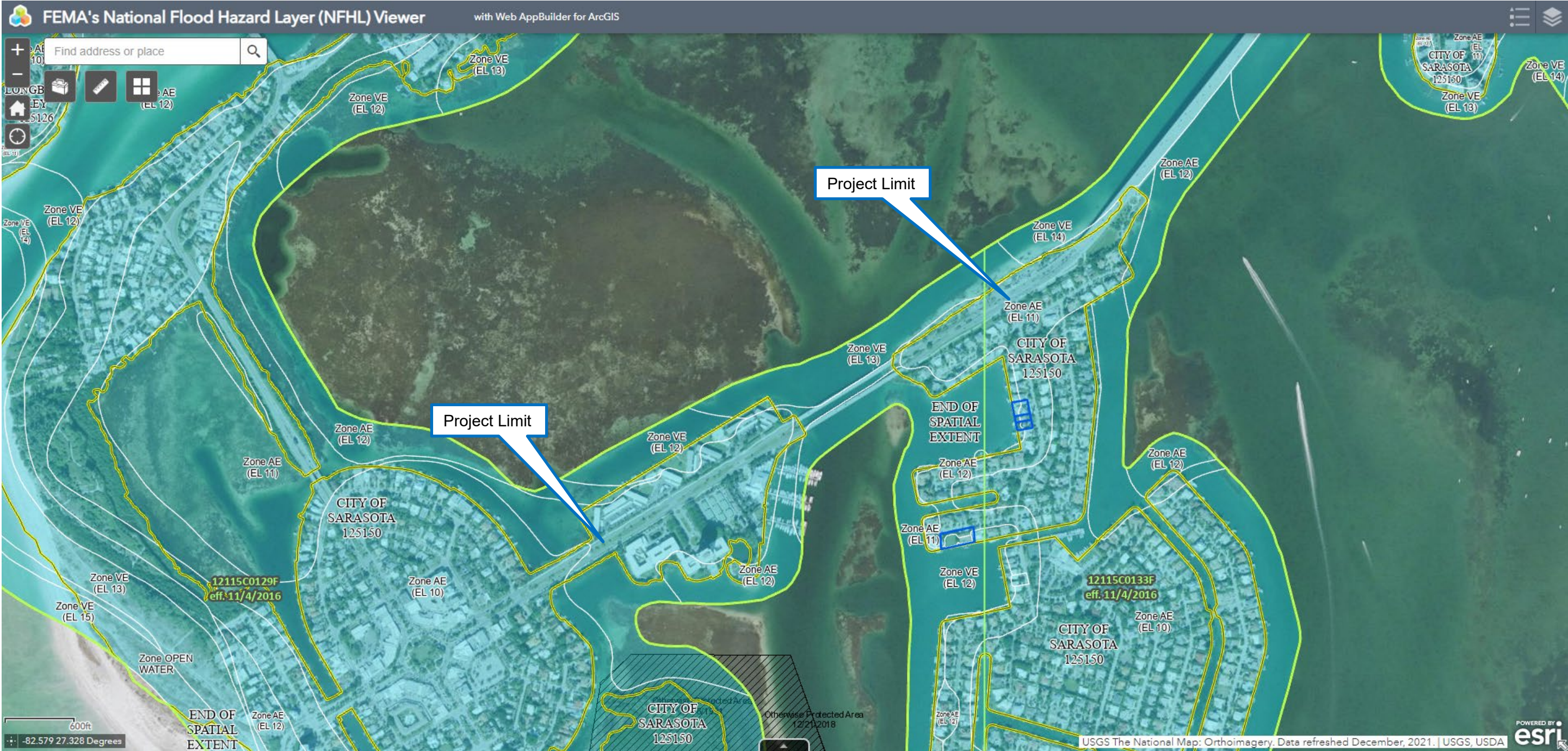
2.6 Scour Countermeasures

The existing bridges utilize rubble riprap as a means of scour countermeasures around 13 intermediate bents of the existing eastbound and westbound bridges. The existing rubble riprap is 18 inches thick and the typical dimensions at each bridge pile are 26-ft. parallel to the bridge and extending 8-ft. from bridge pile perpendicular to the bridge.

2.7 Pre-Application Meeting

Pre-application meetings were held with SWFWMD on July 11th, 2019 and November 3rd, 2022. This project may qualify for a General Permit per Rule 62-330.443, F.A.C. which allows for up to 0.50 acres of wetland and surface water impacts for certain activities. See **Appendix A** for meeting minutes.

Figure 2-6
FEMA Map

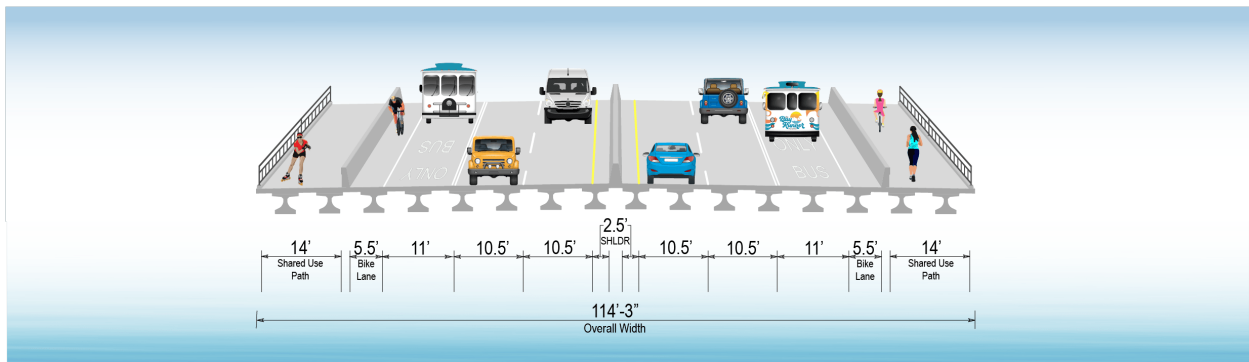


3.0 ROADWAY ANALYSIS

3.1 Preferred Alternative - Single Bridge

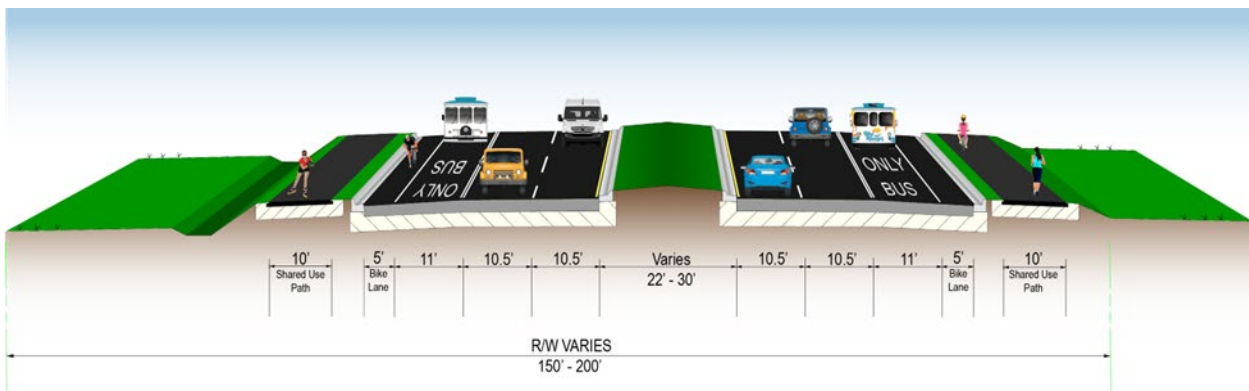
The preferred alternative replaces the existing twin bridges with a single bridge. Project improvements were evaluated using a 2045 design year. The single bridge typical section includes two 10.5-ft wide travel lanes, a dedicated 11-ft transit lane, a 2.5-ft inside shoulder, a 5.5-ft bike lane, and a 14-ft shared use path in each direction, shown on **Figure 3-1**. The total width of the bridge is 114 ft-3-in. The proposed deck elevation at the center of the new bridge will be approximately 26.23 ft, making it approximately 10.50 ft higher than the existing bridges. The additional height is to address storm surge and wave forces and FDOT corrosion criteria. The proposed bridge will not have scuppers.

Figure 3-1
SR 789 Preferred Bridge Typical Section



The new bridge will transition to a curb and gutter roadway typical section that includes two 10.5-ft wide travel lanes, a dedicated 11-ft transit lane, and a 5-ft bike lane in each direction, separated by a median with Type E curb and gutter. This section of roadway also includes a 10-ft shared-use path on both sides of the roadway that connects to the bridge, shown on **Figure 3-2**.

Figure 3-2
SR 789 Preferred Roadway Typical Section



4.0 BRIDGE HYDRAULICS ANALYSIS

As part of the PD&E study, a preliminary bridge hydraulics analysis was developed which includes the numerical solutions of the hydraulic and wave conditions at the proposed bridge alternatives. Sarasota Bay, a coastal hydrodynamic system, requires a two-dimensional hydrodynamic model describing predictions of hydraulic conditions at the bridge(s) during extreme storm events (50-, 100- and 500-year return periods). These predicted conditions will determine the corresponding design criteria for clearance, scour, and waves. The hydraulic modeling will also assist the District in the evaluation of alternatives for the bridge. For a complete analysis, refer to the Bridge Hydraulics Analysis Memorandum,

4.1 Tidal Benchmarks

Table 4-1 presents the tidal datums for the National Oceanic and Atmospheric Administration (NOAA) Sarasota, FL Tidal Benchmark number 8726083.

Table 4-1
NOAA Station 8726083 Tidal Benchmark Information

Tidal datum Type	Elevation (ft-NAVD88)
Mean Higher High Water (MHHW)	0.39
Mean High Water (MHW)	0.15
Mean Sea Level	-0.50
Mean Tide Level	-0.47
Mean Low Water (MLW)	-1.10
Mean Lower Low Water (MLLW)	-1.56

4.2 Sea Level Rise

The 2024 FDOT Drainage Manual provides sea level rise data at specified stations based on historical tidal records gathered by National Water Level Observation Network (NWLON). The nearest station to this project, St. Petersburg, FL station 8726520, experiences a sea level rise of 2.75 mm/year. The design of coastal projects must incorporate sea level rise analysis to assess vulnerability over the design life of the facility.

4.3 Storm Surge Modeling Results

Table 4-2 summarizes the results of the storm surge simulation. The table presents peak water surface elevations, discharges and velocities for each return period.

**Table 4-2
Summary of Storm Surge Hydraulic Parameters**

Flood Data	Design Flood	Base Flood	Greatest Flood
Stage Elevation (ft-NAVD88)	11.0	12.6	15.9
Discharge (cfs)	59,719	61,717	63,230
Maximum Velocity (ft/s)	4.5	4.5	4.3
Average Velocity (ft/s)	3.5	3.5	3.3
Exceedance Probability (%)	2	1	0.2
Frequency (yr)	50	100	500

4.4 Wave Modeling Results

Additional hydraulic modeling simulates wave conditions at the proposed bridge location for the base flood (100-year) in order to factor wave loading on the bridge superstructures. The peak wave period was determined to be 3.7 seconds with significant wave height of 4.2 ft. The maximum wave height was calculated as 8.7 ft. The maximum wave crest elevation is calculated as 70% of the maximum wave height plus the 100-year peak water surface elevation (11.6 ft-NAVD88), which yields a 100-year wave crest elevation of 17.7 ft-NAVD88. If the low member elevation lies below this elevation, the bridge design must account for wave loading.

4.5 Scour

The hydrodynamic modeling for Sarasota Bay will determine the appropriate scour countermeasures required at the proposed bridge. The 100-year (design) and 500-year (check) flow velocities provide the inputs to calculate the scour. These values will be calculated at a later date for the preferred alternative, and used to ensure adequate scour protection is provided where necessary during design.

5.0 RISK ASSESSMENT

The proposed improvements will require modification of the existing roadway and bridge profile grade line and will involve construction of stormwater conveyances and BMPs (See Pond Siting Memorandum). The proposed vertical and horizontal roadway alignments do result in floodplain encroachments due to roadway embankment, however since the floodplains are tidally influenced, no floodplain compensation is required for this project. There is no change in flood “Risk” associated with the design alternatives of this project.

Chapter 13.2.2.5 of the 2023 FDOT PD&E Manual describes the necessary requirements for the completion of the LHR for each level of significance of encroachment. This project should be classified as “Minimal Encroachments”. The following items must be included in the LHR for all alternatives containing minimal encroachments:

- a. General description of the project including location, length, existing and proposed typical sections, drainage basins, and cross drains; **Included in previous sections.**
- b. Determination of whether the proposed action is in the base floodplain; **Section 2.3.**
- c. The history of flooding of the existing facilities and/or measures to minimize any impacts due to the proposed improvements; **There were no documented flooding complaints within the project limits identified at the drainage kick-off meeting. Channel banks at each end of the bridge crossing are protected with seawalls that prohibit any channel meandering.**
- d. Determination of whether the encroachment is longitudinal or transverse, and if it is a longitudinal encroachment, an evaluation and discussion of practicable avoidance alternatives; **There will be longitudinal impacts to the floodplain due to the additional shoulder widths and shared use paths. Maximum allowable embankment slopes and/or retaining walls will be used to minimize these impacts. With the existing SR 789 bisecting these floodplains, there are no economically practicable avoidance alternatives.**
- e. The practicability of avoidance alternatives and/or measures to minimize impacts; **The proposed design will make every reasonable effort to minimize the impacts resulting from roadway fill.**
- f. Impact of the project on emergency services and evacuation; **Since there is no change in flood risk and the new bridge will be designed to revisit storm surge and wave forces, the project provides improvements for emergency services and evacuation.**
- g. Impacts of the project on the base flood, likelihood of flood risk, overtopping, location of overtopping, backwater; **The project will not impact the likelihood of flood risk or the base flood elevation, which is the result of coastal storm surge. The entire project limits in the existing condition are overtopped by the base flood. The proposed profile grade line will result in a minimum low member elevation of 13 ft-NAVD88, which will decrease the likelihood of overtopping of the bridge(s).**
- h. Determination of the impact of the project on regulatory floodways, if any, and documentation

of coordination with FEMA and local agencies to determine the requirements for the project to be developed consistent with the regulatory floodway; **Not applicable**

i. The impacts on natural and beneficial floodplain values, and measures to restore and preserve these values (this information may also be addressed as part of the wetland impact evaluation and recommendations); **Refer to Pond Siting Memorandum – Section 2.6 Environmental**

j. Consistency of the project with the local floodplain development plan or the land use elements in the Local Government Comprehensive Plan (LGCP), and the potential of encouraging development in the base floodplain; **The project will remain consistent with the local floodplain development plan and land use elements and will not encourage base floodplain development.**

k. Measures to minimize flood-plain impacts associated with the project, and measures to restore and preserve the natural and beneficial flood-plain values impacted by the project; **See item “d” and item “j” above.**

l. A map showing project, location, and impacted floodplains. A FIRM Map should be used if available. If not, other maps (e.g., US Geological Survey (USGS), U.S. Army Corps of Engineers (USACE), Soil Conservation Service (SCS), Bureau of Land Management, U.S. Forest Service, or best available information from the WMDs) may be used. Copies of applicable maps should be included in the appendix; **Copy of FIRM map is provided in Appendix B.**

m. Results of any risk assessments performed; **There is no change in flood “Risk” associated with the design alternatives of this project. Refer to Bridge Hydraulics Memorandum for additional analyses.**

Appendix A
Correspondence

THIS FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.



**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RESOURCE REGULATION DIVISION
PRE-APPLICATION MEETING NOTES**

**FILE
NUMBER:

PA 406905**

Date:	7/11/2019		
Time:	3:00		
Project Name:	FDOT SR 789 (Ringling) - Bird Key Dr to Sarasota Harbor West		
District Engineer:	Monte Ritter		
District ES:	Kim Dymond		
Attendees:	Jason Dunn jdunn@hardestyhanover.com , Tom Pride		
County:	Sarasota	Sec/Twp/Rge:	25,26/36/17
Total Land Acreage:		Project Acreage:	<10 acres

Prior On-Site/Off-Site Permit Activity:

- ERPs 40404.000 and 40867.000 (ERP Noticed General for bridge repairs)

Project Overview:

- Proposed roadway widening and bridge replacement project over tidal waters. Roadway widening and bridge replacement will not include additional traffic lanes, but will include paved shoulders and will replace existing 5' sidewalks with 10' wide multi-use path. If wetland or surface water impacts are less than 0.5 acres proposed activity can qualify for a General Permit per Rule 62-330.443, F.A.C. Otherwise, proposed activity will qualify for an Individual ERP.

Environmental Discussion: (Wetlands On-Site, Wetlands on Adjacent Properties, Delineation, T&E species, Easements, Drawdown Issues, Setbacks, Justification, Elimination/Reduction, Permanent/Temporary Impacts, Secondary and Cumulative Impacts, Mitigation Options, SHWL, Upland Habitats, Site Visit, etc.)

- Provide the limits of jurisdictional surface waters.
- Project may qualify for General Permit 62-330.443, F.A.C. which allows for up to 0.50 acre of wetland and surface water impacts for certain activities. If construction exceeds 0.50 acre of impacts, an Individual ERP and mitigation will be required.
- As of October 1, 2017, the District will no longer send a copy of an application that does not qualify for a State Programmatic General Permit (SPGP) to the U.S. Army Corps of Engineers. If a project does not qualify for a SPGP, you will need to apply separately to the Corps using the appropriate federal application form for activities under federal jurisdiction. Please see the Corps' Jacksonville District Regulatory Division Sourcebook for more information about federal permitting. Please call your local Corps office if you have questions about federal permitting. Link: <http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/>

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)

- WBIDs – Sarasota Bay (WBIDs 1968BA, 1968B and 1968C). None of these WBIDs are currently listed for nutrient related impairments. WBIDs need to be independently verified by the consultant
- Provide documentation to support tailwater conditions for quality and quantity design
- OFW – Sarasota bay Estuary System adjacent to project area.
- Any wells on site should be identified and their future use/abandonment must be designated.

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)

- Peak rate attenuation not required for bridge replacement project.
- Demonstrate proposed bridge hydraulic openings will prevent downstream scour, increased downstream velocities, and increased flood elevations on the property of others from flood events up to and including the 100-year, 24-hour event. Evaluation of the 2.33-year, 10-year, 25-year, and 100-year, 24-hour events will be acceptable.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

For General Permit:

- Formal water quality treatment not required.

For Individual Permit:

- Presumptive treatment not required since new travel lanes will not cause an increase in pollutant load over the existing lanes.
- Net improvement
-Refer to rule 62-330.301(2), F.A.C.
- -Net improvement not required since no new non exempt impervious areas are proposed.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- The project may be located within state owned sovereign submerged lands (SSSL). Be advised that a title determination will be required from FDEP to verify the presence and/or location of SSSL.
- If use of SSSL is proposed, authorization will be required. Refer to Chapter 18-21, F.A.C. and Chapter 18-20, F.A.C. for guidance on projects that impact SSSL and Aquatic Preserves.
- If there is an existing SSL public easement, the easement will need to be modified. Refer to Chapter 18-21.005, F.A.C.

Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- The permit must be issued to entity that owns or controls the property. FDOT will be permittee.

Application Type and Fee Required:

- Notice of Intent to Use an Environmental Resource General Permit Application. \$250 for online submittal.
- Individual ERP- Sections A, C and E of application. Fee will be dependent upon project area and wetland/surface water impacts.
- Consult the [fee schedule](#) for different thresholds.

Other: (Future Pre-Application Meetings, Fast Track, Submittal Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- The plans and drainage report submitted electronically must include the appropriate information required under Rules 61G15-23.005 and 61G15-23.004 (Digital), F.A.C. The following text is required by the Florida Board of Professional Engineers (FBPE) to meet this requirement when a digitally created seal is not used and must appear where the signature would normally appear:

ELECTRONIC (Manifest): *[NAME] State of Florida, Professional Engineer, License No. [NUMBER] This item has been electronically signed and sealed by [NAME] on the date indicated here using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies*

DIGITAL: *[NAME] State of Florida, Professional Engineer, License No. [NUMBER]; This item has been digitally signed and sealed by [NAME] on the date indicated here using a Digital Signature; Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.*

- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

AGENDA

Drainage Kick-off Meeting Minutes

SR 789 (Ringling) from Bridge Key Drive to Sarasota Harbor West Concurrent Project Development and Environment (PD&E) Study and Design Sarasota County

FPID#: 436680-1-22-01 and 436680-1-32-01

Thursday October 26, 2022 (11:00 AM – 12:00 PM)
Teams Meeting

- I. Introductions
 - Florida Department of Transportation
 - Brent Setchell, Sergio Figueroa, Jonathon Bennett
 - Hardesty & Hanover Team
 - Jim Englert, Jason Dunn, Zachary Gross (H&H), Gordon Mullen (RK&K)

- II. Drainage Design
 - Existing Condition
 - Sarasota Bay (WBID 1968) impaired for bacteria, but is an OFW
 - Bridge runoff is direct discharge to Sarasota Bay via existing scuppers
 - Roadway runoff sheet flows to landscaped median and grassed areas
 - FEMA Flood Zones AE and VE
 - Proposed Condition
 - Eliminate scuppers from design and direct discharge to Sarasota Bay
 - Add BMPs in green spaces where possible
 - Stormwater conveyance
 - Combination of open swale and closed collection system
 - Based on 10-year storm frequency
 - Allow Spread Criteria based on DS 40 mph: keep ½ lane clear
 - Draft PSR/LHR
 - Developed Draft PSR January 2021
 - Evaluated single v. twin bridges
 - Identified BMP alternatives
 - Linear Treatment Areas on South side of bridge, created by the realignment
 - Under bridge approaches
 - Typical Section modifications with 15% L&G
 - Single Bridge Selection
 - Increased inside shoulder width
 - Potential for transit lane

- III. Permitting approach
 - Bridge Replacement - Not adding capacity to roadway

- Shoulders, bicycle lanes and sidewalks are exempt from providing water quality
- Exempt from water quantity due to tidal outfall
- SMFs are not required
 - Verified with SWFWMD on 7/11/19

IV. Open discussion

- Schedule
 - Jason- 2021 Draft PSR was put on hold due to funding and determination of single v. twin bridge as well as typical section components
 - PD&E is going to public hearing in early April 2022
 - H&H to show the single bridge with the 15% L&G typical in the PSR and LHR. PD&E technical documents are due in for D1 review in January due to schedule needed prior to the public hearing.
 - Jason mentioned the PD&E and Design overlap relative to H&H's recent 15% L&G submittal.
 - Brent -combined PD&E/Design schedule puts more urgency on these design discussions. Patrick Bateman is working to set up typical section and L&G review meetings with D1 staff.
- Permitting approach for transit lane
 - Jim-Transit/shoulder is being added for both Big Ringling and Little Ringling bridges. Stripe out 12' outside shoulder, which requires a 2' reduction to the inside shoulder width. No change to total bridge width
 - Brent stated transit lanes are not considered travel/capacity lanes. Brent will discuss the concept with Dave Kramer/SWFWMD. With incorporation of BMPs, he thinks SWFWMD may be okay with the current bus on shoulder concept.
 - Jim – D1 EMO wants to show in public hearing the future transit lane concept (a striping change from safety to a transit project).
 - Brent agrees with the BMP approach, starting with net new impervious, scupper removal and routing all runoff through the BMPs/ponds. Demonstrate ROW hardship, as no ROW acquisition is needed for the preferred alternative.
- Treatment
 - Sergio how much additional impervious area in pre- vs post?
 - H&H will calculate but new impervious for bridge exceeds the 0.5 acre over water threshold for General Bridge Replacement Permit
 - Brent - Even if we're not meeting volumetric requirements for treatment, at least routing the stormwater runoff through the BMPs (esp. trash removal) could be sold as a net project WQ benefit.
- Compensatory treatment from another project
 - Jason mentioned the potential for using WQ credits from traffic circle at Gulfstream Drive? Brent would rather keep treatment options within this project but could use that credit as a backup if SWFWMD does not accept the WQ approach. Brent isn't immediately aware of any other regional WQ improvement projects.
 - Any need for a dedicated environmental look around meeting? Brent – not needed at the moment.

- Sea Wall Design
 - Brent –sea level rise (resiliency) is important to consider in the development of the seawall design (i.e., implications of cost versus potential risk). Sergio asked about looking into the feasibility of adding flap gates or tide valves.
 - Brent – displayed Port Manatee data, suggesting 2.43’ NAVD as the MHW in 2100 using linear interpretation. Brent would like to apply more science in the justification in the sea wall and bridge profile heights (versus bridge design life). Brent forwarded his e-mail to the team for reference. Jason will review this with Intera, the coastal engineer.

- Stormwater conveyance
 - Jason- combination of open and closed drainage systems may be used for this project due to ROW-restricted areas and added turn lane areas.
 - Jason- need to evaluate how spread could impact the transit lane. Using a design speed of 40 mph half the lane is required to be clear. Do we need to apply this criteria to the transit lane or use the allowable spread of the entire shoulder on the bridge. Brent - If you can’t meet spread, a design variation may be needed. Sergio doesn’t think this will be an issue relative to the longitudinal grade of the bridge (most of the water should be able to be collected). Gordon mentioned the potential for unauthorized vehicle use of the bus on shoulder lane (similar to what is seen on SR 865/Matanzas Pass Bridge into Ft. Myers Beach).
 - Sergio asked about looking into the feasibility of adding flap gates or tide valves.
 - Jason mentioned a public workshop comment about flooding complaints along south ROW, will address by capturing roadway runoff in the proposed conveyance design.

- Maintenance of Traffic
 - Brent asked about MOT approach. Jason/Jim - partial construction build half bridge in the median, switch traffic, then build the rest of the bridge. Temporary work trestle? Yes, start at one end then work across the channel.

- Environmental
 - Gordon showed the draft wetland/SAV/oyster/EFH impacts table being used in the pending Draft NRE. Brent mentioned that D1 will be using the Skyway SAV Mitigation site currently being permitted by D1 Permits (12 mitigation plan components are being developed). This site is out-of-basin, so Brent is using ratios. There is currently no D1 Permits plan for mangrove mitigation due to limited banks available. Gordon mentioned that during field reviews, he saw evidence of prior on-site mangrove plantings – not sure who tried this? These were generally unsuccessful as only the plastic pots were left in the water-front substrate.

V. Project Schedule

- NTP – November 4, 2019
- Design Execution – December 2019
- Alternatives Public Workshop – April 5 and April 7, 2022
- Typical Section Package – September 16, 2022

- 15% Line & Grade – September 16, 2022
- BDR (30% Plans) – TBD
- Public Hearing – April 2023

VI. Action Items

- H&H- Update PSR and LHR for use in the public hearing
- H&H- Attend monthly FDOT/SWFWMD meeting on 11/3

Minutes

SWFWMD/FDOT Meeting Minutes

SR 789 (Ringling) from Bridge Key Drive to Sarasota Harbor West Concurrent Project Development and Environment (PD&E) Study and Design Sarasota County

FPID#: 436680-1-22-01 and 436680-1-32-01

Thursday November 3, 2022 (2:00 – 3:00 PM)
Teams Meeting

- I. Introductions
 - SWFWMD
 - David Kramer, Al Gagne
 - Florida Department of Transportation
 - Nicole Monies, Brent Setchell, Ben Shepard
 - Hardesty & Hanover Team
 - Jason Dunn (H&H), Gordon Mullen (RK&K)
- II. Project Overview
 - Proposed roadway widening and bridge replacement project over tidal waters. Roadway widening and bridge replacement will not include additional traffic lanes, but will include paved shoulders and will replace existing 5' sidewalks with 14' wide multi-use paths. Additionally, FDOT is considering narrowing the travel lanes which would allow wider outside shoulders for occasional transit use for the trolley
 - Proposed typical section is a single bridge, the twin parallel bridges will be removed.
 - Right turn lanes are also contemplated on the island
 - A draft profile and typical sections was shown from the 15% Line and Grade submittal
- III. Site Information
 - Sarasota Bay (WBID 1968) impaired for bacteria
 - Sarasota Bay is an OFW
 - Existing Bridge runoff is direct discharge to Sarasota Bay via scuppers
 - FEMA Flood Zones AE and VE
- IV. Water Quantity
 - Tidal outfall
 - Exempt from peak rate attenuation
 - Scour analysis for proposed condition
- V. Water Quality
 - Bridge Replacement - Not adding capacity to roadway (4 lanes existing will be replaced with 4 lanes)
 - Reference PA 406905, Verified with SWFWMD on 7/11/19

- Shoulders, bicycle lanes and sidewalks are exempt from providing water quality
- Jason: Proposed design will remove the direct discharge to Sarasota Bay by removing the bridge scuppers in the proposed design
- Jason: Design team will maximize green spaces from bridge realignment to provide BMPs for treatment (dry retention)
- Jason: Identified hardship that all project improvements will occur within existing right of way.
- David Kramer: Transit use on shoulder would require treatment of this additional impervious surface
 - Reference FDOT District 7 project I-275 bus on shoulder project
- Treatment volume was determined to be presumptive criteria plus 150% OFW adjustment for additional transit lane.
- A temporary mixing zone will be established during construction

VI. Sovereign Lands Discussion

- Project will be constructed within the existing SSL easement

VII. Environmental

- Seagrass mitigation
 - Estimated 0.05 acre of direct impacts and 0.12 acre of secondary impacts (using a 100-foot buffer from the outside edges of the existing bridges).
 - Anticipates using the FDOT D1 Skyway WADs site (pending permitting). Since it is out-of-basin, FDOT is proposing the use of a ratio.
 - SWFWMD staff confirmed that a coastal cumulative impact analysis will be required.
- Mangrove mitigation
 - Estimated 0.05 acre of direct impacts (mostly of individual mangroves along the eastern end of the bridge).
 - Brent stated that potential mitigation options are still being evaluated due to lack of available local mitigation banks with mangrove/estuarine credits.
 - SWFWMD suggested that on-site planting could be an option.
 - Mitigation planting would also likely require additional coordination with the City of Sarasota (Bird Key Park owner) and/or the FDEP for potential Sovereign Submerged Lands involvement.
- Listed/protected species –
 - Applicable federal species include free-swimming sea turtles (several species), West Indian manatee and low potential for small tooth sawfish and Gulf sturgeon.
 - State-listed species generally consist of state-threatened shorebird and water bird species.
 - The PD&E study's Draft Natural Resources Evaluation document is being prepared with the intent to have as much preliminary construction information available to seek advanced consultation with the National Marine Fisheries Service.

Appendix B
FEMA FIRM

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **flowways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **flowways** were computed at cross sections and interpolated between cross sections. The flowways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Florida State Plane West Zone (FIPS zone 0902). The **horizontal datum** was NAD 83 HARN, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey (NGS) website at <http://www.ngs.noaa.gov> or contact the NGS at the following address:

NGS Information Services
National Geodetic Survey, NOAA, NNGS12
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Example Datum Offset Calculation
using datum offset table below
NAVD88 = NGVD29 + (datum offset value)
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was provided in digital format by the Southwest Florida Water Management District. This information was photogrammetrically compiled at a scale of 1:6,000 from aerial photography dated 2007 or later. For DFIRM production, the original imagery was converted to black-and-white.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and flowways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

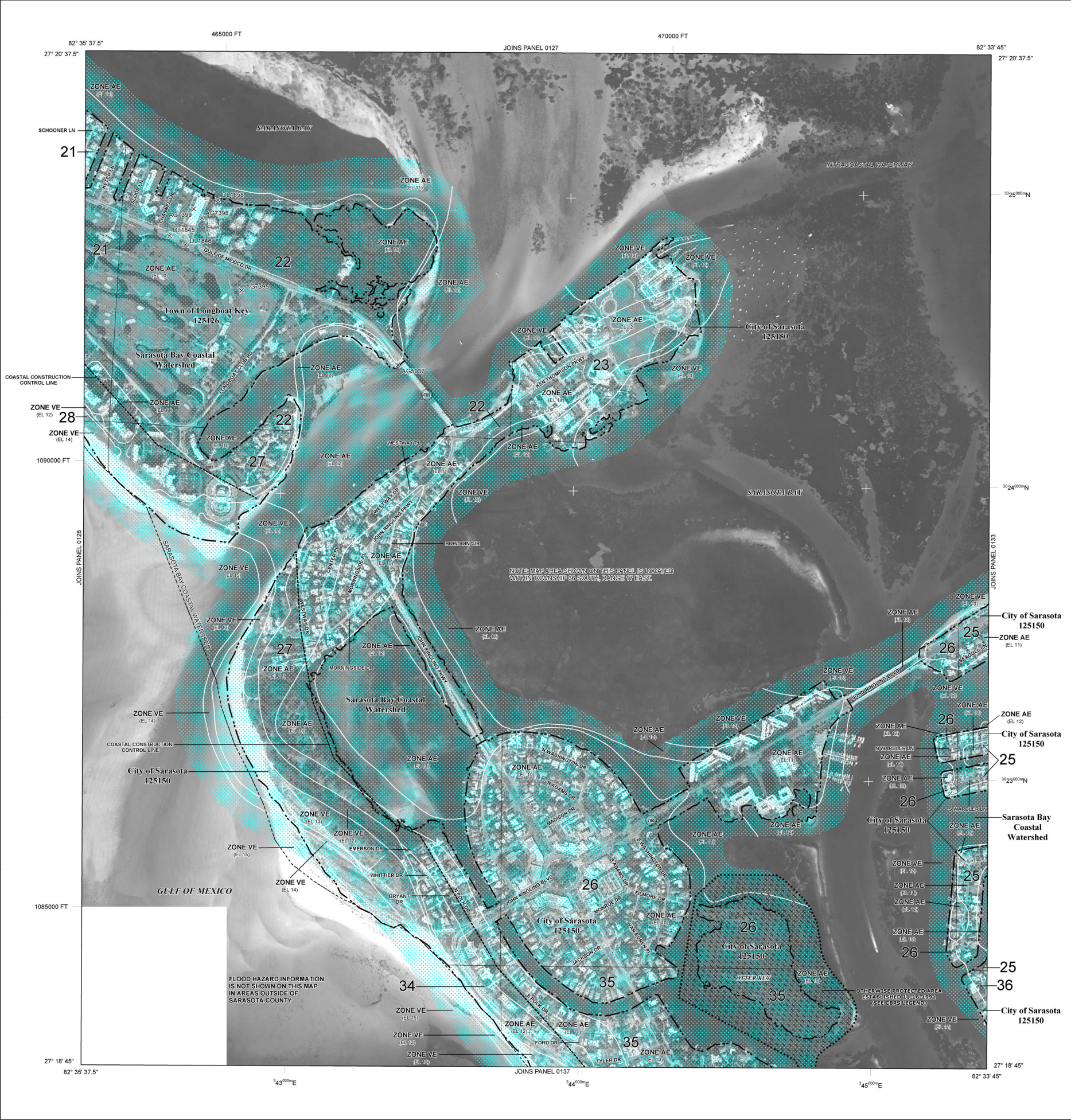
For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/mifp>.

COASTAL BARRIER LEGEND

11-16-91 Otherwise Protected Area
FLOOD INSURANCE NOT AVAILABLE FOR STRUCTURES NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON OR AFTER NOVEMBER 16, 1991 - NOT USED IN A MANNER CONSISTENT WITH THE PURPOSE OF THE OTHERWISE PROTECTED AREAS.

Comments or concerns regarding the Coastal Barrier Resources System or Otherwise Protected Areas should be directed to the Coastal Barrier Coordinator at the U.S. Fish and Wildlife Service, (404) 679-7106.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A
No Base Flood Elevations determined.

ZONE AE
Base Flood Elevations determined.

ZONE AH
Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO
Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR
Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99
Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V
Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE
Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE
The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X
Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X
Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D
Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% Annual Chance Floodplain Boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
Base Flood Elevation line and value; elevation in feet*
Base Flood Elevation value where uniform within zone; elevation in feet*
*Referenced to the North American Vertical Datum of 1988

Cross section line
Transect line
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
500-foot ticks: Florida State Plane West Zone (FIPS Zone 0902), Transverse Mercator projection
1000-meter Universal Transverse Mercator grid values, zone 17
Bench mark (see explanation in Notes to Users section of this FIRM panel)
River Mile Junction - Points defining locations of flow accumulation or hydraulic connectivity. The first two characters of the Junction name represents the specific watershed (as shown in the map color locator map) in which the junction is located (note the boundary junctions, without an associated floodplain, are also shown).
Hydraulic Connectivity - Flow pathway between junctions.
MAP REPOSITORIES
Refer to Map Repositories list on Map Index
EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP: NOVEMBER 4, 2016
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0129F

FIRM FLOOD INSURANCE RATE MAP SARASOTA COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 129 OF 475
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LONGBOAT KEY, TOWNSHIP OF	125126	0129	F
SARASOTA, CITY OF	125150	0129	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 1215C0129F
EFFECTIVE DATE NOVEMBER 4, 2016
Federal Emergency Management Agency