

DRAFT POND SITING REPORT

Florida Department of Transportation

District One

S.R. 789 (Longboat Key) PD&E Study

Limits of Project: From North Shore Road to Coquina Park Entrance

Manatee County, Florida

Financial Management Number: 436676-1-22-01

ETDM Number: 14382

Date: February 2026

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.

Draft Pond Siting Report

Florida Department of Transportation

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PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing engineering with Scalar Consultant Group Inc. and that I have supervised the preparation of and do approve the analysis, findings, opinions, conclusions, and technical advice hereby reported for:

PROJECT: S.R. 789 (Longboat Key) Project Development and Environment (PD&E) Study
Financial Project ID: 436676-1-22-01
Manatee County, Florida

The engineering work represented by this document was performed through the following duly authorized engineering business:

Scalar Consulting Group Inc.
2301 Maitland Center Parkway, Suite 200
Maitland, FL 32751
Telephone No.: (407) 868-4094

This Pond Siting Report contains engineering information that fulfills the purpose and needs for the State Road (S.R.) 789 (Longboat Key) Project Development and Environment (PD&E) Study in Manatee County, Florida. I acknowledge that the procedures and references used to develop the results contained in this report are standard for the professional practice of transportation engineering as applied through professional judgment and experience.

Any engineering analysis, documents, conclusions, or recommendations relied upon from other professional sources or provided with responsibility by the client are referenced accordingly in the following report.

This item has been digitally signed and sealed by David A. Bennett on the date adjacent to the seal.



Signature must be verified
on any electronic copies.

SCALAR CONSULTING GROUP LLC
2301 Maitland Center Parkway, Suite 200
Maitland, FL 32751
David A. Bennett, P.E. No 54769

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1.0 PROJECT SUMMARY

The Florida Department of Transportation (FDOT) District One has conducted this Project Development and Environment (PD&E) Study to determine the engineering and environmental effects of the proposed improvements to State Road (S.R.) 789 (Longboat Key) from North Shore Road to Coquina Park Entrance, in Manatee County. A project location map is shown in **Figure 1-1**. This PD&E Study documents the need for replacing the existing Longboat Key Bridge over Longboat Key Pass, and presents the procedures utilized to develop and evaluate a selected alternative. Information relating to the engineering and environmental characteristics essential for the development of alternatives and analytical decisions was collected. The alternatives were analyzed using a variety of parameters with a matrix format. This process was followed to identify natural, physical, and socio-economic impacts, while providing the necessary future transportation improvements. The study includes solicited input from the public and local agencies. The PD&E Study satisfies the requirements of FDOT and follows the process for a Type 2 Categorical Exclusion. The PD&E Study process was developed in compliance with the National Environmental Policy Act (NEPA), and other applicable federal and state regulations.

The purpose of this Pond Siting Report is to identify potential pond site locations for meeting applicable stormwater management criteria and to determine any necessary right-of-way requirements for the bridge replacement project. The goal is to minimize cultural and environmental impacts and to utilize existing right-of-way wherever possible. Pond alternatives were analyzed and evaluated based on the best available information, considering the following factors:

- Environmental impacts include wetlands, upland habitat, and protected species involvement.
- Cultural resources.
- Hazardous materials contamination.
- Economic factors, including construction costs and estimated land costs.
- Hydrologic factors such as soil types and seasonal high groundwater table (SHWT) elevations.
- Stormwater conveyance and hydraulic parameters.
- Utility impacts.
- Use of existing right-of-way.

These items were mitigated during the pond siting process by limiting the proposed storm water management facilities to the existing FDOT ROW.

1.1 Project Description

Longboat Key serves as the primary north-south connection from Longboat Key to Bradenton Beach and Anna Maria Island. The original Longboat Key (or Longboat Pass) bridge was built in 1926. In 1932, the Longboat Key Bridge was washed away by a hurricane, severing the connection between Longboat Key and Anna Maria Island. The current Longboat Key bridge (Structure Number 130057) was built in 1957 slightly east of the original bridge's footprint, and it was reconstructed in 2005. The bridge crosses Longboat Pass, a navigable waterway which serves as a

northwestern entry point from the Gulf of Mexico to Sarasota Bay. With the planned replacement of Cortez bridge to the north with a 65-foot vertical clearance fixed bridge and the discontinued maintenance of New Pass bridge to the south, Longboat Key bridge would be the only point of entry in and out of Sarasota Bay for vessels with an air draft of 65 feet or greater.

This project involves the potential reconstruction and/or rehabilitation of S.R. 789/Longboat Key Bridge to address structural integrity and operational deficiencies. The limits of the proposed project are from North Shore Road to Coquina Park Entrance in the Town of Longboat Key and City of Bradenton Beach, in Manatee County, Florida. S.R. 789 is classified as an Urban, Major Collector and consists of a two-lane, undivided typical section between North Shore Road and the entrance to Coquina Park. The main bridge span material is steel-reinforced concrete while the deck type is made of cast-in-place concrete, and the bridge has a movable-bascule span design. The vertical clearance below the bridge is 16.7 feet. The bridge deck width from edge-to-edge is 37.4 feet. The existing S.R. 789 bridge has one (1) 12-foot travel lane northbound, one (1) 12-foot travel lane southbound, and no shoulders. Adjacent to each travel lane is a small concrete barrier and a 5-foot-wide sidewalk. On the northbound approach to the bridge, there is a 5-foot-wide sidewalk on the west side of S.R. 789. On the southbound approach to the bridge, there are no sidewalk facilities. Bicycle lanes are present in both directions approaching the bridge structure but are not present on the bridge.

The preferred alternative is the **Build Alternative 6: High Level Fixed Bridge**. This includes the replacement of the existing Longboat Key Bridge with a 78-foot vertical clearance bascule bridge with 90 feet of horizontal clearance between fenders. The reduced typical section includes: one 12-foot-wide protected shared use path on the west side of the bridge, two 8-foot wide outside shoulders, two 11-foot-wide travel lanes and one 8-foot-wide protected sidewalk on the east side of the bridge. The alternative involves right-of-way acquisition from the north side of the bridge at the Manatee County Marine Rescue Facility (county-owned property). The alternative involves intersection and access management modifications at the north end of the bridge at the Coquina Beach entrance.

1.2 Purpose & Need

Per the Efficient Transportation Decision Making (ETDM) Summary Report – ETDM No. 14382, published on April 30, 2020, the purpose of the project is to address structural integrity and operational deficiencies of the Longboat Key/S.R. 789 bridge. The 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 will evaluate alternatives for the reconstruction/rehabilitation, with consideration of bicycle and pedestrian facilities, of approximately one mile of roadway that provides a connection between nearby neighborhoods and recreational facilities (Longboat Key to Bradenton Beach). The need for the project is based on existing bridge deficiencies, improving multimodal transportation options, and improving safety.

Figure 1 - Project Location Map



2.0 POND SITING APPROACH

The proposed right-of-way provides adequate area to accommodate all stormwater management needs for the project; therefore, additional offsite facilities are not required. Stormwater treatment will be managed through a dry swale located at the southern end of the project and a dry retention pond situated at the northern end.

2.1 Project Datum

Unless otherwise noted, all reference elevations are referenced to the North American Vertical Datum of 1988 (NAVD88).

2.2 Design Criteria

The design of stormwater management facilities for this project is regulated by the rules and regulations set forth by SWFWMD, FDOT and FDEP.

2.2.1 Water Quantity

SWFWMD water quantity criteria are not applicable for this project due to discharging of surface waters to the Gulf of Mexico.

2.2.2 Water Quality

The SWFWMD requires that all projects meet state surface water quality standards as set forth in Chapters 62-4 and 62-302, Florida Administrative Code (FAC). Effective June 28, 2024, Chapter 62-330, FAC and ERP AH Vols. I & II were amended to include new water quality performance standards and supporting calculations specified in Section 8.0, Criteria for Evaluation, and Section 9.0, Stormwater Quality Treatment Evaluations, ERP AH Vol. I, respectively.

The project lies within a HUC 12 sub basin (45), discharges to an Outstanding Florida Water (OFW) and lies within an impaired water body, WBID 1968B, Sarasota Bay, Bacteria. Therefore, according to the SWFWMD Environmental Resource Permit Information Manual, Volume 1, 2024, this project must meet the following nutrient load reduction standard:

- 95% reduction in average annual loading of phosphorus (TP) & 95% reduction in average annual loading of nitrogen (TN).
- A reduction such that the post-development condition average annual loading of nutrients does not exceed the predevelopment condition nutrient loading.

3.0 EXISTING CONDITIONS

This project is located on S.R. 789, from North Shore Road to the Coquina Park entrance in the Town of Longboat Key and the City of Bradenton Beach, in Manatee County, Florida. It lies within the Southwest Florida Water Management District (SWFWMD) and is part of the Sarasota Bay watershed, with the bay being designated as an Outstanding Florida Water (OFW). The project is bordered by Water Body Identification Number (WBID) 1968B, Sarasota Bay to the North, which is impaired for bacteria, and WBID 1862, Direct Runoff to Bay, which is unimpaired. There is not an adopted Total Maximum Daily Load (TMDL), and the bay is not part of a Basin Management Action Plan (BMAP).

3.1 Existing Drainage Patterns

The existing bridge has scuppers which allow for a direct discharge of runoff to the bay. Runoff not captured by the scuppers is conveyed to the bridge approaches. Runoff from the northern approach sheet flows to the adjacent right-of-way where it infiltrates the ground or eventually makes it to the bay. Runoff from the southern approach is collected in a closed storm sewer system which directly discharges to the bay. Currently there are no roadway stormwater management facilities within the project limits. See **Figure 2** for the Drainage Basin Map. For the purposes of this study one drainage basin map for used due to the similarities in the pre versus post development conditions.

3.2 Floodplain

There are no reported flooding issues within the project limits. The only FEMA floodplain the project crosses is associated with Sarasota Bay, crossing an AE zone (EL 11.0 North American Vertical Datum (NAVD) and a VE zone (El 13.0 NAVD), but this should not impact the project. **See Figure 3.** Roadway elevations range from 1' to 5' within the project limits. No portions of the project lie within a regulated floodway. There are no existing cross drains per the FDOT Straight Line Diagram (SLD). The Location Hydraulic Report process will quantify and evaluate any floodplain impacts. A bridge hydraulics report will address the required bridge opening based on the bridge alternative selected. We anticipate that existing bridge scour countermeasures will also be required for the new bridge.

Figure 2 Drainage Basin Map



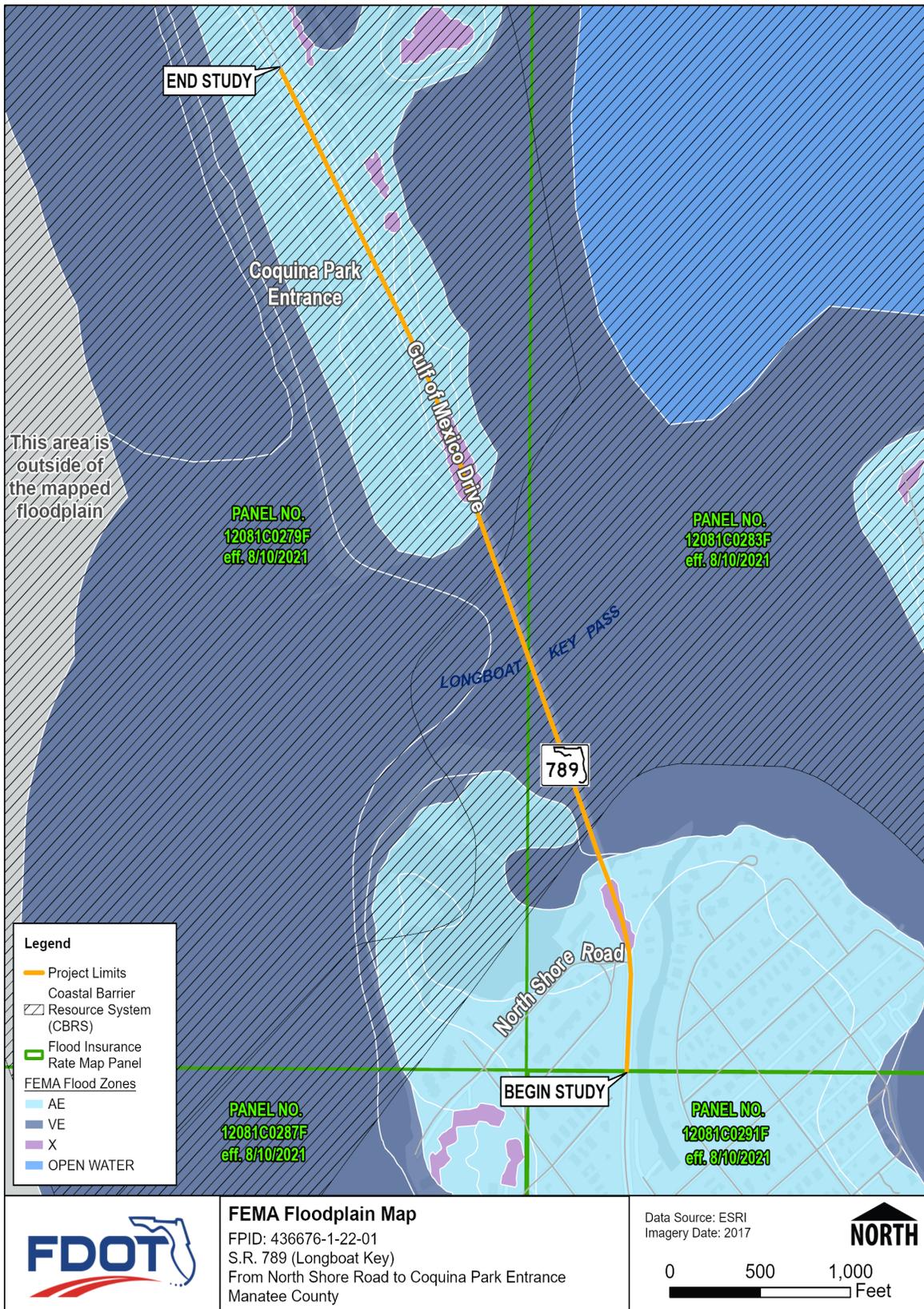
Existing Drainage Basin Map
S.R. 789 (Longboat Key) PD&E Study
From North Shore Road to Coquina Park Entrance
FPID No. 436676-1-22-01
Manatee County

Image Source: APLUS
Image Date: 2024

NORTH

0 500 1,000
Feet

Figure 3 Floodplain Map



3.4 Soils/Geotechnical

The USDA soil survey map and the Summary of USDA Soil Survey are presented in **Figure 4** and **Figure 5**. The project lies within soil type (8), Canaveral Fine Sand.

Figure 4 USDA NRCS Soil Map

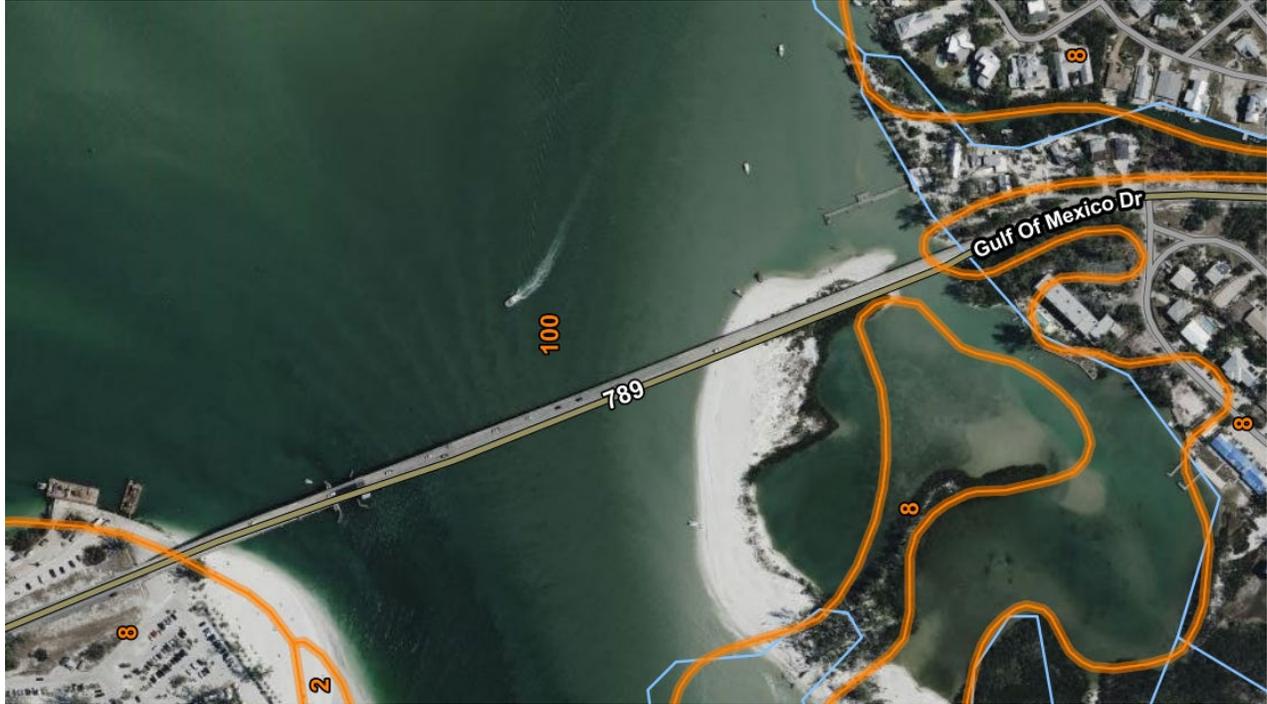


Figure 5 Summary of USDA Soil Survey

SUMMARY OF USDA SOIL SURVEY							
SR 789 (LONGBOAT KEY) PD&E Study from North Shore Road to Coquina Park Entrance							
MANATEE COUNTY, FLORIDA							
FPN: 436676-1-22-01							
TEST LAB PROJECT NO: 19-5066							
USDA Soil Name	Depth (in)	Soil Classification		Permeability (in/hr)	pH	Seasonal High Water Table	
		USCS	AASHTO			Depth (feet)	Months
(8) Canaveral fine sand, 0 to 5 percent slopes							
Canaveral	0-5	SP-SM, SM	A-2-4, A-3	19.98 - 39.97	6.6-8.4	1.5-3.5	Jun-Nov
	5-17		A-3, A-2-4				
	17-49	SP-SM			7.4-8.4		
	49-80						
(9) Canaveral sand, filled							
Canaveral, filled	0-80	SP	A-3	19.98 - 49.89	6.6-8.4	1.0-3.0	Jun-Nov
(10) Canaveral sand, organic substratum							
Canaveral, organic substratum	0-45	SP	A-3	19.98 - 50.03	6.6-8.4	2.5-5.0	Jan-Dec
	45-70	PT	A-8	1.98 - 5.95			
	70-80	SP	A-3	5.95 - 19.98			

4.0 POND SIZING

4.1 Proposed Drainage Condition

The existing drainage conditions will be maintained in the proposed condition. Runoff from the northern section of the bridge will be collected and conveyed to a proposed dry retention pond located under the bridge within the FDOT ROW prior to discharging to the bay. Runoff from the southern section of the bridge will be conveyed to a proposed dry roadway swale prior to discharging to the bay.

4.2 Pond Sizing

As previously discussed, water quantity is not a design criterion for this project; therefore, only water quality treatment is required. The stormwater management system must provide sufficient treatment volume to achieve 95% removal of nitrogen and phosphorus prior to discharge to the Gulf of Mexico. The pond will be sized to meet this required treatment volume, which will be calculated based on runoff from the new impervious areas. Given the available right-of-way, stormwater treatment will be provided through a small dry swale located at the southern end of the project and a dry retention pond at the northern end. The following Figure 6 summarizes the available storage volumes within these on-site treatment facilities:

Figure 6 Pond Stage Storage

Maximum Storage Depth (SD) =	0.75	1.0 ft freeboard	
Water Table (MHW)	0.25		
Avg. Exist. Ground Elev. (ft) =	3.00		
Pond Bottom (ft) =	1.25		
Minimum EOP Elevation (ft) =	3.90		

ELEVATION (ft, NAVD)	DESCRIPTION	AREA (ac)	STORAGE (ac-ft)
3.00	Back of Maintenance Berm	3.03	NA
3.00	Front of Maintenance Berm	3.03	5.10
2.00	Available Treatment Volume	2.90	2.14
1.25	Pond Bottom	2.80	0.00

Using the BMD Trains model, the required treatment volume to achieve 95% removal of nitrogen and phosphorus is 2.14 acre-feet. The proposed dry facilities provide sufficient storage to meet this requirement. Detailed nutrient removal calculations are provided in **Appendix B**.

Based on soil parameters obtained from the USDA Soil Survey, pond recovery is not anticipated to be an issue. During the design phase, once site-specific geotechnical data are available, pond recovery calculations will be performed to confirm this assumption. If recovery requirements cannot be met, underdrains may be incorporated into the final design.

5.0 CONCLUSION

This pond siting report demonstrates that the available right-of-way for the project is adequate to accommodate all required stormwater management facilities. The analysis confirms that the proposed on-site facilities can effectively manage runoff volumes and meet all applicable design criteria. As a result, no additional off-site stormwater management measures are anticipated to be necessary, ensuring that the project can be fully supported within the existing project footprint.

APPENDIX A – Typical Section & Concept Plans

PROJECT CONTROLS

CONTEXT CLASSIFICATION

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

FUNCTIONAL CLASSIFICATION

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

HIGHWAY SYSTEM

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

ACCESS CLASSIFICATION

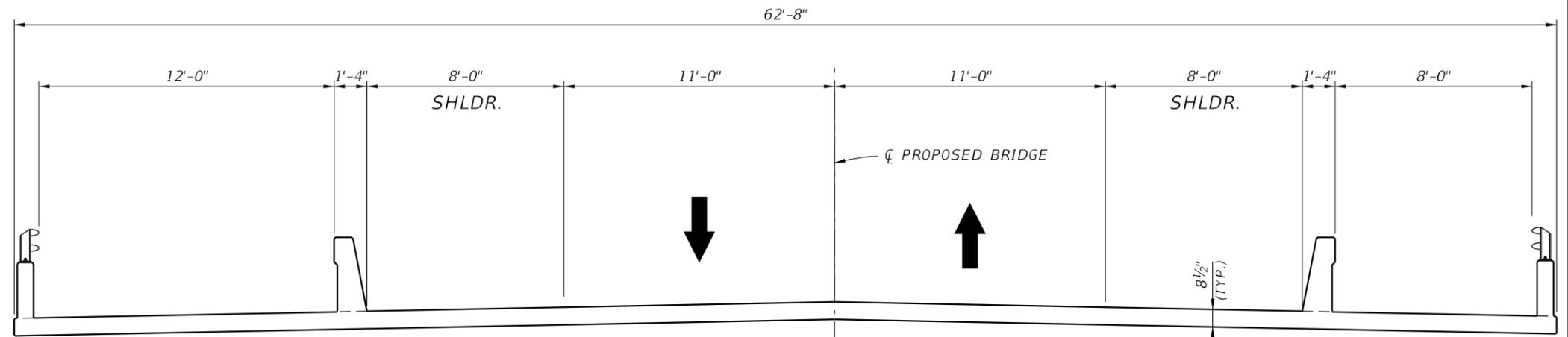
- () 1 - FREEWAY
- () 2 - RESTRICTIVE w/Service Roads
- () 3 - RESTRICTIVE w/660 ft. Connection Spacing
- () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
- () 5 - RESTRICTIVE w/440 ft. Connection Spacing
- () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
- () 7 - BOTH MEDIAN TYPES

CRITERIA

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

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No.



PROPOSED LONGBOAT KEY BRIDGE
HIGH LEVEL FIXED

6/23/2025 4:28:21 PM P:\FL20005.00 LONGBOAT KEY (SR 789) PDA&E STUDY\43667612201\STRUCT\B1BRIDGESECTION01.DGN hsaad

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

(NONE)

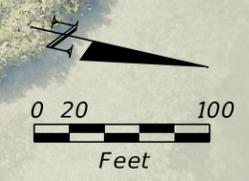
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
789	MANATEE	436676-1-22-01

TYPICAL SECTION

SHEET NO.

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BEGIN STUDY



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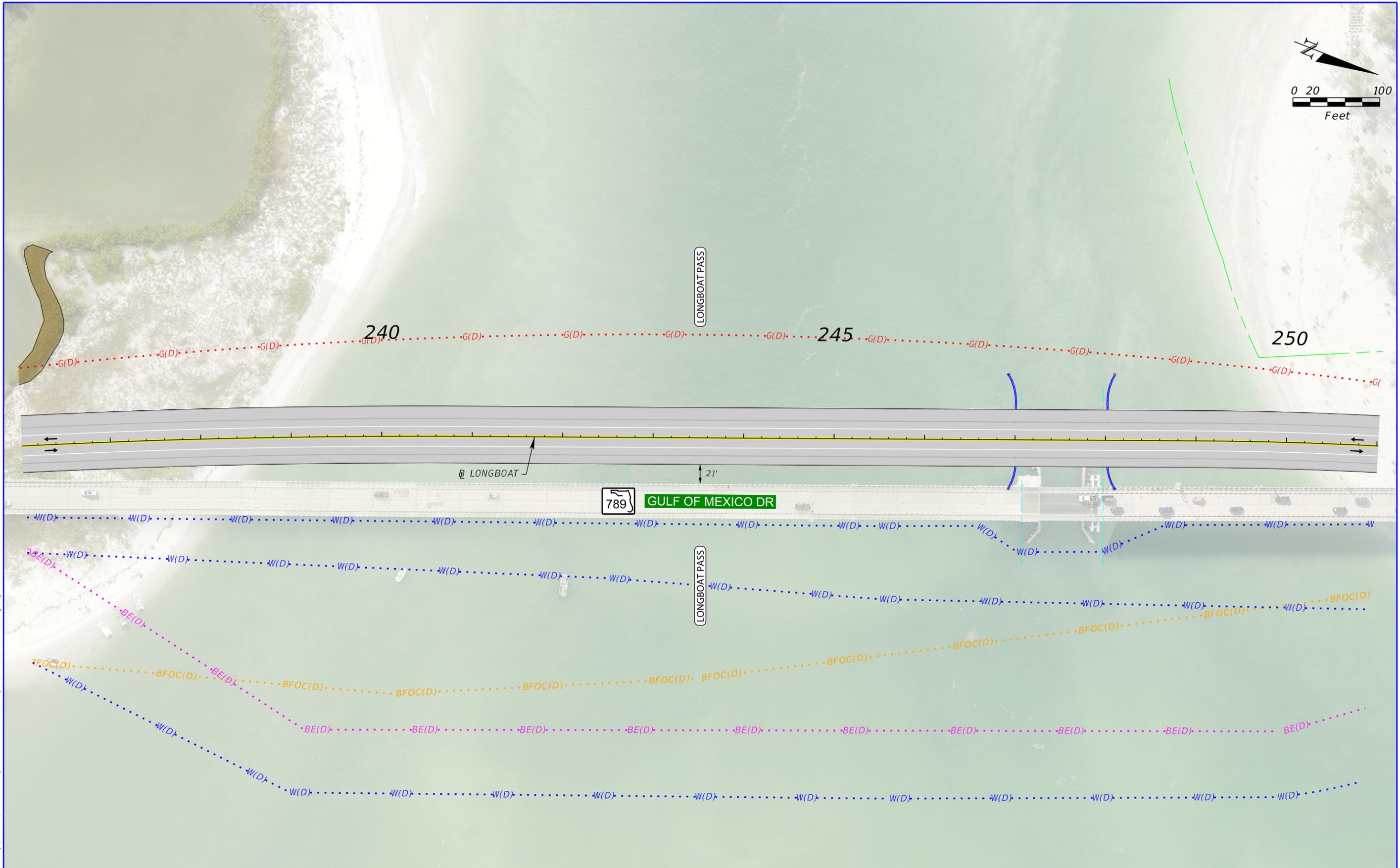
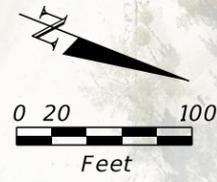
	EXISTING ROW		EXISTING SEAGRASS		PROPOSED ROADWAY WITH BIKE LANES AND SIDEWALKS
	PROPOSED ROW		EXISTING MANGROVES		PROPOSED BRIDGE WITH FLUSH SHOULDERS AND SIDEWALKS
	PARCEL LINE		PROPOSED RETAINING WALL		
	STORMWATER MANAGEMENT FACILITY		EXISTING UTILITY		

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 789	MANATEE	436676-1-22-01

**PREFERRED ALTERNATIVE
HIGH-LEVEL FIXED**

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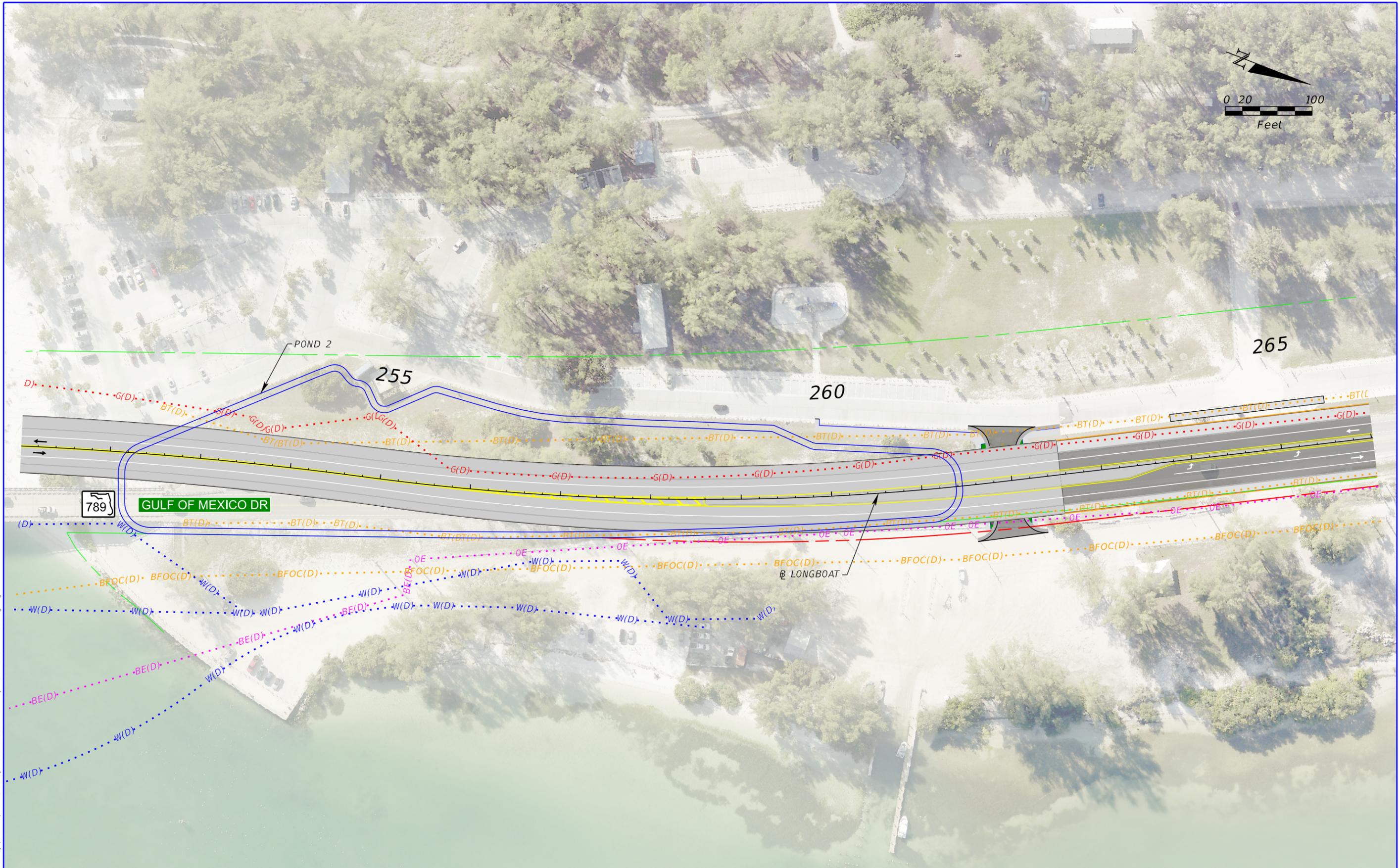
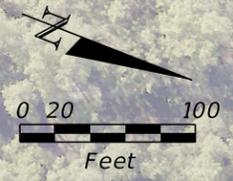
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	PROPOSED ROW		EXISTING MANGROVES		PROPOSED BRIDGE WITH FLUSH SHOULDERS AND SIDEWALKS
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SR 789	MANATEE	436676-1-22-01

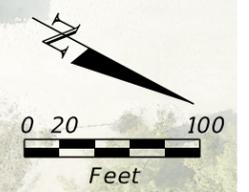
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HIGH-LEVEL FIXED**

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<ul style="list-style-type: none"> --- EXISTING ROW --- PROPOSED ROW --- PARCEL LINE --- STORMWATER MANAGEMENT FACILITY 	<ul style="list-style-type: none"> EXISTING SEAGRASS EXISTING MANGROVES PROPOSED RETAINING WALL EXISTING UTILITY 	<ul style="list-style-type: none"> PROPOSED ROADWAY WITH BIKE LANES AND SIDEWALKS PROPOSED BRIDGE WITH FLUSH SHOULDERS AND SIDEWALKS 	<p>SCALAR CONSULTING GROUP, LLC 5713 CORPORATE WAY SUITE 200 WEST PALM BEACH, FL 33407</p>	<p style="text-align: center;">STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 25%;">ROAD NO.</th> <th style="width: 25%;">COUNTY</th> <th style="width: 50%;">FINANCIAL PROJECT ID</th> </tr> <tr> <td style="text-align: center;">SR 789</td> <td style="text-align: center;">MANATEE</td> <td style="text-align: center;">436676-1-22-01</td> </tr> </table>	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	SR 789	MANATEE	436676-1-22-01	<p style="text-align: center;">PREFERRED ALTERNATIVE HIGH-LEVEL FIXED</p>	<p style="text-align: center;">SHEET NO.</p>
ROAD NO.	COUNTY	FINANCIAL PROJECT ID										
SR 789	MANATEE	436676-1-22-01										



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	EXISTING ROW		EXISTING SEAGRASS		PROPOSED ROADWAY WITH BIKE LANES AND SIDEWALKS
	PROPOSED ROW		EXISTING MANGROVES		PROPOSED BRIDGE WITH FLUSH SHOULDERS AND SIDEWALKS
	PARCEL LINE		PROPOSED RETAINING WALL		EXISTING UTILITY

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**PREFERRED ALTERNATIVE
HIGH-LEVEL FIXED**

SHEET NO.

APPENDIX B – Nutrient Removal Calculations

Complete Report (not including cost) Ver 4.3.5

Project: Long Boat Key
Date: 1/29/2026 10:05:14 AM

Site and Catchment Information

Analysis: Specified Removal Efficiency

Catchment Name	Dry Pond
Rainfall Zone	Florida Zone 4
Annual Mean Rainfall	54.00

Pre-Condition Landuse Information

Landuse	User Defined Values
Area (acres)	4.00
Rational Coefficient (0-1)	0.82
Non DCIA Curve Number	98.00
DCIA Percent (0-100)	100.00
Nitrogen EMC (mg/l)	1.190
Phosphorus EMC (mg/l)	0.155
Runoff Volume (ac-ft/yr)	14.814
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	21.736
Phosphorus Loading (kg/yr)	2.831

Post-Condition Landuse Information

Landuse	User Defined Values
Area (acres)	6.91
Rational Coefficient (0-1)	0.82
Non DCIA Curve Number	98.00
DCIA Percent (0-100)	100.00
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	1.190
Phosphorus EMC (mg/l)	0.155
Runoff Volume (ac-ft/yr)	25.591

Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	37.549
Phosphorus Loading (kg/yr)	4.891

Catchment Number: 1 Name: Dry Pond

Project: Long Boat Key

Date: 1/29/2026

Retention Design

Retention Depth (in) 3.700

Retention Volume (ac-ft) 2.131

Watershed Characteristics

Catchment Area (acres) 6.91

Contributing Area (acres) 6.910

Non-DCIA Curve Number 98.00

DCIA Percent 100.00

Rainfall Zone Florida Zone 4

Rainfall (in) 54.00

Surface Water Discharge

Required TN Treatment Efficiency (%) 96

Provided TN Treatment Efficiency (%) 96

Required TP Treatment Efficiency (%) 96

Provided TP Treatment Efficiency (%) 96

Media Mix Information

Type of Media Mix Not Specified

Media N Reduction (%)

Media P Reduction (%)

Groundwater Discharge (Stand-Alone)

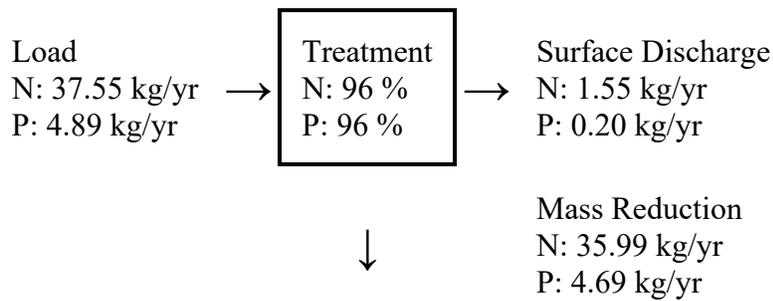
Treatment Rate (MG/yr) 0.000

TN Mass Load (kg/yr) 35.995

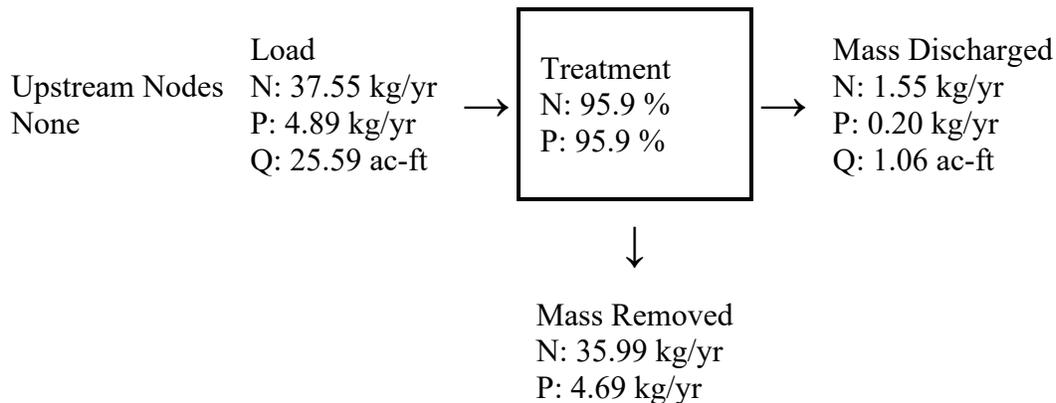
TN Concentration (mg/L) 0.000

TP Mass Load (kg/yr) 4.688
TP Concentration (mg/L) 0.000

Load Diagram for Retention (stand-alone)



Load Diagram for Retention (As Used In Routing)



Summary Treatment Report Version: 4.3.5

Project: Long Boat Key

Date:1/29/2026

Analysis Type: Specified

Removal Efficiency

BMP Types:

Catchment 1 - (Dry Pond)

Routing Summary

Catchment 1 Routed to Outlet

Retention

Based on % removal values to
the nearest percent

Total nitrogen target removal met? **Yes**

Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	21.74 kg/yr	
Total N post load	37.55 kg/yr	
Target N load reduction	96 %	
Target N discharge load	1.5 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	1.55 kg/yr	3.43 lb/yr
Provided N load removed	35.99 kg/yr	79.37 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	2.831 kg/yr	
Total P post load	4.891 kg/yr	
Target P load reduction	96 %	
Target P discharge load	.196 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.202 kg/yr	.45 lb/yr
Provided P load removed	4.688 kg/yr	10.338 lb/yr