

**HARBOR BAY COMMUNITY DEVELOPMENT DISTRICT
REQUEST FOR PROPOSALS – DESIGN-BUILD OF
MASTER SEAWALL PROJECT**

PART V. DESIGN CRITERIA PACKAGE

1. OVERVIEW. The District has prepared the following Design Criteria Package for the reconstruction of the District’s master storm water and retaining wall stabilization project. This section describes the minimum required criteria and scope for design and construction. It will be the Design-Builder’s responsibility to meet the minimum criteria and develop complete construction documents with all necessary details and specifications.

2. SCOPE AND LIMITS. The scope and limits of construction include a stabilization of all the seawalls within Section I, Section II, and Section III that have not already been stabilized or retrofitted. Section I is further divided into Priority “A” and Priority “B” areas. See Figure 1 for a general plan. The scope of work includes stabilization for the typical seawall supporting residential property, the restrictor walls within the canals, and the walls separating ponds from the canals.

The term “stabilization” refers to a solution that produces adequate factors of safety for the seawall. This may include a new wall to replace the existing wall, a retrofit of the existing wall, or berm reconstruction, which could consist of adding stabilized fill and/or planting mangroves in front of the wall along with an enhanced drainage/weep hole system. **Existing conditions vary significantly throughout the site and more than one design solution for stabilization is anticipated. The Design-Builder is encouraged to develop context sensitive solutions for differing areas as applicable.**

Section I is divided into Priority “A” and Priority “B” areas based on the severity of the condition of the existing seawall. Priority “A” Areas contain the worst existing conditions and shall be addressed first in the construction schedule. Priority “B” Areas are showing less severe conditions and may be scheduled for construction after the Priority “A” Areas.

Sections II and III are generally in better condition than Section I and contain significantly less home construction.

Bids shall be prepared for each individual section, defined as Section I (Priority “A”), Section I (Priority “B”), Section II, and Section III. The Board may award one section as an individual or multiple sections grouped in order of their number designation. For example, the Board may award only Section I (Priority “A”), or a group of Section I (Priority “A”), Section I (Priority “B”), and Section II. The Design-Builder shall prepare bid prices for each section individually knowing that all sections may not be awarded.

Below is a list of the approximate length of wall that requires improvement per section. Limits of work are defined by existing property lots as shown in Figure 1. Section lengths provided below are approximate and for bidding purposes only.

- Section I (Priority “A”): 3,015± ft
- Section I (Priority “B”): 11,170± ft
- Section II: 13,550± ft
- Section III: 5,130± ft

Previous design information, plans, and data used for the previous stabilizations and retrofits have been included in Part IV, Technical Documents. This documentation is for reference only and the completeness and accuracy therein is not guaranteed. The Design-Builder is responsible for verifying or obtaining all the necessary geotechnical and survey information required for design and installation.

3. VIBRATION AND SETTLEMENT MONITORING. The Design-Builder is responsible for evaluating any necessary precautionary features to protect existing structures from damage, including, at a minimum, selecting construction methods and procedures that will prevent damage. The Design-Builder shall submit to the District Engineer for acceptance a Settlement and Vibration Monitoring Plan (SVMP) as part of the plans submittal and update the SVMP as necessary throughout the construction period. The Design-Builder is responsible for establishing maximum settlement and vibration thresholds.

Submittals for Settlement and Vibration Monitoring Plan (SVMP) shall include the following as a minimum:

- A. Identify any existing structures that will be monitored for vibrations and/or settlement during the construction period.
- B. Establish the maximum vibration/settlement levels that will be allowed during construction operations.
- C. Identify any existing structures that require pre-construction and post-construction surveys.

Records of the construction surveys shall be submitted to the District Engineer for documentation.

4. DESIGN DOCUMENTS. Design documents shall be submitted to the District Engineer for review and acceptance prior to commencing work. At a minimum, the design documentation shall include, but not be limited to, the following:

- A. Design Calculations signed and sealed by a professional engineer licensed in the state of Florida. The Design-Builder shall include notes, sketches, references, and calculations to document the design conclusions and assumptions reached during the development of the construction documents and verify that all design requirements have been met.

- B. Design Plans signed and sealed by a professional engineer licensed in the state of Florida. The Design-Builder shall include all geometry, specifications, materials, factors of safety and requirements necessary to complete the work.
- C. As-Built Plans signed and sealed by a professional engineer licensed in the state of Florida. The Design-Builder shall include all changes, revisions, and modifications to the Design Plans that were made during construction.

5. QUALITY CONTROL. The Design-Builder is responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications, geotechnical and other services furnished by the Design-Builder. The Design-Builder shall be responsible for developing and maintaining a Construction Quality Control Plan, which describes their quality control procedures to verify, check, and maintain control of key construction processes and materials. The Construction Quality Control Plan shall be submitted to the District Engineer for review and acceptance prior to commencing work.

The Design-Builder is responsible for all material testing, acceptance, and reporting. Material certifications shall be submitted to the District Engineer for documentation. Times and dates of all field testing shall be provided in advance to the District Engineer. The results of all testing shall be submitted to the District Engineer for review and documentation.

At a minimum, the Design-Builder shall sample and test the initial concrete delivery of each design mix for water to cementitious materials ratio, air content, temperature, slump and compressive strength once for every 50 cubic yards or once per day. Concrete testing shall conform to the following:

- Slump of Hydraulic Cement Concrete ASTM C143
- Air Content of Freshly Mixed Concrete by the Pressure Method ASTM C231
- Air Content of Freshly Mixed Concrete by the Volumetric Method ASTM C173
- Making and Curing Test Specimens in the Field ASTM C31
- Compressive Strength of Cylindrical Concrete Specimens ASTM C39
- Temperature of Freshly Mixed Portland Cement Concrete ASTM C1064
- Sampling Freshly Mixed Concrete ASTM C172

Six (6) cylinders shall be cast for compression tests. Compression tests shall be performed on individual cylinders at 3, 7, and 14 days. At 28 days, two cylinders will be tested. One cylinder will be held for 56 days in case the 28 day test results do not meet the project concrete compression strength requirements.

The District shall maintain its rights to inspect construction activities and request any documentation from the Design-Builder to ensure quality products and services are being provided in accordance with the Project plans and specifications. The Design-Builder shall provide safe accommodations for the District Engineer to access the construction site.

6. INSTALLATION PLAN. The Design-Builder shall provide the District Engineer with an installation plan for review and acceptance prior to the start of construction.

The installation plan shall include, as a minimum, a schedule for installation, a detailed sequence of installation, descriptions of installation methods, data sheets for all equipment to be used, and names and contact information for superintendents responsible for operations.

All work as shown in the installation plan shall be completed in a professional manner. The Design-Builder shall also conduct all operations in a clean worksite without the accumulation of waste or debris.

7. DESIGN AND CONSTRUCTION REQUIREMENTS. The Design-Builder is responsible for meeting, at a minimum, the following design requirements:

- A. The design shall be performed by a professional engineer registered in the state of Florida, who shall also hold all required local, state, and federal licenses in good standing and shall be authorized to conduct business in Hillsborough County and Florida.
- B. The existing seawall shall be stabilized with the design proposed by the Design-Builder in accordance with the methods, loads, and safety factors specified in either the U.S. Army Corps of Engineers EM 1110-2-2504 *Design of Sheet Pile Walls*, or the Florida Department of Transportation's 2017 *Structures Design Guidelines*, and any other applicable guidelines as accepted by the District Engineer.
 - a. Load cases for both usual and extreme events shall be included in the design. At a minimum, the extreme event load case shall assume that the water in the canals has been drained and that upland water has saturated the backfill and overtopped the wall.
 - b. As a reference, design plans have been provided within the Section for Technical Documents for previous repairs and retrofits of the seawalls. The Design-Builder may reuse these concepts where appropriate. Design documentation and plans for these concepts, prepared by a professional engineer, would still be required as outlined in this Design Criteria Package.
- C. The Design-Builder shall identify if the proposed solution meets the requirements of permits and approvals necessary for the Project, or if modifications or new permits and/or approvals will be required. The Design-Builder shall also adhere to all permits and approvals required for Project-related construction and other agreements related to the Project.
- D. The final design proposed shall have a minimum design life of 50 years in terms of construction methods, materials, and corrosion protection.
- E. The final design proposed shall neither impair boat navigation in the canals nor impair boat access to docks. If proposed, the addition of rip rap or similar material

in the canal would also require the Design-Builder to investigate and, to the extent necessary and/or appropriate, install warning markers in the waterway in accordance with, all Coast Guard, state, and local regulations concerning same.

- F. The final design proposed shall restore the sodded swale behind the seawall and maintain the geometry and elevation of the original swale. The existing swale is intended to store and filter storm water runoff from upland properties.
- G. The final proposed design shall facilitate adequate drainage through the structure for both the groundwater and surface water. This shall include, at a minimum, an improvement to the existing drainage system and weep holes through the existing seawall. The improvements shall meet the minimum requirements of FDOT Standard Details and have free draining material behind the wall that is continuous between the weep holes.
- H. The Design-Builder shall maintain or restore all conduits and utilities that pass through the existing seawall to their original condition and satisfaction of the District Engineer.
- I. The Design-Builder shall restore all boat docks that are impacted by construction to their original condition and satisfaction of the District Engineer.
- J. Construction activities shall not block passage of the canal. The Design-Builder shall make accommodations for watercraft to pass the work zone in the canal.
- K. The Design-Builder's design professional shall provide a signed and sealed certification to the District Engineer stating the construction is substantially complete and in compliance with the design documents prior to final payment.
- L. The Design-Builder's design professional shall provide a recommended inspection/maintenance plan when construction is substantially complete. The plan shall recommend a frequency for inspections and anticipated maintenance, as well as identify requirements specified by any warranties.