

# Bridge Infrastructure Review

Public Works – Engineering Division

March 2, 2020



CITY OF FORT LAUDERDALE

# Bridge Infrastructure



## **Commission Priorities – Strategic Plan**

*Goal:* Be a sustainable and resilient community.

*Objective:* Proactively maintain our water, wastewater, road, and bridge infrastructure.

## **Contractors/Support Agencies:**

Engineering Control Systems, Corp.

Lambert Brothers, Inc.

Florida Department of Transportation

Transystems Corporation

# Bridge Master Plan Overview



## Overview

53 city-owned bridges

Bridge Master Plan completed August 2014

## What is the Master Plan?

- Identifies Deficiencies
- Reviews Substandard Geometric Elements
- Functional Ability Rating
- Structural Rating
- Rehabilitation & Replacement Schedule

# Bridge Master Plan Overview



## What's in the Master Plan?

- Field Inspection Reports
- Bridge History
- Repair Options
- Cost Estimates
- Constructability Issues
- Long/Short Term Recommendation

# Bridges Infrastructure



## Issues and Challenges

- Salt and brackish water effect
- Tides and sea level rise
- Aging infrastructure
- Access during improvement

## Opportunities

- Enhance level of service and reduce risk to traveling public
- Introduce new materials and processes

# Bridges Infrastructure: Expenditures Overview



- \$11.5M Replacement Budget (5 Years)
- \$1M Annual Budget for Repair & Maintenance
- Average Maintenance Cost \$100K per Bridge includes:
  - Painting
  - Reinforcement
  - Spalling Repair

# Bridges Infrastructure: Current FY 20 Projects



## Construction:

- Coconut Isle Bridge
  - Construction Amount: \$1.4 Million
  - Estimated Completion Date: January 2021

## Design:

- South Ocean Drive
  - Cost Estimate: \$3.6 Million
- West Lake Drive Bridge
  - Cost Estimate: \$367,000

## Planning:

- Bayview Drive Bridge
  - Cost Estimate: \$ TBD



# Bridges Infrastructure: Scheduled for Maintenance



## 8 Locations:

- NE 1st Street Bridge
- Bayview Drive Bridge
- Bridge Mills Pond Canal
- NE 18th Avenue over Cypress Creek Canal
- NE 55th Street over Landing Inlet
- NE 15th Street over S. Fork Middle River
- Old Dixie Highway over S. Fork Middle River
- SE 9th Street over Tarpon River

# Questions?



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# SEWALL REPLACEMENT PROGRAM

INFRASTRUCTURE TASK FORCE PRESENTATION

February 3, 2020

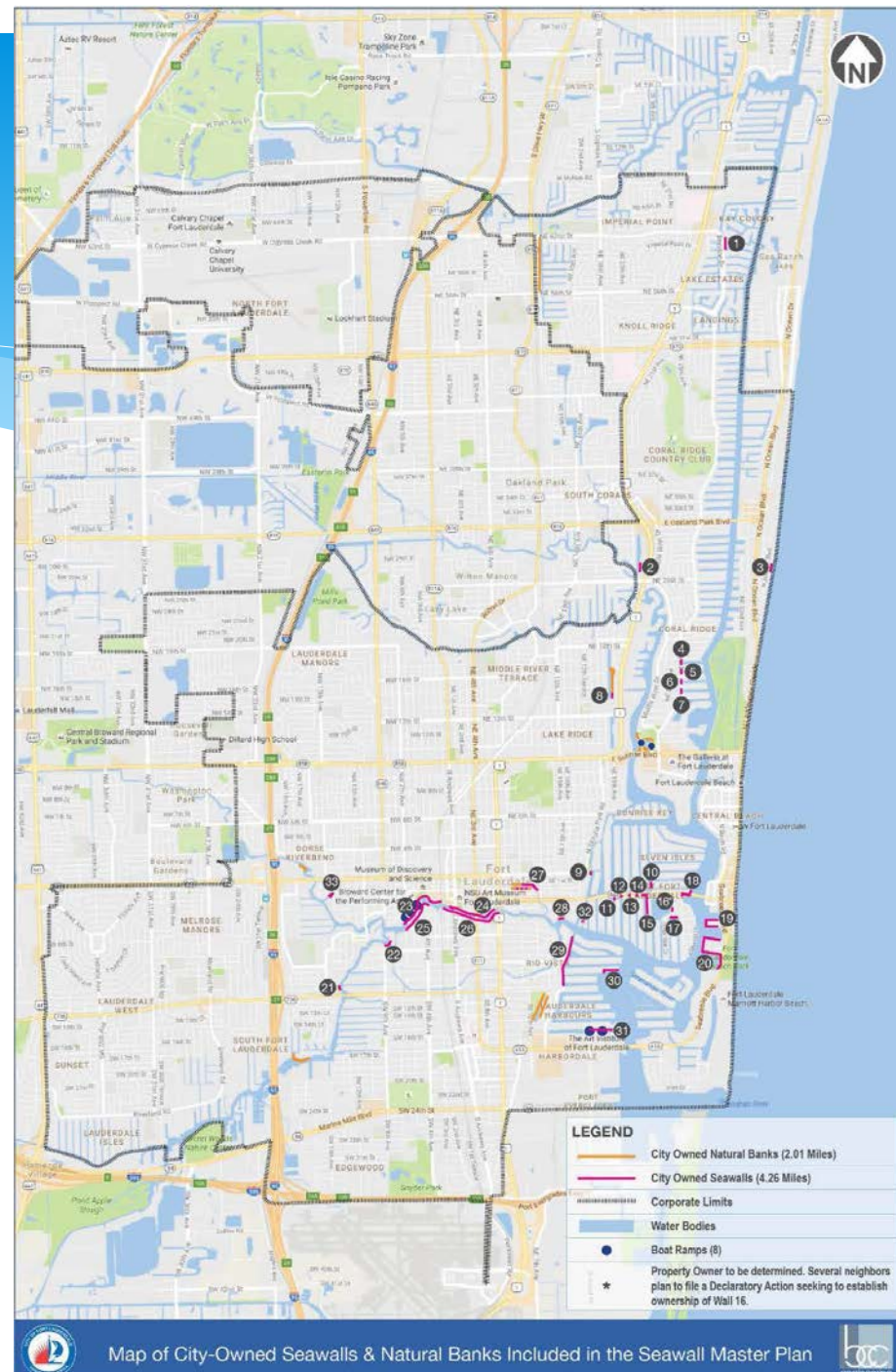
CITY HALL COMMISSION CHAMBERS



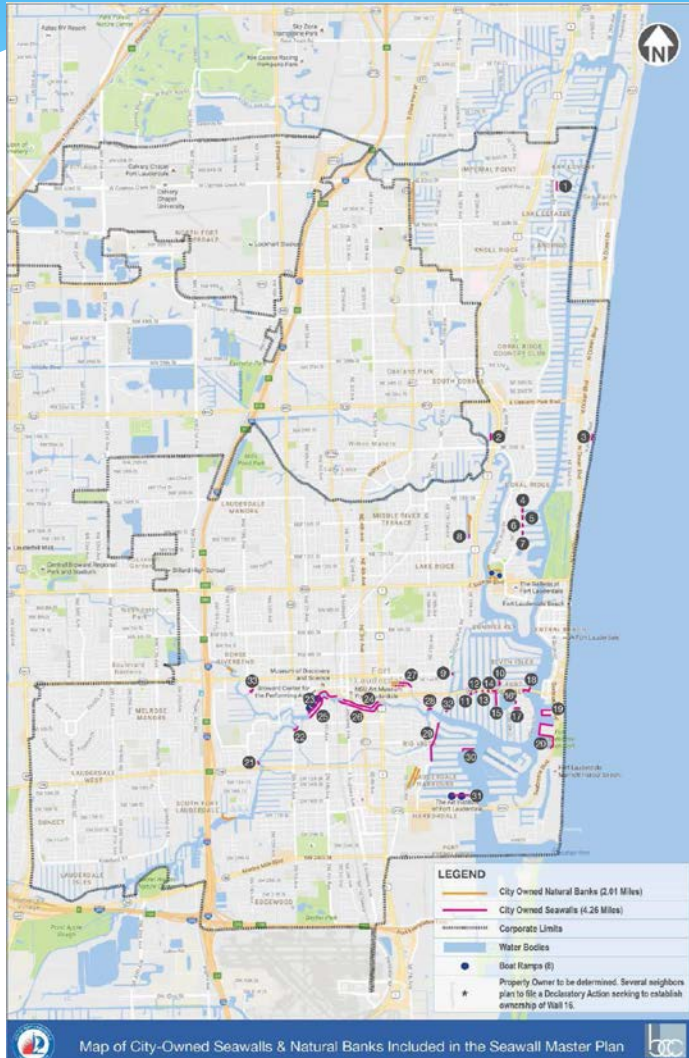
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# SEAWALL ASSESSMENT STUDY

- The seawall assessment study was performed by BCC Engineering, Inc.
- The assessment consisted of 35 (4.41 miles) of city owned seawalls
- The final report was completed on February 5, 2018
- The assessment consisted of limited visual inspections, prioritization of seawalls for replacement/repair and general cost estimates for the repairs.



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# SEAWALL MASTERPLAN ASSESSMENT

TABLE 2.5 – WALL VULNERABILITY\* (Reference Figure 1 for seawall locations)

Wall	When Overtopped	Raising Required	When Addressed**	Funds Encumbered	Requiring Funding	Comments	Common Name
1	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Top priority. 0-5 Yr overtopping, deficiencies, portions failing.	Bayview Dr. at Bay Colony
2	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Top priority. 0-5 Yr overtopping, deficiencies, majority has failed.	Budget Inn Property
3	N/A	N/A	6-10 Yr	6-10 Yr	6-10 Yr	Deficiencies and exposure (beach) warrant 6-10 Yr replacement.	Loggerhead Park
4	0-5 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	No record of currently overtopping. Deficiencies warrant 6-10 Yr replacement.	Bayview Dr. north of NE 17th St.
5	0-5 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	No record of currently overtopping. Deficiencies warrant 6-10 Yr replacement.	Bayview Dr. north of NE 16th St.
6	0-5 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	No record of currently overtopping. Deficiencies warrant 6-10 Yr replacement.	Bayview Dr. north of NE 15th St.
7	16-20 Yr	11-15 Yr	6-10 Yr	6-10 Yr	6-10 Yr	Deficiencies warrant 6-10 Yr replacement.	Bayview Dr. north of NE 14th St.
8	2036+	2036+	6-10 Yr	6-10 Yr	6-10 Yr	Deficiencies warrant 6-10 Yr replacement.	Lake Melva north of Ford Dealer
9	0-5 Yr	0-5 Yr	11-15 Yr	11-15 Yr	11-15 Yr	Lower risk location. Projected as overtopping, but no record of overtopping.	Victoria Park
10	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Top priority. Deficiencies and high-profile location.	Seven Isles Dr. at Del Mar Pl.
11	16-20 Yr	11-15 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Top priority. Deficiencies govern when wall is addressed.	City Pump Station
12	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	High priority. High profile location along critical east-west roadway.	E. Las Olas Blvd. east of Lido Dr.
13	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	High priority. High profile location along critical east-west roadway.	E. Las Olas Blvd. east of San Marco Dr.
14	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	High priority. High profile location along critical east-west roadway.	E. Las Olas Blvd. east of Coral Way
15	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Top priority. Currently overtopping. High profile location.	Isle of Palms Dr.
16	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Top priority. Currently overtopping. High profile location.	SE 25th Ave.
17	0-5 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	Mid-priority. Not currently overtopping. Available funds may bump to 0-5 Yr.	SE 5th St.
18	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Top priority. Condition and high profile location along Las Olas Blvd.	E. Las Olas at ICWW
19	16-20 Yr	16-20 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Deficiencies warrant 0-5 Yr repair prior to raising 16-20 Yr.	Swimming Hall of Fame
20	11-15 Yr	11-15 Yr	11-15 Yr	11-15 Yr	11-15 Yr	Lower priority. Good condition and overtopping 11-15 Yr.	Bahia Mar
21	6-10 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	0-5 Yr overtopping but no overtopping noted. Low risk (park) location.	Coontie Hatchie Landings Park
22	11-15 Yr	6-10 Yr	6-10 Yr	6-10 Yr	6-10 Yr	Minor 6-10 Yr overtopping. Low risk (park) location. Recently rehabilitated.	Lewis Landing Park
23	0-5 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	No record of currently overtopping. Partial repair/raising.	Riverwalk North west of CSX
24	0-5 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	No record of currently overtopping. Partial repair/raising.	Riverwalk North east of CSX
25	0-5 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	No record of currently overtopping. Partial repair/raising.	SW 5th Ave.
26	0-5 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	No record of currently overtopping. Partial repair/raising.	Riverwalk South
27	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Currently overtops.	Richard Mancuso Greenway
28	0-5 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	No record of currently overtopping. Partial repair/raising.	Colee Hammock Park
29	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Top priority. Currently overtopping and structural deficiencies. High profile.	Cordova Rd.
30	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Currently overtops. High profile.	SE 10th St.
31	0-5 Yr	0-5 Yr	6-10 Yr	6-10 Yr	6-10 Yr	No record of currently overtopping. Replace 6-10 Yr.	Cox's Landing Boat Launch
32	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	Currently overtopping. High profile.	Mola Ave.
33	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	No record of currently overtopping, however survey indicates overtopping.	Sailboat Bend Preserve
34	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	No record of overtopping. Survey indicates overtopping. High profile location.	Barcelona Dr. East of NE 26th Terrace
35	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	0-5 Yr	No record of overtopping. Survey indicates overtopping. High profile location.	SE 8th St.

\*Timeframes are based on Work Program Windows in absence of detailed Vulnerability Analysis and uncertainties/variability in SLR projections.

\*\*Wall Vulnerability (overtopping) may not govern when wall is addressed. See "Comments" for clarification.

Priority

Construction

Construction

Priority



# CORDOVA ROAD SEAWALL REPLACEMENT PROJECT CIP P12337

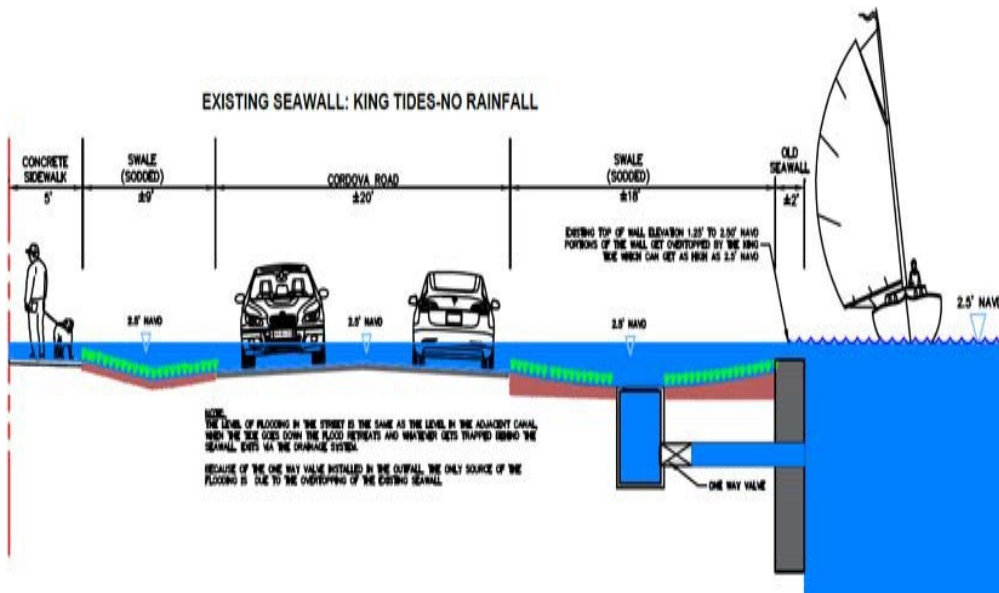


# SCOPE OF WORK-SCHEDULE-COST

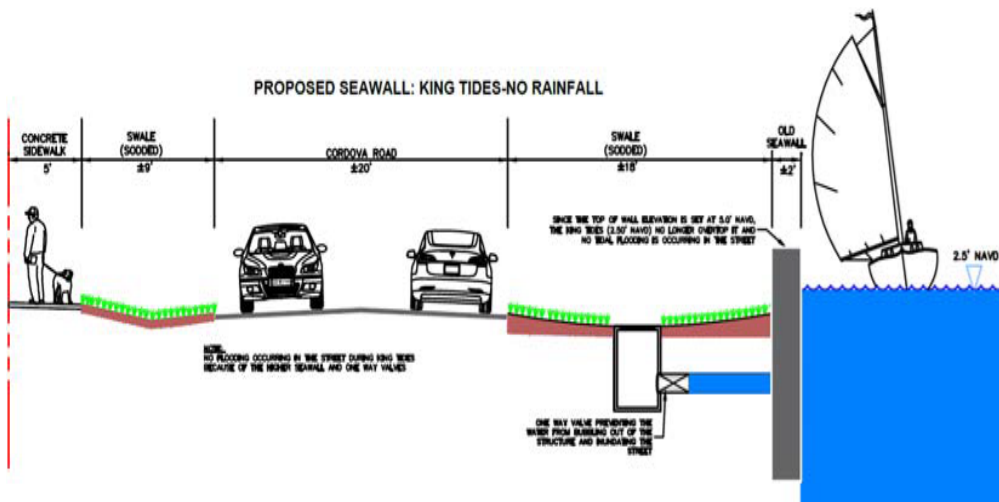
- ❖ Replace 2,200 linear feet of existing City-owned seawall
- ❖ Construct upland local drainage improvements benefitting the Cordova Road public right-of-way and mill and resurface Cordova Road
- ❖ Construction started October, 2019 and is expected to last 12 months.
- ❖ **Total: \$6,616,300** (costs include Civil engineering inspection services and in-house project management fees, and construction fees and restoration)



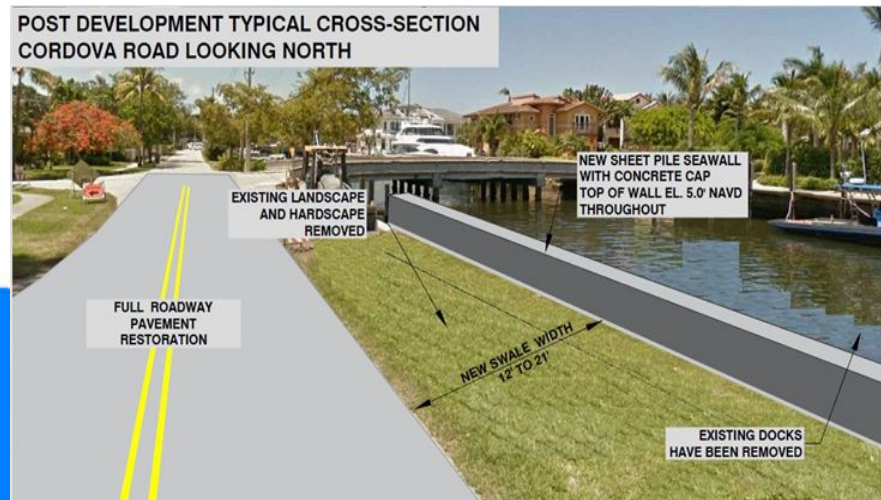
# PRE DEVELOPMENT CONDITION



# POST DEVELOPMENT CONDITION



**POST DEVELOPMENT TYPICAL CROSS-SECTION  
CORDOVA ROAD LOOKING NORTH**



# CONSTRUCTION CURRENTLY ON-GOING

- ❖ Completed to date:
  - All docks have been removed
  - Vibration/noise monitoring devices installed
  - **500** linear feet (lf) of sheet piles out of the **2200** installed



# BENEFITS TO NEIGHBORS

- Replace existing seawall that is low and in disrepair
- Improve level of service and reduce tidal impacts by elevating seawall to 5.0 feet NAVD, including:
  - Protect adjacent properties from wave and storm surge
  - Improve consistency of access to Rio Vista neighborhood
- Improve drainage along Cordova Road
- Provide a new roadway surface (driving)
- Remove unpermitted/unsightly water and electrical connections
- Swale rehabilitation/ Landscape Renewal

***Goal: provide a resilient coastal roadway addressing projected sea level rise through 2060***

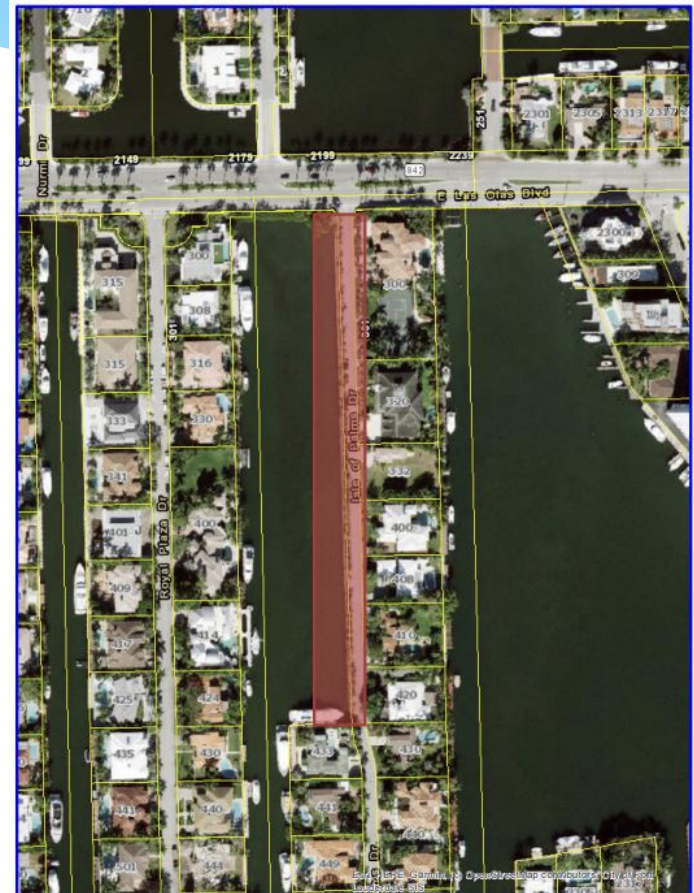
# ISLE OF PALMS SEAWALL REPLACEMENT PROJECT CIP 12014



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# SCOPE OF WORK-SCHEDULE-COST

- ❖ Replace 900 linear feet of existing City-owned seawall
- ❖ Construct upland local drainage improvements benefitting the Isles of Palms public right-of-way and mill and resurface
- ❖ January and is expected to last 9 months.
- ❖ **Total: \$2,414,158** (costs include Civil engineering inspection services and in-house project management fees, and construction fees and restoration)



Location Map



**GIS**  
Fort Lauderdale

# ESTIMATED CONSTRUCTION SCHEDULE

- \* November 5, 2019
  - Contract award by City Commission
- \* Notice to Proceed (NTP) for Construction issued January 27, 2020
- \* February 3<sup>rd</sup>, 2020 Contactor mobilization
- \* September/November 2020
  - Construction fully completed

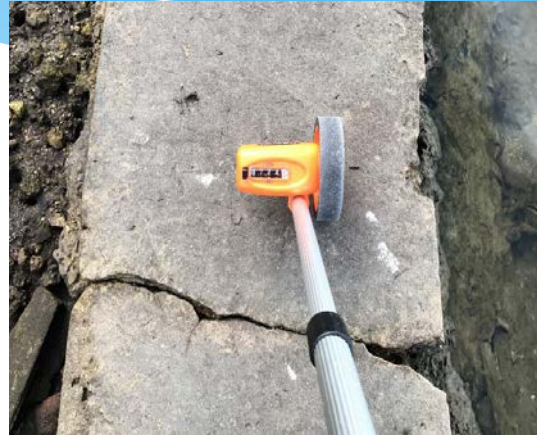


# ESTIMATED CONSTRUCTION COSTS

- ❖ Seawall replacements costs and landscape:  
\$2,221,021
- ❖ Land side drainage improvements, milling  
and re-surfacing of Cordova Rd.: \$193,137
- ❖ **Total: \$2,414,158** (costs include in-house  
project management fees)

# EXISTING ISLE OF PALMS SEAWALL (STRUCTURAL CONDITION)

- \* Coral rock seawall
- \* Construction date: unknown
- \* Average cap el. : 1.26' NAVD
- \* Condition: Poor with significant horizontal and vertical displacement with loss of fill from behind the wall
- \* 2018 Seawall Assessment Study recommended replacement and raising within 0-5 years



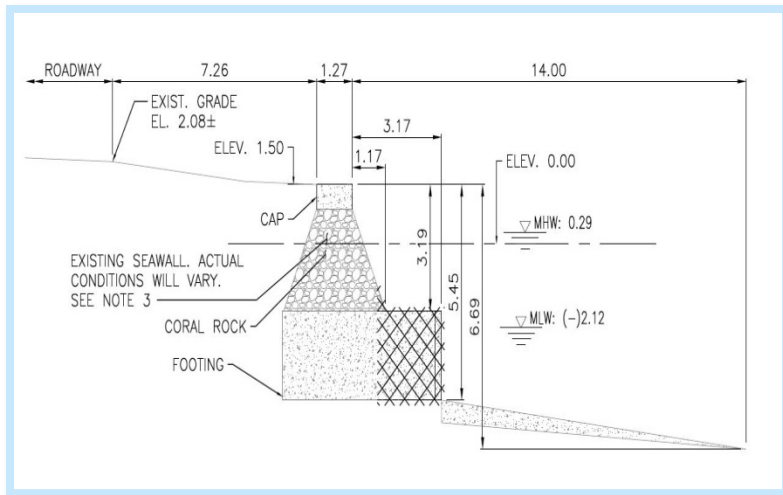
# EXISTING ISLE OF PALMS SEAWALL (CURRENT TOP OF WALL ELEVATION)

- \* Average cap el. : 1.26' NAVD
- \* Typical king tide elevations range between 1.5' to 2.5' NAVD and are projected to increase.

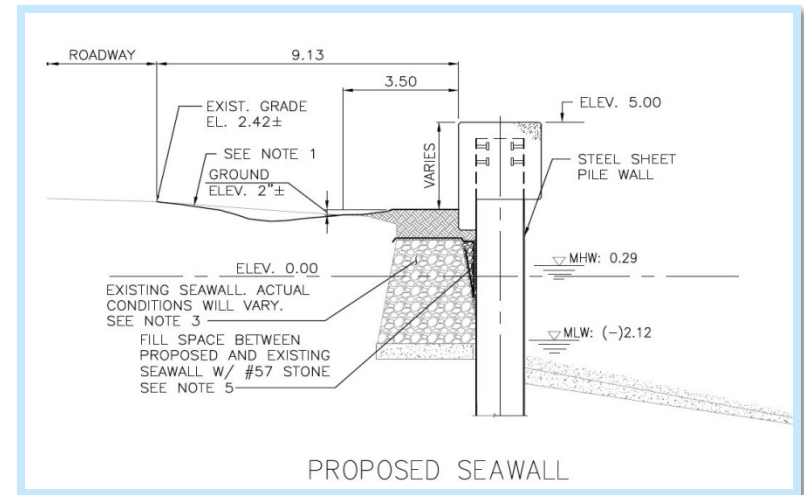


# TYPICAL CROSS-SECTION (LOOKING SOUTH)

## Existing



## Proposed



# ISLE OF PALMS DRIVE (LOOKING SOUTH)

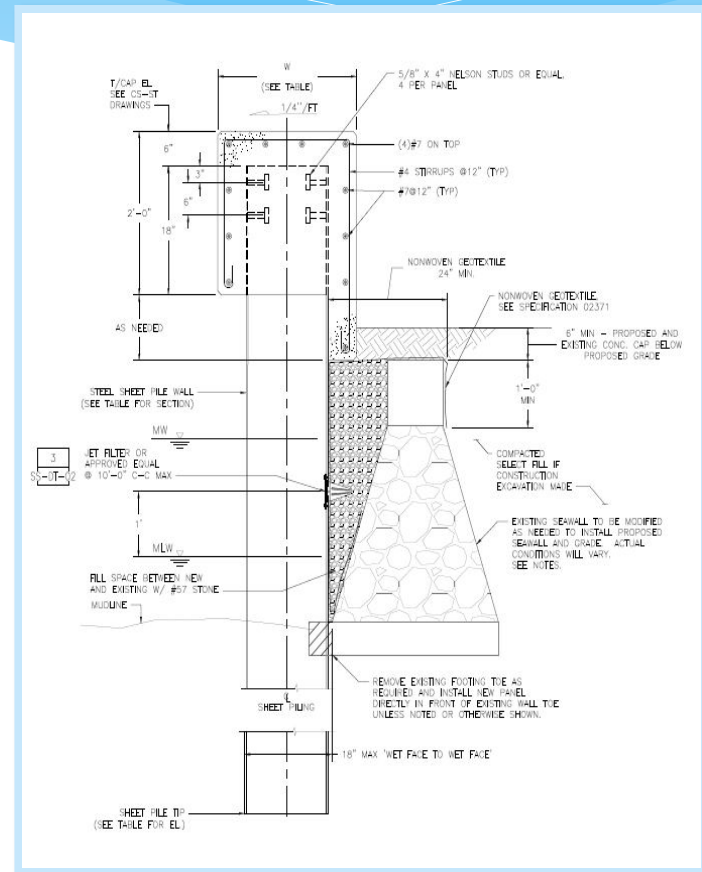
Existing

Proposed



# CONSTRUCTION SPECIFICATIONS

- \* Seawall elevation (top of concrete cap) – 5.0' NAVD
  - Approximately 3.5 feet higher than existing seawall
  - NAVD – datum used to determine base flood elevations
- \* Steel sheet pile
  - 28 feet in length
  - Coated for protection against corrosion
    - Urethane zinc primer
    - Polyamine epoxy
- \* Concrete cap
  - 26 in wide x 24 in height
  - Will look like a concrete wall from roadside



# BENEFITS TO THE NEIGHBORS

- \* Reduced frequency, intensity and duration of tidal flooding on Isle of Palms Drive
  - Protect adjacent properties from storm surge
  - Improved traffic
  - Safer access to Isle of Palms neighborhood
- \* Improved local right-of-way drainage
- \* New roadway surface (driving) course
- \* Help maintain property value
- \* Protect existing infrastructure by replacing deteriorated seawall
- \* Swale width to increase by a minimum of 1.5 feet
  - New sod and landscape will be installed

# IMPACTS DURING CONSTRUCTION

## \* Traffic

- Expect west (southbound lane) to be closed
- Flaggers will direct traffic

## \* Noise and vibration

- Sheet pile driving
  - Contractor will monitor noise and vibration to comply with contract specifications
  - City will retain independent vibration and noise monitoring services
- Concrete trucks, materials deliveries, paving equipment

# PROJECT WEBSITE

- \* Frequently Asked Questions (FAQ) Document
- \* Project Flyers, Presentations
- \* General Information About Project Milestones

<https://www.fortlauderdale.gov/departments/public-works/engineering/isle-of-palms-seawall-3838>

# QUESTIONS?

## \* Public Works Engineering Division contacts:

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