

# Miramar Shoreline Restoration

City Council Presentation  
October 13, 2014

# Agenda

- Erosion History
- Project Overview & Objectives
- Proposed Shoreline Protection & Park Amenities
  
- Partners:
  - SWA Group – Landscape Architecture
  - Freese & Nichols – Environmental
  - Raba-Kistner, Inc. – Geotechnical
  - Surveying and Mapping, Inc. – Surveying

# Causes of Erosion / Need for Shore Protection

- Subsidence
  - Estimated 8 ft of subsidence over last approx. 100 years
  - Sea level rise contributed another approx. 1 ft over last 100 years
- Low topography
  - Shoreacres is low point between Red Bluff and Morgans Point.
  - Makes Miramar shoreline more susceptible to overtopping by storm surge and associated wave damage.
  - Lowest near pier, higher on both ends
- Storm Surge
  - 100 year storm surge elevation estimate raised to 15.3 ft NAVD88 by FEMA

# Project Overview

- Current work is grant funded by Federal government through the Coastal Impact Assistance Program (CIAP)
- Scope of current work is to:
  1. Develop consensus based design
  2. Obtain required permits from Corps of Engineers & others
  3. Develop plans & specifications
- Construction not funded by current grant
- Construction funds to be sought through other grants
- Planning work includes shoreline protection, potential environmental restoration, and planning for park as whole
- Final plan to be approved by City Council
- Public notice as part of Corps permitting process



# Project Objectives

- Objectives derived from Advisory Committee discussions:
  1. Preserve Shell Beach and recreational uses of it.
  2. Preserve nearshore boating & fishing.
  3. Preserve views of Bay
  4. Create storm durable structure able to withstand “at least Ike” (100 year design storm)
  5. Preserve access and function for fishing pier and boat ramp
  6. Consider improvements to park, especially planting vegetation and walking path. Address parking issues.
  7. Wetlands creation / restoration not favored, but potentially integrate oyster habitat creation into design
  8. Tie-in to private property at each end to preserve properties and not cause or increase erosion
  9. Mitigating upland damage is secondary benefit, not focus

# Proposed Shoreline Protection & Park Amenities

- Shoreline Protection:
  - Rock riprap revetment north along entire shoreline north of Shell Beach
  - Potentially integrate oyster reef habitat into toe of revetment
- Beach Restoration
  - Preserve Shell Beach, expand length approximately 200 ft
- Park Amenities
  - Overlook “Super-Step” Structures at north and south ends, aligned with Shadylawn & Meadowlawn
  - Small shade structures at each
  - Tree planting – aligned with property lines – is recommended for consideration, but not included in shoreline project

# Overview - Rendering

preliminary alignment –  
see permit sketches for final



# South End - Rendering

preliminary alignment –  
see permit sketches for final



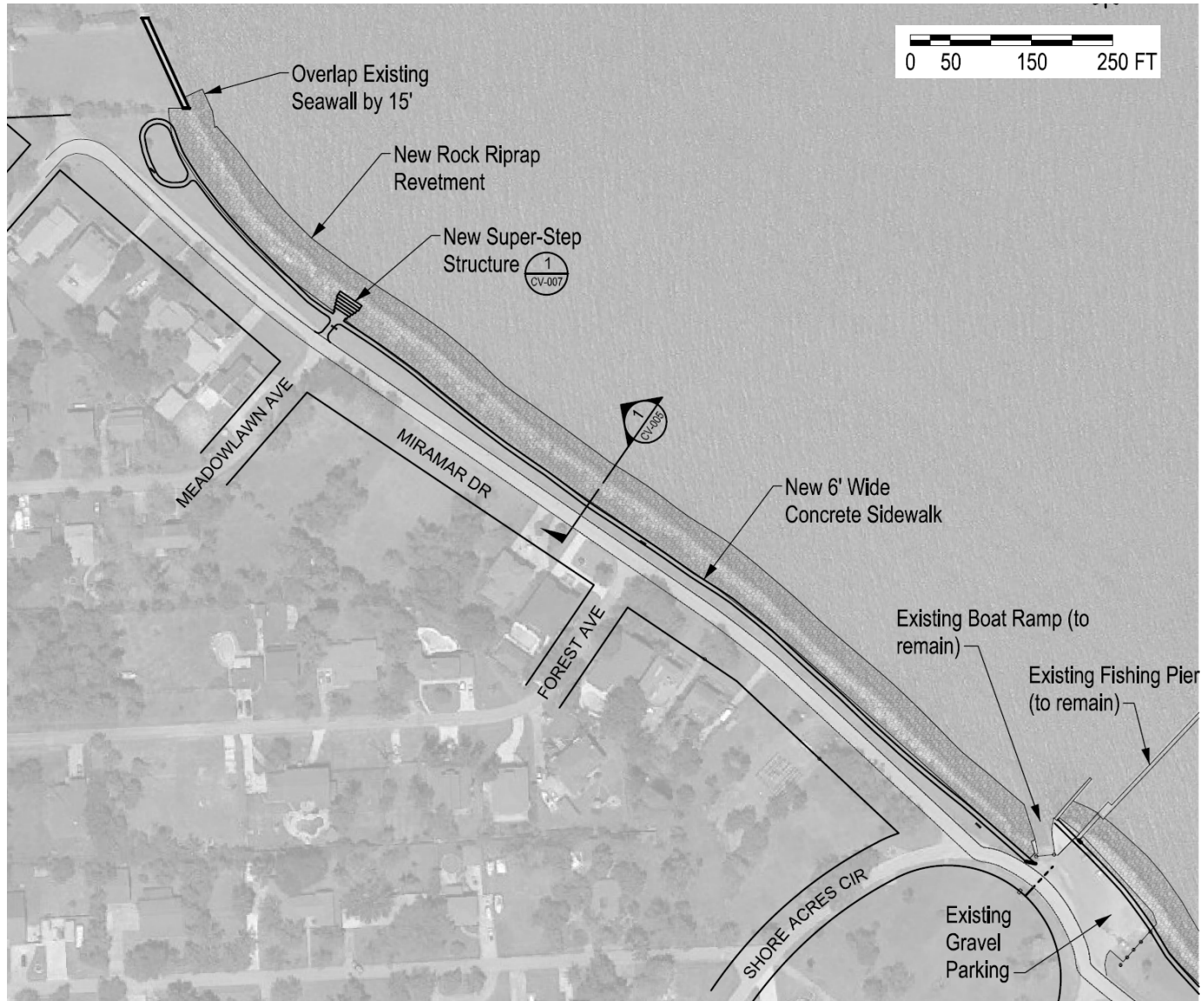


# North End - Rendering

preliminary alignment –  
see permit sketches for final



# North End – Permit Sketch

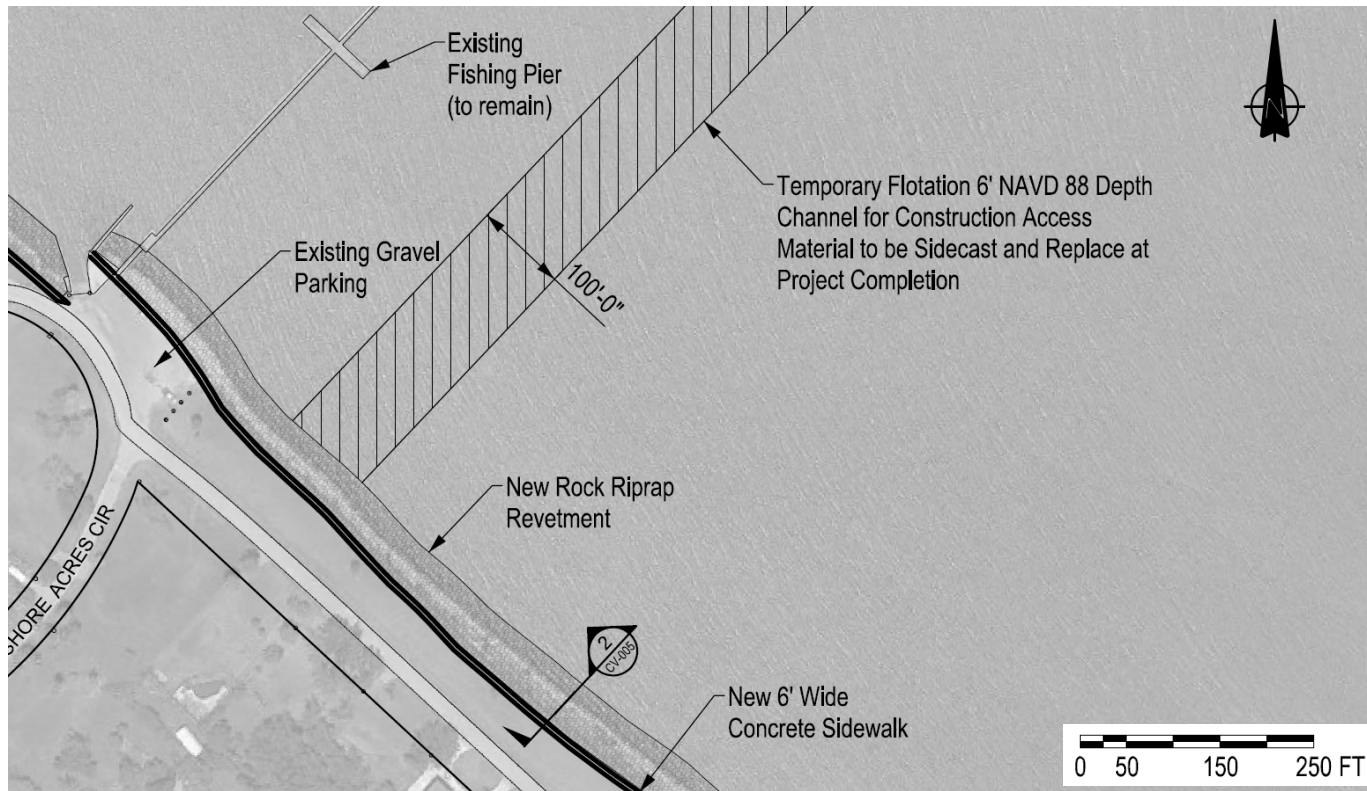




# North End

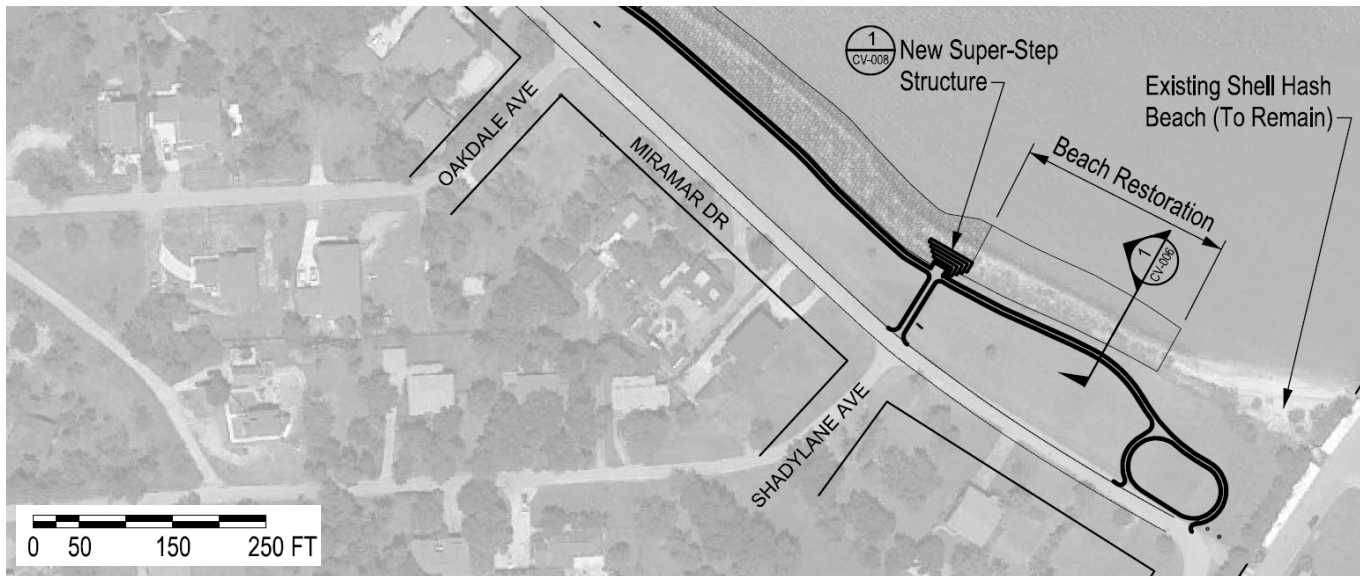


# South End – Permit Sketch

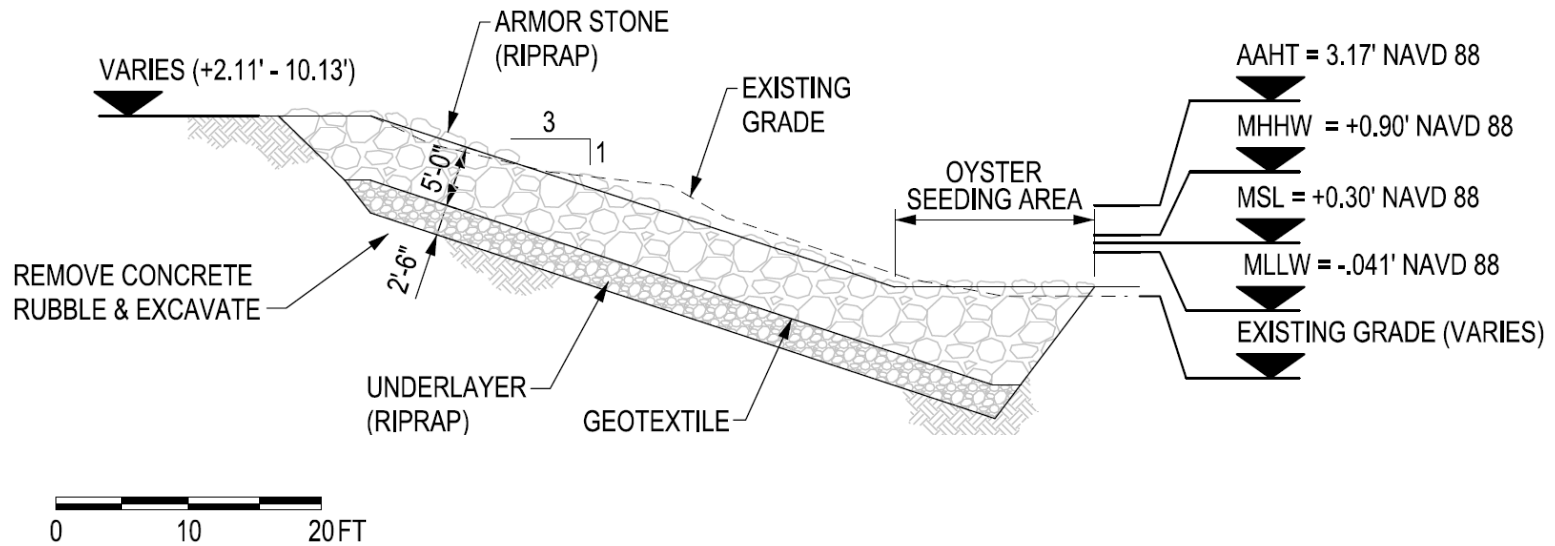




# South End – Permit Sketch



# Rock Riprap Revetment Section

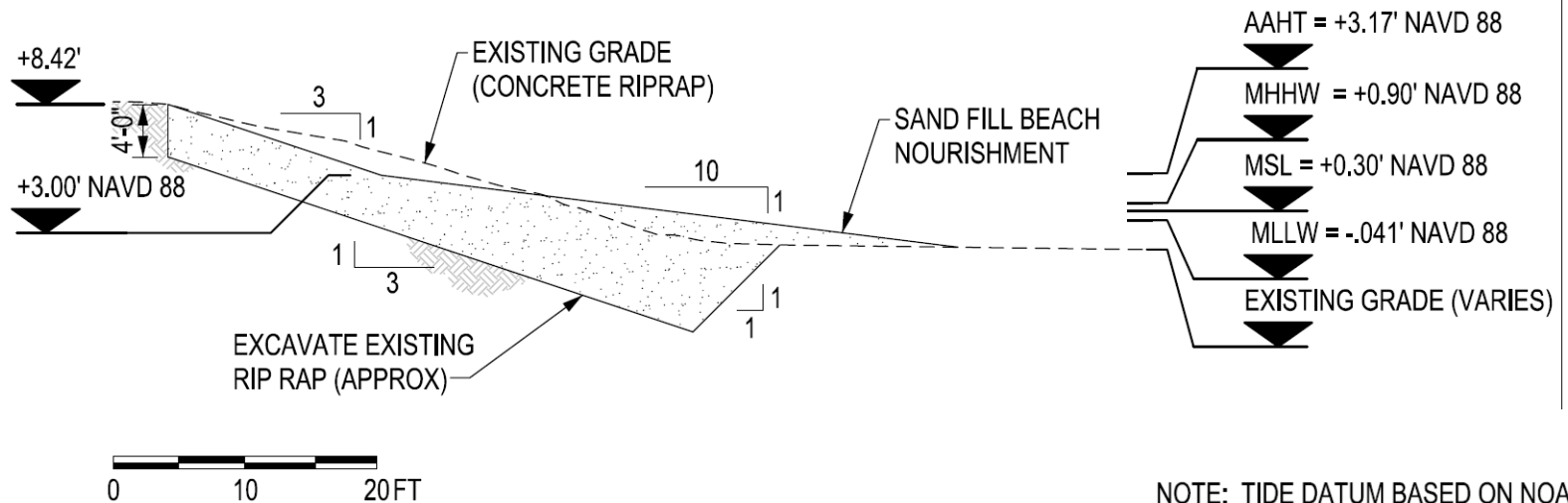


NOTE: TIDE DATUM BASED ON NOAA  
MORGANS POINT TIDE GAGE  
AAHT = AVERAGE ANNUAL HIGHEST TIDE  
MHHW = MEAN HIGHER HIGH WATER  
MSL = MEAN SEA LEVEL  
MLLW = MEAN LOWER LOW WATER

# Example Structure – Rock Riprap Revetment



# Beach Nourishment Section



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# Park Amenities



This aerial photograph shows a proposed residential development. A new street, labeled "Shadylawn Ave. (60' WIDE)", runs vertically on the left. Another street, "Baywood St. (60' WIDE)", runs vertically on the right. A horizontal road, "Shady Lane", runs across the middle. The site is divided into lots numbered 8, 9, 10, 11, 12, and 13. Lot 14 is partially visible at the bottom. A "preliminary alignment" is shown as a dashed line. Various engineering notes and elevations are present, including "STORM MANHOLE # 1860", "STORM MANHOLE # 1857", "STORM MANHOLE # 1854", and "STORM INLET". Elevation data such as "RIM = 9.66", "FL = 5.62", "FL = 5.58", and "FL = 5.56" are provided for the manholes. A "12\" PALM" tree is indicated in lot 9. A "CONTROL POINT" is marked with coordinates "E. = 13,795,785.40" and "N. = 3,238,902.72". A "RIPRAP" area is also labeled. The text "see permit sketches for final" is written in the upper right corner.

This aerial photograph shows a proposed residential development. A new street, labeled "Shadylawn Ave. (60' WIDE)", runs vertically on the left. Another street, "Baywood St. (60' WIDE)", runs vertically on the right. A horizontal road, "Shady Lane", runs across the middle. The site is divided into lots numbered 8, 9, 10, 11, 12, and 13. Lot 14 is also visible at the bottom. The image includes various engineering annotations: "preliminary alignment" and "see permit sketches for final" are written in the upper right; "SOUTH END" is in the top left; "STORM MANHOLE # 1854" and "STORM MANHOLE # 1857" are labeled with elevations; "SANITARY MANHOLE # 1865" and "STORM MANHOLE # 1860" are also labeled; "12\" PALM" indicates a tree location; "RIPRAP" is noted in several areas; and "FND 5/8\" IR" and "FND 1/2\" IR" are labeled along the lot boundaries. A "STORM INLET" is shown near the intersection of Shadylawn Ave. and Shady Lane. The background shows existing trees and a building.

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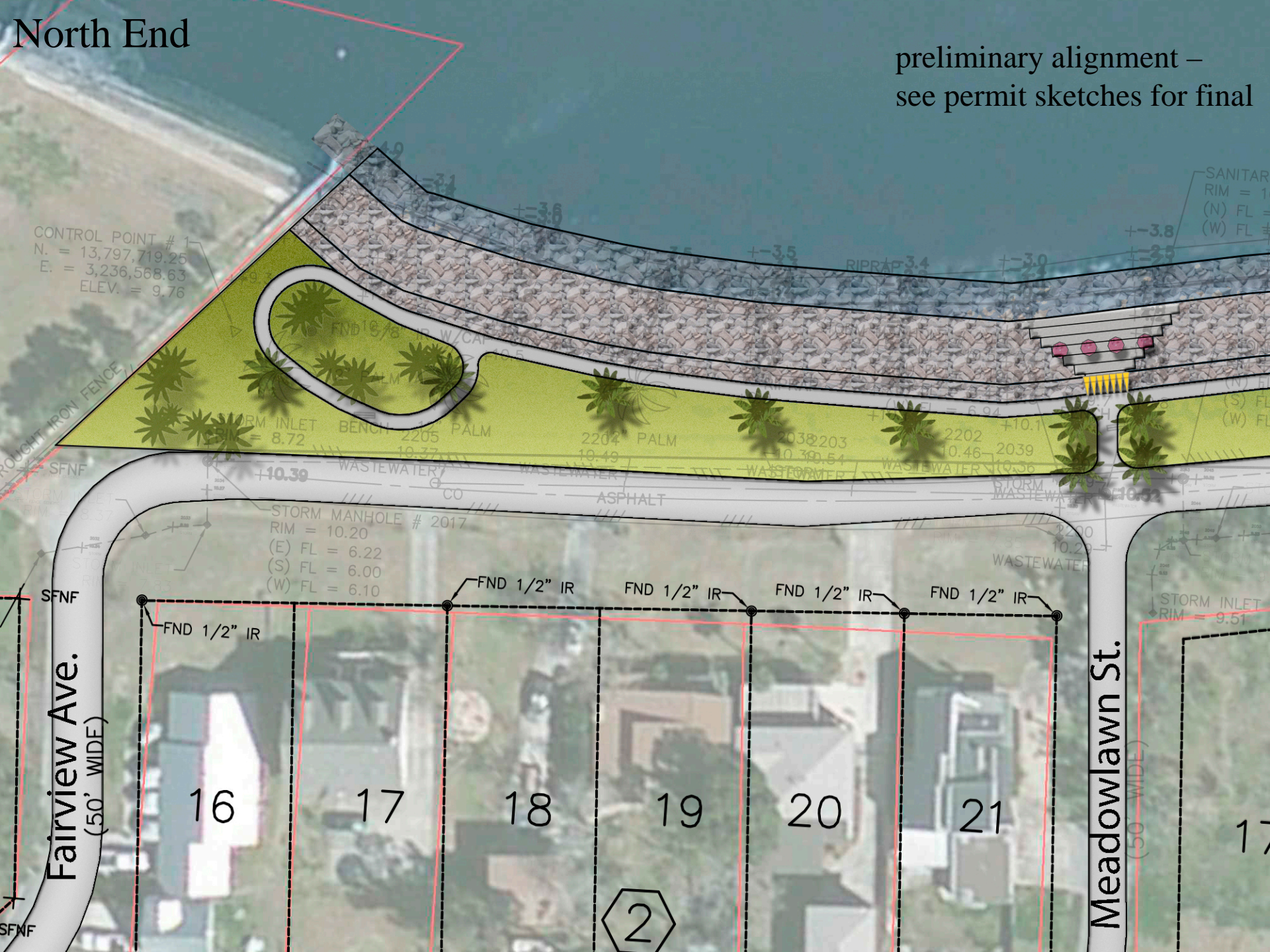
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The image includes various engineering annotations: "FND 5/8\" IR" and "FND 1/2\" IR" are marked along the lot lines; "STORM INLET RIM = 6.95" is noted near the bottom left; "STORM MANHOLE # 1860 RIM = 9.66 (N) FL = 5.62 (S) FL = 5.58 (W) FL = 5.56" is noted in the center; "STORM MANHOLE # 1857 RIM = 9.79 (N) FL = 5.75 (S) FL = 5.71 (W) FL = 5.69" is noted to the right of the center; "STORM MANHOLE # 1854 RIM = 9.95 FL = 5.83 FL = 5.94" is noted on the right; "SANITARY MANHOLE # 1865 RIM = 9.66 (S) FL = 5.52" is noted on the left; "CONTROL POINT 13,795,785.40 E. = 3,238,902.72 +8.7 ELEV. = 9.30" is noted at the top right; "RIPRAP" is noted at the top; "12\" PALM" is noted near the center; "3\" IR" is noted on the left; "14" is in a hexagonal sign at the bottom center; "13" is in a rectangular lot; "12" is in a rectangular lot; "11" is in a rectangular lot; "10" is in a rectangular lot; "9" is in a rectangular lot; "8" is in a rectangular lot; "Shadylawn Ave. (60' WIDE)" is written vertically on the left; "Baywood St. (60' WIDE)" is written vertically on the right; "Shady Lane" is written horizontally in the middle; "South End" is written in the top left corner; "preliminary alignment see permit sketches for final" is written in the top right corner; "LE # 1864 RIM = 9.53 (S) FL 5.13 (W) FL = 5.01 (E) FL = 5.15" is noted on the far left; "STORM MANHOLE # 1866 RIM = 9.66 (S) FL = 5.52" is noted on the far left; "STORM MANHOLE # 1867 RIM = 9.66 (S) FL = 5.52" is noted on the far left; "STORM MANHOLE # 1868 RIM = 9.66 (S) FL = 5.52" is noted on the far left; "STORM MANHOLE # 1869 RIM = 9.66 (S) FL = 5.52" is noted on the far left; "STORM MANHOLE # 1870 RIM = 9.66 (S) FL = 5.52" is noted on the far left; "STORM MANHOLE # 1871 RIM = 9.66 (S) FL = 5.52" is noted on the far left; "STORM MANHOLE # 1872 RIM = 9.66 (S) FL = 5.52" is noted on the far left; "STORM MANHOLE # 1873 RIM = 9.66 (S) FL = 5.52" is noted on the far left; "STORM MANHOLE # 1874 RIM = 9.66 (S) FL = 5.52" is noted on the far left; 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preliminary alignment –  
see permit sketches for final



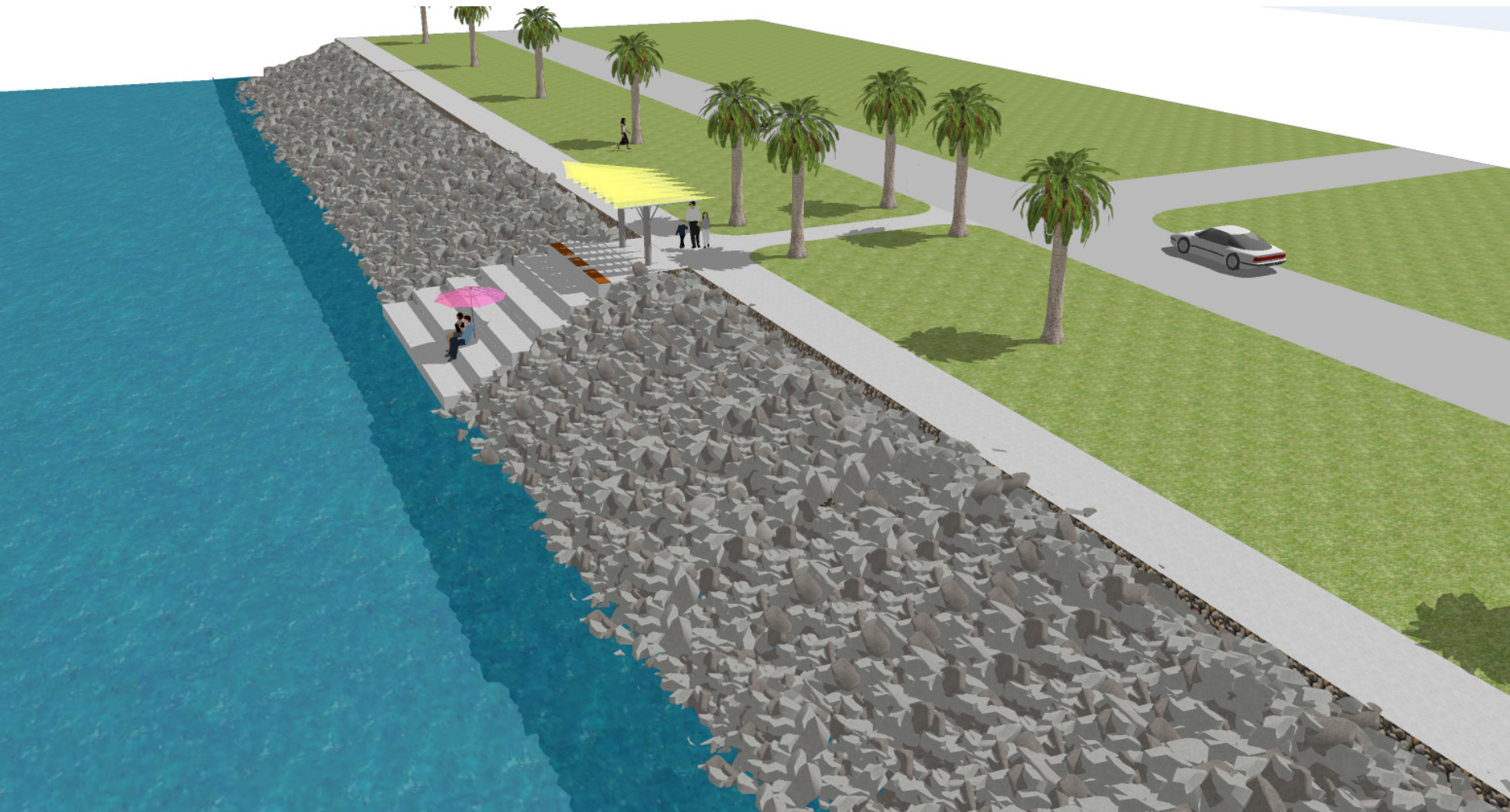


# Enlargement of the Vista

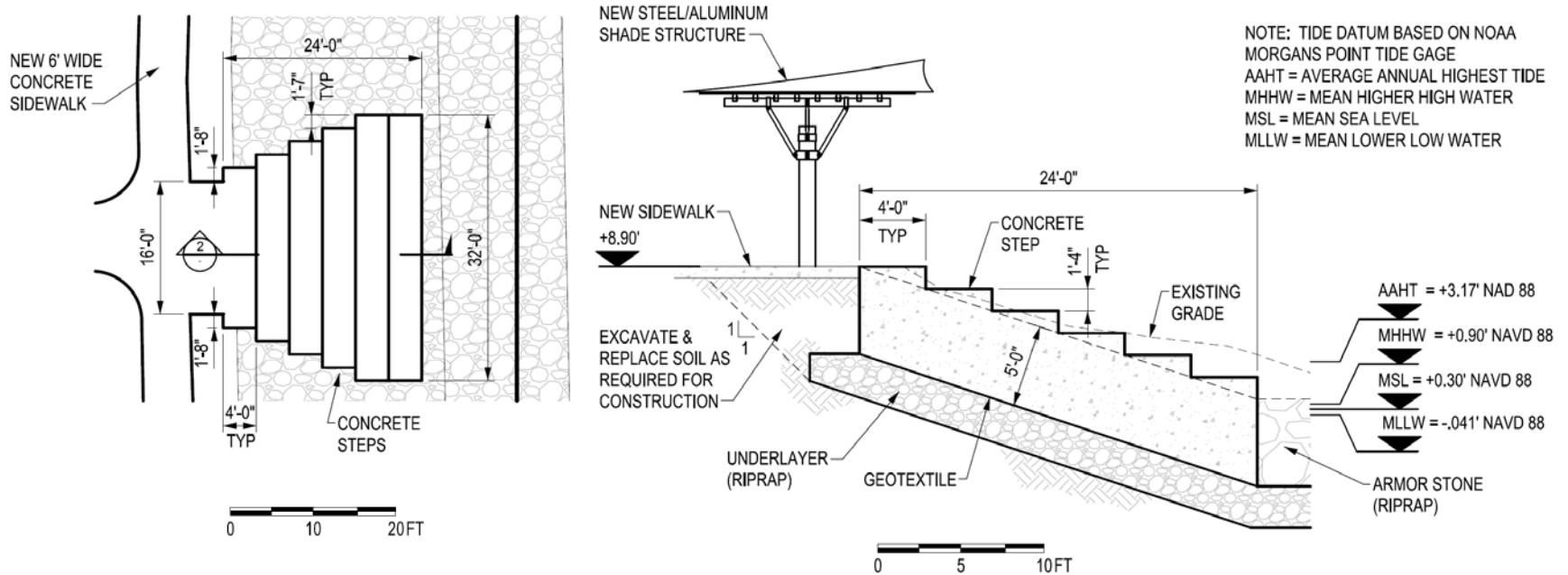




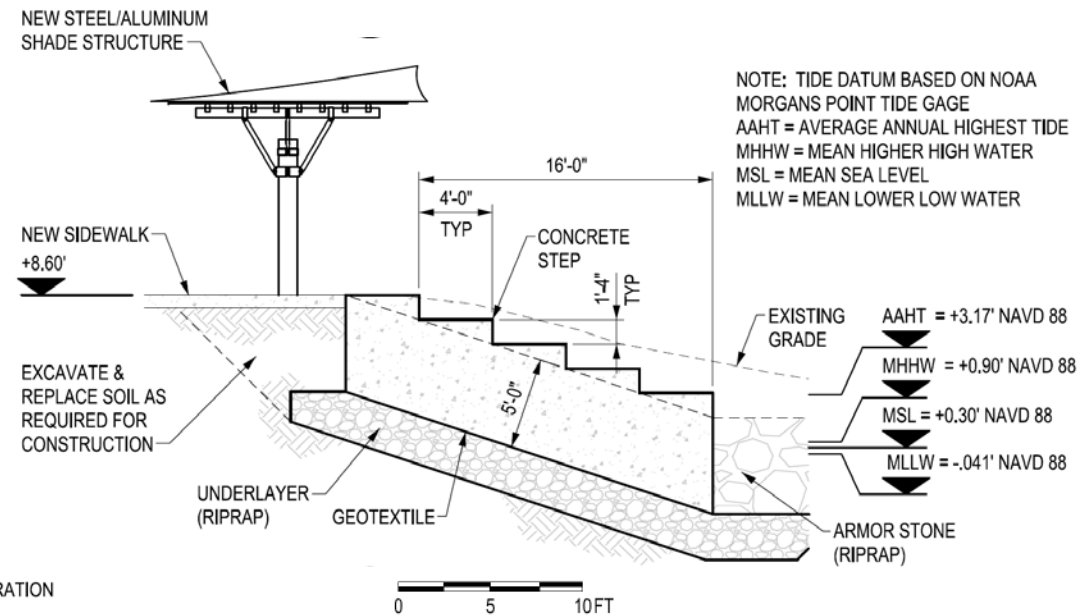
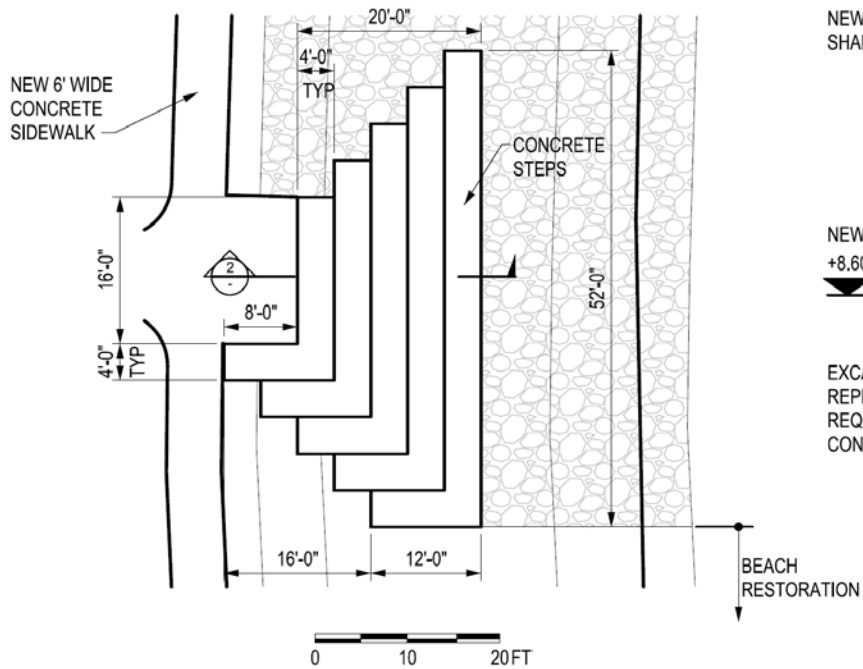
# View of Vista



# North Vista Plan / Section



# South Vista Plan / Section



# Construction Budget

## Preliminary based on 30% Design

Item	Unit Cost	Quantity	Cost
Contractor Mobilization, Indirect Costs, Bonds, & Overhead / Profit			\$2,020,576.06
Dredging for Access (if required)	\$12.40/CY	10,370 CY	\$128,592.59
Rock Riprap	\$108.28/ton	49,658 tons	\$5,376,971.95
Excavation, Removal, & Regrading	\$7.36/CY	50,631 CY	\$372,646.00
Geotextile	\$10/SY	17,934 SY	\$179,340.00
Beach Nourishment Sand	\$15/CY	2,045 CY	\$30,675.00
Sidewalks	\$33/LF	3,750 LF	\$123,750.00
Vista Structures			\$53,807.50
Contingency		20%	\$1,661,90.15
<b>Total</b>			<b>\$9,971,406.92</b>

Note: Oyster seeding costs not included, assumed to be volunteer activity with Galveston Bay Foundation