

New Orleans Municipal Yacht Harbor

Marina Schematic Design Update



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Post-Katrina



NEW ORLEANS MUNICIPAL YACHT HARBOR

NEW ORLEANS, LOUISIANA



VICINITY MAP
SCALE: 1" = 1 MILE

INDEX OF DRAWINGS	
SHEET NO.	DRAWING TITLE
1	COVER SHEET & VICINITY MAP
2	EXISTING CONDITIONS AND DEMOLITION PLAN
3	MARINA SITE PLAN
4	DREDGING PLAN
5	DREDGING SECTIONS
6	ENLARGED MARINA SITE PLAN (1 OF 4)
7	ENLARGED MARINA SITE PLAN (2 OF 4)
8	ENLARGED MARINA SITE PLAN (3 OF 4)
9	ENLARGED MARINA SITE PLAN (4 OF 4)
10	PLATFORM A DETAILS
11	PLATFORM B DETAILS (1 OF 2)
12	PLATFORM B DETAILS (2 OF 2)
13	BULKHEAD DETAILS (1 OF 2)
14	BULKHEAD DETAILS (2 OF 2)
15	FLOATING DOCK DETAILS (1 OF 2)
16	FLOATING DOCK DETAILS (2 OF 2)
17	GANGWAY DETAILS



LOCATION MAP
SCALE: 1" = 1 MILE



PERMITTING AGENCIES: U.S. ARMY CORPS OF
ENGINEERS
DEPARTMENT OF NATURAL
RESOURCES
CITY OF NEW ORLEANS

PURPOSE: CONSTRUCTION PERMIT

DATUM: NAVD88

COVER SHEET & VICINITY MAP

NEW ORLEANS MUNICIPAL
YACHT HARBOR

PREPARED BY: MOFFATT & NICHOL

DATE: 07 NOV 2018

SHEET 1 OF 17

Municipal Yacht Harbor: Introduction

The MYH was an approximate 600 slip marina located on the south shore of Lake Pontchartrain in New Orleans, Louisiana. Hurricane Katrina caused severe damage to the MYH docks and associated facilities. Instead of making repairs to the existing facility, the City has determined that the existing dock and mooring infrastructure be demolished and replaced with a floating dock system to provide the greatest resiliency and sustainability.

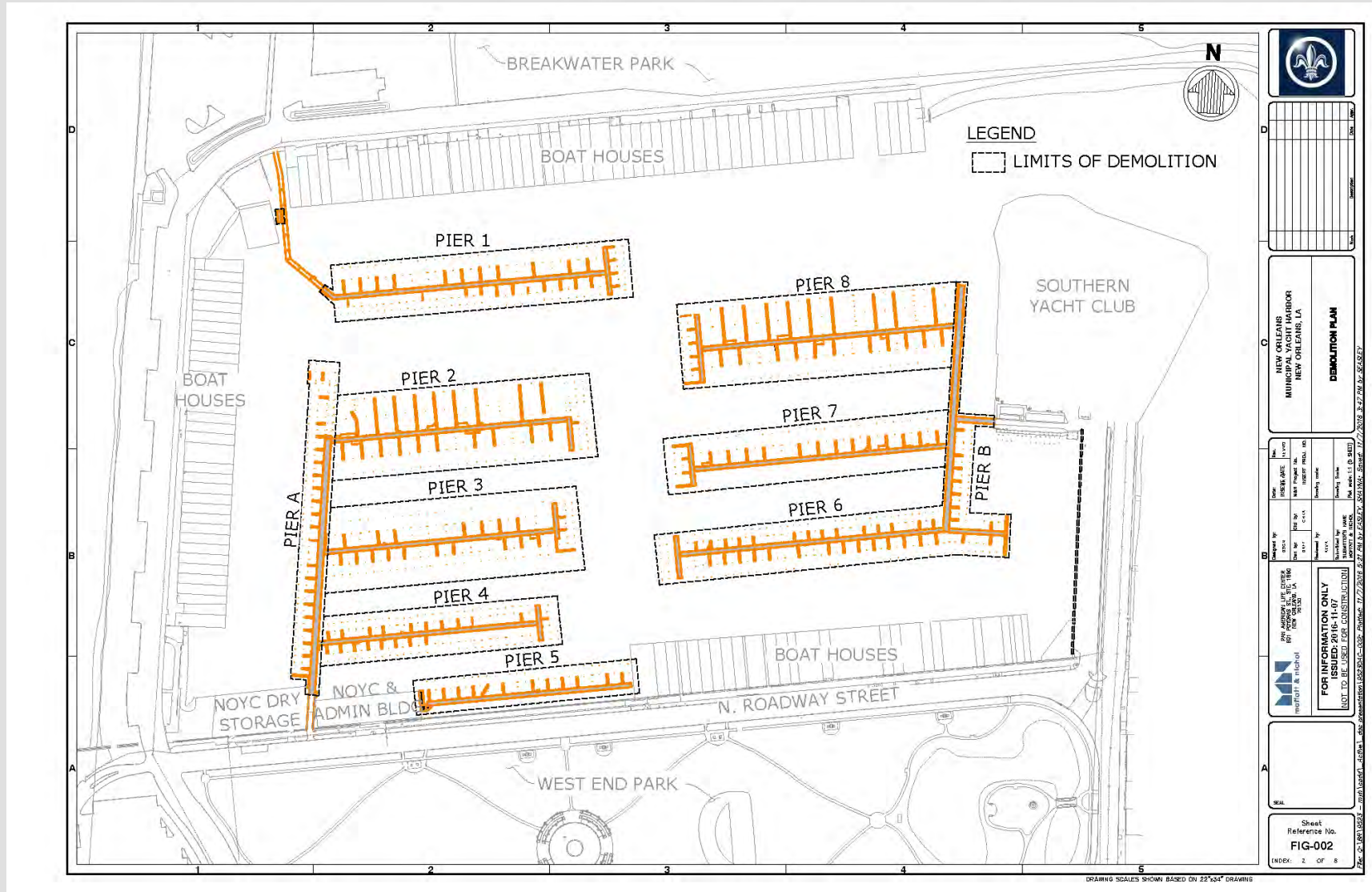
The new harbor system being planned is a concrete floating dock system with wave attenuation designed to accommodate the needs of the regional boating community while meeting ADA access requirements.

In addition to replacing the existing docks the project will also establish two new entry points for the marina, rehabilitate the eastern bulkhead and perform maintenance dredging.

Project Scope

- Remove Existing Docks
- Install new floating docks
- Construct West Marina Entry
- Construct East Marina Entry and Restroom
- Replace Bulkhead
- Maintenance Dredging
- Rehabilitate Pump Out Dock

Project Scope: Remove Existing Docks



Existing Conditions: Entrances



Parking Lot Entrance



West Marina/ Park Entrance

Existing Conditions: Docks

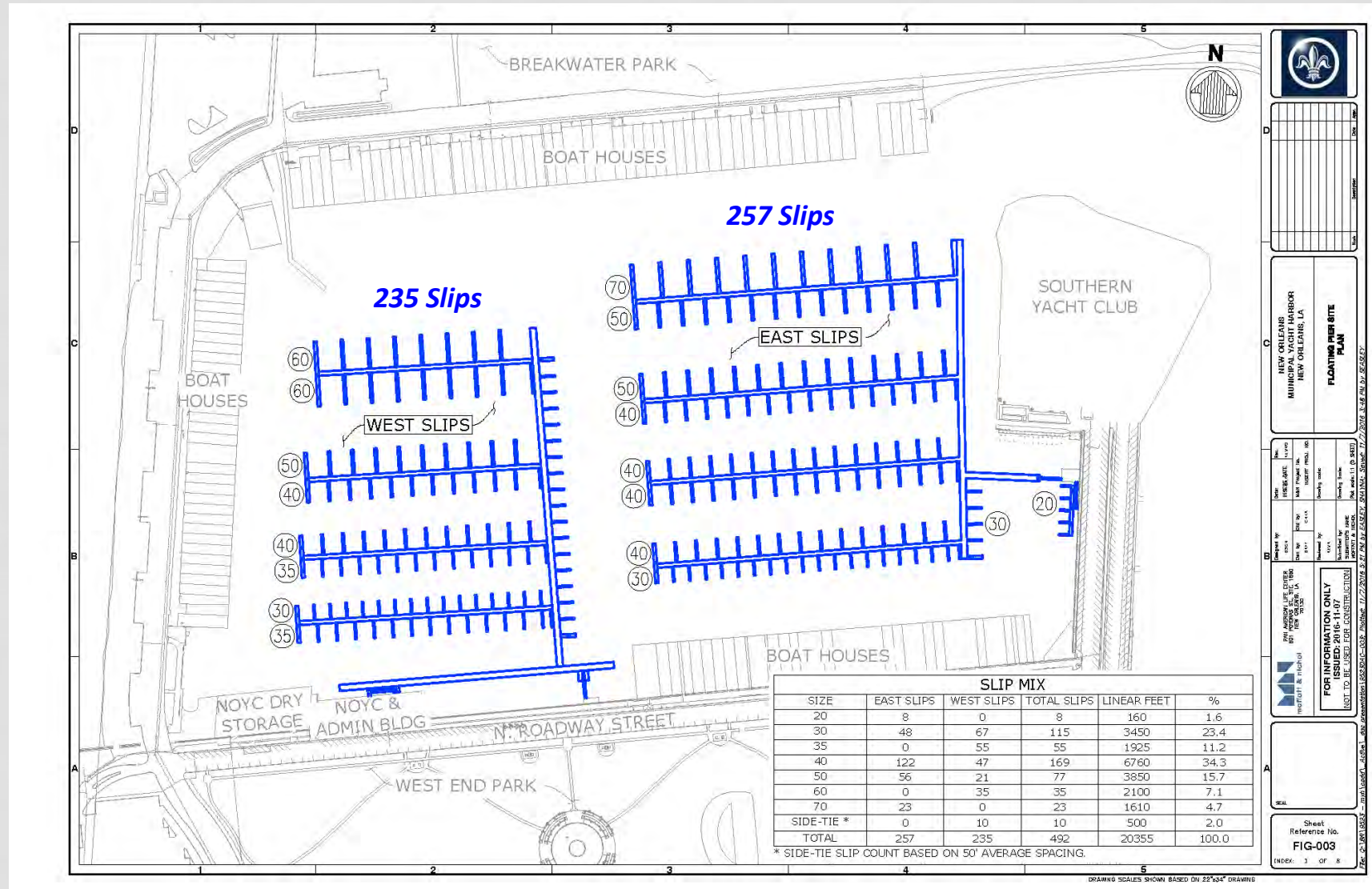


Docks



Pump-out Dock

Project Scope: Floating Docks – Master Plan



Municipal Yacht Harbor: Master Plan



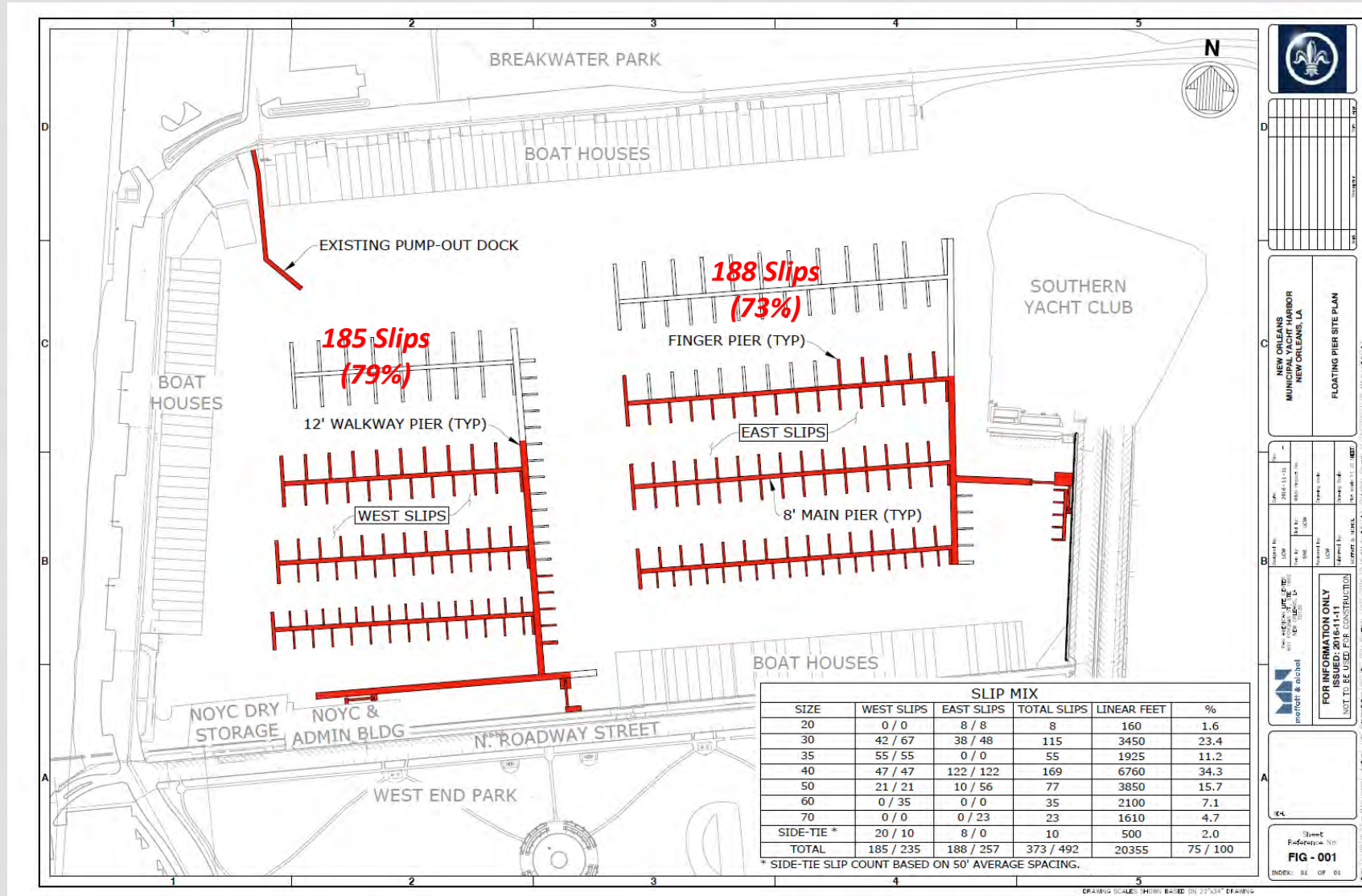
Municipal Yacht Harbor: Master Plan



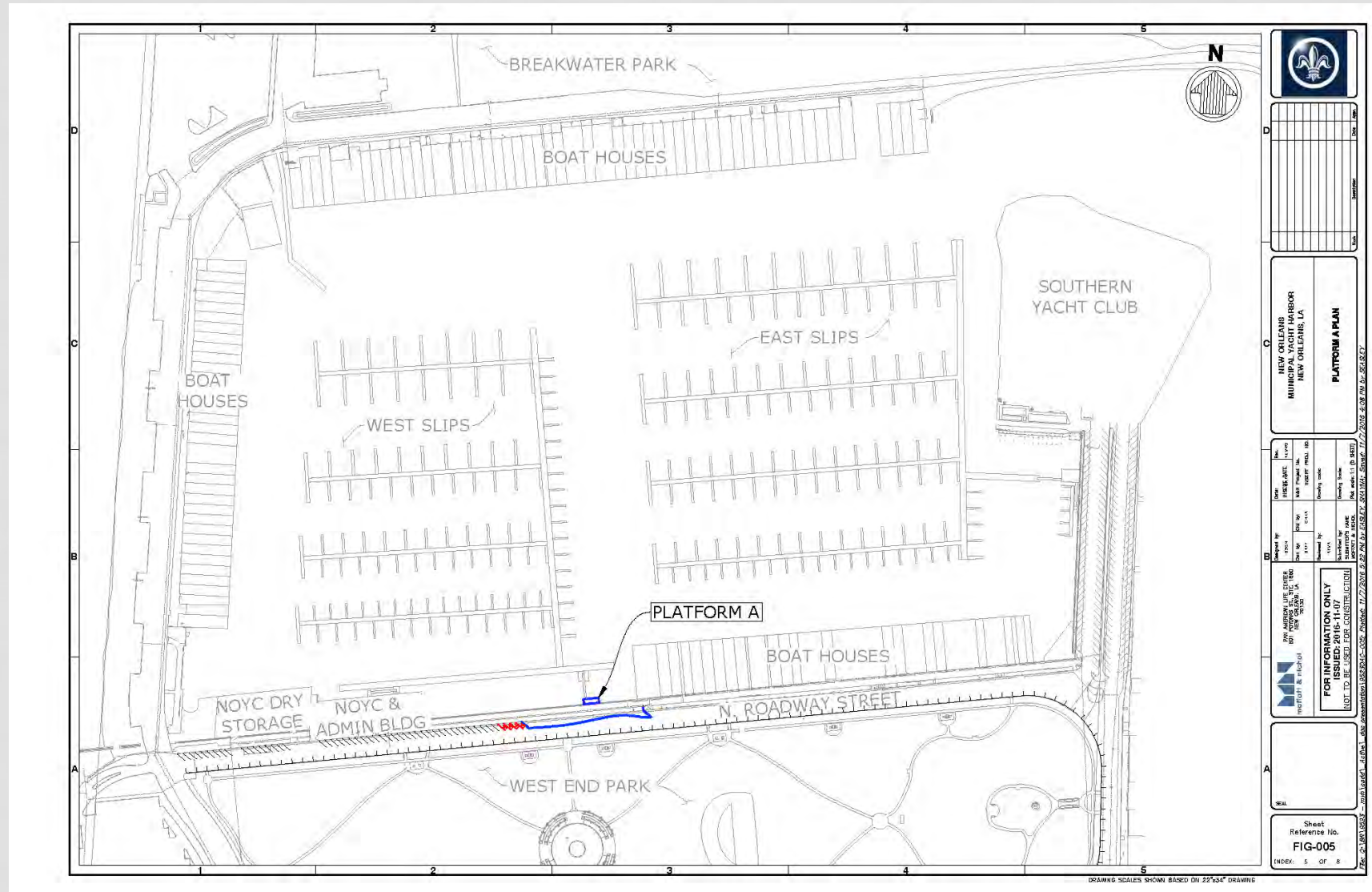
Municipal Yacht Harbor: Master Plan



Phase 1: Construction



Phase 1: Construct West Marina Entry



West Marina Entry: Existing



West Marina Entry: Proposed



Master Plan: West Marina Entry



WEST MARINA | PARK ENTRY

Master Plan: West Marina Entry



WEST MARINA | PARK ENTRY

Master Plan: West Marina Entry



Master Plan: West Marina Entry



OPTION 2

WEST MARINA | PARK ENTRY

West Marina/Park Entrance

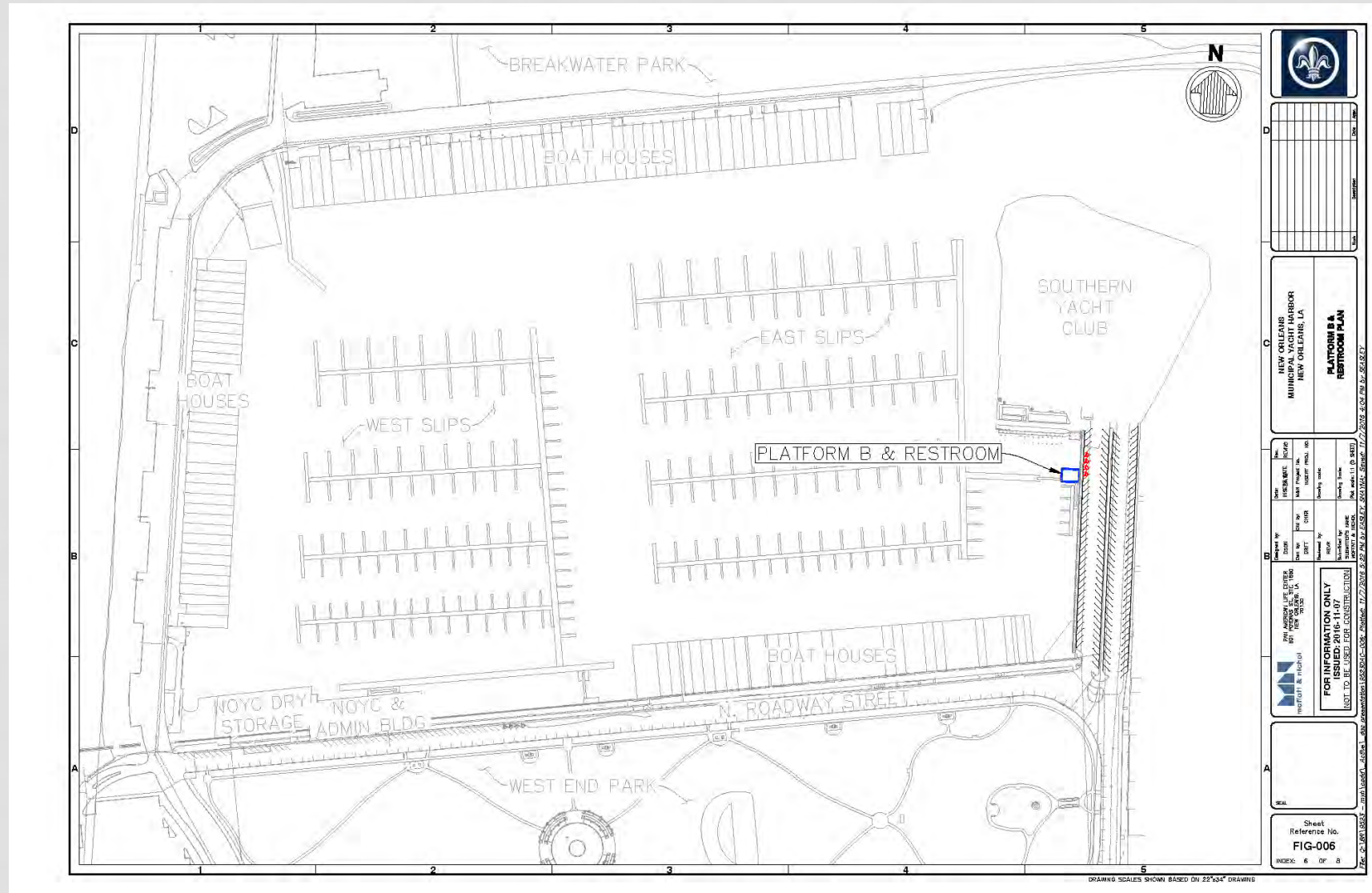
landscapeforms®



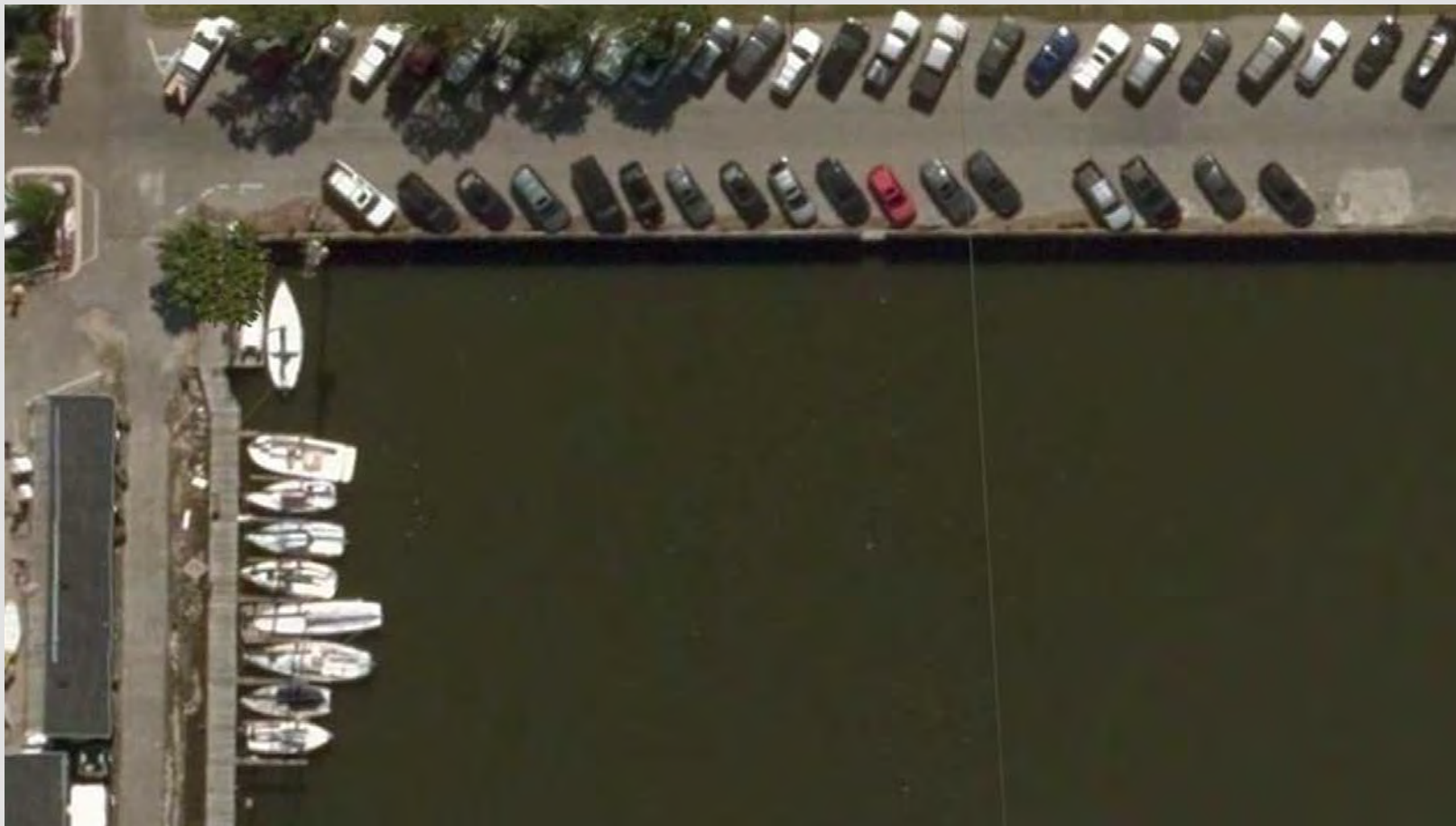
West Marina / Park Entrance

- Metal fencing and guard rails are powder coated with a metallic paint finish – Silver.
- Site accessories including lighting, benches, trash cans, bike racks and dumpster fencing are fabricated in metal with a powder coated metallic paint finish – Titanium.
- MYH Logo is fabricated in aluminum with powder coated paint finish and polished metal.

Phase 1: Construct East Marina Entry



East Marina Entry: Existing



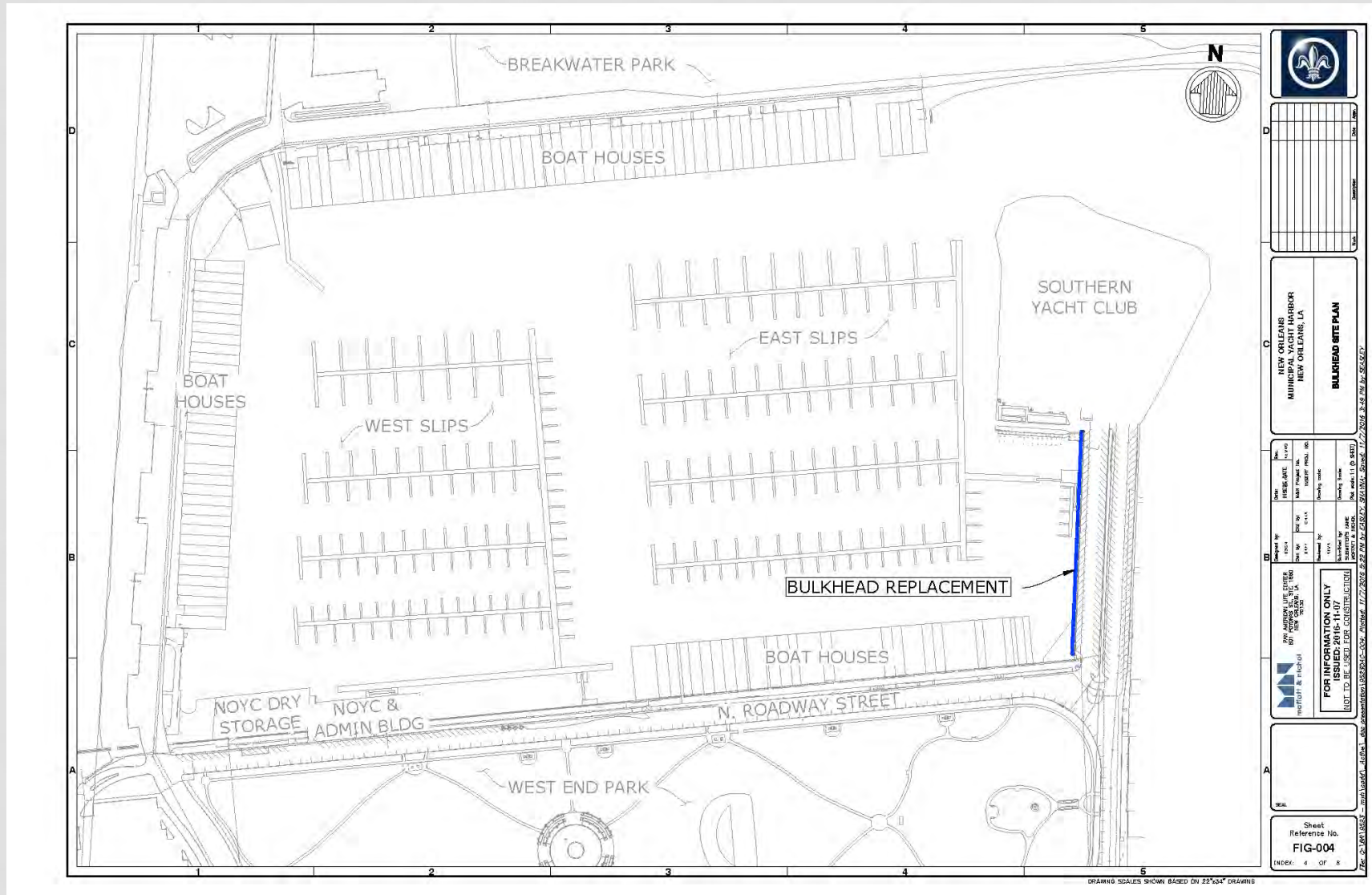
Phase 1: East Marina Entry



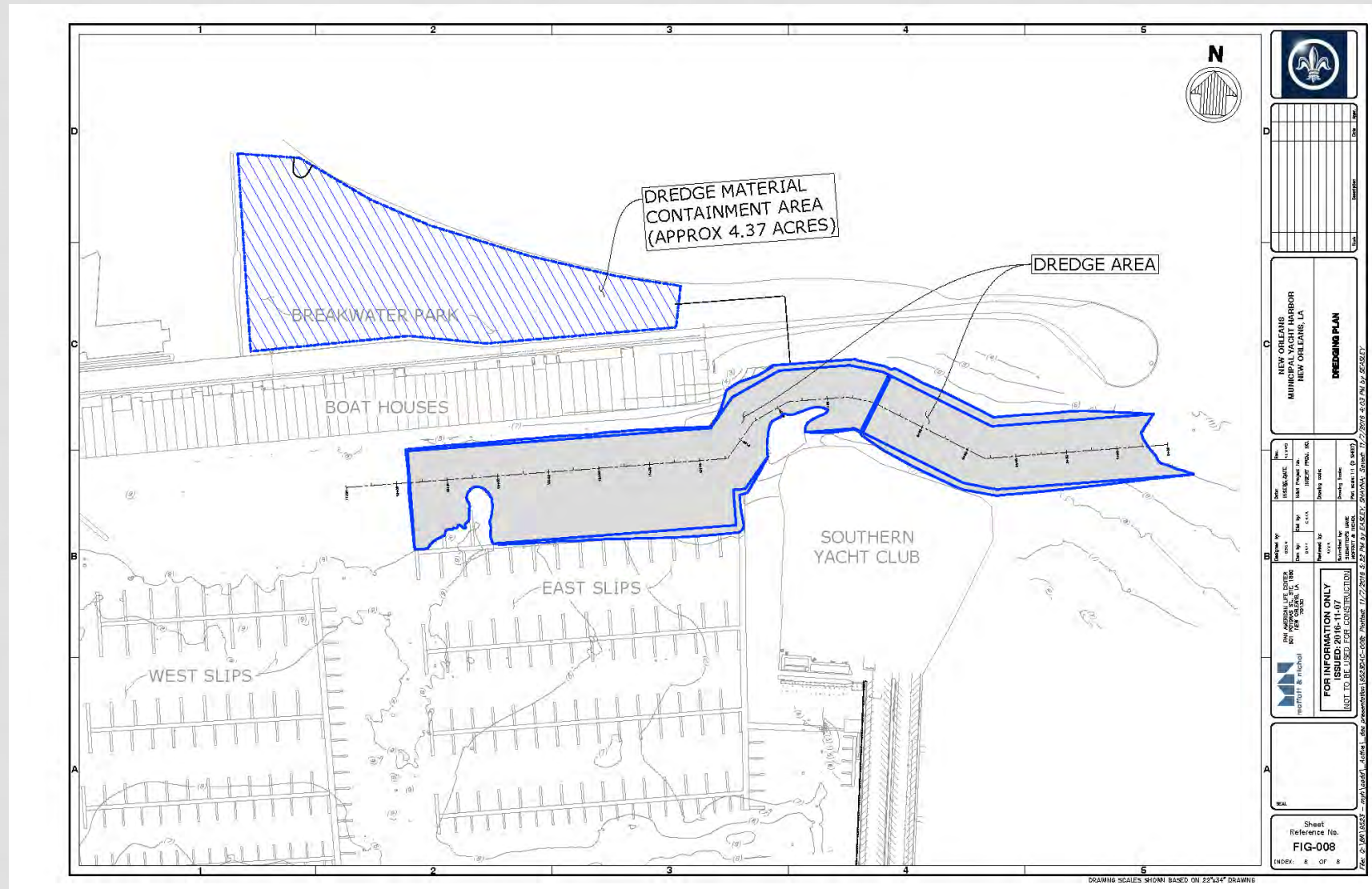
East Marina Entrance & Comfort Station

- Main building is constructed of steel frame construction with galvalume metal panels and roof supported on galvanized steel metal columns.
- The ground floor will be covered with a perforated steel panel with a powder coated metallic paint finish.
- All fencing, rails and stairs will be metal fabrication with a powder coated metal paint finish.

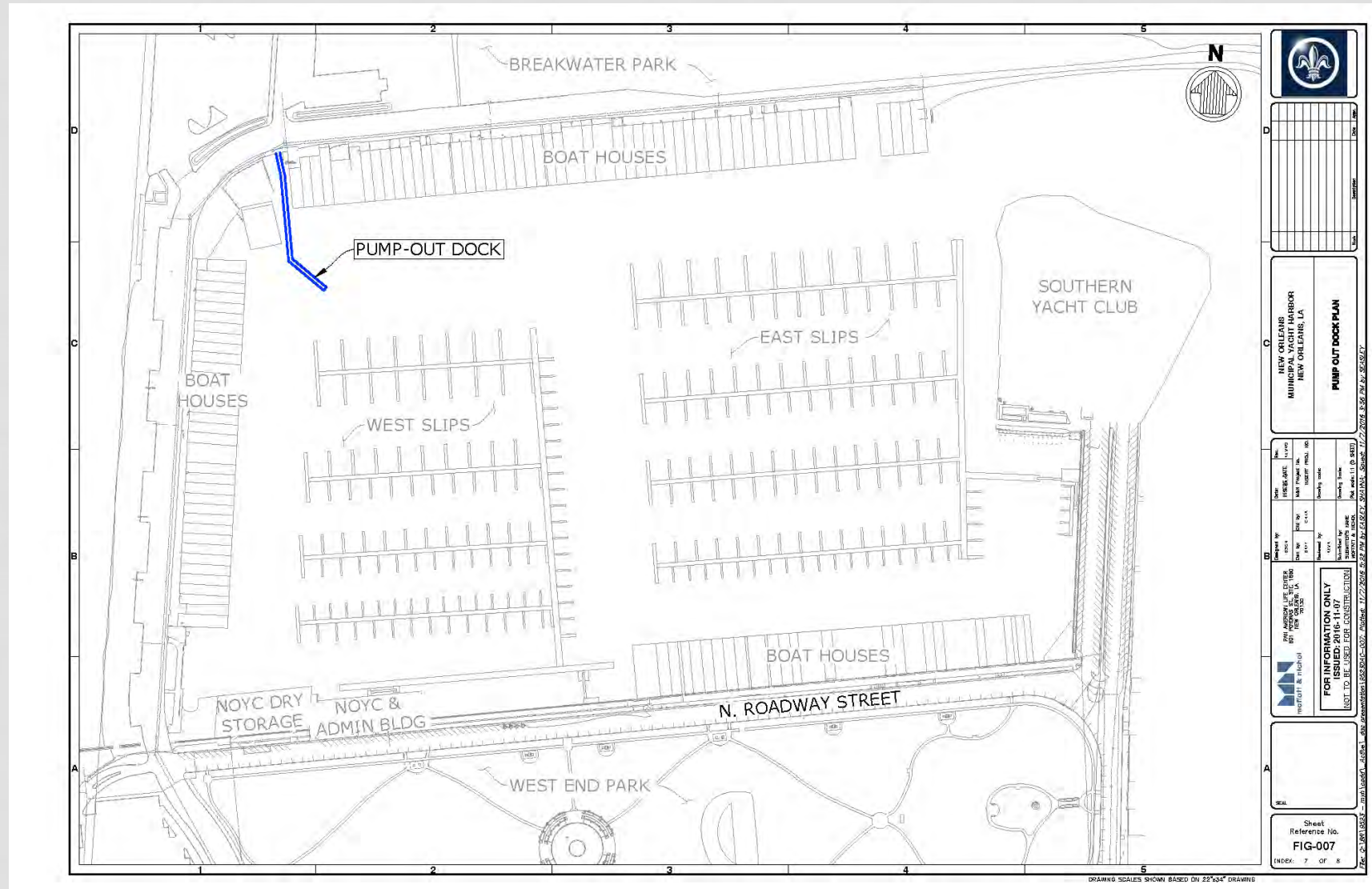
Phase 1: Bulkhead Reconstruction



Maintenance Dredging – Master Plan



Phase 1: Rehabilitate Pump-out Dock



Schedule & Budget

Project Schedule



Project Budget - \$24 Million

Professional Services – \$2 Million Dollars

- Includes Architectural Services, Marine Engineering Services, Land Surveys, Hydrographic Surveys, Bathymetric Surveys, Environmental Testing, Geotechnical Services, Material Testing and Permitting Fees.

Construction Services – \$22 Million Dollars (includes hard costs and contingencies)

- New Floating Docks, West Marina Entrance, East Marina Entrance (w/ restroom), Bulkhead Reconstruction and Maintenance Dredging.

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Environmental Conditions and Wave Modeling



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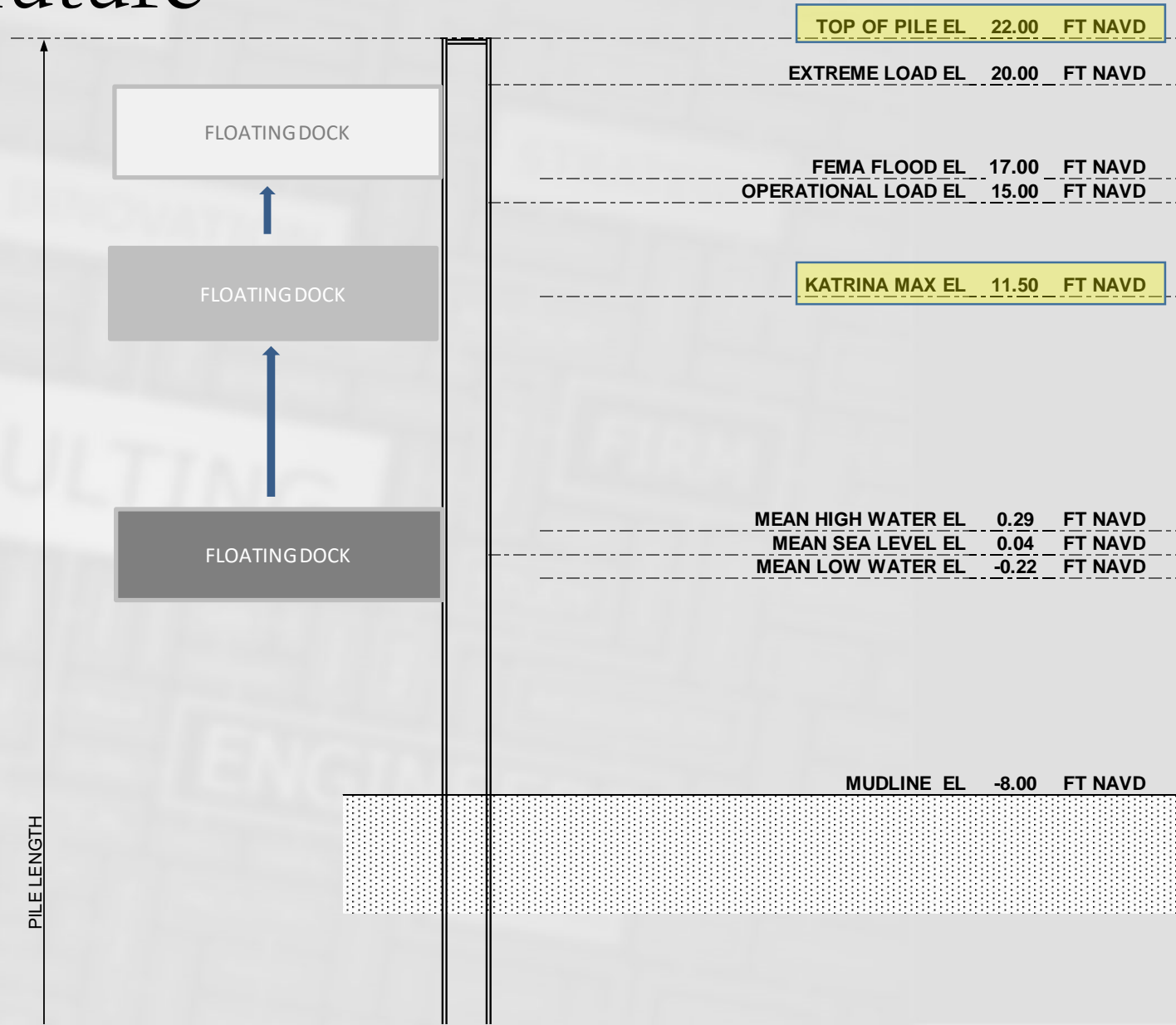
1. Performance-based design

- Design considers impacts of extreme surge, waves and wind in harbor
 - Intent is to design a system which is more resilient to extreme surge events.
 - Can rise and fall with surge.
- Docks won't submerge during high water
 - Lets boats stay at berth



2. Planning for the future

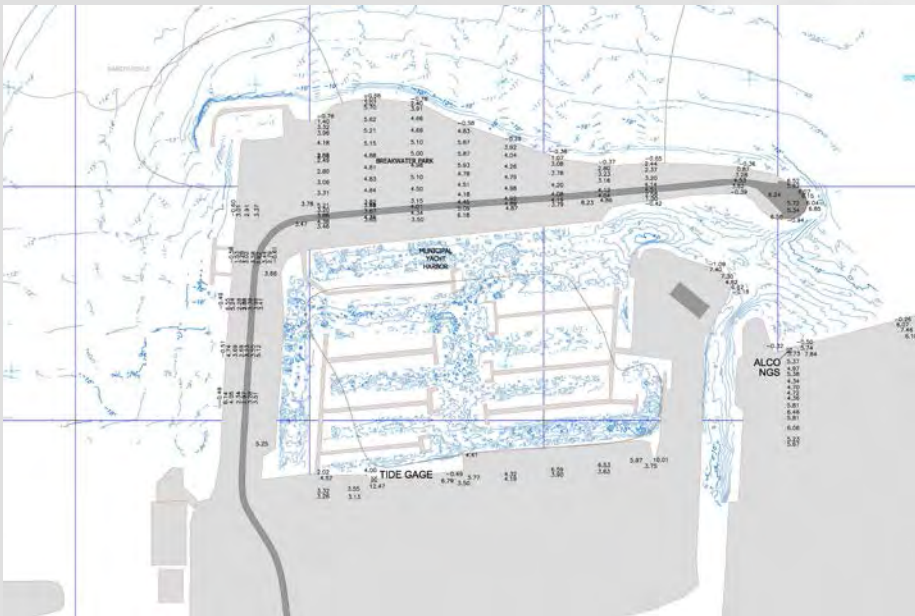
- Conservative, scientifically sound sea level rise and subsidence projections
- Future hurricane waves and surge based on HSDRRS project – most rigorous data available
- Pile caps (how high docks can rise with surge) are set at +22' NAVD88 – more than 10.5' higher than Katrina's high water mark at MYH



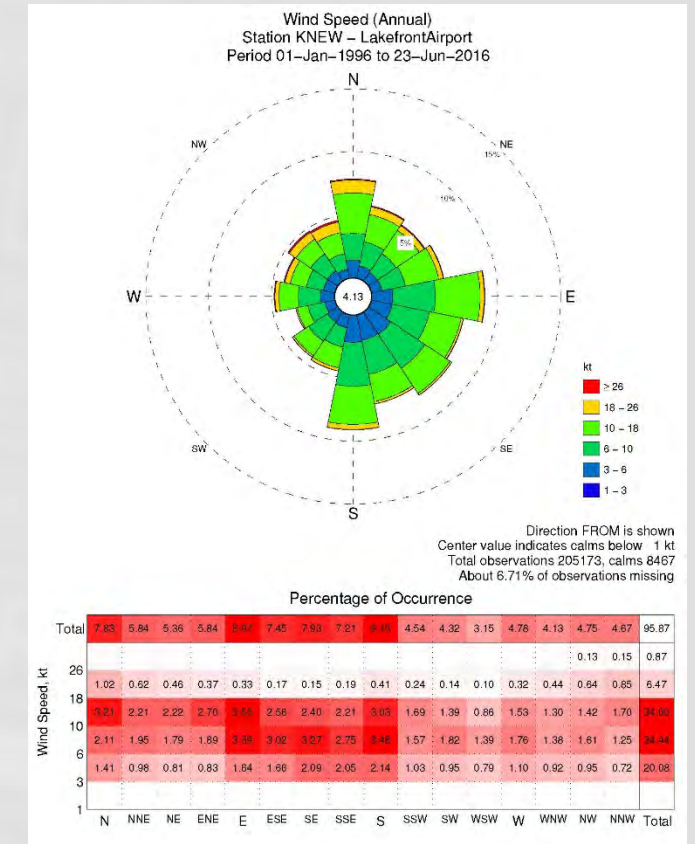
3. Data Sources

- Bathymetric surveys and geotechnical investigations
- 11-year NOAA tide gauge on site
- 20-year Wind records at Lakefront Airport

- USACE HSDRRS Studies
- FEMA / US Army Corps high water marks from Katrina

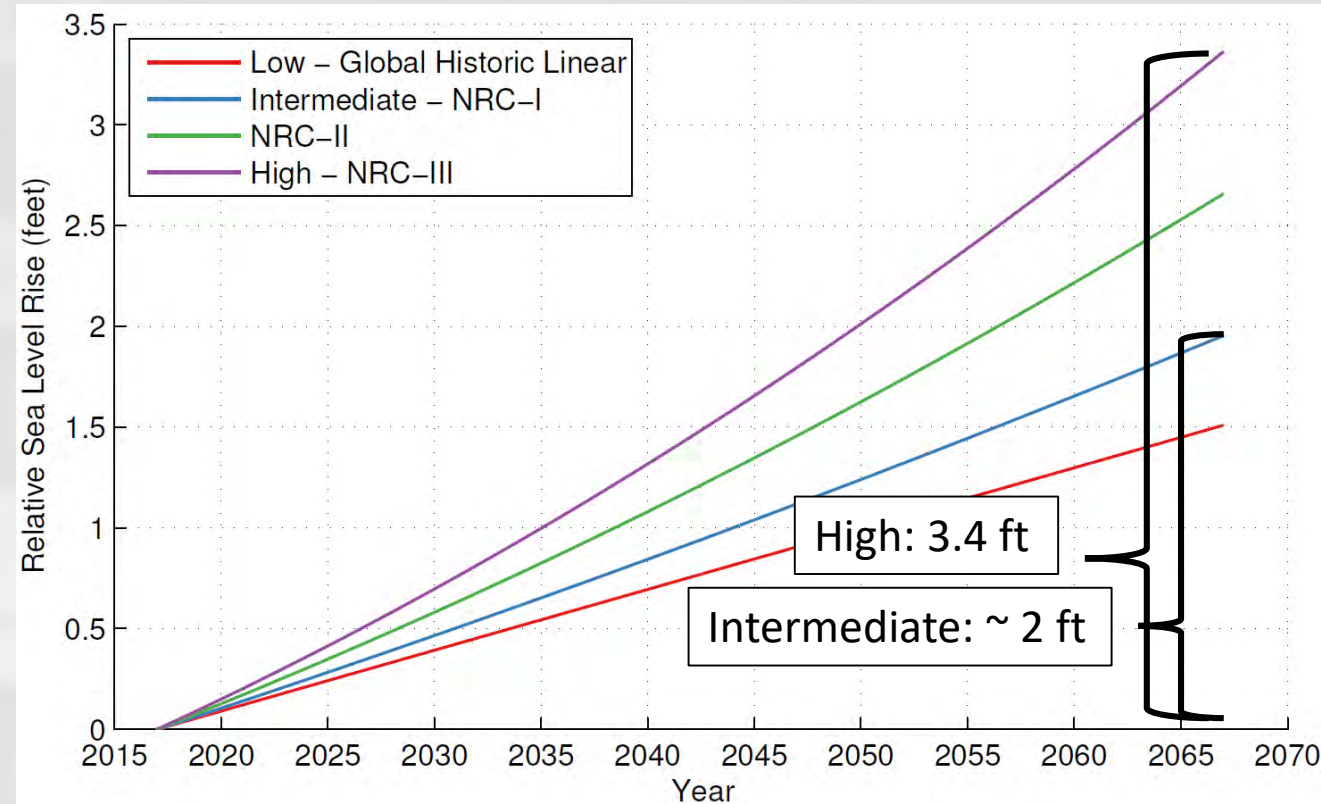


<https://tidesandcurrents.noaa.gov/stationhome.html?id=8761927>



4. Sea Level Rise

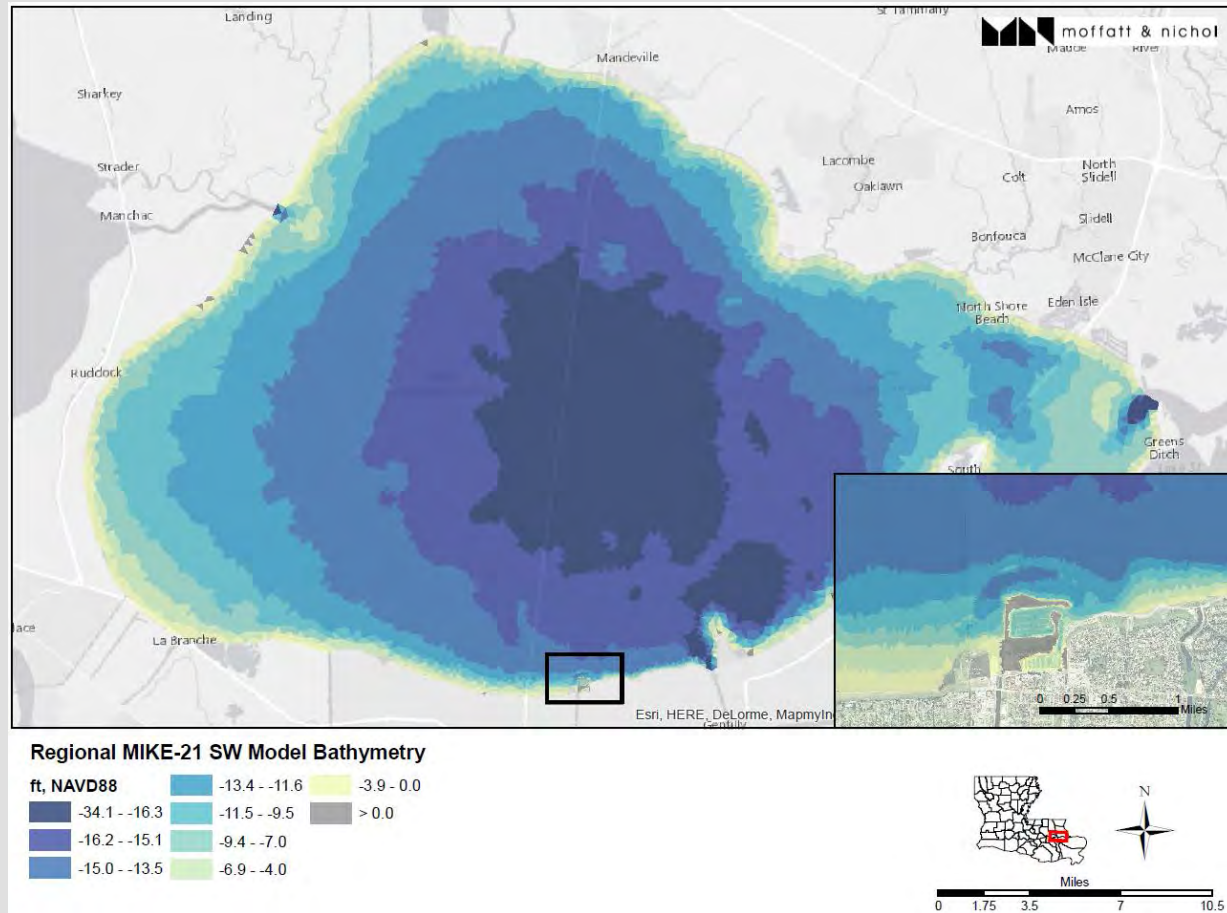
- Land subsidence rate of **7.5 mm/yr.**
 - *West Shore Lake Pontchartrain Hurricane and Storm Damage Risk Reduction Study* (US Army Corps of Engineers, 2014).
- Global mean sea level rise rate of **1.7 mm/yr.**
 - Intergovernmental Panel on Climate Change (IPCC, 2014)
- Projection equations, which account for **accelerated rates** of mean sea level rise and subsidence
 - *Engineering Technical Letter 1100-2-1: Procedures to Evaluate Sea Level Change* (US Army Corps of Engineers, 2014).



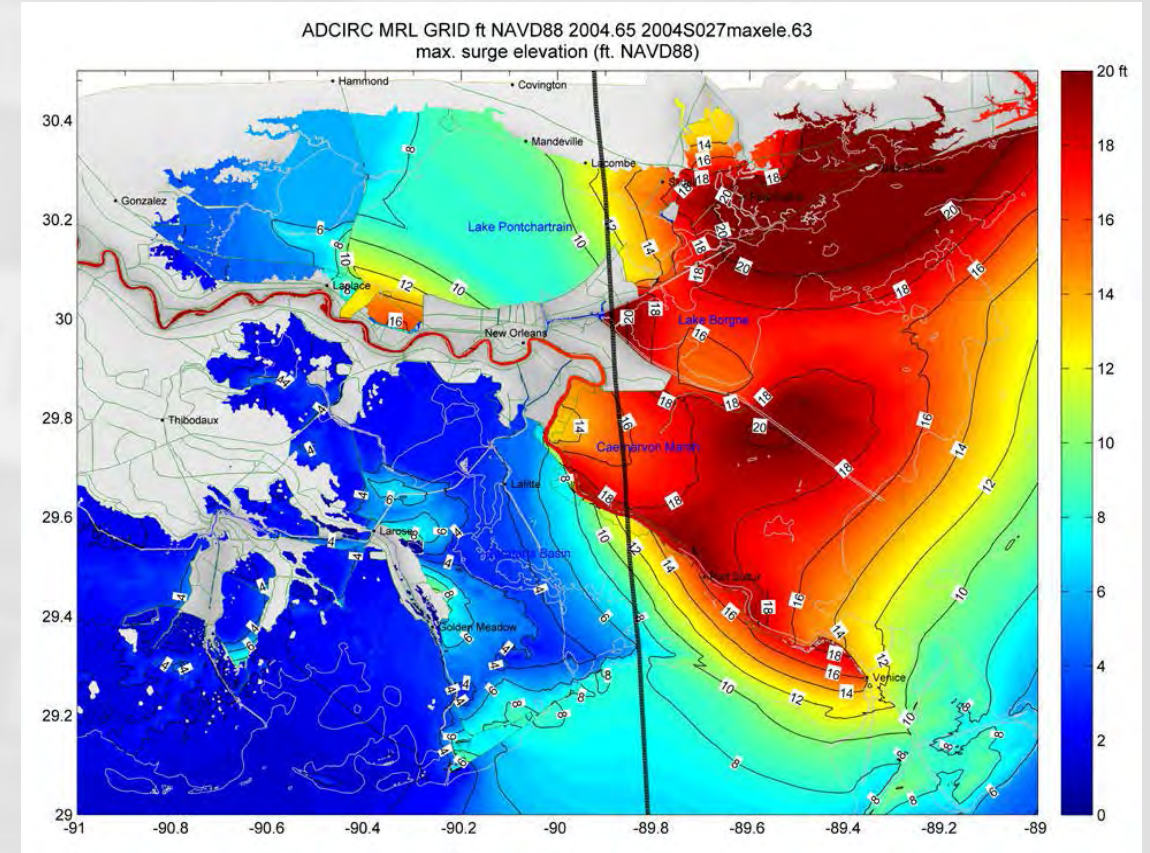
- Recommend using **Intermediate** value for design, while also assessing cost implications for accommodating **High** scenario

5. Operational and Extreme Wave Conditions

- Operational storms simulated in-house, based on wind records



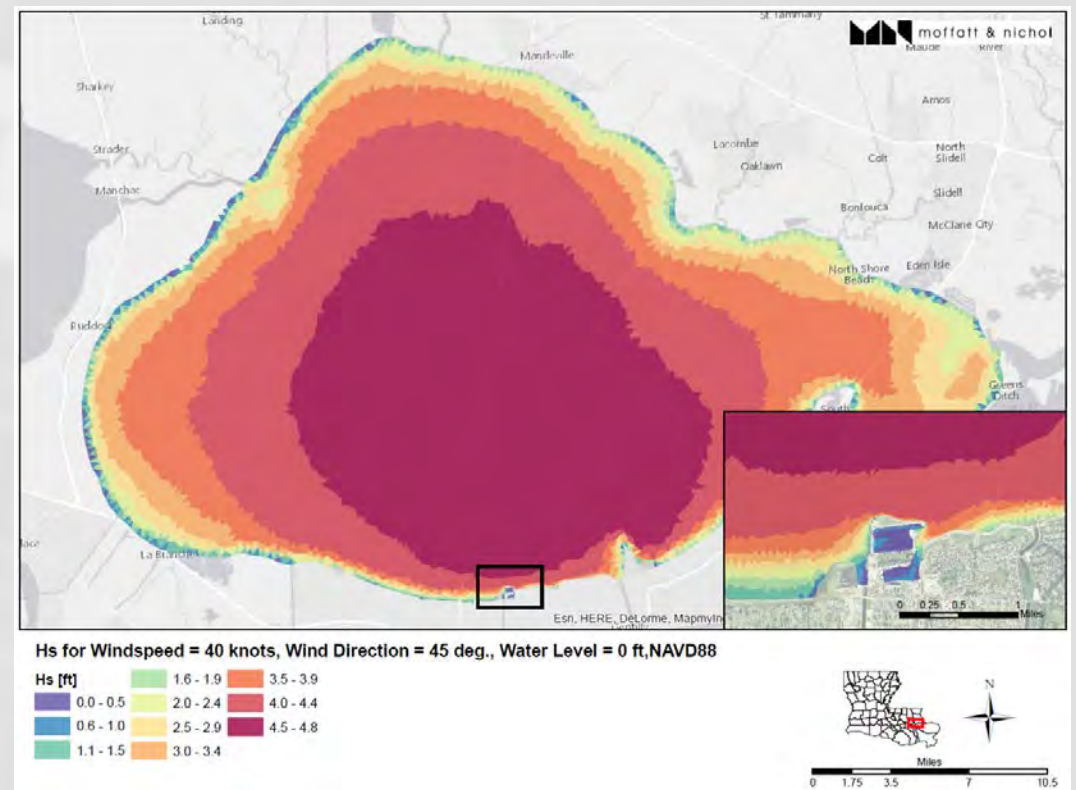
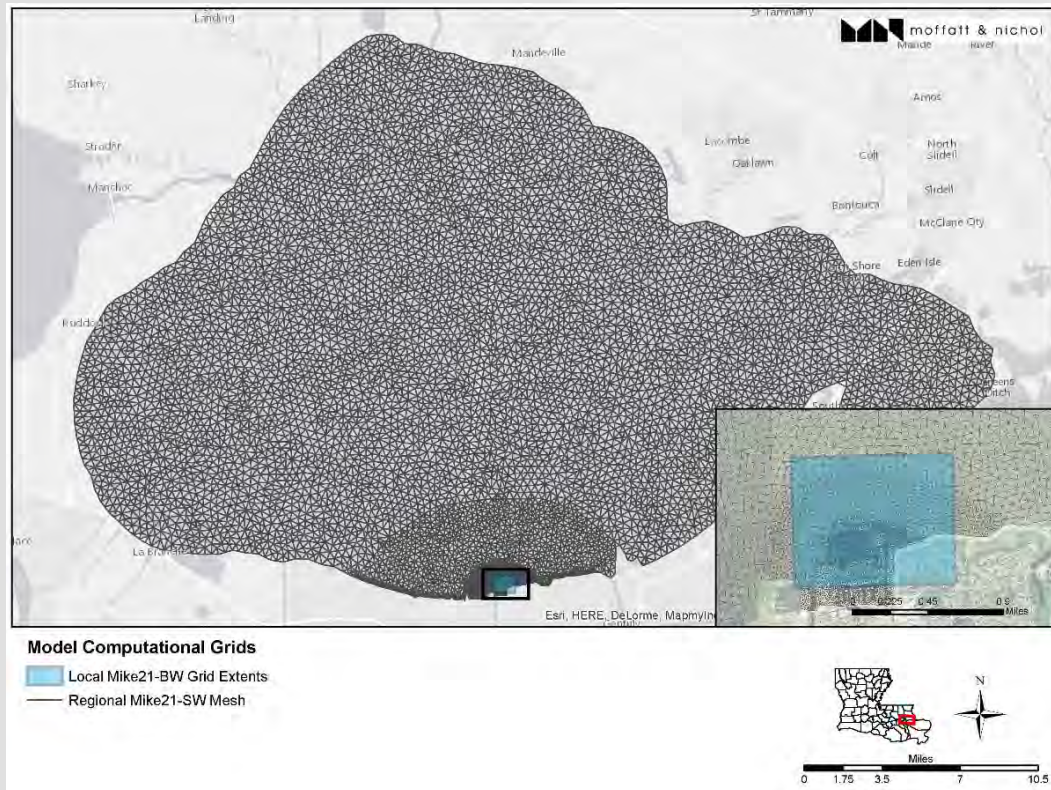
- Design 100-year (1% annual chance) storm taken as US Army Corps' conservative 2057 event used in HSDRRS projects



Source: US Army Corps *Elevations for Design of Hurricane Protection Levees and Structures: Lake Pontchartrain and Vicinity... Appendix A* (2014)

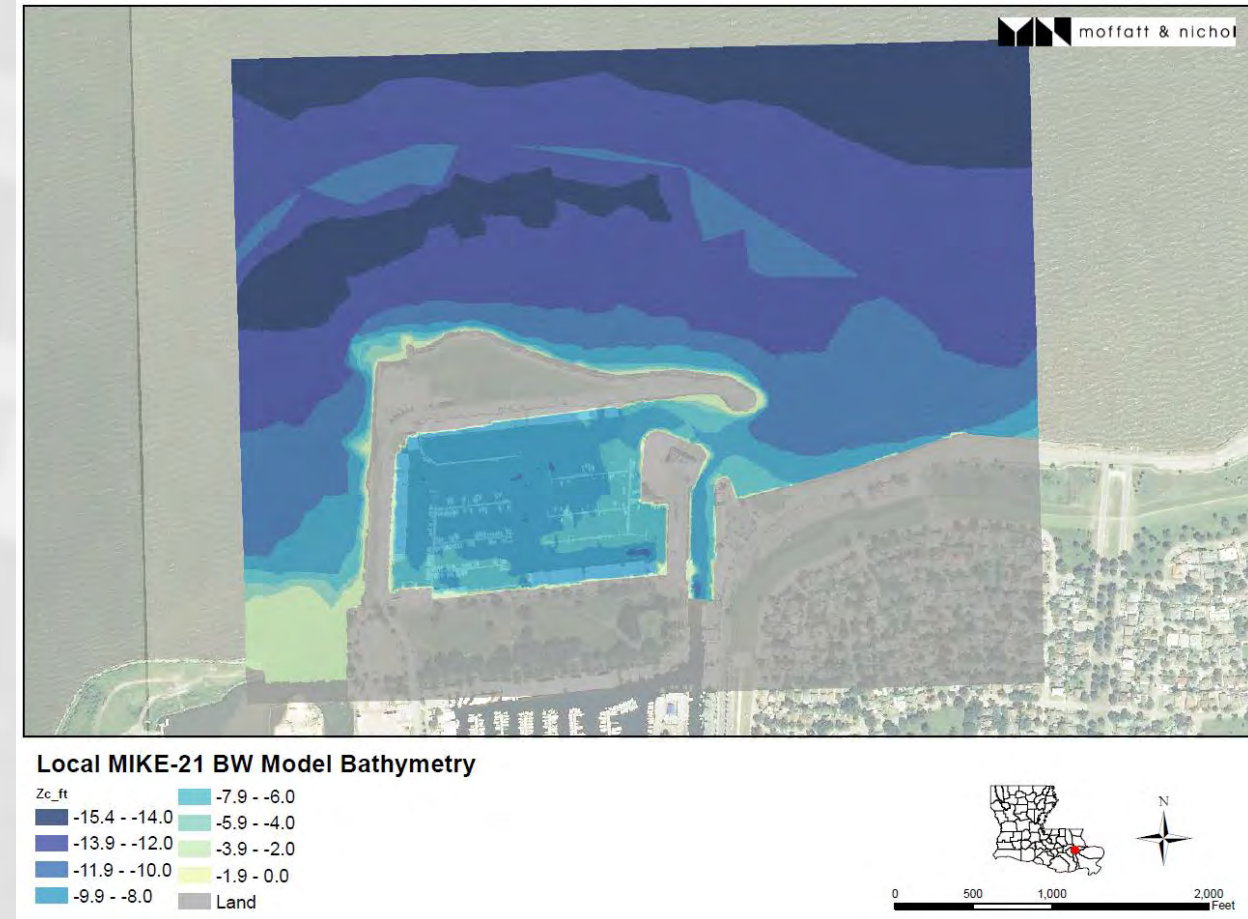
5.1 Regional Wave Modeling

- Depth accurate computational grid, with high resolution at harbor
- Use of measured wind and water level to model waves offshore of harbor
- Statistical analysis of modeled waves to determine operational wave heights (1-yr through 50-yr Return Periods)



5.2 Local Wave Modeling

- Model propagation of offshore waves into harbor
 - Robust diffraction/reflection formulations
- Operational wave conditions
 - From statistical analysis of regional wave modeling
- Extreme wave conditions
 - 1% annual chance surge and wave conditions offshore of harbor (from USACE HSDRRS studies)

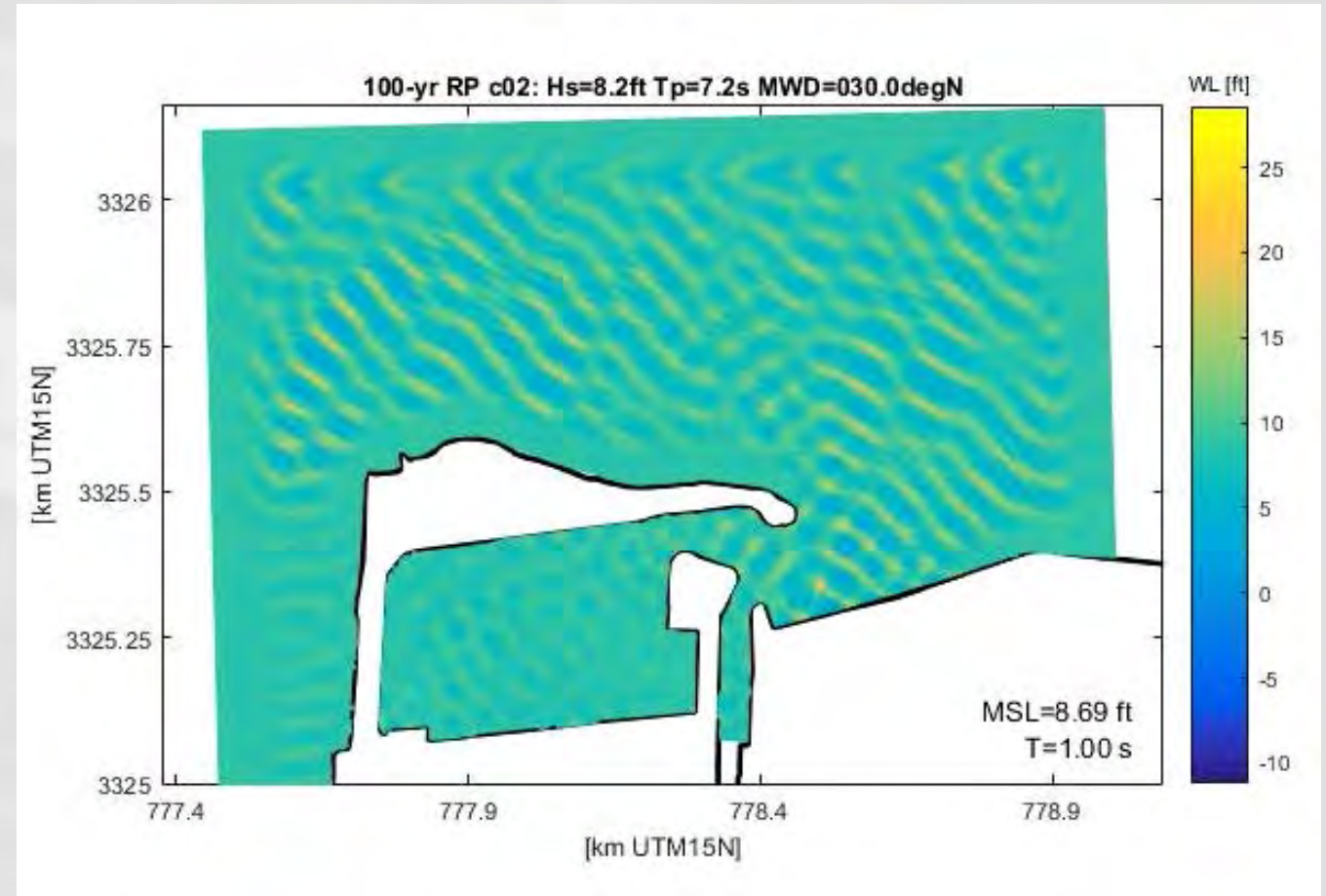


5.3 Extreme Modeling Results

Robust diffraction-reflection formulation



Accurate simulation of waves penetrating harbor and reflecting within



5.4 Extreme Modeling Results



Extreme 100-yr RP Conditions:
Max from All Wave Incident Directions: $H_s = 8.2$ ft, $T_p = 7.2$ s

H_s [ft]

2.4 - 2.7	3.1 - 3.2	3.3 - 3.5	3.6 - 3.8
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6. Conclusions

- Marina design protects dock infrastructure from inundation damage during surges
- Pile height accommodates future conditions with SLR
- Modeled with accurate data and state-of-the-art tools



An aerial photograph of a large marina at dusk. Numerous sailboats of various sizes are docked in neat rows along a complex system of wooden piers. The water is calm, reflecting the twilight sky. In the background, a long row of white boat storage sheds with arched openings lines the shore. The overall atmosphere is serene and quiet.

Questions or comments?



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THANK YOU!

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