# PRELIMINARY ENGINEERING REPORT

**MARCH 15, 2023**

## DOWNTOWN WATERFRONT INFRASTRUCTURE PROJECT
## ROCKLAND, MAINE

LANDMARK CORPORATION
SURVEYORS & ENGINEERS

16-012

**CITY OF ROCKLAND, MAINE**

**DOWNTOWN WATERFRONT INFRASTRUCTURE**

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# Preliminary Engineering Report
# Downtown Waterfront Infrastructure

## 1.1 DESCRIPTION OF PROJECT COMPONENTS

The City of Rockland (City) is located on Penobscot Bay in Knox County, Maine.

Rockland's Downtown Waterfront Project involves redevelopment of two multi-use piers, nearly 7 acres, and more than 1,000 feet of shore frontage in the heart of the City. The Project is necessary because of age-related deterioration and safety issues. It also is an opportunity to rebuild with a more resilient design for sea level rise, make more efficient use of space, and incorporate amenities that will enhance commercial, recreational, and transient access to Rockland's waterfront.

This Preliminary Engineering Report addresses the major marine structures that are part of the larger Project. Specifically, redevelopment of the two multi-use piers (the Public Landing and Middle Pier), the Harbor Park Seawall, and the bridge and boardwalk that will connect them. The planned improvements to marine structures will:

- Address age-related deterioration and safety issues,
- Increase elevations of the piers, seawall, and support facilities to ensure resilience at expected sea levels 2.7 feet higher than they are today – which aligns with the State's Climate Action Plan for a 50-year planning horizon,
- Incorporate "flexible resiliency" design features to allow for adaptation over time, if sea levels rise is more than anticipated,
- Fill gaps in ADA accessibility and pedestrian connectivity
- Bring utilities up to code,
- Prepare for marine electrification, and
- Make more efficient use of space to allow for growth in usage over time.

The marine infrastructure components of this Preliminary Engineering Report are described below. Plans are included in Attachment A.

1. **Public Landing** - The Public Landing pier and floats serve recreational and commercial mooring holders, transient vessels, cruise ships, and more. The pier is at the end of its design life and needs to be replaced. This presents an opportunity to rebuild with a modified design that will be more resilient with rising sea levels, make better use of space, create public space on the pier for both boaters and non-boater to enjoy, and prepare for a future with electrification of marine vessels.
    - ***Existing conditions.*** The existing pier is made of steel and cast-in-place concrete that has become corroded and needs replacement. The elevation of the existing pier is 17.2' MLLW (11.5 NAVD 88) and is not currently ADA accessible from land. The floats and some piles need repair and/or replacement. Utilities are not up to code.
    - ***Structural improvements***. This part of the project includes replacing and expanding the pier (3,800 sf), adding an ADA accessible gangway ramp, replacing and reorganizing the floats (12,280 sf for full replacement) and upgrading the utilities (water, sewer, power).
        i. Materials. The pier will be constructed of pressure-treated sustainably sourced southern yellow pine piles, timbers, and decking.
        ii. Elevation and flexible resilience. The elevation of the pier will be raised to elevation 18.4' MLLW (12.7' NAVD88) which will accommodate a 50-year intermediate sea level rise projection. To introduce flexibility into its resiliency, the framing of the pier will be made and fastened in sections. Should the future sea level projection increase, this will allow framing and decking to be removed, pile caps adjusted, and the framing and decking section to be re-set at a higher elevation.
        iii. Floats and Piles. The plans include uniform replacement so that all floats are built with consistent floatation, framing, decking, cleats, fendering, and connection hardware. The inner floats will be oriented to mitigate prevailing summer seas and the outer float will be lengthened along the deeper water of the federal channel. Piles for the floats will be placed to an elevation of 24.0 (MLLW) which will allow for flexible resiliency in the event that current sea level rise projections are low.

iv. Utilities. A sewer pump-out system, seven (7) domestic water and shore power pedestals, and code compliant fire extinguishers will be provided on the floats. Electrical service is intended to be scalable, and eventually support a 200 kW High Power DC Charger with a 600 amp, 3-phase electrical service.

2. **Harbor Park Seawall** – The existing seawall runs in front of the Public Landing, and along the length of Harbor Park's shorefront.
    - ***Existing conditions.*** The seawall is constructed of durable stacked granite blocks. It is stable, true, and has stood the test of time. The elevation of the existing wall ranges from 14.6' to 16.2' MLLW. The Harbor Trail Boardwalk currently crosses neighboring private property and stops short of this property –transitioning to dilapidated sidewalk along the Harbor Park parking area.
    - ***Structural improvements.*** Improvements involve raising 360 linear feet of the seawall to a consistent elevation of 18.4' MLLW (12.7' NAVD88) with a combination of durable granite blocks and concrete. The wall will be back filled in conjunction with upland improvement to raise the elevation of the bottom of Harbor Park (to be addressed in a future Preliminary Engineering Report for upland landside improvements). The Harbor Trail boardwalk will be extended from the property line along the top of the seawall. This will include pedestrian space, seating areas, landscaped areas and a curved, pile-supported concrete pier/overlook. The pedestrian way will be plank-style pavers on a concrete base with dark shy compliant lighting. For resiliency, storm drain outfalls will be raised in conjunction with the previously mentioned upland improvements.
3. **Bridge to Buoy Park**– In cooperation with a private property owner, Joseph Reynolds, who owns a property between the shorefronts of Harbor and Buoy Parks, the Project includes a pedestrian bridge that will connect the Harbor Park Boardwalk to Buoy Park, crossing and connecting Mr. Reynolds' pier in between. This would provide safe and uninterrupted access between the parks. Beyond the bridge is a walkway to Middle Pier along a rip rap slope, the riprap slope presents an opportunity to incorporate living shoreline plantings. The Project will also include pedestrian connection to the beach and 700 sf of floats to accommodate kayak access.

- ***Existing conditions.*** Pedestrian connections exist today. Currently pedestrians must navigate the parking lot and a driveway to reach the park from other areas of the waterfront to continue walking along the shoreline. A license agreement is needed for this pedestrian bridge connection. Mr. Reynolds has been part of project planning and supports this effort.
- ***Structural improvements.*** This work includes constructing new pile supported pier connection (1,920 sf), a concrete abutment, and placing an arched aluminum walkway.
    i. Materials. The pier will be constructed of pressure-treated sustainably sourced southern yellow pine piles, timbers, and decking. An aluminum pedestrian bridge would connect the boardwalk where it crosses Mr. Reynold's Pier to Middle Pier in Buoy Park.
    ii. Elevation and flexible resilience. The pier will be constructed at elevation 18.4' MLLW (12.7' NAVD88) which will accommodate the 50-year intermediate sea level rise projection. To introduce flexibility into its resiliency, the framing of the pier will be made and fastened into sections. Should future sea level projection increase, this will allow framing and decking to be removed, pile caps adjusted, and the framing and decking section to be re-set at a higher elevation. Pending details of an agreement with Mr. Reynolds, the scope of work includes the City's portion of a cohesive structure, and the assumption, based on collaborative planning work to date, that Mr. Reynolds will make corresponding changes on his property when the City improvements are made.

4. **Middle Pier** – Middle Pier provides docking space for commercial vessels, is used for transfer of supplies, and is an important facility for public safety in cases of marine emergency. The pier is in disrepair and replacement presents an opportunity to rebuild to be more resilient from seal level rise, better accommodate public safety needs, create public space, prepare for future electrification of marine vessels, and provide expansion of dingy docks.
    - *Existing conditions.* Due to damage from the late December storm, Middle Pier is currently closed to the public. Deck and joist fasteners have failed due to rot and the structure needs to be replaced. The elevation of the existing pier is 16.4' MLLW. The gangway is not currently ADA accessible. The floats are in poor condition. Utilities are unavailable, non-functioning, or not code compliant. There are no fire extinguishers.

- *Structural improvements.* This part of the project includes replacing and expanding the pier (5,425 sf), increasing commercial floats (3,535 sf for new and replacement), replacing the existing gangway ramp with one that is ADA accessible, adding a second ADA accessible gangway ramp to the expanded float system, and bringing coded compliant utilities to code (water, sewer, power) to both the pier and floats. An alternative dinghy access is proposed with a repurposed ramp and new floats (876 sf). Adding dinghy docks to Middle Pier will provide added capacity for accessing the City's mooring fields, while improving safe access during Harbor Park events.
    i. Materials. The pier will be constructed of pressure-treated sustainably sourced southern yellow pine piles, timbers, and decking.
    ii. Elevation and flexible resilience. The elevation of the pier will be raised to elevation 18.4' MLLW (12.7' NAVD88) which will accommodate a 50-year intermediate sea level rise projection. To introduce flexibility into its resiliency, the framing of the pier will be made and fastened into sections. Should future sea level projection increase, this will allow framing and decking to be removed, pile caps adjusted, and the framing and decking section to be re-set at a higher elevation.
    iii. Floats and pilings. To create uniform maintenance and replacement, all floats will be built with consistent floatation, framing, decking, cleats, fendering, and connection hardware. The new floats and ramp can accommodate additional commercial use and would allow for a secure passenger terminal in compliance with the Coast Guard's Maritime Transportation Security Act. Piles for the floats will be cut to an elevation of 24.0 (MLLW) which will allow for flexible resiliency in the event sea level rise projections are low or storms and waves become more intense.
    iv. Utilities. A sewer pump-out system and five (5) domestic water and shore power pedestals will be provided on the floats. Electrical service is intended to be scalable, and eventually support a 200 kW High Power DC Charger with a 600 amp, 3-phase electrical service.

Each of these components are integral to public access at the City's Downtown Waterfront and important for its overall community and sea level rise resiliency.

## 1.2. CONSISTENCY WITH GRANT REQUIREMENTS

This PER is funded with help from a Community Action Grant from the Governor's Office of Policy Innovation and the Future, Application RFA# 202111178, and is consistent with the scope of work contained therein.

The level of detail included in this PER and related cost estimates is consistent with that required by the Economic Development Administration's (EDA) for grant applications; EDA requirements were used as a proxy for the level of detail needed for successful federal grant applications.

## 1.3. PROJECT DRAWINGS

Refer to Attachment A for drawings showing the general layout of the project, existing site conditions, and the project components.

## 1.4 FEASIBILITY ANALYSIS

Initial discussions with permitting agencies did not raise any serious issues and the project appears to be feasible from a permitting perspective. See section 1.9.

The project as described is in accordance with local practices with use of typical materials. The design was accomplished by competent and experienced consultants and vetted by an Ad Hoc Downtown Waterfront Advisory Committee (appointed by City Council), City Staff, and interested members of the public in a series of publicly advertised meetings. The Preliminary Engineering was based on a Conceptual Design developed this a robust public process and incorporated ideas and recommendations from recent and past planning and assessment efforts by the City, City Committees, and related consultants.

## 1.5 PROPOSED METHOD OF CONSTRUCTION

This project will be a design-competitive bid-build construction project. The waterfront infrastructure, as described herein, is based on the Preliminary Engineering Design. The Preliminary Engineering for the upland portion of the project has also been funded and will be completed this summer. Considering the need to raise the elevation of the waterfront infrastructure, for sea level resiliency purposes, it would be prudent to conduct the final design for the waterfront and upland portions of the project together. Likewise, it would be prudent to bid the waterfront and upland portions of the project together. Depending on funding, however, the project may have to be split into phases.

## 1.6 ANTICIPATED CONSTRUCTION CONTRACTS

As mentioned above, it would be prudent to bid and construct the marine infrastructure components together with the landside/upland portions of the project. If necessary, the marine infrastructure work addressed in this PER could be split as follows (as long as the corresponding upland work were included):

1. Middle Pier
2. Public Landing and Harbor Park Seawall
3. Bridge to Buoy Park and Kayak Floats

## 1.7 CONSTRUCTION COST ESTIMATE

See Attachment B for the Construction Cost breakdown and Section 1.11 for overall budgets.

## 1.8 PROPERTY ACQUISITION

No property acquisition is required for the Downtown Waterfront Infrastructure. However, agreements and/or construction easements will be required:

- **Harbor Trail Boardwalk Connection**. Rockland Harbor Park, LLC owns the property to the South of the project area, and an agreement or construction easement will be needed to connect the Public Landing Pier and the Harbor Trail Boardwalk extension to the existing boardwalk owned by Rockland Harbor Park, LLC. Rockland Harbor Park, LLC currently allows public use of that boardwalk.
- **Pedestrian bridge and related connections.** As described in Bridge to Buoy Park above, an agreement, license, and/or construction easement will be required with Mr. Joseph Reynolds.

The City has been in cooperative communication with both parties.

## 1.9 REQURED PERMITS

Based on review of local ordinances and discussion with State and Federal regulators, the project will be subject to following permits:

a. **City of Rockland:**

Building, Plumbing, and Electrical Permits will be required for the Waterfront Infrastructure Project. A Flood Hazard Development Permit will also be required for work within a VE flood zone.

b. **State of Maine:**

**Department of Environmental Protection (DEP)**

**Natural Resources Protection Act (NRPA)**: Wetland permitting for work impacting and work within 25 feet of the Coastal Wetland will be required for the Waterfront Infrastructure Project. The level of permitting will be Tier 3 (Individual), which may require a Functional Assessment and a Public Informational Meeting.

**Department of Agriculture, Conservation, & Forestry**

**Bureau of Parks and Lands, Submerged Lands**: Application will be required requesting a modification to the City's existing submerged land lease. This will be needed to accommodate expansion of Waterfront Infrastructure below mean

low water (Littoral Zone). Also, since there are multiple converging Littoral zones with abutting properties, Letters of No Objection may be necessary from the following entities:

- Mr. Joseph Reynolds, owner of the Pearl wharf, located in between the Public Landing and Middle Pier
- The Landings Properties, LLC, owner of the Landings Marina to the North of Buoy Park
- Safe Harbor – SHM Rockland, LLC, owner of the intertidal area to the South of Harbor Park

c. **US Army Corps of Engineers**:

A Maine General Permit (Section 404) will be required for the expansion of the Waterfront Infrastructure within the resource. This may also require a Section 408 permit for permission to occupy any existing U.S. Army Corps of Engineers constructed public works project, which in this case is the Federal Navigation Channel and its buffer.

d. **US Coast Guard**:

Per the Rivers and Harbors Act of 1899, a bridge permit will be required for the aluminum arch to Buoy Park for navigation considerations.

## 1.10 PROJECT SCHEDULE

The schedule for this project will be contingent on obtaining the necessary funding. The sources of funding and amounts will dictate how and if the project will be split into phases.

## 1.11 OVERALL PROJECT BUDGET

The project budget for the Waterfront Infrastructure broken down by component is as follows: Also, a more detailed itemized cost estimate is included in Attachment B.

Component 1: Public Landing

| Item | Description | Estimated Cost |
|---|---|---|
| 1 | Construction | $2,274,275.00 |
| 2 | Site Work | $90,000.00 |
| 3 | Equipment | $385,450.00 |
| 4 | Design and Admin (8%) | $241,975.80 |
| 5 | Contingency (10%) | $274,972.50 |
| | Total | $3,266,673.30 |

Component 2: Harbor Park Seawall

| Item | Description | Estimated Cost |
|---|---|---|
| 1 | Construction | $1,272,900.00 |
| 2 | Site Work | $642,468.00 |
| 3 | Equipment | $0.00 |
| 4 | Design and Admin (8%) | $168,552.38 |
| 5 | Contingency (10%) | $191,536.80 |
| | Total | $2,275,457.18 |

Component 3: Bridge to Buoy Park

| Item | Description | Estimated Cost |
|---|---|---|
| 1 | Construction | $550,100.00 |
| 2 | Site Work | $93,000.00 |
| 3 | Equipment | $0.00 |
| 4 | Design and Admin (8%) | $56,592.80 |
| 5 | Contingency (10%) | $64,310.00 |
| | Total | $764,002.80 |

Component 4: Middle Pier

| Item | Description | Estimated Cost |
|---|---|---|
| 1 | Construction | $2,227,900.00 |
| 2 | Site Work | $338,788.89 |
| 3 | Equipment | $328,100.00 |
| 4 | Design and Admin (8%) | $254,741.42 |
| 5 | Contingency (10%) | $289,478.89 |
| | Total | $3,439,009.20 |

Components 1-4: Total

| Item | Description | Estimated Cost |
|---|---|---|
| 1 | Construction | $6,325,175.00 |
| 2 | Site Work | $1,164,256.89 |
| 3 | Equipment | $713,550.00 |
| 4 | Design and Admin (8%) | $721,862.40 |
| 5 | Contingency (10%) | $820,298.19 |
| | Total | $9,745,142.48 |

# ATTACHMENT A
# PLANS

# CITY OF ROCKLAND
# DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE

## AT
## HARBOR AND BUOY PARKS

SITE LOCATION MAP

SCALE: 1" = 200'

## SHEET INDEX


C0 COVER SHEET & LOCATION MAP
C1 EXISTING CONDITIONS & REMOVAL PLAN
C2 EXISTING CONDITIONS & REMOVAL PLAN
C3 MARINE INFRASTRUCTURE SITE PLAN
C4 MARINE INFRASTRUCTURE SITE PLAN

E0.1 ELECTRICAL NOTES AND LEGENDS
E0.2 ELECTRICAL DETAILS
E0.3 ELECTRICAL DETAILS
E1.0 ELECTRICAL SITE PLAN
E1.1 PUBLIC LANDING – ELECTRICAL PLAN
E1.2 MIDDLE PIER – ELECTRICAL PLAN
E2.1 PANEL SCHEDULES
E2.2 PANEL AND EQUIPMENT SCHEDULES

L1 LANDSCAPE & MATERIALS PLAN
L2 PLAN DETAILS
L3 SITE & LANDSCAPE DETAILS

S1 PUBLIC LANDING STRUCTURAL PLAN
S2 PUBLIC LANDING FRAMING PLAN
S3 PUBLIC LANDING STRUCTURAL PILE AND CAP PLAN
S4 PUBLIC LANDING STRUCTURAL SECTIONS
S5 PUBLIC LANDING STRUCTURAL SECTIONS
S1 PUBLIC LANDING PIER DECK PLANS
S2 PUBLIC LANDING PIER PILE AND PILE CAP PLAN
S3 PUBLIC LANDING SEAWALL PLAN
S4 PUBLIC LANDING SEAWALL DETAILS
S5 PEARL PIER AND BRIDGE DECK PLAN
S6 PEARL PIER AND BRIDGE DECK FRAMING PLAN
S7 PEARL PIER AND BRIDGE PILE AND PILE CAP PLAN
S8 PEARL PIER AND BRIDGE – BRIDGE DETAILS
S9 MIDDLE PIER DECK PLAN
S10 MIDDLE PIER DECK FRAMING PLAN
S11 MIDDLE PIER PILE AND PILE CAP PLAN
S12 MIDDLE PIER TRANSVERSE SECTIONS
S13 MIDDLE PIER LONGITUDINAL SECTIONS


## PRELIMINARY ENGINEERING DRAWINGS
## (NOT FOR CONSTRUCTION)

**FEBRUARY 28, 2023**


CIVIL ENGINEER

LANDMARK CORPORATION
SURVEYORS & ENGINEERS
135 ROCKLAND STREET ROCKPORT, MAINE 04856 PHONE: (207) 236-6757 WWW.LANDMARKMAINE.COM

ELECTRICAL ENGINEER

MAFFETT LOFTIS ENGINEERING, LLC

STRUCTURAL ENGINEER

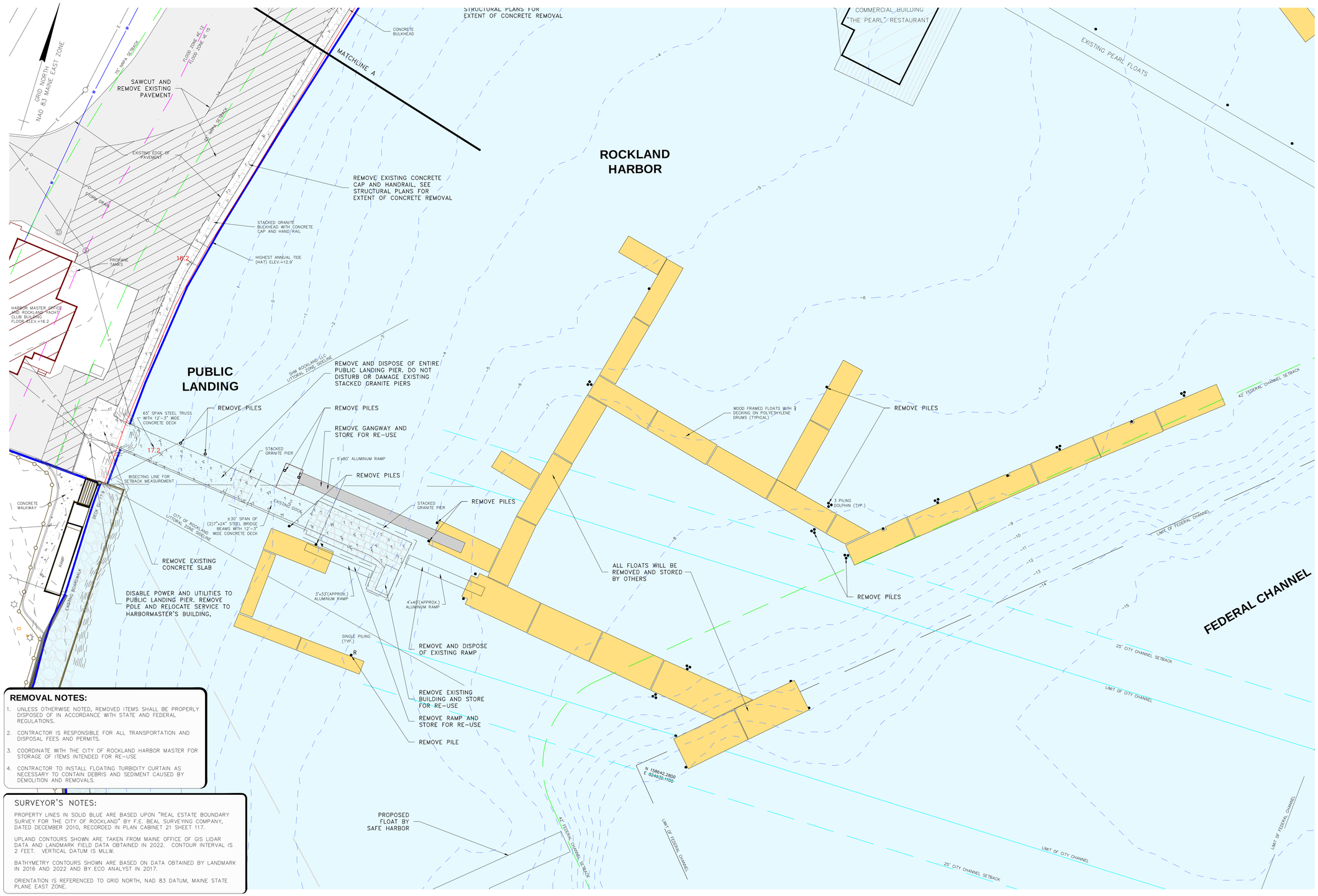
PINNACLE HILL ENGINEERING

LANDSCAPE ARCHITECT

RS LEONARD
Landscape Architecture
29 Bridge Street – Topsham, ME 04086
Tel. 207-450-9700 – www.rslla.com


SHEET DESIGNATION:

**C0**




## REMOVAL NOTES:

1. UNLESS OTHERWISE NOTED, REMOVED ITEMS SHALL BE PROPERLY DISPOSED OF IN ACCORDANCE WITH STATE AND FEDERAL REGULATIONS.
2. CONTRACTOR IS RESPONSIBLE FOR ALL TRANSPORTATION AND DISPOSAL FEES AND PERMITS.
3. COORDINATE WITH THE CITY OF ROCKLAND HARBOR MASTER FOR STORAGE OF ITEMS INTENDED FOR RE-USE
4. CONTRACTOR TO INSTALL FLOATING TURBIDITY CURTAIN AS NECESSARY TO CONTAIN DEBRIS AND SEDIMENT CAUSED BY DEMOLITION AND REMOVALS.

## SURVEYOR'S NOTES:

PROPERTY LINES IN SOLID BLUE ARE BASED UPON "REAL ESTATE BOUNDARY SURVEY FOR THE CITY OF ROCKLAND" BY F.E. BEAL SURVEYING COMPANY, DATED DECEMBER 2010, RECORDED IN PLAN CABINET 21 SHEET 117.

UPLAND CONTOURS SHOWN ARE TAKEN FROM MAINE OFFICE OF GIS LIDAR DATA AND LANDMARK FIELD DATA OBTAINED IN 2022. CONTOUR INTERVAL IS 2 FEET. VERTICAL DATUM IS MLLW.

BATHYMETRY CONTOURS SHOWN ARE BASED ON DATA OBTAINED BY LANDMARK IN 2016 AND 2022 AND BY ECO ANALYST IN 2017.

ORIENTATION IS REFERENCED TO GRID NORTH, NAD 83 DATUM, MAINE STATE PLANE EAST ZONE.

## LEGEND:

- IRON PIN SET OR FOUND BY BEAL
- UTILITY POLE
- WATER VALVE
- HYDRANT
- SEWER MANHOLE
- CATCH BASIN
- DECIDUOUS TREE
- EXISTING FENCE
- EXISTING DRAINAGE
- EXISTING OVERHEAD UTILITY
- EXISTING UNDERGROUND UTILITY
- EXISTING WATER MAIN
- EXISTING SEWER MAIN
- EXISTING SEWER MANHOLE
- EXISTING CATCHBASIN
- 10.5 EXISTING SPOT ELEVATION
- EXISTING CONTOUR (LIDAR)
- BATHYMETRY (2017)
- BOUNDARY LINE (BEAL)
- EXISTING FLOAT PILE
- EXISTING SUPPORT PILE
- EXISTING 3-PILE DOLPHIN
- PAVEMENT REMOVAL

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.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FIELD WORK DATE:
FIELD WORK BY: KMB/EST
DRAFTED BY: KBM/MJS
CHECKED BY: MJS
PLAN DATE: **FEBRUARY 28, 2023**

**EXISTING CONDITIONS AND REMOVAL PLAN**

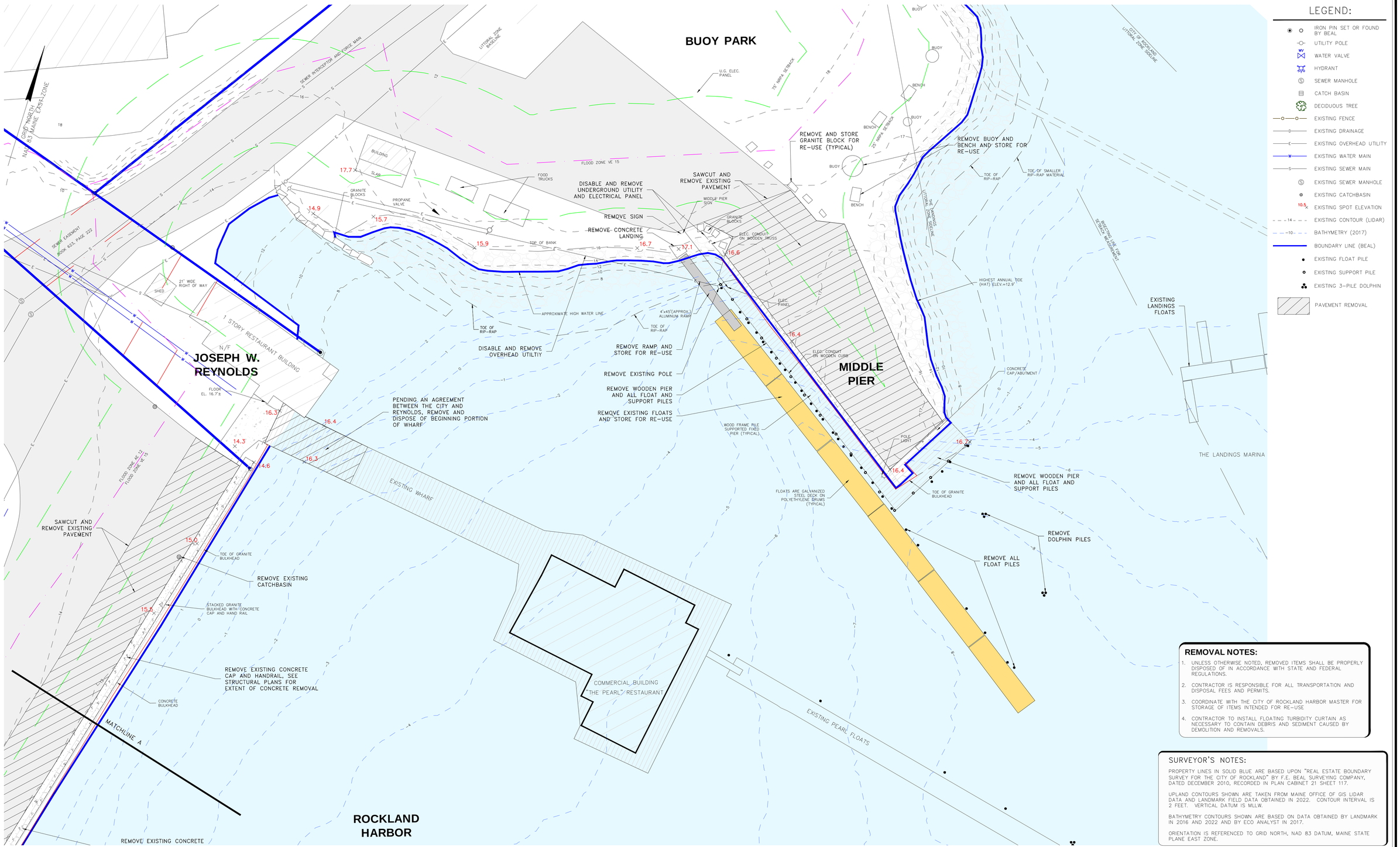
STATE OF MAINE
MICHAEL J. SABATINI 9053
LICENSED PROFESSIONAL ENGINEER
2/28/23

# CITY OF ROCKLAND

DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**
KNOX COUNTY

SCALE: **1" = 20'**
JOB No.: **16 - 012**

SHEET DESIGNATION:
**C1**

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GRAPHIC SCALE
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**EXISTING CONDITIONS AND REMOVAL PLAN**

STATE OF MAINE
MICHAEL J. SABATINI 9053
LICENSED PROFESSIONAL ENGINEER
2/28/23

# CITY OF ROCKLAND

HARBOR AND BUOY PARK MARINE INFRASTRUCTURE

**ROCKLAND, MAINE**

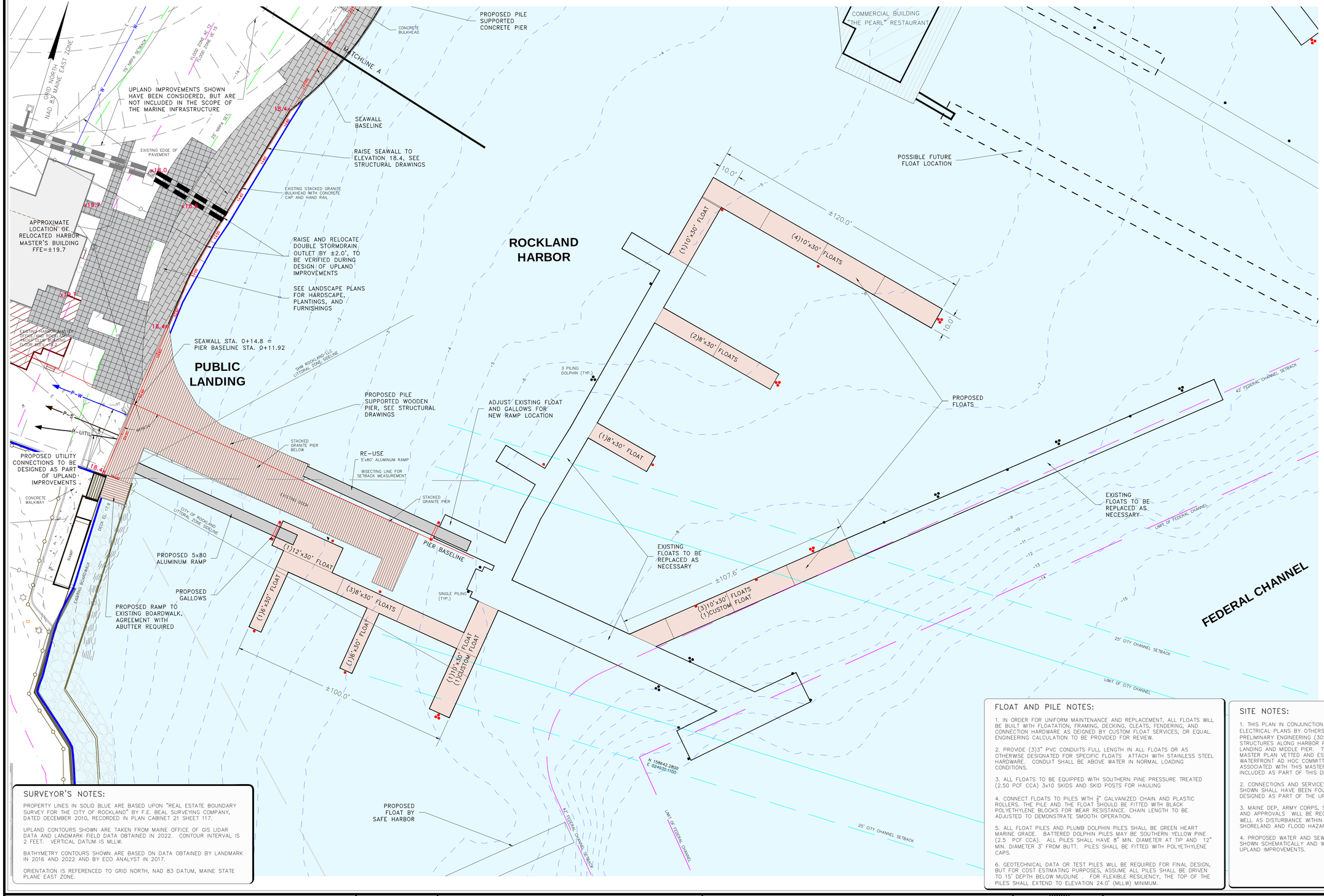
KNOX COUNTY

SCALE: **1" = 20'**

JOB No.: **16 - 012**

SHEET DESIGNATION:

# C2

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- EXISTING 3-PILE DOLPHIN
- PROPOSED FLOAT PILE
- PROPOSED 3-PILE DOLPHIN
- P-S PROPOSED SEWER
- P-W PROPOSED WATER LINE
- P-UTIL PROPOSED UNDERGROUND UTILTIY
- PROPOSED STORMDRAIN
- PROPOSED CATCH BASIN (4' DIA.)
- PROPOSED CATCH BASIN (TYPE F)
- 18.4x PROPOSED SPOT ELEVATION

## SURVEYOR'S NOTES:

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## FLOAT AND PILE NOTES:

1. IN ORDER FOR UNIFORM MAINTENANCE AND REPLACEMENT, ALL FLOATS WILL BE BUILT WITH FLOATATION, FRAMING, DECKING, CLEATS, FENDERING, AND CONNECTION HARDWARE AS DEIGNED BY CUSTOM FLOAT SERVICES, OR EQUAL. ENGINEERING CALCULATION TO BE PROVIDED FOR REVIEW.

2. PROVIDE (3)3" PVC CONDUITS FULL LENGTH IN ALL FLOATS OR AS OTHERWISE DESIGNATED FOR SPECIFIC FLOATS ATTACH WITH STAINLESS STEEL HARDWARE. CONDUIT SHALL BE ABOVE WATER IN NORMAL LOADING CONDITIONS.

3. ALL FLOATS TO BE EQUIPPED WITH SOUTHERN PINE PRESSURE TREATED (2.50 PCF CCA) 3x10 SKIDS AND SKID POSTS FOR HAULING

4. CONNECT FLOATS TO PILES WITH ¾" GALVANIZED CHAIN AND PLASTIC ROLLERS. THE PILE AND THE FLOAT SHOULD BE FITTED WITH BLACK POLYETHYLENE BLOCKS FOR WEAR RESISTANCE. CHAIN LENGTH TO BE ADJUSTED TO DEMONSTRATE SMOOTH OPERATION.

5. ALL FLOAT PILES AND PLUMB DOLPHIN PILES SHALL BE GREEN HEART MARINE GRADE. BATTERED DOLPHIN PILES MAY BE SOUTHERN YELLOW PINE (2.5 PCF CCA). ALL PILES SHALL HAVE 8" MIN. DIAMETER AT TIP AND 12" MIN. DIAMETER 3' FROM BUTT. PILES SHALL BE FITTED WITH POLYETHYLENE CAPS.

6. GEOTECHNICAL DATA OR TEST PILES WILL BE REQUIRED FOR FINAL DESIGN, BUT FOR COST ESTIMATING PURPOSES, ASSUME ALL PILES SHALL BE DRIVEN TO 15' DEPTH BELOW MUDLINE . FOR FLEXIBLE RESILIENCY, THE TOP OF THE PILES SHALL EXTEND TO ELEVATION 24.0' (MLLW) MINIMUM.

## SITE NOTES:

1. THIS PLAN IN CONJUNCTION WITH STRUCTURAL, LANDSCAPE, AND ELECTRICAL PLANS BY OTHERS (SEE COVER SHEET) IS INTENDED TO SHOW PRELIMINARY ENGINEERING (30% DESIGN, NOT FOR CONSTRUCTION) OF MARINE STRUCTURES ALONG HARBOR PARK AND BUOY PARK INCLUDING THE PUBLIC LANDING AND MIDDLE PIER. THE IMPROVEMENTS ARE IN ACCORDANCE WITH A MASTER PLAN VETTED AND ESTABLISHED BY THE ROCKLAND DOWNTOWN WATERFRONT AD HOC COMMITTEE. ALTHOUGH UPLAND IMPROVEMENTS ASSOCIATED WITH THIS MASTER PLAN WERE CONSIDERED, THEY ARE NOT INCLUDED AS PART OF THIS DESIGN EFFORT.

2. CONNECTIONS AND SERVICES ASSOCIATED WITH THE UTILITY IMPROVEMENTS SHOWN SHALL HAVE BEEN FOUND TO BE FEASIBLE AND WILL BE FULLY DESIGNED AS PART OF THE UPLAND IMPROVEMENTS. .

3. MAINE DEP, ARMY CORPS, SUBMERGED LAND, AND COAST GUARD PERMITS AND APPROVALS WILL BE REQUIRED FOR THE WATERFRONT ELEMENTS AS WELL AS DISTURBANCE WITHIN 25' OF THE HARBOR. CITY OF ROCKLAND SHORELAND AND FLOOD HAZARD PERMITS WILL ALSO BE REQUIRED.

4. PROPOSED WATER AND SEWER SERVICE TO THE PUBLIC LANDING ARE SHOWN SCHEMATICALLY AND WILL BE FULLY DESIGNED AS PART OF THE UPLAND IMPROVEMENTS.

LANDMARK CORPORATION
SURVEYORS & ENGINEERS
135 ROCKLAND STREET ROCKPORT, MAINE 04856 PHONE: (207) 236-6757 WWW.LANDMARKMAINE.COM

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|---|---|
| FIELD WORK DATE: | |
| FIELD WORK BY: | KMB/EST |
| DRAFTED BY: | KBM/MJS |
| CHECKED BY: | MJS |
| PLAN DATE: | FEBRUARY 28, 2023 |

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

**MARINE INFRASTRUCTURE SITE PLAN**

STATE OF MAINE
MICHAEL J. SABATINI 9053
LICENSED PROFESSIONAL ENGINEER
2/28/23

# CITY OF ROCKLAND

DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**
KNOX COUNTY

SCALE: 1" = 20'
JOB No.: 16 - 012

SHEET DESIGNATION:
**C3**

## SITE NOTES:

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4. PROPOSED WATER AND SEWER SERVICE TO THE PUBLIC LANDING ARE SHOWN SCHEMATICALLY AND WILL BE FULLY DESIGNED AS PART OF THE UPLAND IMPROVEMENTS.

## SURVEYOR'S NOTES:

PROPERTY LINES IN SOLID BLUE ARE BASED UPON "REAL ESTATE BOUNDARY SURVEY FOR THE CITY OF ROCKLAND" BY F.E. BEAL SURVEYING COMPANY, DATED DECEMBER 2010, RECORDED IN PLAN CABINET 21 SHEET 117.

UPLAND CONTOURS SHOWN ARE TAKEN FROM MAINE OFFICE OF GIS LIDAR DATA AND LANDMARK FIELD DATA OBTAINED IN 2022. CONTOUR INTERVAL IS 2 FEET. VERTICAL DATUM IS MLLW.

BATHYMETRY CONTOURS SHOWN ARE BASED ON DATA OBTAINED BY LANDMARK IN 2016 AND 2022 AND BY ECO ANALYST IN 2017.

ORIENTATION IS REFERENCED TO GRID NORTH, NAD 83 DATUM, MAINE STATE PLANE EAST ZONE.

## FLOAT AND PILE NOTES:

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GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

**MARINE INFRASTRUCTURE SITE PLAN**

STATE OF MAINE
MICHAEL J. SABATINI 9053
LICENSED PROFESSIONAL ENGINEER
2/28/23

# CITY OF ROCKLAND
HARBOR AND BUOY PARK MARINE INFRASTRUCTURE
**ROCKLAND, MAINE**
KNOX COUNTY

SCALE: 1" = 20'    JOB No.: 16 - 012

SHEET DESIGNATION:
# C4

16012\DWG\16012.DWG

## ELECTRICAL LEGEND

**GENERAL**

- PANEL
- HOT LEG
- HOT LEG WITH NEUTRAL
- HOT LEG WITH GROUND
- SWITCH LEG
- THREE-WAY CIRCUIT
- CIRCUIT HOME RUN

**POWER**

- NON-FUSED DISCONNECT
- TRANSFORMER
- 120V DUPLEX RECEPTACLE
- RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER
- RECEPTACLE, IN-FLOOR BOX & COVER

## WIRING COLOR CODE

| CONDUCTOR | COLOR |
|---|---|
| **120/208 (240)** | |
| PHASE A | BLACK |
| PHASE B | RED |
| PHASE C (3Φ ONLY) | BLUE |
| NEUTRAL | WHITE |
| GROUND | GREEN |
| **277/480** | |
| PHASE A | BROWN |
| PHASE B | ORANGE |
| PHASE C (3Φ ONLY) | YELLOW |
| NEUTRAL | GRAY |
| GROUND | GREEN |

## CALL BEFORE YOU DIG

www.call811.com

THE CONTRACTOR SHALL NOTIFY ALL UTILITIES INCLUDING AND NOT LIMITED TO GAS, WATER, ELECTRIC, CABLE, AND TELEPHONE COMPANIES PRIOR TO ANY EXCAVATION. THE CONTRACTOR SHALL NOTIFY ONE-CALL SERVICE (CALL 811) SEVENTY-TWO (72) HOURS AS REQUIRED BY LAW BEFORE ANY EXCAVATION, AT ANY LOCATION.

## ELECTRICAL ABBREVIATIONS

| | |
|---|---|
| A / AB | ABOVE |
| AF | AMPERE FRAME |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AFI | ARC FAULT INTERRUPTER |
| AHJ | AUTHORITY HAVING JURISDICTION |
| AIC | AVAILABLE FAULT CURRENT |
| AMP | AMPERE |
| AT | AMPERE TRIP |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AUTO | AUTOMATIC |
| BFG | BELOW FINISHED GRADE |
| BOD | BASIS OF DESIGN |
| CKT | CIRCUIT |
| CT | CURRENT TRANSFORMER |
| DETD | DUAL ELEMENT TIME DELAY |
| DN | DOWN |
| DWG | DRAWING |
| EC | ELECTRICAL CONTRACTOR |
| ECB | ENCLOSED CIRCUIT BREAKER |
| EDP | ELECTRICAL DATUM PLANE |
| EMG | EMERGENCY |
| EQUIP | EQUIPMENT |
| ETB | ELECTRONIC TRIP BREAKER |
| GFCI | GROUND FAULT CIRCUIT INTERRUPTER |
| GFM | GROUND FAULT MONITOR |
| GFPE | GROUND FAULT PROTECTION OF EQUIPMENT |
| IPC | INTEGRATED POWER CENTER |
| KVA | KILOVOLT-AMPERE |
| KW | KILOWATT |
| LEUD | LOCAL ELECTRICAL AND UTILITY DEPARTMENT |
| MAX | MAXIMUM |
| MCB | MAIN CIRCUIT BREAKER |
| MCS | MOLDED CASE SWITCH |
| MDP | MAIN DISTRIBUTION PANEL |
| MFG | MANUFACTURING |
| MFR | MANUFACTURER |
| MIN | MINIMUM |
| MLO | MAIN LUG ONLY |
| MOCP | MAIN OVERCURRENT PROTECTION |
| N.C. | NORMALLY CLOSED |
| N.O. | NORMALLY OPEN |
| OCP | OVERCURRENT PROTECTION |
| OH | OVERHEAD |
| PH / Φ | PHASE |
| PNL | PANEL |
| PPC | PORTABLE POWER CABLE |
| RECPT | RECEPTACLE |
| SCH | SCHEDULE |
| SER | SERVICE ENTRANCE CONDUCTOR |
| SPD | SURGE PROTECTIVE DEVICE |
| ST | SHUNT TRIP |
| TEL | TELEPHONE |
| TMB | THERMAL MAGNETIC BREAKER |
| TYP | TYPICAL |
| U / UC | UNDER / UNDER CABINET |
| UG | UNDERGROUND |
| UON | UNLESS OTHERWISE NOTED |
| UPS | UNINTERRUPTIBLE POWER SUPPLY |
| US | UNDERSLAB |
| UW | UNDERWATER |
| V | VOLT |
| VA | VOLT-AMPERE |
| W | WATT |
| WR | WEATHER-RESISTANT |
| WRI | WEATHER-RESISTANT, IN-USE |

## ELECTRICAL MATERIALS SCHEDULE - MARINA

• ALL NONMETALLIC MATERIAL SHALL BE UV-RESISTANT

| DESCRIPTION | MATERIAL | STANDARDS | REMARKS |
|---|---|---|---|
| BOXES | | | |
| PULL / JUNCTION / OUTLET BOX | GALVANIZED STEEL | UL 731A | • 1 1/2" MINIMUM DEPTH<br>COORDINATE SIZE WITH NEC<br>COORDINATE COVER MATERIAL & COLOR W/ ARCH/OWNER |
| WIRE / CABLE | | | |
| #10 & SMALLER | 600-VOLT<br>THWN<br>THWN-2 AS NOTED | UL 83 | • SOLID OR STRANDED AS REQUIRED BY EQUIPMENT MANUFACTURER<br>• TINNED SOFT<br>• DRAWN COPPER |
| #8 & LARGER | 600-VOLT<br>THWN<br>THWN-2 AS NOTED | UL 83 | • STRANDED<br>• TINNED SOFT<br>• DRAWN COPPER |
| TYPE "W" / "G" / "G-GC" MARINE CABLE | 105°C<br>2000-VOLT | UL 83 | • USE FOR UNDERWATER FEEDER<br>• STRANDED<br>• TINNED SOFT<br>• DRAWN COPPER<br>• EXTRA HARD USE<br>• SUN LIGHT RESISTANT<br>• OIL, GAS, AND CHEMICAL RESISTANT |
| WET-LISTED MC CABLE | 600-VOLT | | • PVC JACKET |
| CONDUIT | | | |
| RIGID | GALVANIZED STEEL | HH 9359 | • USE ABOVE OR BELOW GROUND |
| PVC | SCHEDULE 40 / 80 PVC | NEMA TC-2 | • USE SCHEDULE 40 IN PROTECTED DOCK STRUCTURE OR UNDERGROUND / UNDERWATER / UNDERDECK<br>• USE SCHEDULE 80 ABOVE THE DECK AND ABOVE GROUND UP TO 6' |
| EMT | GALVANIZED DUCTILE STEEL | HE 8141 | • ELECTRIC METALLIC TUBING - USE IN DRY OF FLOATING BUILDINGS |
| LFNC | LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT | | • LISTED FOR DIRECT BURIAL - INSTALL WHERE NOT SUBJECT TO PHYSICAL DAMAGE AND NOT ABOVE THE DECK |
| HDPE | HIGH-DENSITY POLYETHYLENE | | • INSTALL UNDERGROUND FOR SERVICE AND FEEDER CONDUCTORS WHERE NOT SUBJECT TO PHYSICAL DAMAGE |
| CONDUIT HANGERS / STRAPS | | | |
| UP TO 3/4" | GALVANIZED STEEL | | • 4'-0" O/C MAXIMUM |
| 1" TO 1-1/4" | | | • 6'-0" O/C MAXIMUM |
| 1-1/2" & UP | | | • 8'-0" O/C MAXIMUM |
| CABLE SUPPORT | | | |
| "KELLEMS" CABLE GRIPS | STAINLESS STEEL | | • COORDINATE SIZE AND STYLE FOR PROPER CABLE OR CONDUIT |

## ELECTRICAL NOTES

1. APPLICABLE CODES INCLUDE, BUT ARE NOT RESTRICTED TO, THE LATEST ADOPTED VERSIONS OF THE FOLLOWING CODES AT THE TIME OF THE PLAN DATE:
   - NFPA 70 NATIONAL ELECTRIC CODE
   - INTERNATIONAL BUILDING CODE
   - UL UNDERWRITERS LABORATORY
   - NEMA
2. ELECTRICAL SYSTEM(S) SHALL BE INSTALLED COMPLETE WITH ALL WORK, MATERIALS, AND EQUIPMENT CUSTOMARILY CONSIDERED PART OF SUCH WORK FOR A FULLY OPERATIONAL, COMPLETE, AND CODE COMPLIANT SYSTEM.
3. PLANS ARE DIAGRAMMATIC AND ARE PROVIDED ONLY TO SHOW GENERAL SYSTEM. CONTRACTOR SHALL CONSIDER ACTUAL FIELD CONDITIONS DURING INSTALLATION. ANY GROSS INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE CONTINUING.
4. ALL ELECTRICAL CONNECTIONS SHALL BE MOUNTED ABOVE ELECTRICAL DATUM PLANE.
5. COORDINATE FINAL LOCATIONS OF ALL SWITCHES AND OUTLETS WITH OWNER. OWNER SHALL RETAIN RIGHT TO MAKE MINOR LOCATION ADJUSTMENTS PRIOR TO EQUIPMENT INSTALLATION WITHOUT ADDITIONAL COST.
6. ALL 3Φ CIRCUITS SHALL HAVE A-B-C PHASE ROTATION. ALL 3Φ ELECTRICAL SWITCHGEAR, SWITCHBOARDS, MCC'S, AND SIMILAR EQUIPMENT SHALL HAVE A-B-C PHASE ROTATION FROM LEFT TO RIGHT. REFER TO THE POWER WIRING COLOR CODE ON THIS SHEET.
7. VERIFY AVAILABLE CIRCUIT CURRENT WITH ELECTRICAL POWER SUPPLIER.
8. PROVIDE COMPLETE AND COMPLIANT EQUIPMENT AND SYSTEM GROUNDING THROUGHOUT ELECTRICAL INSTALLATION. INSTALL BONDING JUMPERS TO OUTLET BOXES IN METALLIC CONDUIT SYSTEMS.
9. UNLESS OTHERWISE NOTED, EACH CONDUIT OR RACEWAY SHALL CONTAIN ONLY A SINGLE CIRCUIT.
10. ALL EXTERIOR EQUIPMENT SHALL BE NEMA 3R RAINTIGHT.
11. WITH ALL LIGHTING AND MOTOR LOADS OPERATING, CONTRACTOR SHALL VERIFY THAT THE PHASE BALANCE IN EACH PANEL IS WITHIN 5%.
12. COMPLETE ELECTRICAL SYSTEMS SHALL BE TESTED FOR COMPLIANCE AND FUNCTION IN ACCORDANCE WITH LOCAL INSPECTIONS AND NATIONAL CODES.
13. CONTRACTOR SHALL INSTALL EXPANSION AND DEFLECTION CONDUIT FITTINGS PER NEC 300.7(B), PLANS, AND SPECIFICATIONS.
14. THE AMPACITY, VOLTAGE, AND PHASE OF ALL DISCONNECTS SHALL BE RATED PER THE SPECIFIED CIRCUIT AND UPSTREAM OVERCURRENT PROTECTION UON. THE ENCLOSURE NEMA RATING SHALL BE COORDINATED AS REQUIRED BY THE ENVIRONMENT.
15. IF DISCREPANCIES EXIST WITHIN THE PLANS AND/OR SPECIFICATIONS, THE MOST STRINGENT SHALL APPLY AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BRING IT TO THE ATTENTION OF THE ENGINEER BEFORE WORK IS STARTED OR MATERIAL/EQUIPMENT IS ORDERED.
16. THE PLANS AND SPECIFICATIONS FOR THIS WORK HAVE BEEN PREPARED WITH THE INTENT TO BE AS ACCURATE AND COMPLETE AS PRACTICAL, BUT ERRORS, OMISSIONS, AND CONFLICTS MAY EXIST. PRIOR TO SUBMITTING A BID FOR CONSTRUCTING THE WORK, THE CONTRACTOR SHALL REVIEW THE PLANS AND SPECIFICATIONS IN DETAIL. ANY QUESTIONS OR COMMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO SUBMITTING A BID. BY SUBMITTING A BID FOR THE WORK, THE CONTRACTOR ACKNOWLEDGES THAT HE HAS REVIEWED THE PLANS AND SPECIFICATIONS, UNDERSTANDS THE DESIGN INTENT, AND DOES NOT HAVE ANY FURTHER QUESTIONS OR COMMENTS.
17. CONTRACTOR SHALL FIELD VERIFY THAT ALL PARALLEL CONDUCTOR RUNS OF SERVICE ENTRANCE OR FEEDER CONDUCTORS FOR EACH CIRCUIT FOLLOW THE SAME PATH AND ARE OF EQUAL LENGTH.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITY FEES AND CHARGES FOR INSTALLATION AND UTILITY UPGRADES FOR PROJECT.
19. CONTRACTOR SHALL COORDINATE AND PAY FOR ALL PERMITS, INSPECTION FEES, UTILITY FEES, AND UTILITY CHARGES FOR THIS PROJECT.
20. CONTRACTOR SHALL WARRANTY ALL SYSTEMS FOR PARTS, EQUIPMENT, MATERIAL, AND LABOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.
21. THE OWNER AND/OR OWNER'S REPRESENTATIVE SHALL INSPECT THE INSTALLATION AT SUBSTANTIAL COMPLETION AND AT ONE YEAR FROM SUBSTANTIAL COMPLETION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CORRECTIONS THAT DO NOT CONFORM TO THE CODE AND/OR THE CONTRACT DOCUMENTS.
22. KELLEMS GRIPS SHALL BE INSTALLED SO THE GRIP IS ALIGNED WITH THE CABLE TO AVOID ANY PRESSURE POINTS ANYWHERE ALONG THE LENGTH OF THE GRIP. THIS INCLUDES INSTALLATION PROJECTS WHERE TIDAL ACTION MAY CHANGE THE ANGLE OF THE CABLE IN REFERENCE TO THE GRIP POSITION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBSERVING AND MAKING ANY ADJUSTMENTS TO THE GRIP MOUNTING POSITION AND CABLE LENGTHS AS REQUIRED TO MITIGATE PRESSURE POINTS AT LOW AND HIGH TIDES. REFER TO PLANS AND DETAILS WHERE THE GRIPS ARE INDENDED TO BE INSTALLED. ALL KELLEMS GRIPS, SUPPORT CABLE, AND MOUNTING HARDWARE SHALL BE STAINLESS STEEL.
23. LABEL REQUIREMENTS:
   A. ALL ELECTRICAL EQUIPMENT SHALL BE AFFIXED WITH A PERMANENT LABEL STATING THE EQUIPMENT NAME, VOLTAGE AND PHASE CLASS, AMPACITY, AND WHERE THE EQUIPMENT IS FED FROM.
   B. PANEL DIRECTORIES SHALL BE TYPED SHOWING EACH BRANCH BREAKER LOAD AS SHOWN IN THE PANEL SCHEDULES.
   C. EACH SHORE POWER PEDESTAL SHALL BE LABELED WITH THE UPSTREAM CIRCUIT AND PANEL.
24. CONTRACTOR SHALL CARRY CONTINGENCY IN THE AMOUNT OF 10% OF BID.
25. SUBMITTAL REQUIREMENTS: CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL DETAILED PRODUCT INFORMATION ON ALL EQUIPMENT INCORPORATED IN THE PROJECT RELATED TO THE SPECIFIC CONTRACTOR TRADE. SUBMITTAL SHALL BE PROVIDED, AND ENGINEER SHALL REVIEW AND APPROVE, PRIOR TO EQUIPMENT PURCHASE. FOUR COPIES OF SUBMITTALS SHALL BE PROVIDED TO THE ENGINEER. TWO COPIES SHALL BE RETURNED TO THE CONTRACTOR. PRIOR TO SUBMITTAL, CONTRACTOR SHALL REVIEW AND CERTIFY BY SIGNATURE THE SUBMITTED EQUIPMENT MEETS SPECIFICATION. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DIMENSIONS, FITTINGS, AND CONSTRUCTION FEATURES RELATIVE TO EQUIPMENT. APPROVAL OF SUBMITTAL INFORMATION BY THE ENGINEER ONLY REFERS TO MATERIALS, DESIGN, AND ADHERENCE TO SPECIFICATIONS.

## MARINA GROUND FAULT COMMISSIONING NOTES

PER THE CONTRACT WITH THE CLIENT, THE ENGINEER'S SCOPE FOR THIS PROJECT INCLUDES THE ENGINEER AND/OR ENGINEER'S TEAM PERFORMING GROUND FAULT DEVICE COMMISSIONING. THE COMMISSIONING EFFORTS INCLUDE ONE SITE VISIT AT THE END OF THE CONSTRUCTION ADMINISTRATION PHASE TO TEST THE PROPER FUNCTION OF ALL FEEDER, BRANCH CIRCUIT, AND SHORE POWER RECEPTACLE GROUND FAULT DEVICES. THIS VISIT IS REQUIRED AND SHALL OCCUR AFTER SUBSTANTIAL COMPLETION OF THE CONSTRUCTION. THE SCHEDULE OF THIS VISIT SHALL BE COORDINATED WITH THE ENGINEER, THE CLIENT, AND THE CONTRACTOR.

THE COMMISSIONING PROCESS SHALL CONSIST OF THE FOLLOWING:

- VERIFY PARAMETERS OF ALL GROUND FAULT MONITORING DEVICES ARE SET TO THE SPECIFIED VALUES PROVIDED IN THE DESIGN PLANS AND SCHEDULES.
- TEST ALL GFCI-PROTECTED RECEPTACLES.
- TEST TRIP TIMES OF ALL GFCI DEVICES.
- TEST THE TRIP LEVEL OF ALL GFPE DEVICES PROTECTING SHORE POWER RECEPTACLES BY SAFELY INDUCING LEAKAGE CURRENT AT EACH SHORE POWER RECEPTACLE. VERIFY THE GFPE DEVICE TRIPS POWER TO THE RECEPTACLE WHEN LEAKAGE CURRENT IS GREATER THAN 25MA AND LESS THAN OR EQUAL TO 30MA.
- TEST THE TRIP TIMES OF ALL GFPE DEVICES PROTECTING THE SHORE POWER RECEPTACLE TO VERIFY THEY TRIP SLOWER THAN 100MS AND FASTER THAN 250MS.
- INDUCE LEAKAGE CURRENT ON ALL BRANCH CIRCUITS AND FEEDER CIRCUITS REQUIRING GFPE PROTECTION TO TEST AND VERIFY THE GFPE DEVICE TRIPS POWER WHEN LEAKAGE CURRENT ON THE CIRCUIT IS GREATER THAN 90MA AND LESS THAN OR EQUAL TO 100MA.
- TEST THE TRIP TIMES OF ALL GFPE DEVICES PROTECTING BRANCH CIRCUITS AND FEEDER CIRCUITS TO VERIFY THEY COORDINATE WITH THE DOWNSTREAM DEVICES.

IT IS RECOMMENDED FOR THE ELECTRICAL CONTRACTOR TO CHECK ALL WIRING METHODS AND THE INSTALLATION OF THE GFPE SYSTEM'S CT'S AND SHUNT-TRIP BREAKERS AND TO PRE-TEST ALL GFPE DEVICES BEFORE THE ENGINEER TRAVELS TO THE SITE TO PERFORM THE COMMISSIONING EFFORTS. IF DEFICIENCIES ARE FOUND IN THE ELECTRICAL AND/OR GFPE SYSTEMS THAT CANNOT BE REMEDIED WITHIN A REASONABLE TIME OF THE SAME-DAY VISIT, ADDITIONAL SITE VISITS SHALL BE REQUIRED AT THE EXPENSE OF THE CONTRACTOR. THE ADDITIONAL SITE VISIT SHALL BE QUOTED TO THE CONTRACTOR BASED ON THE EXPECTED EFFORTS TO RETEST THE DEFICIENCIES AND TRAVEL COST.

THE CONTRACTOR SHALL PROVIDE ASSISTANCE TO THE ENGINEER FOR THE ENTIRE DURATION OF THE TESTING AND COMMISSIONING BY PROVIDING EXPERIENCED STAFF THAT INSTALLED AND HAS KNOWLEDGE OF THE ELECTRICAL SYSTEMS OF THE PROJECT. THIS ASSISTANCE SHALL INCLUDE, BUT NOT BE LIMITED TO, OPENING AND CLOSING OF ELECTRICAL EQUIPMENT AND SHORE POWER PEDESTALS. TROUBLESHOOTING AND REPAIRING OF DEFICIENCIES SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR.

A DETAILED COMMISSIONING REPORT BY THE ENGINEER SHALL BE GENERATED DESCRIBING THE FINDINGS OF THE COMMISSIONING. THE COMMISSIONING SHALL NOT GUARANTEE THE SAFETY OR CODE COMPLIANCE OF THE SYSTEM, BUT WILL HELP MITIGATE OPERATIONAL AND SAFETY ISSUES.

## SERVICE ENTRANCE CONDUCTOR & CONDUIT LEGEND

ALL WIRE SIZED FOR THWN COPPER
ALL CONDUIT SIZED FOR RIGID PVC, SCHEDULE 40; RESIZE FOR DIFFERENT CONDUIT AS REQUIRED

| LABEL | GROUNDING ELECTRODE CONDUCTOR | CONDUCTORS PER CONDUIT | NUMBER OF RUNS | MINIMUM CONDUIT | CONDUCTOR AMPACITY 75 °C | Φ | VOLTAGE RANGE |
|---|---|---|---|---|---|---|---|
| 1S60 | #8 | (3) #6 | 1 | 2" | 65 | 1 | 208 - 480 |
| 1S100 | #8 | (3) #3 | 1 | 3" | 100 | 1 | 208 - 480 |
| 1S150 | #6 | (3) #1/0 | 1 | 3" | 150 | 1 | 208 - 480 |
| 1S200 | #4 | (3) #3/0 | 1 | 3" | 200 | 1 | 208 - 480 |
| 1S225 | #2 | (3) #4/0 | 1 | 3" | 230 | 1 | 208 - 480 |
| 1S400 | #1/0 | (3) #3/0 | 2 | 3" | 400 | 1 | 208 - 480 |
| 1S400 | #1/0 | (3) #600 KCM | 1 | 4" | 420 | 1 | 208 - 480 |
| 1S600 | #3/0 | (3) #3/0 | 3 | 3" | 600 | 1 | 208 - 480 |
| 1S600 | #3/0 | (3) #350 KCM | 2 | 3" | 620 | 1 | 208 - 480 |
| 1S800 | #3/0 | (3) #3/0 | 4 | 3" | 800 | 1 | 208 - 480 |
| 1S800 | #3/0 | (3) #300 KCM | 3 | 3" | 855 | 1 | 208 - 480 |
| 1S1000 | #3/0 | (3) #250 KCM | 4 | 3" | 1020 | 1 | 208 - 480 |
| 1S1200 | #3/0 | (3) #350 KCM | 4 | 3" | 1240 | 1 | 208 - 480 |
| 3S200 | #4 | (4) #3/0 | 1 | 3" | 200 | 3 | 208 - 480 |
| 3S225 | #2 | (4) #4/0 | 1 | 3" | 230 | 3 | 208 - 480 |
| 3S400 | #1/0 | (4) #3/0 | 2 | 3" | 400 | 3 | 208 - 480 |
| 3S600 | #3/0 | (4) #350 KCM | 2 | 3" | 620 | 3 | 208 - 480 |
| 3S800 | #3/0 | (4) #300 KCM | 3 | 3" | 855 | 3 | 208 - 480 |
| 3S1000 | #3/0 | (4) #400 KCM | 3 | 3" | 1005 | 3 | 208 - 480 |

## BRANCH CIRCUIT AND FEEDER LEGEND W/ EQUIP. GND.

ALL WIRE SIZED FOR THWN COPPER
ALL CONDUIT SIZED FOR RIGID PVC, SCHEDULE 40; RESIZE FOR DIFFERENT CONDUIT AS REQUIRED
FEEDER LABEL WITH * IN THE PLANS INDICATES NEUTRAL IS NOT REQUIRED

| LABEL | CONDUCTORS PER CONDUIT | NUMBER OF RUNS | MINIMUM CONDUIT | CONDUCTOR AMPACITY 75 °C | Φ | VOLTAGE RANGE |
|---|---|---|---|---|---|---|
| A20 | (2) #12 & (1) #12 GND. | 1 | 1/2" | 20 | 1 | 120 OR 277 |
| A30 | (2) #10 & (1) #10 GND. | 1 | 3/4" | 30 | 1 | 120 OR 277 |
| A50 | (2) #8 & (1) #10 GND. | 1 | 3/4" | 50 | 1 | 120 OR 277 |
| B20 | (3) #12 & (1) #12 GND. | 1 | 1/2" | 20 | 1 | 208 - 480 |
| B30 | (3) #10 & (1) #10 GND. | 1 | 3/4" | 30 | 1 | 208 - 480 |
| B50 | (3) #8 & (1) #10 GND. | 1 | 3/4" | 50 | 1 | 208 - 480 |
| B60 | (3) #6 & (1) #10 GND. | 1 | 3/4" | 65 | 1 | 208 - 480 |
| B80 | (3) #4 & (1) #8 GND. | 1 | 1" | 85 | 1 | 208 - 480 |
| B100 | (3) #3 & (1) #8 GND. | 1 | 1-1/2" | 100 | 1 | 208 - 480 |
| B110 | (3) #2 & (1) #6 GND. | 1 | 1-1/2" | 115 | 1 | 208 - 480 |
| B125 | (3) #1 & (1) #6 GND. | 1 | 1-1/2" | 130 | 1 | 208 - 480 |
| B150 | (3) #1/0 & (1) #6 GND. | 1 | 2" | 150 | 1 | 208 - 480 |
| B175 | (3) #2/0 & (1) #6 GND. | 1 | 2" | 175 | 1 | 208 - 480 |
| B200 | (3) #3/0 & (1) #6 GND. | 1 | 2" | 200 | 1 | 208 - 480 |
| B225 | (3) #4/0 & (1) #4 GND. | 1 | 2-1/2" | 230 | 1 | 208 - 480 |
| B250 | (3) #250 KCM & (1) #4 GND. | 1 | 2-1/2" | 255 | 1 | 208 - 480 |
| B275 | (3) #300 KCM & (1) #4 GND. | 1 | 2-1/2" | 285 | 1 | 208 - 480 |
| B300 | (3) #350 KCM & (1) #4 GND. | 1 | 3" | 310 | 1 | 208 - 480 |
| B350 | (3) #500 KCM & (1) #3 GND. | 1 | 3" | 380 | 1 | 208 - 480 |
| B400 | (3) #3/0 & (1) #3 GND. | 2 | 2" | 400 | 1 | 208 - 480 |
| B450 | (3) #4/0 & (1) #2 GND. | 2 | 2-1/2" | 460 | 1 | 208 - 480 |
| B500 | (3) #250 KCM & (1) #2 GND. | 2 | 2-1/2" | 510 | 1 | 208 - 480 |
| B600 | (3) #350 KCM & (1) #1 GND. | 2 | 3" | 620 | 1 | 208 - 480 |
| B800 | (3) #300 KCM & (1) #1/0 GND. | 3 | 2-1/2" | 855 | 1 | 208 - 480 |
| B1000 | (3) #250 KCM & (1) #2/0 GND. | 4 | 2-1/2" | 1020 | 1 | 208 - 480 |
| B1200 | (3) #350 KCM & (1) #3/0 GND. | 4 | 3" | 1240 | 1 | 208 - 480 |
| C20 | (4) #12 & (1) #12 GND. | 1 | 1/2" | 20 | 3 | 208 - 480 |
| C30 | (4) #10 & (1) #10 GND. | 1 | 3/4" | 30 | 3 | 208 - 480 |
| C50 | (4) #8 & (1) #10 GND. | 1 | 3/4" | 50 | 3 | 208 - 480 |
| C60 | (4) #6 & (1) #10 GND. | 1 | 1" | 65 | 3 | 208 - 480 |
| C80 | (4) #4 & (1) #8 GND. | 1 | 1-1/2" | 85 | 3 | 208 - 480 |
| C100 | (4) #3 & (1) #8 GND. | 1 | 1-1/2" | 100 | 3 | 208 - 480 |
| C110 | (4) #2 & (1) #6 GND. | 1 | 1-1/2" | 115 | 3 | 208 - 480 |
| C125 | (4) #1 & (1) #6 GND. | 1 | 1-1/2" | 130 | 3 | 208 - 480 |
| C150 | (4) #1/0 & (1) #6 GND. | 1 | 2" | 150 | 3 | 208 - 480 |
| C175 | (4) #2/0 & (1) #6 GND. | 1 | 2" | 175 | 3 | 208 - 480 |
| C200 | (4) #3/0 & (1) #6 GND. | 1 | 2" | 200 | 3 | 208 - 480 |
| C225 | (4) #4/0 & (1) #4 GND. | 1 | 3" | 230 | 3 | 208 - 480 |
| C250 | (4) #250 KCM & (1) #4 GND. | 1 | 3" | 255 | 3 | 208 - 480 |
| C300 | (4) #350 KCM & (1) #4 GND. | 1 | 3" | 310 | 3 | 208 - 480 |
| C350 | (4) #500 KCM & (1) #3 GND. | 1 | 3-1/2" | 380 | 3 | 208 - 480 |
| C400 | (4) #3/0 & (1) #3 GND. | 2 | 2" | 400 | 3 | 208 - 480 |
| C450 | (4) #4/0 & (1) #2 GND. | 2 | 3" | 460 | 3 | 208 - 480 |
| C500 | (4) #250 KCM & (1) #2 GND. | 2 | 3" | 510 | 3 | 208 - 480 |
| C600 | (4) #350 KCM & (1) #1 GND. | 2 | 3" | 620 | 3 | 208 - 480 |
| C800 | (4) #300 KCM & (1) #1/0 GND. | 3 | 3" | 855 | 3 | 208 - 480 |
| C1000 | (4) #250 KCM & (1) #2/0 GND. | 4 | 3" | 1020 | 3 | 208 - 480 |
| C1200 | (4) #350 KCM & (1) #3/0 GND. | 4 | 3" | 1240 | 3 | 208 - 480 |
| C1400 | (4) #500 KCM & (1) #4/0 GND. | 4 | 3-1/2" | 1520 | 3 | 208 - 480 |
| C1600 | (4) #400 KCM & (1) #4/0 GND. | 5 | 3" | 1675 | 3 | 208 - 480 |
| C2000 | (4) #600 KCM & (1) #250 KCM GND. | 5 | 4" | 2100 | 3 | 208 - 480 |

## PORTABLE POWER CABLE & CORD BRANCH CIRCUIT AND FEEDER LEGEND

ALL WIRE SIZED USING NEC 400.5(A)(2), WITH GREEN INSULATED GROUND
ALL CONDUCTORS SHALL BE COPPER

- WET LISTED
- APPROVED FOR MARINA USE
- SUITABLE FOR CONTINUOUS SUBMERSION IN WATER

ALL CONDUIT SIZED FOR RIGID PVC, SCHEDULE 40; RESIZE FOR DIFFERENT CONDUIT AS REQUIRED
FEEDER LABEL WITH * IN THE PLANS INDICATES NEUTRAL IS NOT REQUIRED

| LABEL | CABLE FOR MARINA / BOATYARD APPLICATION | NUMBER OF RUNS | MINIMUM CONDUIT | CONDUCTOR AMPACITY 75 °C | Φ | VOLTAGE RANGE |
|---|---|---|---|---|---|---|
| 1G35 | #12 AWG TYPE SEOOW | 1 | 1-1/2" | 37 | 1 | 240 - 480 |
| 1G50 | #10 AWG TYPE SEOOW | 1 | 1-1/2" | 52 | 1 | 240 - 480 |
| 1G60 | #8 AWG TYPE G OR W CABLE | 1 | 2" | 65 | 1 | 240 - 480 |
| 1G80 | #6 AWG TYPE G OR W CABLE | 1 | 2" | 88 | 1 | 240 - 480 |
| 1G100 | #4 AWG TYPE G OR W CABLE | 1 | 2" | 115 | 1 | 240 - 480 |
| 1G125 | #3 AWG TYPE G OR W CABLE | 1 | 2" | 135 | 1 | 240 - 480 |
| 1G150 | #2 AWG TYPE G OR W CABLE | 1 | 2-1/2" | 152 | 1 | 240 - 480 |
| 1G175 | #1 AWG TYPE G OR W CABLE | 1 | 2-1/2" | 178 | 1 | 240 - 480 |
| 1G200 | #1/0 AWG TYPE G OR W CABLE | 1 | 3" | 207 | 1 | 240 - 480 |
| 1G225 | #2/0 AWG TYPE G OR W CABLE | 1 | 3" | 238 | 1 | 240 - 480 |
| 1G250 | #3/0 AWG TYPE G OR W CABLE | 1 | 3" | 275 | 1 | 240 - 480 |
| 1G300 | #4/0 AWG TYPE G OR W CABLE | 1 | 3-1/2" | 317 | 1 | 240 - 480 |
| 1G350 | 250 KcMIL TYPE G OR W CABLE | 1 | 4" | 354 | 1 | 240 - 480 |
| 1G400 | #1/0 AWG TYPE G OR W CABLE | 2 | 3" | 414 | 1 | 240 - 480 |
| 1G450 | #2/0 AWG TYPE G OR W CABLE | 2 | 3" | 476 | 1 | 240 - 480 |
| 1G500 | #3/0 AWG TYPE G OR W CABLE | 2 | 3" | 550 | 1 | 240 - 480 |
| 1G600 | #4/0 AWG TYPE G OR W CABLE | 2 | 3-1/2" | 634 | 1 | 240 - 480 |
| 1G600 | #1/0 AWG TYPE G OR W CABLE | 3 | 3" | 621 | 1 | 240 - 480 |
| 1G800 | #3/0 AWG TYPE G OR W CABLE | 3 | 3" | 825 | 1 | 240 - 480 |
| 1G800 | #1/0 AWG TYPE G OR W CABLE | 4 | 3" | 828 | 1 | 240 - 480 |
| 1G1000 | 250 KcMIL TYPE G OR W CABLE | 3 | 4" | 1062 | 1 | 240 - 480 |
| 1G1000 | #3/0 AWG TYPE G OR W CABLE | 4 | 3" | 1100 | 1 | 240 - 480 |
| 1G1200 | #4/0 AWG TYPE G OR W CABLE | 4 | 3-1/2" | 1268 | 1 | 240 - 480 |
| 3G50 | #8 AWG TYPE G OR W CABLE | 1 | 2" | 57 | 3 | 208 - 480 |
| 3G70 | #6 AWG TYPE G OR W CABLE | 1 | 2" | 77 | 3 | 208 - 480 |
| 3G100 | #4 AWG TYPE G OR W CABLE | 1 | 2" | 101 | 3 | 208 - 480 |
| 3G110 | #3 AWG TYPE G OR W CABLE | 1 | 3" | 118 | 3 | 208 - 480 |
| 3G125 | #2 AWG TYPE G OR W CABLE | 1 | 3" | 133 | 3 | 208 - 480 |
| 3G150 | #1 AWG TYPE G OR W CABLE | 1 | 3" | 156 | 3 | 208 - 480 |
| 3G175 | #1/0 AWG TYPE G OR W CABLE | 1 | 3" | 181 | 3 | 208 - 480 |
| 3G200 | #2/0 AWG TYPE G OR W CABLE | 1 | 3" | 208 | 3 | 208 - 480 |
| 3G225 | #3/0 AWG TYPE G OR W CABLE | 1 | 3" | 241 | 3 | 208 - 480 |
| 3G250 | #4/0 AWG TYPE G OR W CABLE | 1 | 4" | 277 | 3 | 208 - 480 |
| 3G300 | 250 KcMIL TYPE G OR W CABLE | 1 | 4" | 310 | 3 | 208 - 480 |
| 3G400 | #2/0 AWG TYPE G OR W CABLE | 2 | 3" | 416 | 3 | 208 - 480 |
| 3G450 | #3/0 AWG TYPE G OR W CABLE | 2 | 3" | 482 | 3 | 208 - 480 |
| 3G500 | #1/0 AWG TYPE G OR W CABLE | 3 | 3" | 543 | 3 | 208 - 480 |
| 3G500 | #4/0 AWG TYPE G OR W CABLE | 2 | 4" | 554 | 3 | 208 - 480 |
| 3G600 | 250 KcMILTYPE G OR W CABLE | 2 | 4" | 620 | 3 | 208 - 480 |
| 3G600 | #2/0 AWG TYPE G OR W CABLE | 3 | 3" | 624 | 3 | 208 - 480 |
| 3G800 | #4/0 AWG TYPE G OR W CABLE | 3 | 4" | 831 | 3 | 208 - 480 |
| 3G800 | #2/0 AWG TYPE G OR W CABLE | 4 | 3" | 832 | 3 | 208 - 480 |
| 3G1000 | #4/0 AWG TYPE G OR W CABLE | 4 | 4" | 1108 | 3 | 208 - 480 |
| 3G1200 | 250 KcMIL TYPE G OR W CABLE | 4 | 4" | 1240 | 3 | 208 - 480 |

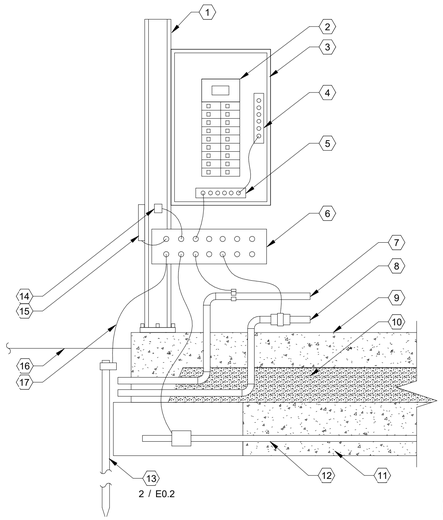
ELECTRICAL UPGRADES FOR
CITY OF ROCKLAND
DOWNTOWN WATERFRONT MARINA
INFRASTRUCTURE
ROCKLAND, MAINE

MAFFETT LOFTIS ENGINEERING, LLC
1 S JEFFERSON AVE, STE 101
COOKEVILLE, TN 38501
TEL: (931) 526-5143
www.maffett-loftis.com

Revisions indicated w/ △
Revisions:
No. Date Description

SHEET: E0.1
TITLE: ELECTRICAL NOTES AND LEGENDS
JOB NO: 23008
DATE: 2-28-23
DWN BY: JLC

PRELIMINARY SET NOT FOR CONSTRUCTION

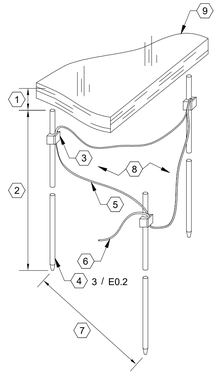



## ELECTRICAL NOTES

NUMBERED NOTES
1 METAL FRAME OF BUILDING OR MOUNTING STRUCTURE.
2 MAIN DISCONNECT.
3 SERVICE EQUIPMENT.
4 NEUTRAL BAR.
5 GROUNDING BAR.
6 GROUNDING PLATE OR BONDING POINT AS REQUIRED.
7 WATER PIPING ON LOAD SIDE OF METER.
8 GAS PIPING ON LOAD SIDE OF METER.
9 FINISHED FLOOR.
10 FILL GRAVEL.
11 CONCRETE FOOTER.
12 CONCRETE-ENCASED ELECTRODE, 1/2" x 20' FOR NEW CONSTRUCTION.
13 GROUND ROD, SEE REFERENCED DETAIL.
14 BONDING POINT.
15 GROUND BAR FOR LOW VOLTAGE UTILITIES.
16 FINISHED GRADE.
17 GROUNDING ELECTRODE CONDUCTOR.

GENERAL NOTES
A SHALL BE PER NEC ARTICLE 250.
B ALL PROJECTS MAY NOT INCLUDE METAL WATER PIPE, GAS LINE, OR METAL CONSTRUCTION.
C CONFIGURATION OF SERVICE MAY DIFFER, COORDINATE INSTALLATION.

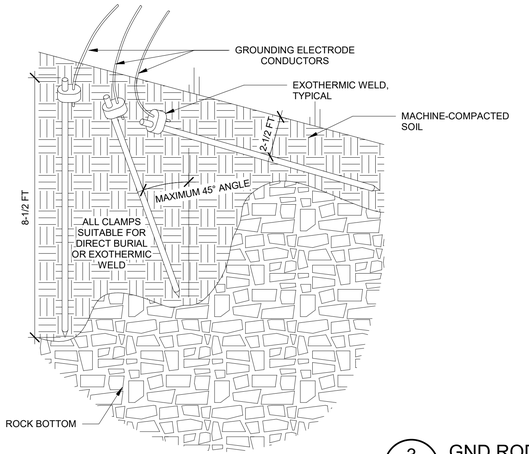
## 1 GROUNDING DTL
E0.2 NOT TO SCALE



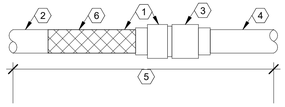

## ELECTRICAL NOTES

NUMBERED NOTES
1 INSTALL GROUND ROD BELOW GROUND FREEZING DEPTH. COORDINATE DEPTH WITH AREA OF INSTALLATION.
2 GROUND ROD TO HAVE A MINIMUM OF 8' IN CONTACT WITH UNDISTURBED EARTH.
3 UL LISTED UNDERGROUND EXOTHERMIC WELD OR APPROVED CLAMP, TYP.
4 UL LISTED 5/8" Ø x 10' DRIVEN GROUND ROD, TYP. COORDINATE LOCATION WITH SITE. SEE REFERENCED DETAIL.
5 GROUNDING CONDUCTOR, TYP. SAME SIZE AS GROUNDING ELECTRODE CONDUCTOR.
6 GROUNDING ELECTRODE CONDUCTOR.
7 GROUND RODS TO BE INSTALLED IN A TRIANGULAR PATTERN WITH MIN. 6' APART, TYP.
8 VIRGIN EARTH.
9 FINISHED GRADE.

## 2 GROUND ROD DTL
E0.2 NOT TO SCALE



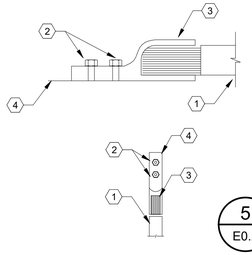

## 3 GND ROD INSTALL. DTL
E0.2 NOT TO SCALE




## PVC TO LFNC CONNECTION DTL
4 / E0.2 NOT TO SCALE

## ELECTRICAL NOTES

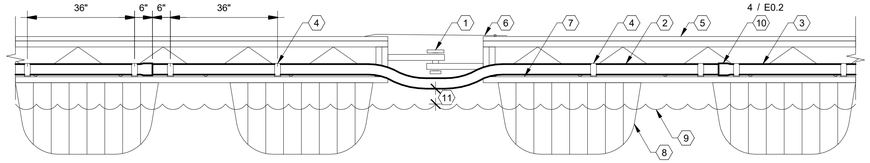
NUMBERED NOTES
1 PVC FITTING WITH STAINLESS STEEL WIRE MESH STRAIN RELIEF. WET-LISTED. SHALL BE USED AT ALL CONNECTION POINTS.
2 LFNC CONDUIT WITH STRAIN RELIEF.
3 PVC FITTING AS REQUIRED.
4 PVC CONDUIT.
5 FINAL INSTALLATION OF CONDUITS ACROSS FITTINGS SHALL BE STRAIGHT SO THERE IS NO BEND AT CONNECTION POINT.
6 STAINLESS STEEL KELLEMS CABLE GRIP - SIZE FOR WIRE DIAMETER.




## 5 BONDING DTL
E0.2 NOT TO SCALE

## ELECTRICAL NOTES

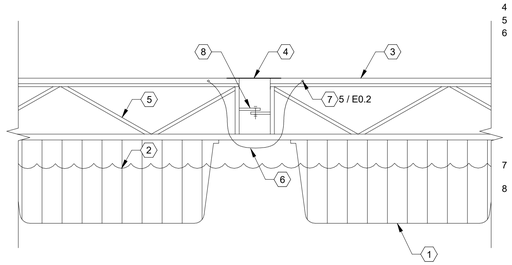
NUMBERED NOTES
1 BONDING CONDUCTOR #3/0 GREEN INSULATION COPPER CABLE, MSHA ACCEPTED, WET LOCATIONS, RESISTANT TO OILS, ACIDS, ALKALINES, AND ABRASION-RESISTANT, OR 12" OF GREEN TAPE AT EACH END. CONDUCTOR STRAND SHALL BE MINIMUM OF 448/24 STRANDS. ALLOW ENOUGH SLACK IN WIRE FOR STRUCTURE MOVEMENT AS PRACTICAL. INSTALLATION LOCATION SHALL BE SUCH THAT NO DAMAGE WILL OCCUR TO CONDUCTOR DURING STRUCTURE MOVEMENT.
2 (2) STAINLESS STEEL HEX BOLTS 5/16 - 18 MIN.
3 HEX STYLE CRIMP OR EQUAL, USING A MINIMUM OF 14 TON CRIMP TOOL.
4 CLEAN STRUCTURE METAL BEHIND CLAMP.




## ELECTRICAL NOTES

NUMBERED NOTES
1 HINGE POINT/FIFTH-WHEEL/OTHER DOCK TRANSITION.
2 LFNC CONDUIT.
3 PVC CONDUIT.
4 GALVANIZED TWO-HOLE STRAPS BOLTED TO DOCK STRUCTURE, TYPICAL.
5 DECK.
6 COVER PLATE.
7 DOCK STRUCTURE.
8 FLOTATION.
9 WATER LINE.
10 PVC TO LFNC CONNECTION, SEE REFERENCED DETAIL.
11 CONDUIT SHALL MAINTAIN SEPARATION FROM WATER LINE. COORDINATE SLACK TO SATISFY REQUIREMENTS FOR FIFTH-WHEEL.

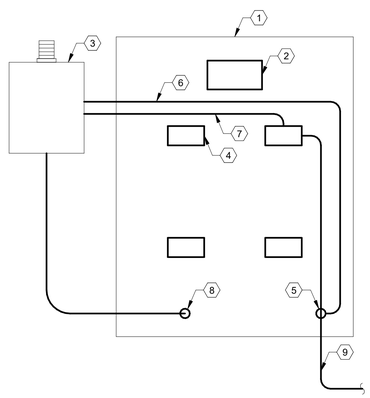
## 6 DRY TRANSITION PVC TO LFNC DTL
E0.2 NOT TO SCALE




## ELECTRICAL NOTES

NUMBERED NOTES
1 FLOTATION.
2 WATER LEVEL.
3 DECK.
4 TRANSITION COVER PLATE.
5 DOCK STRUCTURE.
6 BONDING CONDUCTOR #3/0 GREEN INSULATION COPPER CABLE, MSHA ACCEPTED, WET LOCATIONS, RESISTANT TO OILS, ACIDS, ALKALINES, AND ABRASION-RESISTANT, OR 12" OF GREEN TAPE AT EACH END. CONDUCTOR STRAND SHALL BE MINIMUM OF 448/24 STRANDS. ALLOW ENOUGH SLACK IN WIRE FOR FULL DOCK MOVEMENT. INSTALLATION LOCATION SHALL BE SUCH THAT NO DAMAGE WILL OCCUR TO CONDUCTOR DURING DOCK MOVEMENT.
7 BOND TO DOCK STRUCTURE, SEE REFERENCED DETAIL.
8 HINGE OR FIFTH WHEEL.

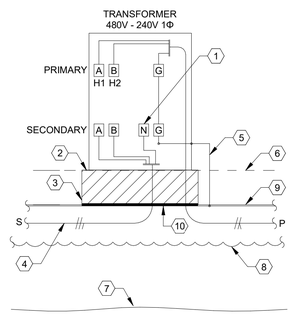
## 7 TRANSITION BONDING DTL
E0.2 NOT TO SCALE




## ELECTRICAL NOTES

NUMBERED NOTES
1 ELECTRICAL PANEL.
2 MAIN CIRCUIT BREAKER.
3 GROUND FAULT MONITOR (GFM). COORDINATE WITH MANUFACTURER FOR WIRING AND INSTALLATION REQUIREMENTS. RED BEACON SHALL FLASH UPON ALL CIRCUIT TRIPS DUE TO GROUND FAULT ALARMS.
4 SHUNT TRIP BRANCH BREAKER, TYPICAL. SEE PANEL SCHEDULE FOR SIZE.
5 GFM CURRENT SENSOR, TYPICAL. SIZE PER WIRE AS SHOWN IN PANEL SCHEDULE. HOT AND NEUTRAL CONDUCTORS ROUTED THROUGH CT.
6 CURRENT SENSOR CONTROL WIRE, TYIPCAL.
7 SHUNT TRIP CONTROL WIRE, TYPICAL.
8 TAP BUS ON LOAD SIDE OF THE MAIN BREAKER AND RUN TO GFM. UTILIZE A SUB-FEED LUG BLOCK OR SIMILAR MEANS TO MAKE TAP. TERMINATE CIRCUIT ON MANUFACTURER'S SUPPLIED OVERCURRENT DEVICE. CIRCUIT CONDUCTORS SHALL NOT EXTEND LONGER THAN 10 FEET.
9 BRANCH CIRCUIT TO MARINA PEDESTAL, TYPICAL.

## 8 GFM WIRING DTL
E0.2 NOT TO SCALE




## 9 MARINA TRANSFORMER DTL
E0.2 NOT TO SCALE

# ELECTRICAL UPGRADES FOR CITY OF ROCKLAND DOWNTOWN WATERFRONT MARINA INFRASTRUCTURE ROCKLAND, MAINE

MAFFETT LOFTIS ENGINEERING, LLC
15 JEFFERSON AVE, STE 101
COOKEVILLE, TN 38501
TEL: (931) 526-5143
www.maffett-loftis.com

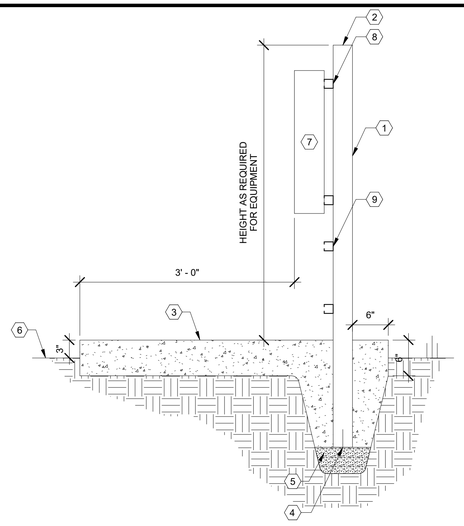
Revisions indicated w/ △

| Revisions: No. | Date | Description |
|---|---|---|

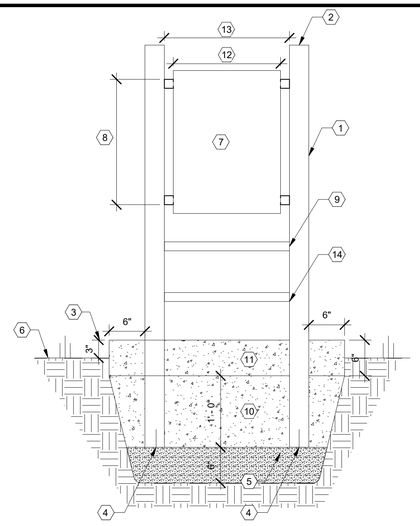
| SHEET: | TITLE: | JOB NO: | DATE: |
|---|---|---|---|
| E0.2 | ELECTRICAL DETAILS | 23008 | 2-28-23 |

DWN BY: JLC

PRELIMINARY SET NOT FOR CONSTRUCTION




SIDE VIEW




ELEVATION VIEW

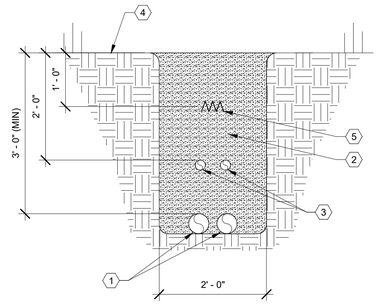
## # ELECTRICAL NOTES

NUMBERED NOTES

1. 3-1/4" GALVANIZED SQUARE POST.
2. PLASTIC CAP.
3. EQUIPMENT PAD.
4. OPEN BOTTOM.
5. 6" OF GRADE #57 GRAVEL.
6. FINISHED GRADE.
7. ELECTRICAL EQUIPMENT PER PLANS.
8. UNISTRUT FOR EQUIPMENT MOUNTING AS REQUIRED. COORDINATE UNISTRUT SPACING WITH EQUIPMENT MOUNTING HOLES.
9. UNISTRUT FOR CONDUIT SUPPORT INSTALLED WITHIN 12" OF EQUIPMENT.
10. POLE BASE SUPPORT.
11. SLAB.
12. EQUIPMENT WIDTH VARIES.
13. STRUCTURE WIDTH SHALL BE 4" WIDER THAN WIDTH OF EQUIPMENT.
14. IF SPACE BETWEEN FIRST UNISTRUT AND SLAB IS GREATER THAN 36", INSTALL SECOND UNISTRUT EQUIDISTANT.

1 / E0.3 — POST MOUNT DTL

NOT TO SCALE




## # ELECTRICAL NOTES

NUMBERED NOTES

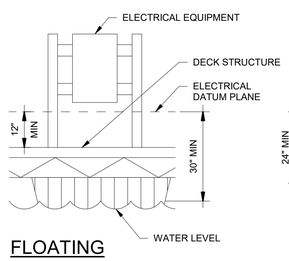
1. SCHD 40 PVC SERVICE CONDUITS AS REQUIRED.
2. MACHINE COMPACTED GRAVEL FILL FOR AREAS WHEN CROSSING DRIVEWAYS, ROADS, AND PARKING LOTS. DIRT FILL AND COMPACT ALL OTHER AREAS.
3. COMMUNICATION CONDUITS AS REQUIRED.
4. FINISH GRADE.
5. WARNING TAPE.

2 / E0.3 — 36" DITCH DTL

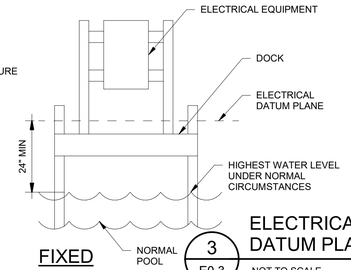
NOT TO SCALE




LAND NOT SUBJECT TO TIDES




FLOATING




FIXED

## # ELECTRICAL NOTES

GENERAL NOTES

A. ALL ELECTRICAL CONNECTIONS (WITH EXCEPTION TO GROUND BONDING TO DOCK STRUCTURE), ON FLOATING OR FIXED PIERS, SHALL BE ABOVE THE ELECTRICAL DATUM PLANE. BOTTOMS OF TRANSFORMERS SHALL NOT BE BELOW THE ELECTRICAL DATUM PLANE.

3 / E0.3 — ELECTRICAL DATUM PLANE DTL

NOT TO SCALE




## # ELECTRICAL NOTES

NUMBERED NOTES

1. BOND METAL DOCK STRUCTURE TO GROUND BUS OF EQUIPMENT INCLUDING SHORE POWER PEDESTALS.
2. ELECTRICAL EQUIPMENT.
3. SUPPORT STRUCTURE.
4. DECK.
5. DOCK STRUCTURE.
6. WATER LEVEL.
7. ELECTRICAL DATUM PLANE, SEE REFERENCED DETAIL.

4 / E0.3 — EQUIPMENT BONDING DTL

NOT TO SCALE

# ELECTRICAL UPGRADES FOR CITY OF ROCKLAND DOWNTOWN WATERFRONT MARINA INFRASTRUCTURE ROCKLAND, MAINE


MAFFETT LOFTIS ENGINEERING, LLC
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www.maffett-loftis.com


Revisions:

| No. | Date | Description |
|---|---|---|
| | | Revisions indicated w/ △ |

SHEET: E0.3

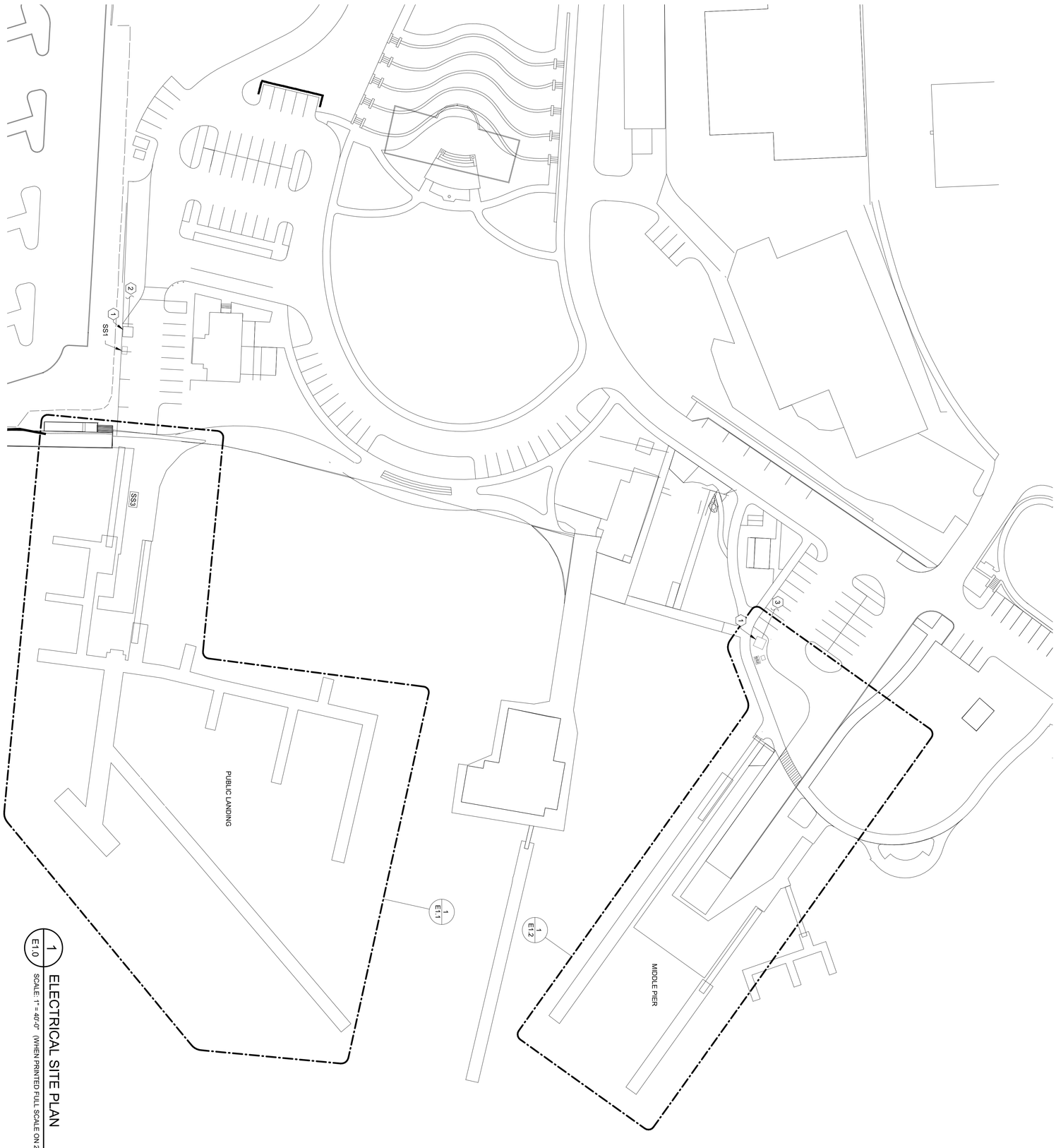
TITLE: ELECTRICAL DETAILS

JOB NO: 23008

DATE: 2-28-23

DWN BY: JLC

PRELIMINARY
SET NOT FOR
CONSTRUCTION




1 E1.0 ELECTRICAL SITE PLAN

SCALE: 1" = 40'-0" (WHEN PRINTED FULL SCALE ON 24"X36")

## ELECTRICAL NOTES

NUMBERED NOTES

1 PROPOSED UTILITY TRANSFORMER LOCATION.

2 TO 3Φ PRIMARY ON MAIN STREET.

3 TO 3Φ PRIMARY IN HARBOR PARK.

PRELIMINARY
SET NOT FOR
CONSTRUCTION

SHEET: E1.0

ELECTRICAL SITE PLAN

TITLE:

JOB NO: 23008 DATE: 2-28-23

DWN BY: JLC

Revisions: Revisions indicated w/ △

| No. | Date | Description |
|---|---|---|

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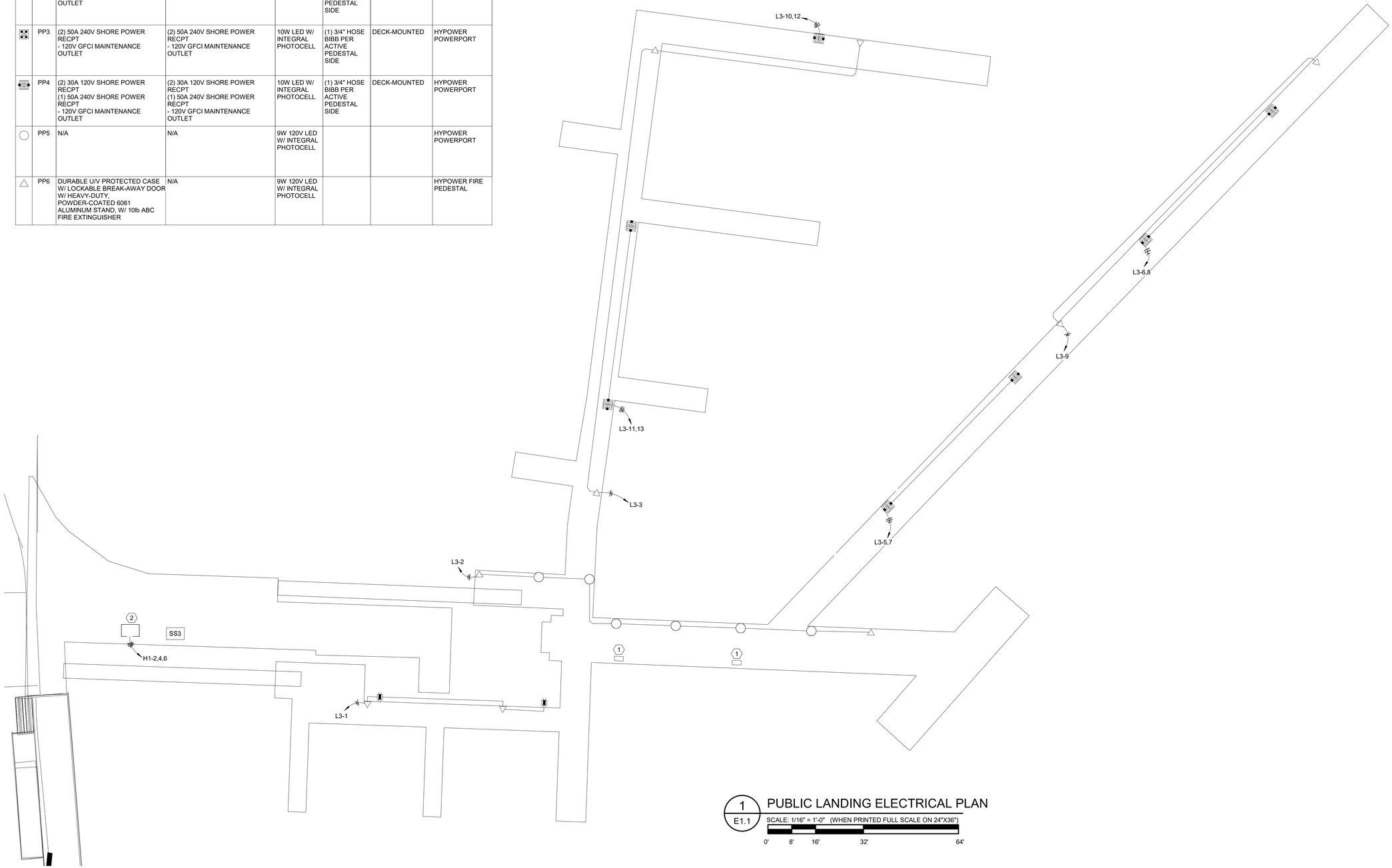
# ELECTRICAL UPGRADES FOR CITY OF ROCKLAND DOWNTOWN WATERFRONT MARINA INFRASTRUCTURE ROCKLAND, MAINE

## MARINA POWER PEDESTAL LEGEND

OTHER NOTES:
- (1) kWH METER INCLUDED PER ACTIVE PEDESTAL SIDE UNLESS OTHERWISE NOTED
- ALL SHORE POWER BREAKERS SHALL BE PROTECTED BY A LISTED INDIVIDUAL GFPE DEVICE SET TO TRIP BETWEEN 25mA - 30mA AND 250ms OR FASTER LOCATED IN THE SHORE POWER PEDESTAL
- COORDINATE LIGHT COLOR AND/OR LENS COLOR WITH OWNER AND LOCAL REQUIREMENTS

| | LABEL | SIDE 1 | SIDE 2 | LIGHTING | OTHER UTILITIES | MOUNTING | MODEL # |
|---|---|---|---|---|---|---|---|
| | PP1 | (1) 50A 240V SHORE POWER RECPT<br>(1) 30A 120V SHORE POWER RECPT<br>- 120V GFCI MAINTENANCE OUTLET | (1) 50A 240V SHORE POWER RECPT<br>(1) 30A 120V SHORE POWER RECPT<br>- 120V GFCI MAINTENANCE OUTLET | 10W LED W/ INTEGRAL PHOTOCELL | (1) 3/4" HOSE BIBB PER ACTIVE PEDESTAL SIDE | DECK-MOUNTED | HYPOWER POWERPORT |
| | PP2 | (1) 50A 240V RV RECPT<br>(1) 30A 120V RV RECPT<br>- 120V GFCI MAINTENANCE OUTLET | N/A | 10W LED W/ INTEGRAL PHOTOCELL | (1) 3/4" HOSE BIBB PER ACTIVE PEDESTAL SIDE | PAD-MOUNTED | HYPOWER POWERPORT |
| | PP3 | (2) 50A 240V SHORE POWER RECPT<br>- 120V GFCI MAINTENANCE OUTLET | (2) 50A 240V SHORE POWER RECPT<br>- 120V GFCI MAINTENANCE OUTLET | 10W LED W/ INTEGRAL PHOTOCELL | (1) 3/4" HOSE BIBB PER ACTIVE PEDESTAL SIDE | DECK-MOUNTED | HYPOWER POWERPORT |
| | PP4 | (2) 30A 120V SHORE POWER RECPT<br>(1) 50A 240V SHORE POWER RECPT<br>- 120V GFCI MAINTENANCE OUTLET | (2) 30A 120V SHORE POWER RECPT<br>(1) 50A 240V SHORE POWER RECPT<br>- 120V GFCI MAINTENANCE OUTLET | 10W LED W/ INTEGRAL PHOTOCELL | (1) 3/4" HOSE BIBB PER ACTIVE PEDESTAL SIDE | DECK-MOUNTED | HYPOWER POWERPORT |
| ○ | PP5 | N/A | N/A | 9W 120V LED W/ INTEGRAL PHOTOCELL | | | HYPOWER POWERPORT |
| △ | PP6 | DURABLE U/V PROTECTED CASE W/ LOCKABLE BREAK-AWAY DOOR W/ HEAVY-DUTY, POWDER-COATED 6061 ALUMINUM STAND, W/ 10lb ABC FIRE EXTINGUISHER | N/A | 9W 120V LED W/ INTEGRAL PHOTOCELL | | | HYPOWER FIRE PEDESTAL |




1 / E1.1 PUBLIC LANDING ELECTRICAL PLAN

SCALE: 1/16" = 1'-0" (WHEN PRINTED FULL SCALE ON 24"X36")

0' 8' 16' 32' 64'

## ELECTRICAL NOTES

NUMBERED NOTES
1. 100kW DC FAST CHARGING DISPENSER. ROUTE 2000V RATED DC CIRCUIT TO POWER BOX.
2. 200kW POWER BOX FOR DUAL DC CHARGING DISPENSERS.

# ELECTRICAL UPGRADES FOR CITY OF ROCKLAND DOWNTOWN WATERFRONT MARINA INFRASTRUCTURE ROCKLAND, MAINE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Revisions:
| No. | Date | Description |
|---|---|---|
| | | Revisions indicated w/ △ |

SHEET: E1.1

TITLE: PUBLIC LANDING - ELECTRICAL PLAN

DATE: 2-28-23

JOB NO: 23008

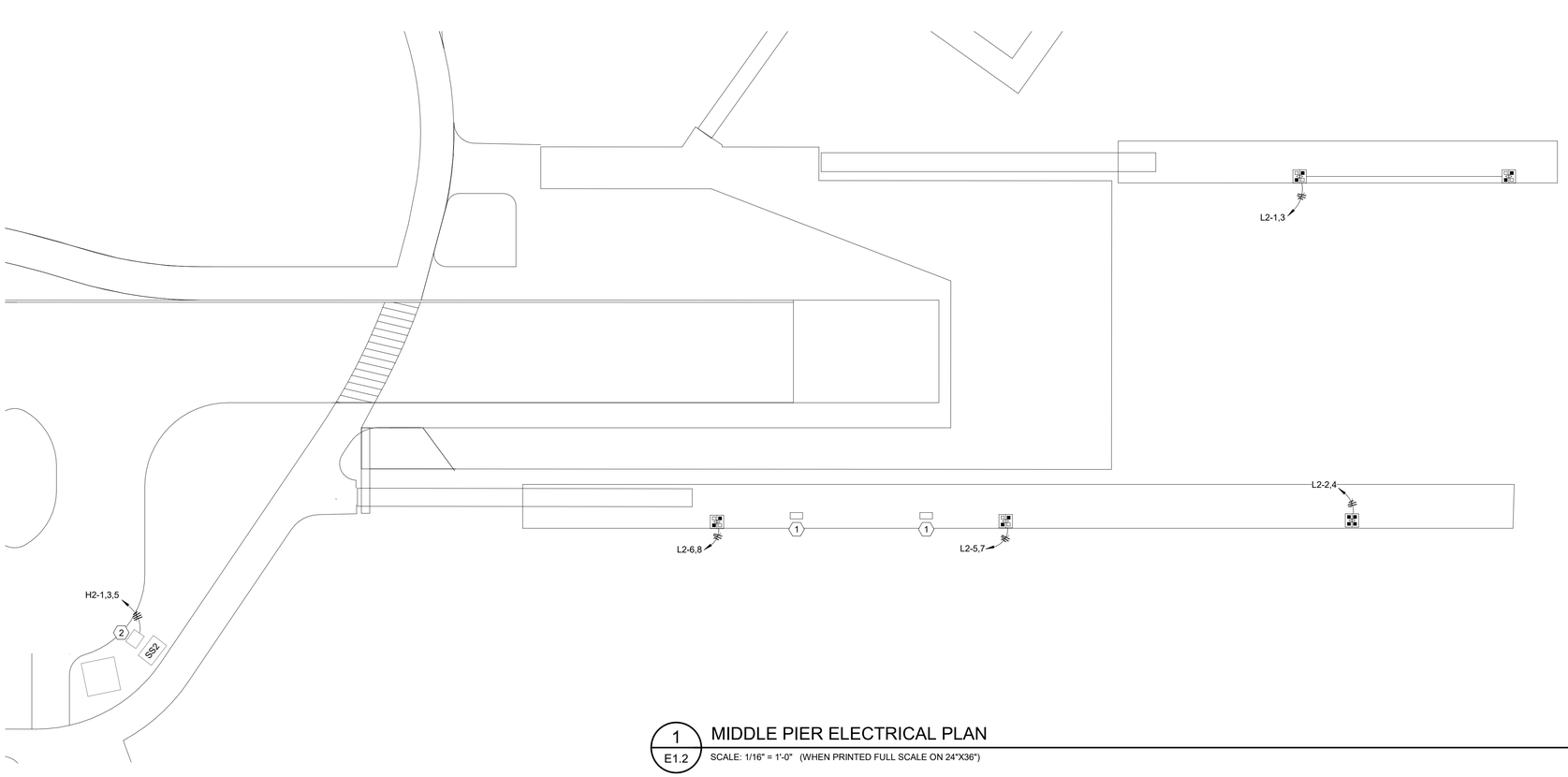
DWN BY: JLC

PRELIMINARY SET NOT FOR CONSTRUCTION

## ELECTRICAL NOTES

NUMBERED NOTES

1. 100kW DC FAST CHARGING DISPENSER. ROUTE 2000V RATED DC CIRCUIT TO POWER BOX.
2. 200kW POWER BOX FOR DUAL DC CHARGING DISPENSERS.




1 / E1.2 MIDDLE PIER ELECTRICAL PLAN

SCALE: 1/16" = 1'-0" (WHEN PRINTED FULL SCALE ON 24"X36")

# ELECTRICAL UPGRADES FOR CITY OF ROCKLAND DOWNTOWN WATERFRONT MARINA INFRASTRUCTURE ROCKLAND, MAINE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www.maffett-loftis.com


Revisions: Revisions indicated w/ △

| No. | Date | Description |
|---|---|---|

SHEET: E1.2

TITLE: MIDDLE PIER - ELECTRICAL PLAN

JOB NO: 23008 DATE: 2-28-23

DWN BY: JLC

PRELIMINARY SET NOT FOR CONSTRUCTION

## BRANCH PANEL: H1

**LOCATION:**
**SUPPLY FROM:**
**MOUNTING:** SURFACE
**ENCLOSURE:** SS1

**TYPE:** SQUARE - D I-LINE SER
**VOLTS:** 277/480 Wye
**PHASES:** 3
**WIRES:** 4

**A.I.C. RATING:** COORDINATE
**MAINS TYPE:** MCB
**MAINS RATING:** 600 A
**MCB RATING:** 600 A

| TRIP AMPS | POLES | FEED | NOTES | CIRCUIT DESCRIPTION | CKT | A | | B | | C | | CKT | CIRCUIT DESCRIPTION | NOTES | FEED | POLES | TRIP AMPS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 300 A | 2 | B300 | | T1 | 1 | 48.8 | 66.7 | | | | | 2 | | | | | |
| | | | | | 3 | | | 48.7 | 66.7 | | | 4 | DC FAST CHARGER | | C300 | 3 | 300 A |
| 300 A | 2 | 1G300 | 3 | M3 | 5 | | | | | 85.8 | 66.7 | 6 | | | | | |
| | | | | | 7 | 85.4 | | | | | | 8 | | | | | |
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| | | | | | 39 | | | | | | | 40 | | | | | |
| | | | | | 41 | | | | | | | 42 | | | | | |
| | | | | **TOTAL LOAD:** | | 200.9 kVA | | 115.4 kVA | | 152.4 kVA | | | | | | | |

| LOAD CLASSIFICATION | CONNECTED (kVA) | DEMAND FACTOR | EST. DEMAND (kVA) | PANEL TOTALS | |
|---|---|---|---|---|---|
| Receptacle | 0.4 kVA | 100.00% | 0.4 kVA | | |
| Continuous | 200.3 kVA | 125.00% | 250.3 kVA | **TOTAL CONN. LOAD (kVA):** | 468.6 kVA |
| Non-Continuous | 96.0 kVA | 100.00% | 96.0 kVA | **TOTAL EST. DEMAND (kVA):** | 471.6 kVA |
| Metered Shore Power | 168.0 kVA | 72.00% | 121.0 kVA | **TOTAL CONN.:** | 564 A |
| Maint. Recpt. | 4.0 kVA | 100.00% | 4.0 kVA | **TOTAL EST. DEMAND:** | 567 A |

**BREAKER NOTES (REFERENCED IN NOTES COLUMN):**
1. GFCI
2. COMBINATION AFCI
3. SHUNT TRIP - REFER TO GFM WIRING DETAIL
4. 30mA GFPE
5. TAP BLOCK

**CIRCUIT NOTES (REFERENCED IN NOTES COLUMN):**
A. CONTINUOUS METAL RACEWAY

### CIRCUIT SCHEDULE

| CKT # | DESCRIPTION | VD % | GFPE TRIP (mA) | GFPE TIME (ms) |
|---|---|---|---|---|
| 1,3 | T1 | 0.05% | N/A | N/A |
| 2,4,6 | DC FAST CHARGER | 0.43% | 90-100 | 400 |
| 5,7 | M3 | 0.90% | 90-100 | 400 |

## BRANCH PANEL: L1

**LOCATION:**
**SUPPLY FROM:** T1
**MOUNTING:** SURFACE
**ENCLOSURE:** SS1

**TYPE:** SQUARE - D I-LINE
**VOLTS:** 120/240 Single
**PHASES:** 1
**WIRES:** 3

**A.I.C. RATING:** COORDINATE
**MAINS TYPE:** MCB
**MAINS RATING:** 600 A
**MCB RATING:** 600 A

| TRIP AMPS | POLES | FEED | NOTES | CIRCUIT DESCRIPTION | CKT | A | | B | | CKT | CIRCUIT DESCRIPTION | NOTES | FEED | POLES | TRIP AMPS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 A | 1 | A20 | | G1 | 1 | 0.1 | 12.2 | | | 2 | | | | | |
| 100 A | 2 | B100 | | RV PEDESTAL | 3 | | | 12.2 | 12.2 | 4 | RV PEDESTAL | | B100 | 2 | 100 A |
| | | | | | 5 | 12.2 | 12.2 | | | 6 | | | | | |
| 100 A | 2 | B175 | | RV PEDESTAL | 7 | | | 12.2 | 12.2 | 8 | RV PEDESTAL | | B150 | 2 | 100 A |
| | | | | | 9 | 12.2 | | | | 10 | | | | | |
| | | | | | 11 | | | | | 12 | | | | | |
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| | | | | | 39 | | | | | 40 | | | | | |
| | | | | | 41 | | | | | 42 | | | | | |
| | | | | **TOTAL LOAD:** | | 48.8 kVA | | 48.7 kVA | | | | | | | |

| LOAD CLASSIFICATION | CONNECTED (kVA) | DEMAND FACTOR | EST. DEMAND (kVA) | PANEL TOTALS | |
|---|---|---|---|---|---|
| Continuous | 0.1 kVA | 125.00% | 0.1 kVA | | |
| Non-Continuous | 96.0 kVA | 100.00% | 96.0 kVA | **TOTAL CONN. LOAD (kVA):** | 97.5 kVA |
| Maint. Recpt. | 1.4 kVA | 100.00% | 1.4 kVA | **TOTAL EST. DEMAND (kVA):** | 97.5 kVA |
| | | | | **TOTAL CONN.:** | 406 A |
| | | | | **TOTAL EST. DEMAND:** | 406 A |

**BREAKER NOTES (REFERENCED IN NOTES COLUMN):**
1. GFCI
2. COMBINATION AFCI
3. SHUNT TRIP - REFER TO GFM WIRING DETAIL
4. 30mA GFPE
5. TAP BLOCK

**CIRCUIT NOTES (REFERENCED IN NOTES COLUMN):**
A. CONTINUOUS METAL RACEWAY

### CIRCUIT SCHEDULE

| CKT # | DESCRIPTION | VD % | GFPE TRIP (mA) | GFPE TIME (ms) |
|---|---|---|---|---|
| 2,4 | RV PEDESTAL | 1.61% | 90-100 | 400 |
| 3,5 | RV PEDESTAL | 3.36% | 90-100 | 400 |
| 6,8 | RV PEDESTAL | 3.56% | 90-100 | 400 |
| 7,9 | RV PEDESTAL | 3.72% | 90-100 | 400 |

## BRANCH PANEL: L3

**LOCATION:**
**SUPPLY FROM:** T3
**MOUNTING:** SURFACE
**ENCLOSURE:** SS3

**TYPE:** SQUARE - D I-LINE
**VOLTS:** 120/240 Single
**PHASES:** 1
**WIRES:** 3

**A.I.C. RATING:** COORDINATE
**MAINS TYPE:** MCB
**MAINS RATING:** 600 A
**MCB RATING:** 600 A

| TRIP AMPS | POLES | FEED | NOTES | CIRCUIT DESCRIPTION | CKT | A | | B | | CKT | CIRCUIT DESCRIPTION | NOTES | FEED | POLES | TRIP AMPS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 A | 1 | 1G60 | 4 | MAINT RECEPTS AND FIRE PEDESTALS | 1 | 0.4 | 0.1 | | | 2 | LIGHT BOLLARDS | 4 | 1G60 | 1 | 20 A |
| 20 A | 1 | 1G60 | 4 | FIRE PEDESTALS | 3 | | | 0.0 | 0.1 | 4 | G3 | | A20 | 1 | 20 A |
| 200 A | 2 | 1G250 | 3 | METERED SHORE POWER | 5 | 24.4 | 24.4 | | | 6 | METERED SHORE POWER | 3 | 1G300 | 2 | 200 A |
| | | | | | 7 | | | 24.4 | 24.4 | 8 | | | | | |
| 20 A | 1 | 1G60 | 4 | FIRE PEDESTALS | 9 | 0.0 | 12.2 | | | 10 | METERED SHORE POWER | 3 | 1G175 | 2 | 100 A |
| 200 A | 2 | 1G175 | 3 | METERED SHORE POWER | 11 | | | 24.4 | 12.2 | 12 | | | | | |
| | | | | | 13 | 24.4 | | | | 14 | | | | | |
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| | | | | | 39 | | | | | 40 | | | | | |
| | | | | | 41 | | | | | 42 | | | | | |
| | | | | **TOTAL LOAD:** | | 85.8 kVA | | 85.4 kVA | | | | | | | |

| LOAD CLASSIFICATION | CONNECTED (kVA) | DEMAND FACTOR | EST. DEMAND (kVA) | PANEL TOTALS | |
|---|---|---|---|---|---|
| Receptacle | 0.4 kVA | 100.00% | 0.4 kVA | | |
| Continuous | 0.2 kVA | 125.00% | 0.3 kVA | **TOTAL CONN. LOAD (kVA):** | 171.1 kVA |
| Non-Continuous | 0.0 kVA | 0.00% | 0.0 kVA | **TOTAL EST. DEMAND (kVA):** | 124.1 kVA |
| Metered Shore Power | 168.0 kVA | 72.00% | 121.0 kVA | **TOTAL CONN.:** | 713 A |
| Maint. Recpt. | 2.5 kVA | 100.00% | 2.5 kVA | **TOTAL EST. DEMAND:** | 517 A |

**BREAKER NOTES (REFERENCED IN NOTES COLUMN):**
1. GFCI
2. COMBINATION AFCI
3. SHUNT TRIP - REFER TO GFM WIRING DETAIL
4. 30mA GFPE
5. TAP BLOCK

**CIRCUIT NOTES (REFERENCED IN NOTES COLUMN):**
A. CONTINUOUS METAL RACEWAY

### CIRCUIT SCHEDULE

| DESCRIPTION | FEED | VD % | GFPE TRIP (mA) | GFPE TIME (ms) |
|---|---|---|---|---|
| MAINT RECEPTS AND FIRE PEDESTALS | 1G60 | 1.76% | 90-100 | 200 |
| LIGHT BOLLARDS | 1G60 | 0.59% | 90-100 | 200 |
| FIRE PEDESTALS | 1G60 | 0.36% | 90-100 | 200 |
| METERED SHORE POWER | 1G250 | 3.76% | 90-100 | 400 |
| METERED SHORE POWER | 1G300 | 3.97% | 90-100 | 400 |
| FIRE PEDESTALS | 1G60 | 0.31% | 90-100 | 200 |
| METERED SHORE POWER | 1G175 | 3.58% | 90-100 | 400 |
| METERED SHORE POWER | 1G175 | 3.87% | 90-100 | 400 |

# ELECTRICAL UPGRADES FOR CITY OF ROCKLAND DOWNTOWN WATERFRONT MARINA INFRASTRUCTURE ROCKLAND, MAINE


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Revisions indicated w/ △

| Revisions: No. | Date | Description |
|---|---|---|

SHEET: E2.1
TITLE: PANEL SCHEDULES
DATE: 2-28-23
JOB NO: 23008
DWN BY: JLC

PRELIMINARY
SET NOT FOR
CONSTRUCTION

## BRANCH PANEL: H2

**LOCATION:**
**SUPPLY FROM:**
**MOUNTING:** SURFACE
**ENCLOSURE:** SS2

**TYPE:** SQUARE-D I-LINE SER
**VOLTS:** 277/480 Wye
**PHASES:** 3
**WIRES:** 4

**A.I.C. RATING:** COORDINATE
**MAINS TYPE:** MCB
**MAINS RATING:** 600 A
**MCB RATING:** 600 A

| TRIP AMPS | POLES | FEED | NOTES | CIRCUIT DESCRIPTION | CKT | A | | B | | C | | CKT | CIRCUIT DESCRIPTION | NOTES | FEED | POLES | TRIP AMPS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 66.7 | 73.0 | | | | | 2 | | | | | |
| 300 A | 3 | 3G300 | | DC FAST CHARGER | 3 | | | 66.7 | 72.9 | | | 4 | T2 | | C300 | 2 | 300 A |
| | | | | | 5 | | | | | 66.7 | | 6 | | | | | |
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| | | | | | 39 | | | | | | | 40 | | | | | |
| | | | | | 41 | | | | | | | 42 | | | | | |
| | | | | **TOTAL LOAD:** | | 139.7 kVA | | 139.6 kVA | | 66.7 kVA | | | | | | | |

| LOAD CLASSIFICATION | CONNECTED (kVA) | DEMAND FACTOR | EST. DEMAND (kVA) | PANEL TOTALS | |
|---|---|---|---|---|---|
| Continuous | 200.0 kVA | 125.00% | 250.1 kVA | | |
| Non-Continuous | 0.0 kVA | 0.00% | 0.0 kVA | **TOTAL CONN. LOAD (kVA):** | 345.8 kVA |
| Metered Shore Power | 144.0 kVA | 72.00% | 103.7 kVA | **TOTAL EST. DEMAND (kVA):** | 355.5 kVA |
| Maint. Recpt. | 1.8 kVA | 100.00% | 1.8 kVA | **TOTAL CONN.:** | 416 A |
| | | | | **TOTAL EST. DEMAND:** | 428 A |

**BREAKER NOTES (REFERENCED IN NOTES COLUMN):**
1. GFCI
2. COMBINATION AFCI
3. SHUNT TRIP - REFER TO GFM WIRING DETAIL
4. 30mA GFPE
5. TAP BLOCK

**CIRCUIT NOTES (REFERENCED IN NOTES COLUMN):**
A. CONTINUOUS METAL RACEWAY

## BRANCH PANEL: L2

**LOCATION:**
**SUPPLY FROM:** T2
**MOUNTING:** SURFACE
**ENCLOSURE:** SS2

**TYPE:** SQUARE - D I-LINE
**VOLTS:** 120/240 Single
**PHASES:** 1
**WIRES:** 3

**A.I.C. RATING:** COORDINATE
**MAINS TYPE:** MCB
**MAINS RATING:** 600 A
**MCB RATING:** 600 A

| TRIP AMPS | POLES | FEED | NOTES | CIRCUIT DESCRIPTION | CKT | A | | B | | CKT | CIRCUIT DESCRIPTION | NOTES | FEED | POLES | TRIP AMPS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 24.4 | 24.2 | | | 2 | | | | | |
| 200 A | 2 | 1G250 | 3 | METERED SHORE POWER | 3 | | | 24.4 | 24.2 | 4 | METERED SHORE POWER | 3 | 1G250 | 2 | 200 A |
| | | | | | 5 | 12.2 | 12.2 | | | 6 | | | | | |
| 100 A | 2 | 1G125 | 3 | METERED SHORE POWER | 7 | | | 12.2 | 12.2 | 8 | METERED SHORE POWER | 3 | 1G100 | 2 | 100 A |
| 20 A | 1 | A20 | | G2 | 9 | 0.1 | | | | 10 | | | | | |
| | | | | | 11 | | | | | 12 | | | | | |
| | | | | | 13 | | | | | 14 | | | | | |
| | | | | | 15 | | | | | 16 | | | | | |
| | | | | | 17 | | | | | 18 | | | | | |
| | | | | | 19 | | | | | 20 | | | | | |
| | | | | | 21 | | | | | 22 | | | | | |
| | | | | | 23 | | | | | 24 | | | | | |
| | | | | | 25 | | | | | 26 | | | | | |
| | | | | | 27 | | | | | 28 | | | | | |
| | | | | | 29 | | | | | 30 | | | | | |
| | | | | | 31 | | | | | 32 | | | | | |
| | | | | | 33 | | | | | 34 | | | | | |
| | | | | | 35 | | | | | 36 | | | | | |
| | | | | | 37 | | | | | 38 | | | | | |
| | | | | | 39 | | | | | 40 | | | | | |
| | | | | | 41 | | | | | 42 | | | | | |
| | | | | **TOTAL LOAD:** | | 73.0 kVA | | 72.9 kVA | | | | | | | |

| LOAD CLASSIFICATION | CONNECTED (kVA) | DEMAND FACTOR | EST. DEMAND (kVA) | PANEL TOTALS | |
|---|---|---|---|---|---|
| Continuous | 0.0 kVA | 125.00% | 0.1 kVA | | |
| Non-Continuous | 0.0 kVA | 0.00% | 0.0 kVA | **TOTAL CONN. LOAD (kVA):** | 145.8 kVA |
| Metered Shore Power | 144.0 kVA | 72.00% | 103.7 kVA | **TOTAL EST. DEMAND (kVA):** | 105.5 kVA |
| Maint. Recpt. | 1.8 kVA | 100.00% | 1.8 kVA | **TOTAL CONN.:** | 608 A |
| | | | | **TOTAL EST. DEMAND:** | 440 A |

**BREAKER NOTES (REFERENCED IN NOTES COLUMN):**
1. GFCI
2. COMBINATION AFCI
3. SHUNT TRIP - REFER TO GFM WIRING DETAIL
4. 30mA GFPE
5. TAP BLOCK

**CIRCUIT NOTES (REFERENCED IN NOTES COLUMN):**
A. CONTINUOUS METAL RACEWAY

## CIRCUIT SCHEDULE

| CKT # | DESCRIPTION | VD % | GFPE TRIP (mA) | GFPE TIME (ms) |
|---|---|---|---|---|
| 1,3 | METERED SHORE POWER | 3.44% | 90-100 | 400 |
| 2,4 | METERED SHORE POWER | 3.89% | 90-100 | 400 |
| 5,7 | METERED SHORE POWER | 3.52% | 90-100 | 400 |
| 6,8 | METERED SHORE POWER | 3.07% | 90-100 | 400 |

## GROUND FAULT MONITOR SCHEDULE

- MANUFACTURER SHALL PROGRAM ALL PARAMETERS PER THE DESIGN AND SHALL SET TIME AND DATE FOR THE PROJECT'S TIME ZONE
- SEE CIRCUIT SCHEDULES FOR TRIP SETTINGS
- CT SENSORS TO BE USED AS REQUIRED TO CONTROL SHUNT TRIP BREAKERS
- SPARE CHANNELS SHALL BE DISABLED
- USE SPECIFIED EQUIPMENT OR APPROVED EQUAL
- SHALL HAVE LOCKABLE DOOR
- SEE GROUND FAULT MONITOR WIRING DETAIL

| LABEL | LOCATION | MANUFACTURER | RELAY MODEL | INPUTS / OUTPUTS | ENCLOSURE | NOTES |
|---|---|---|---|---|---|---|
| G1 | SS1 | BENDER | RCM420 | 1 | SS1 | LISTED ASSEMBLY |
| G3 | SS2 | BENDER | RCMS490 | 12 | SS3 | LISTED ASSEMBLY |
| G2 | SS3 | BENDER | RCMS490 | 12 | SS2 | LISTED ASSEMBLY |

## TRANSFORMER SCHEDULE

- USE SPECIFIED EQUIPMENT OR EQUAL

| LABEL | LOCATION | MODEL | KVA | ENCLOSURE | TYPE | DOUBLE LUG | PRIMARY VOLTS | PRIMARY Φ | PRIMARY WINDING | SECONDARY VOLTS | SECONDARY Φ | SECONDARY WINDING |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1 | PUBLIC LANDING | EE167S3H | 167 | SS1 | DRY | N | 480 | 1 | 1 | 240 | 1 | CTR TAP |
| T2 | MIDDLE PIER | EE167S3H | 167 | SS2 | DRY | N | 480 | 1 | 1 | 240 | 1 | CTR TAP |
| T3 | PUBLIC LANDING | EE167S3H | 167 | SS3 | DRY | N | 480 | 1 | 1 | 240 | 1 | CTR TAP |

## SUB-STATION SCHEDULE

- NEMA 3R, ALUMINUM, WHITE
- USE AMERICAN MIDWEST POWER OR APPROVED EQUAL
- SEE ONE-LINE & SCHEDULES

| | |
|---|---|
| SS1 | |
| TRANSFORMER | T1 |
| PANEL | H1 |
| PANEL | L1 |
| GFM | G1 |
| SS2 | |
| TRANSFORMER | T2 |
| PANEL | H2 |
| PANEL | L2 |
| GFM | G2 |
| SS3 | |
| TRANSFORMER | T3 |
| MCS | M3 |
| PANEL | L3 |
| GFM | G3 |

# ELECTRICAL UPGRADES FOR CITY OF ROCKLAND DOWNTOWN WATERFRONT MARINA INFRASTRUCTURE ROCKLAND, MAINE

MAFFETT LOFTIS, ENGINEERING, LLC
15 JEFFERSON AVE, STE 101
COOKEVILLE, TN 38501
TEL: (931) 528-5143
www.maffett-loftis.com

Revisions indicated w/ △

Revisions:

| No. | Date | Description |
|---|---|---|

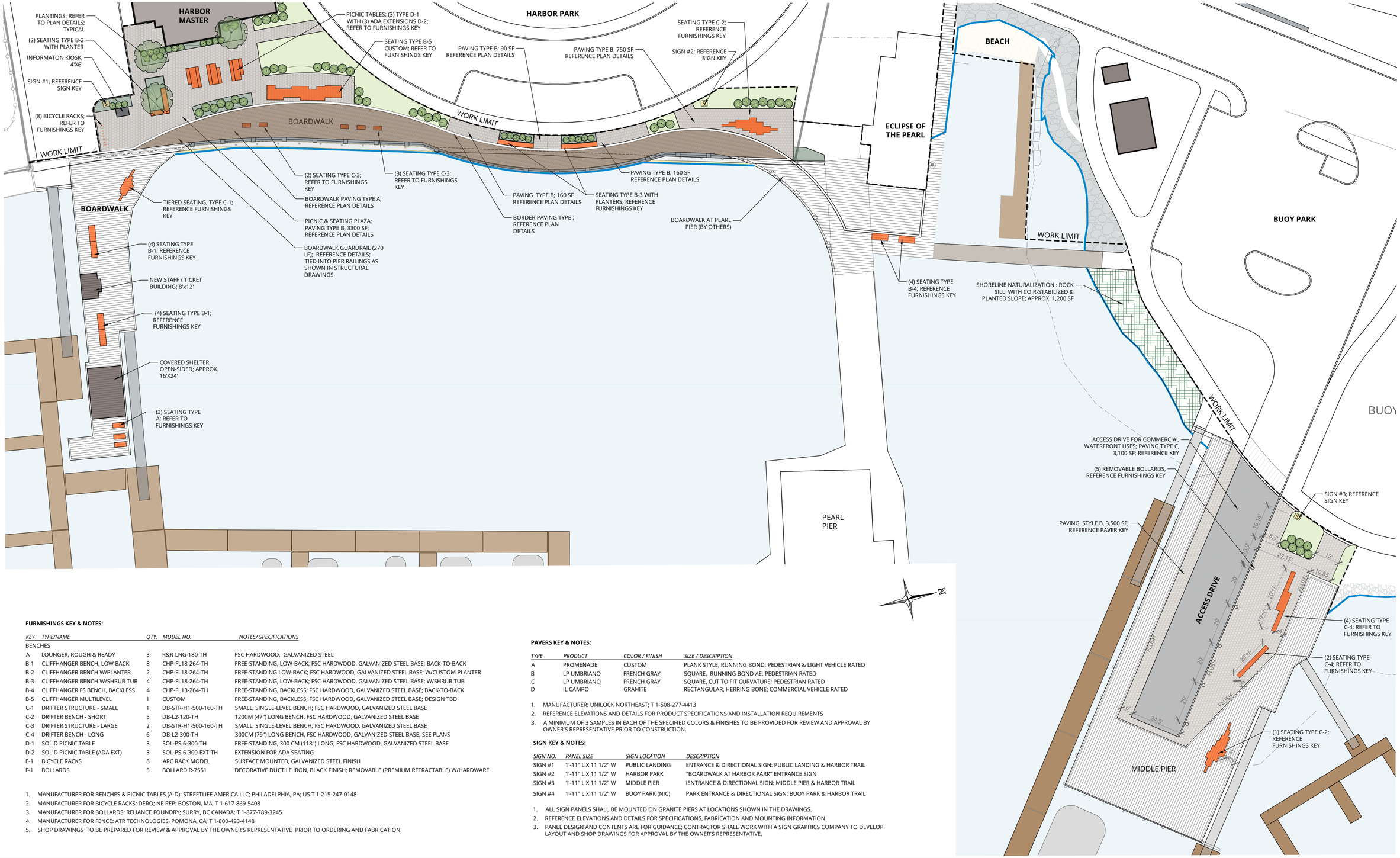
SHEET: E2.2

TITLE: PANEL AND EQUIPMENT SCHEDULES

JOB NO: 23008 DATE: 2-28-23

DWN BY: JLC

PRELIMINARY
SET NOT FOR
CONSTRUCTION




**FURNISHINGS KEY & NOTES:**

| KEY | TYPE/NAME | QTY. | MODEL NO. | NOTES/ SPECIFICATIONS |
|---|---|---|---|---|
| BENCHES | | | | |
| A | LOUNGER, ROUGH & READY | 3 | R&R-LNG-180-TH | FSC HARDWOOD, GALVANIZED STEEL |
| B-1 | CLIFFHANGER BENCH, LOW BACK | 8 | CHP-FL18-264-TH | FREE-STANDING, LOW-BACK; FSC HARDWOOD, GALVANIZED STEEL BASE; BACK-TO-BACK |
| B-2 | CLIFFHANGER BENCH W/PLANTER | 2 | CHP-FL18-264-TH | FREE-STANDING LOW-BACK; FSC HARDWOOD, GALVANIZED STEEL BASE; W/CUSTOM PLANTER |
| B-3 | CLIFFHANGER BENCH W/SHRUB TUB | 4 | CHP-FL18-264-TH | FREE-STANDING, LOW-BACK; FSC HARDWOOD, GALVANIZED STEEL BASE; W/SHRUB TUB |
| B-4 | CLIFFHANGER FS BENCH, BACKLESS | 4 | CHP-FL13-264-TH | FREE-STANDING, BACKLESS; FSC HARDWOOD, GALVANIZED STEEL BASE; BACK-TO-BACK |
| B-5 | CLIFFHANGER MULTILEVEL | 1 | CUSTOM | FREE-STANDING, BACKLESS; FSC HARDWOOD, GALVANIZED STEEL BASE; DESIGN TBD |
| C-1 | DRIFTER STRUCTURE - SMALL | 1 | DB-STR-H1-500-160-TH | SMALL, SINGLE-LEVEL BENCH; FSC HARDWOOD, GALVANIZED STEEL BASE |
| C-2 | DRIFTER BENCH - SHORT | 5 | DB-L2-120-TH | 120CM (47") LONG BENCH, FSC HARDWOOD, GALVANIZED STEEL BASE |
| C-3 | DRIFTER STRUCTURE - LARGE | 2 | DB-STR-H1-500-160-TH | SMALL, SINGLE-LEVEL BENCH; FSC HARDWOOD, GALVANIZED STEEL BASE |
| C-4 | DRIFTER BENCH - LONG | 6 | DB-L2-300-TH | 300CM (79") LONG BENCH, FSC HARDWOOD, GALVANIZED STEEL BASE; SEE PLANS |
| D-1 | SOLID PICNIC TABLE | 3 | SOL-PS-6-300-TH | FREE-STANDING, 300 CM (118") LONG; FSC HARDWOOD, GALVANIZED STEEL BASE |
| D-2 | SOLID PICNIC TABLE (ADA EXT) | 3 | SOL-PS-6-300-EXT-TH | EXTENSION FOR ADA SEATING |
| E-1 | BICYCLE RACKS | 8 | ARC RACK MODEL | SURFACE MOUNTED, GALVANIZED STEEL FINISH |
| F-1 | BOLLARDS | 5 | BOLLARD R-7551 | DECORATIVE DUCTILE IRON, BLACK FINISH; REMOVABLE (PREMIUM RETRACTABLE) W/HARDWARE |

1. MANUFACTURER FOR BENCHES & PICNIC TABLES (A-D): STREETLIFE AMERICA LLC; PHILADELPHIA, PA; US T 1-215-247-0148
2. MANUFACTURER FOR BICYCLE RACKS: DERO; NE REP: BOSTON, MA, T 1-617-869-5408
3. MANUFACTURER FOR BOLLARDS: RELIANCE FOUNDRY; SURRY, BC CANADA; T 1-877-789-3245
4. MANUFACTURER FOR FENCE: ATR TECHNOLOGIES, POMONA, CA; T 1-800-423-4148
5. SHOP DRAWINGS TO BE PREPARED FOR REVIEW & APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO ORDERING AND FABRICATION

**PAVERS KEY & NOTES:**

| TYPE | PRODUCT | COLOR / FINISH | SIZE / DESCRIPTION |
|---|---|---|---|
| A | PROMENADE | CUSTOM | PLANK STYLE, RUNNING BOND; PEDESTRIAN & LIGHT VEHICLE RATED |
| B | LP UMBRIANO | FRENCH GRAY | SQUARE, RUNNING BOND AE; PEDESTRIAN RATED |
| C | LP UMBRIANO | FRENCH GRAY | SQUARE, CUT TO FIT CURVATURE; PEDESTRIAN RATED |
| D | IL CAMPO | GRANITE | RECTANGULAR, HERRING BONE; COMMERCIAL VEHICLE RATED |

1. MANUFACTURER: UNILOCK NORTHEAST; T 1-508-277-4413
2. REFERENCE ELEVATIONS AND DETAILS FOR PRODUCT SPECIFICATIONS AND INSTALLATION REQUIREMENTS
3. A MINIMUM OF 3 SAMPLES IN EACH OF THE SPECIFIED COLORS & FINISHES TO BE PROVIDED FOR REVIEW AND APPROVAL BY OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.

**SIGN KEY & NOTES:**

| SIGN NO. | PANEL SIZE | SIGN LOCATION | DESCRIPTION |
|---|---|---|---|
| SIGN #1 | 1'-11" L X 11 1/2" W | PUBLIC LANDING | ENTRANCE & DIRECTIONAL SIGN: PUBLIC LANDING & HARBOR TRAIL |
| SIGN #2 | 1'-11" L X 11 1/2" W | HARBOR PARK | "BOARDWALK AT HARBOR PARK" ENTRANCE SIGN |
| SIGN #3 | 1'-11" L X 11 1/2" W | MIDDLE PIER | IENTRANCE & DIRECTIONAL SIGN: MIDDLE PIER & HARBOR TRAIL |
| SIGN #4 | 1'-11" L X 11 1/2" W | BUOY PARK (NIC) | PARK ENTRANCE & DIRECTIONAL SIGN: BUOY PARK & HARBOR TRAIL |

1. ALL SIGN PANELS SHALL BE MOUNTED ON GRANITE PIERS AT LOCATIONS SHOWN IN THE DRAWINGS.
2. REFERENCE ELEVATIONS AND DETAILS FOR SPECIFICATIONS, FABRICATION AND MOUNTING INFORMATION.
3. PANEL DESIGN AND CONTENTS ARE FOR GUIDANCE; CONTRACTOR SHALL WORK WITH A SIGN GRAPHICS COMPANY TO DEVELOP LAYOUT AND SHOP DRAWINGS FOR APPROVAL BY THE OWNER'S REPRESENTATIVE.

RS LEONARD
Landscape Architecture

| | |
|---|---|
| DRAFTED BY: | RSL |
| CHECKED BY: | MJS |
| PLAN DATE: | FEB 28, 2023 |

| REVISIONS | |
|---|---|
| DATE | XX |
| DESCR. | XX |
| DATE | |
| DESCR. | |

GRAPHIC SCALE
20 0 10 20 40
1 inch = 20 ft.

# LANDSCAPE & MATERIALS PLAN

REGINA E. LEONARD 4123 REGISTERED LANDSCAPE ARCHITECT STATE OF MAINE 2/28/23

# CITY OF ROCKLAND
DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**
KNOX COUNTY

SCALE: AS SHOWN | JOB No.: 16-012 | SHEET 1 OF 3

L1

2024\1206\2204\dwg

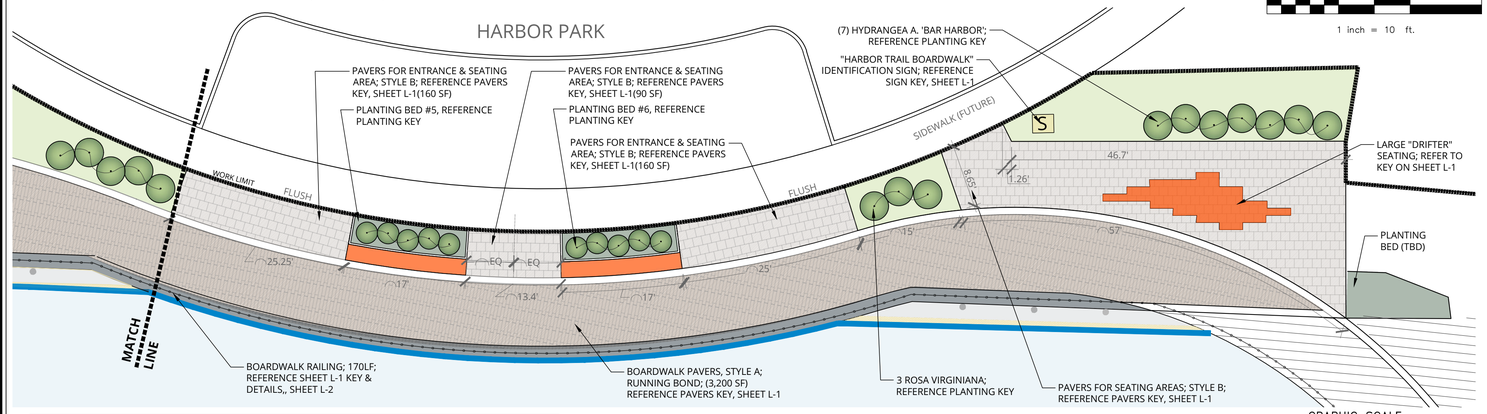
## PLAN DETAIL - BOARDWALK (SOUTH)

N.T.S.

GRAPHIC SCALE

10 0 5 10 20

1 inch = 10 ft.



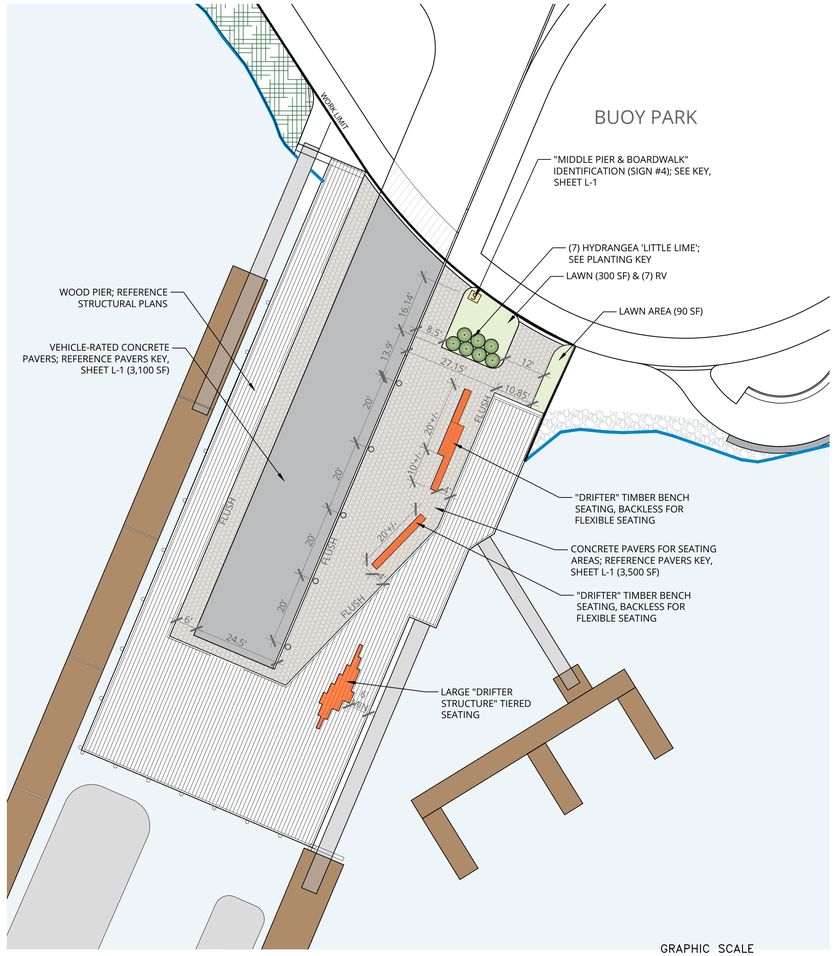

## PLAN DETAIL - BOARDWALK (NORTH)

N.T.S.

GRAPHIC SCALE

10 0 5 10 20

1 inch = 10 ft.




## PLAN DETAIL - MIDDLE PIER

N.T.S.

GRAPHIC SCALE

20 0 10 20 40

1 inch = 20 ft.

### PLANTING SCHEDULE (TOTAL SITE)

| QTY. | KEY | BOTANICAL NAME | COMMON NAME | SIZE/COND. |
|---|---|---|---|---|
| TREES | | | | |
| 3 | CW | CRATAEGUS V. 'WINTER KING' | WINTER KING HAWTHORN | 2-2.5" CAL |
| SHRUBS | | | | |
| 24 | CX | CARYOPTERIS X. 'FIRST CHOICE' | FIRST CHOICE BLUE MIST SPIREA | #3 POT |
| 12 | HB | HYDRANGEA A. 'BAR HARBOR' | BAR HARBOR HYDRANGEA | #5 POT |
| 9 | HP | HYDRANGEA P. 'LITTLE LIME' | LITTLE LIME HYDRANGEA | #5 POT |
| 6 | HP | HYDRANGEA P. 'LITTLE QUICKFIRE | LITTLE QUICKFIRE HYDRANGEA | #5 POT |
| 10 | PO | PHYSOCARPUS O. 'LITTLE DEVIL' | LITTLE DEVIL DWARF NINEBARK | #5 POT |
| 10 | SB | SPIRAEA B. 'PINK SPARKLER' | PINK SPARKLER BIRCHLEAF SPIREA | #3 POT |
| 22 | RV | ROSA VIRGINIANA | VIRGINIA ROSE | #5 POT |
| HERBACEOUS | | | | |
| 14 | DG | DESCHAMPSIA C. 'GOLDTAU' | GOLDEN DEW TUFTED HAIR GRASS | #1 POT |
| 36 | NX | NEPETA G. 'SUMMER MAGIC' | SUMMER MAGIC CATMINT | #1 POT |
| 15 | HB | HEMEROCALLIS 'BIG TIME HAPPY' | BIG TIME HAPPY DAYLILY | #1 POT |
| 10 | SH | STACHYS M. 'HUMMELO' | HUMMELO LAMBS EARS | #1 POT |

SEED MIXES

TURF AREAS: PARK MIX; ALLEN, STERLING, & LOTHRUP, FALMOUTH, ME. TEL. 207-781-4142

### PLANTING SCHEDULE FOR NUMBERED BEDS

| QTY. | KEY | BOTANICAL NAME | COMMON NAME | SIZE/COND. |
|---|---|---|---|---|
| BED #1 | | | | |
| 5 | DG | DESCHAMPSIA C. 'GOLDTAU' | GOLDEN DEW TUFTED HAIR GRASS | #1 POT |
| 9 | NX | NEPETA G. 'SUMMER MAGIC' | SUMMER MAGIC CATMINT | #1 POT |
| 3 | SB | SPIRAEA B. 'PINK SPARKLER' | PINK SPARKLER BIRCHLEAF SPIREA | #3 POT |
| BED #2 | | | | |
| 1 | CW | CRATAEGUS V. 'WINTER KING' | WINTER KING HAWTHORN | 2-2.5" CAL |
| 9 | DG | DESCHAMPSIA C. 'GOLDTAU' | GOLDEN DEW TUFTED HAIR GRASS | #1 POT |
| 10 | HB | HEMEROCALLIS 'BIG TIME HAPPY' | BIG TIME HAPPY DAYLILY | #1 POT |
| 15 | NX | NEPETA G. 'SUMMER MAGIC' | SUMMER MAGIC CATMINT | #1 POT |
| BED #3 | | | | |
| 2 | CW | CRATAEGUS V. 'WINTER KING' | WINTER KING HAWTHORN | 2-2.5" CAL |
| 24 | CX | CARYOPTERIS X. 'FIRST CHOICE' | FIRST CHOICE BLUE MIST SPIREA | #3 POT |
| 5 | HB | HEMEROCALLIS 'BIG TIME HAPPY' | BIG TIME HAPPY DAYLILY | #1 POT |
| 2 | HP | HYDRANGEA P. 'LITTLE LIME' | LITTLE LIME HYDRANGEA | #5 POT |
| 12 | NX | NEPETA G. 'SUMMER MAGIC' | SUMMER MAGIC CATMINT | #1 POT |
| 7 | SB | SPIRAEA B. 'PINK SPARKLER' | PINK SPARKLER BIRCHLEAF SPIREA | #3 POT |
| 10 | SH | STACHYS M. 'HUMMELO' | HUMMELO LAMBS EARS | #1 POT |

### PLANTING SCHEDULE FOR NUMBERED BEDS, (CONT'D)

| QTY. | KEY | BOTANICAL NAME | COMMON NAME | SIZE/COND. |
|---|---|---|---|---|
| BED #4 | | | | |
| 7 | CX | CARYOPTERIS X. 'FIRST CHOICE' | FIRST CHOICE BLUE MIST SPIREA | #3 POT |
| BED #5 | | | | |
| 5 | CX | CARYOPTERIS X. 'FIRST CHOICE' | FIRST CHOICE BLUE MIST SPIREA | #3 POT |
| BED #6 | | | | |
| 5 | CX | CARYOPTERIS X. 'FIRST CHOICE' | FIRST CHOICE BLUE MIST SPIREA | #3 POT |

### PLANTING NOTES

1. ALL MATERIALS SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
2. IN THE CASE OF ANY DISCREPANCIES BETWEEN SPECIES AND QUANTITIES CALLED OUT IN THE PLANTING KEY AND THOSE SHOWN ON THE PLAN, QUANTITIES AND SPECIES SHOWN ON THE PLAN SHALL OVER-RIDE.
3. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES.
4. ALL PLANTS SUBJECT TO APPROVAL BY LANDSCAPE ARCHITECT. ALL SUBSTITUTIONS MUST BE SUBMITTED FOR APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO ORDERING OR DELIVERY OF PLANT MATERIAL ON SITE. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANTINGS THAT DO NOT CONFORM TO THE DRAWINGS OR SPECIFICATIONS OUTLINED HEREIN.
5. LANDSCAPE ARCHITECT SHALL APPROVE FINAL PLACEMENT OF ALL PLANT MATERIALS AND RESERVES THE RIGHT TO MAKE FIELD ADJUSTMENTS TO PLANTINGS AS NECESSARY BASED ON SITE CONDITIONS.
6. NO GRADING, SOIL DISTURBANCE, OR STORAGE OF MATERIALS OR EQUIPMENT SHALL OCCUR WITHIN THE DRIP-LINE OF EXISTING TREES UNLESS OTHERWISE SHOWN ON PLANS. ANY EXCAVATION WITHIN SUCH AREAS SHALL BE PERFORMED WITH SPECIAL CARE.
7. PLANTING PITS AND BEDS SHALL CONSIST OF 3 PARTS FERTILE, FRIABLE LOAM AMENDED WITH 1 PART ORGANIC COMPOST, AS APPROVED BY THE LANDSCAPE ARCHITECT. PLANTING BEDS SHALL BE A MINIMUM DEPTH OF 12" OF PREPARED SOIL, AS NOTED.
8. FINISH GRADE OF PLANTINGS SHALL MATCH ADJACENT FINISH GRADES UNLESS OTHERWISE NOTED ON DRAWINGS OR DIRECTED AND/OR APPROVED BY THE LANDSCAPE ARCHITECT.
9. NO PLANT SHALL BE PUT INTO THE GROUND BEFORE ROUGH GRADING HAS BEEN FINISHED AND APPROVED BY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.
10. ALL PLANTS SHALL BE SET PLUMB UNLESS OTHERWISE SPECIFIED.
11. ALL PLANTINGS SHALL BE TOPPED WITH 3" OF SCREENED, COMPOSTED PINE BARK MULCH. SEE WRITTEN SPECIFICATIONS.
12. ALL DISTURBED AREAS NOT OTHERWISE PLANTED SHALL BE SEEDED WITH THE SEED MIX AND APPLICATION RATE SPECIFIED IN THE SITE PLANTINGS KEY. ALL AREAS TO RECEIVE SEED SHALL RECEIVE 4" CLEAN TOPSOIL. AREAS SHALL BE FINE RAKED AND ALL DEBRIS REMOVED FROM SITE.
13. CONTRACTOR SHALL WATER ALL PLANTS THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS AND NEWLY GRASSED AREAS SHALL BE WATERED AS REQUIRED THEREAFTER TO ENSURE SURVIVAL AND GROWTH THROUGH THE FIRST GROWING SEASON.
14. PLANT MATERIAL SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF INSTALLATION. DURING THE ONE YEAR GUARANTEE, THE CONTRACTOR SHALL REPLACE, IN KIND, ANY DEAD, DISEASED, OR SUBSTANDARD PLANT MATERIAL AT NO COST TO THE OWNER. THE CONTRACTOR SHALL RECEIVE FINAL ACCEPTANCE FROM THE OWNER FOLLOWING THE ONE YEAR GUARANTEE, PROVIDED THE PROVISIONS OF THE PLANT GUARANTEE HAVE BEEN SATISFACTORILY MET.
16. THE CONTRACTOR SHALL ASSUME RESPONSIBILITY TO ENSURE THAT ALL WORK IS PERFORMED IN COMPLIANCE WITH ALL STATE AND LOCAL REQUIREMENTS.
17. SPECIFIC DESIGN OF THE LIVING SHORELINE SEGMENT WILL BE DETERMINED DURING FINAL DESIGN IN CONSULTATION WITH THE MAINE STATE COASTAL PROGRAM AND GOVERNING AUTHORITIES.

RS LEONARD
Landscape Architecture

| REVISIONS | | |
|---|---|---|
| DRAFTED BY: | RSL | DATE XX |
| CHECKED BY: | MJS | DESCR. XX |
| PLAN DATE: | | DATE |
| FEB 28, 2023 | | DESCR. |

# PLAN DETAILS

REGISTERED LANDSCAPE ARCHITECT
REGINA S. LEONARD
#125
2/28/23
STATE OF MAINE

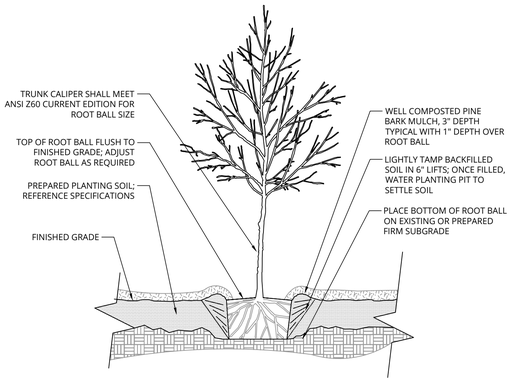
# CITY OF ROCKLAND

DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**
KNOX COUNTY

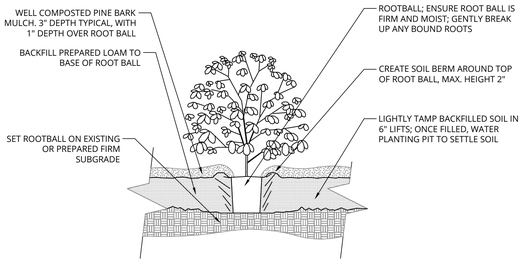
SCALE: AS SHOWN | JOB No.: 16-012 | SHEET 2 OF 3

L2

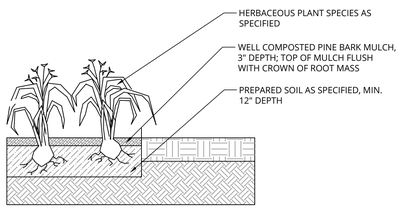
2024\L2.DWG 2/24/2023



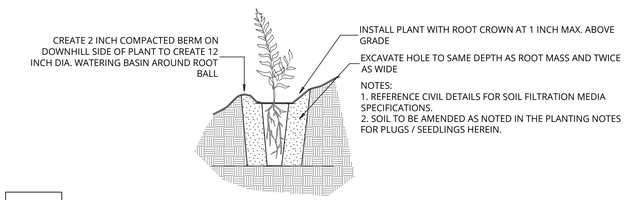

**1** **TREE INSTALLATION DETAIL** N.T.S.



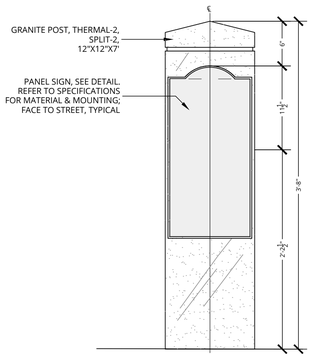

**2** **SHRUB INSTALLATION DETAIL** N.T.S.



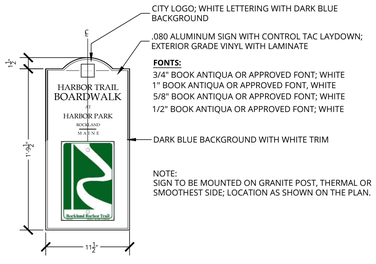

**3** **HERBACEOUS PLANT INSTALLATION DETAIL** N.T.S.



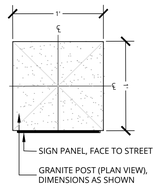

**4** **PLUG / SEEDLING INSTALLATION DETAIL** N.T.S.



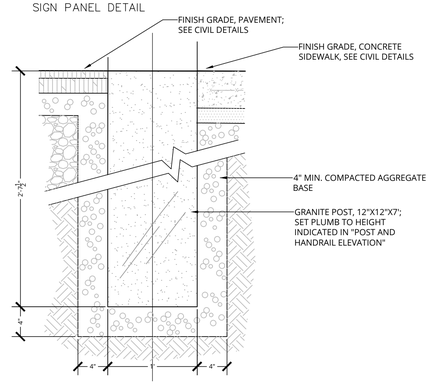

POST & SIGN DETAIL (ABOVE GRADE)




SIGN PANEL DETAIL




POST CROSS SECTION (TOP VIEW)




SIGN POST INSTALLATION DETAIL

**5** **GRANITE SIGN POST & PANEL DETAILS** N.T.S.

SIGN PANEL #1

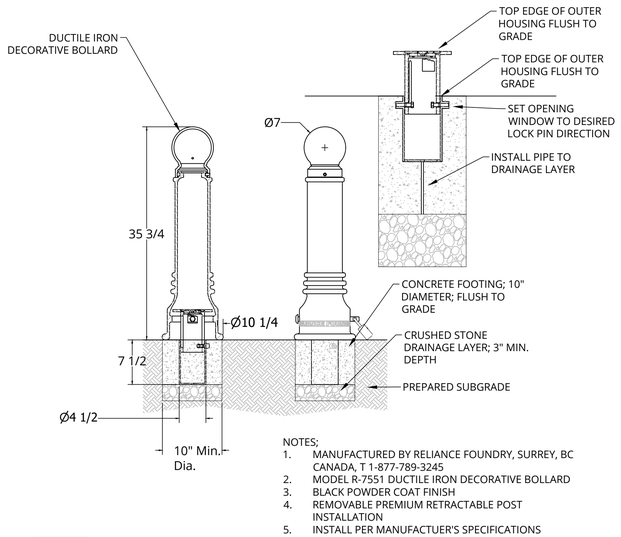



SIGN PANEL #2

SIGN PANEL #3

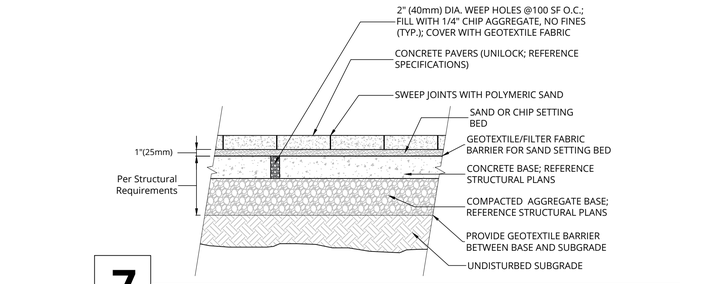



SIGN PANEL #4 (PLACEHOLDER)

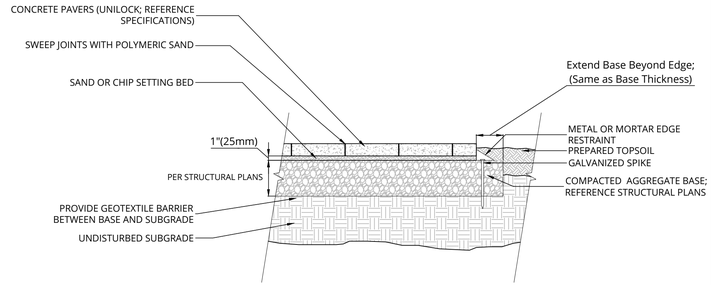



NOTES;
1. MANUFACTURED BY RELIANCE FOUNDRY, SURREY, BC CANADA, T 1-877-789-3245
2. MODEL R-7551 DUCTILE IRON DECORATIVE BOLLARD
3. BLACK POWDER COAT FINISH
4. REMOVABLE PREMIUM RETRACTABLE POST INSTALLATION
5. INSTALL PER MANUFACTUER'S SPECIFICATIONS

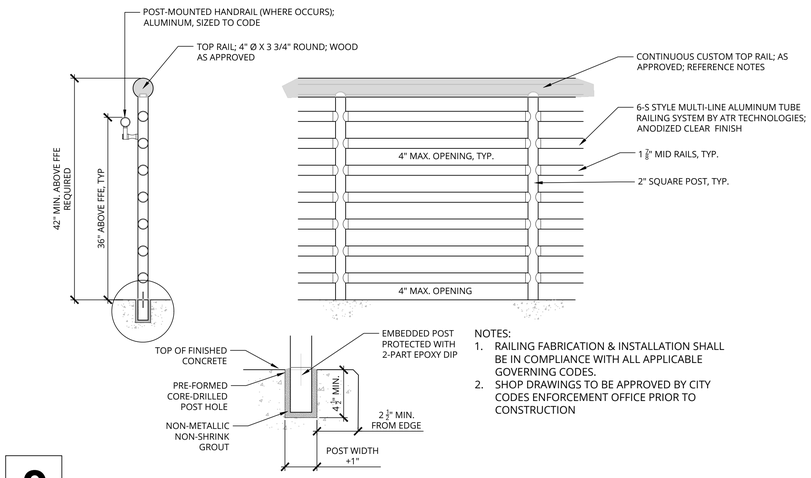
**6** **BOLLARD INSTALLATION DETAIL** N.T.S.




**7** **CONCRETE PAVERS ON CONCRETE BASE DETAIL** N.T.S.




**8** **CONCRETE PAVERS ON AGGREGATE BASE DETAIL** N.T.S.




NOTES:
1. RAILING FABRICATION & INSTALLATION SHALL BE IN COMPLIANCE WITH ALL APPLICABLE GOVERNING CODES.
2. SHOP DRAWINGS TO BE APPROVED BY CITY CODES ENFORCEMENT OFFICE PRIOR TO CONSTRUCTION

**9** **BOARDWALK RAILING DETAIL** N.T.S.

RS LEONARD
Landscape Architecture

| | |
|---|---|
| DRAFTED BY: | RSL |
| CHECKED BY: | MJS |
| PLAN DATE: | FEB 28, 2023 |

| REVISIONS | |
|---|---|
| DATE | XX |
| DESCR. | XX |
| DATE | |
| DESCR. | |

**SITE & LANDSCAPE DETAILS**

REGINA S. LEONARD 3123 2/28/23 REGISTERED LANDSCAPE ARCHITECT STATE OF MAINE

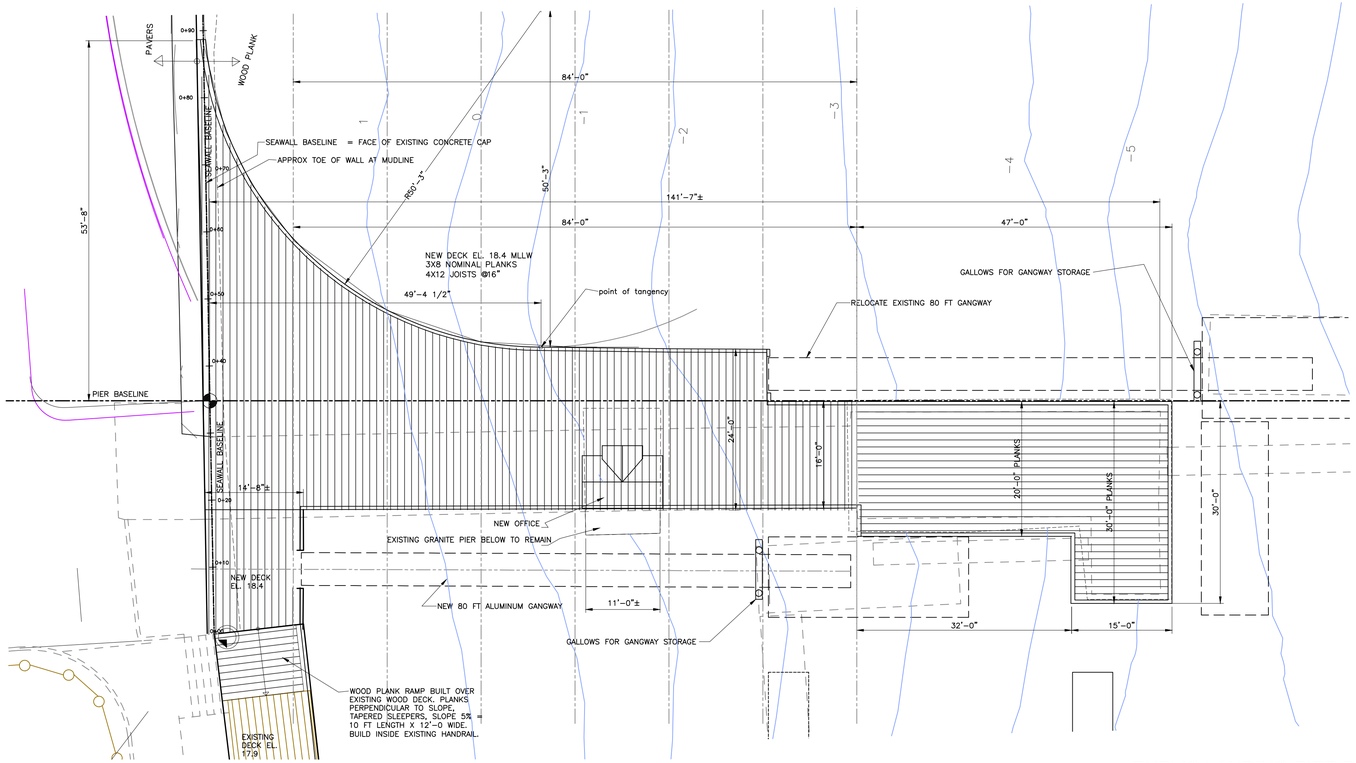
# CITY OF ROCKLAND
DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**
KNOX COUNTY

| SCALE: AS SHOWN | JOB No.: 16-012 | SHEET 3 OF 3 |
|---|---|---|

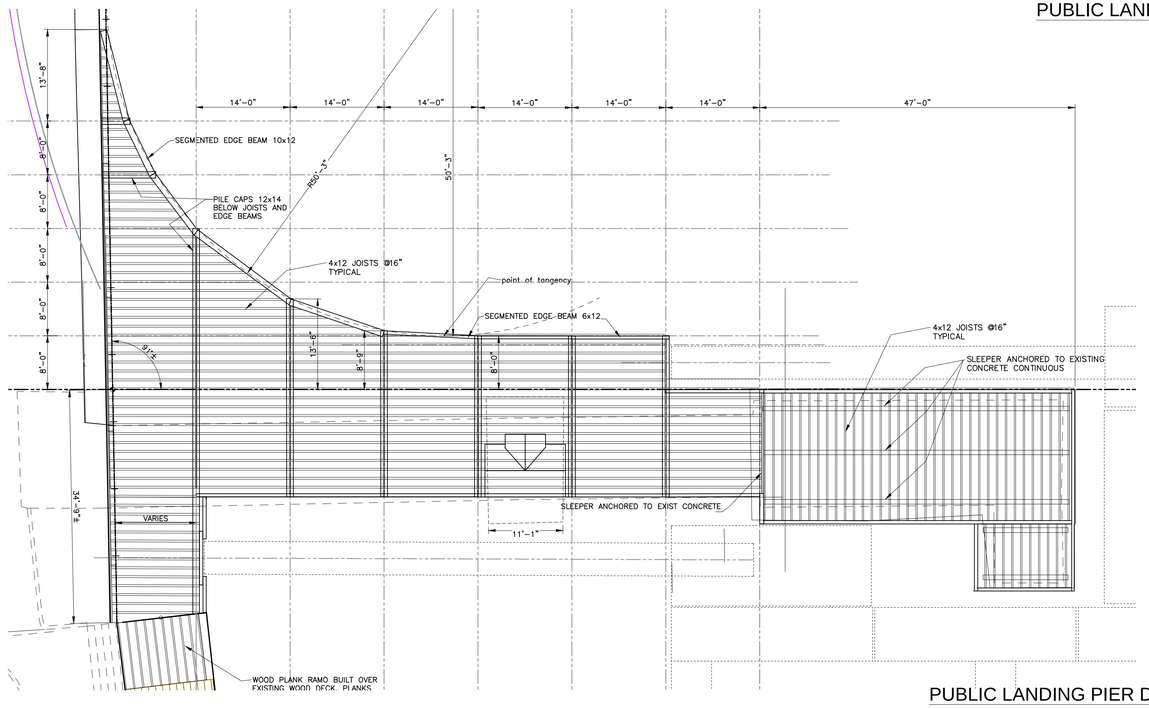
L3

23040 Date 230404.dwg

24x36 = FULL SCALE




## PUBLIC LANDING PIER DECK PLAN




## PUBLIC LANDING PIER DECK FRAMING PLAN

PRELIMINARY
FOR REVIEW AND COMMENT

PRELIMINARY
FOR REVIEW AND COMMENT

PINNACLE HILL ENGINEERING

PUBLIC LANDING CONCEPT
PUBLIC LANDING PIER STRUCTURES

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale 1/8"=1'-0"
Date of Revision: 2-25-2023

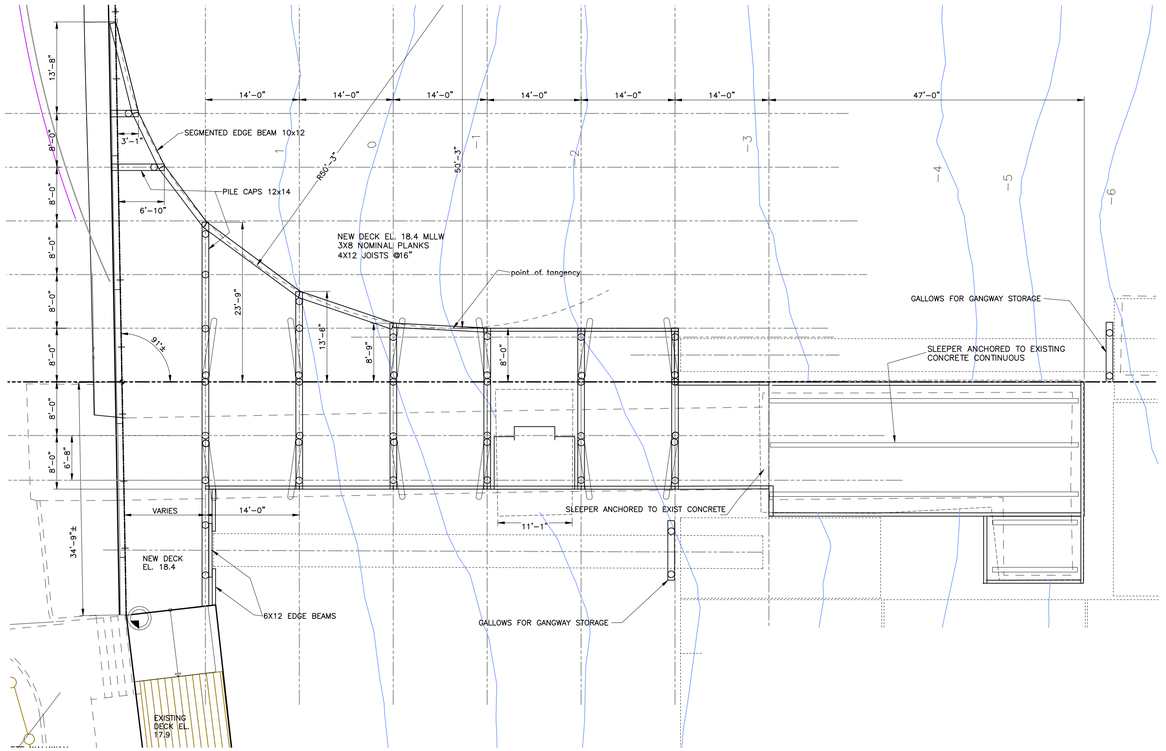
DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

PUBLIC LANDING
PIER DECK PLANS

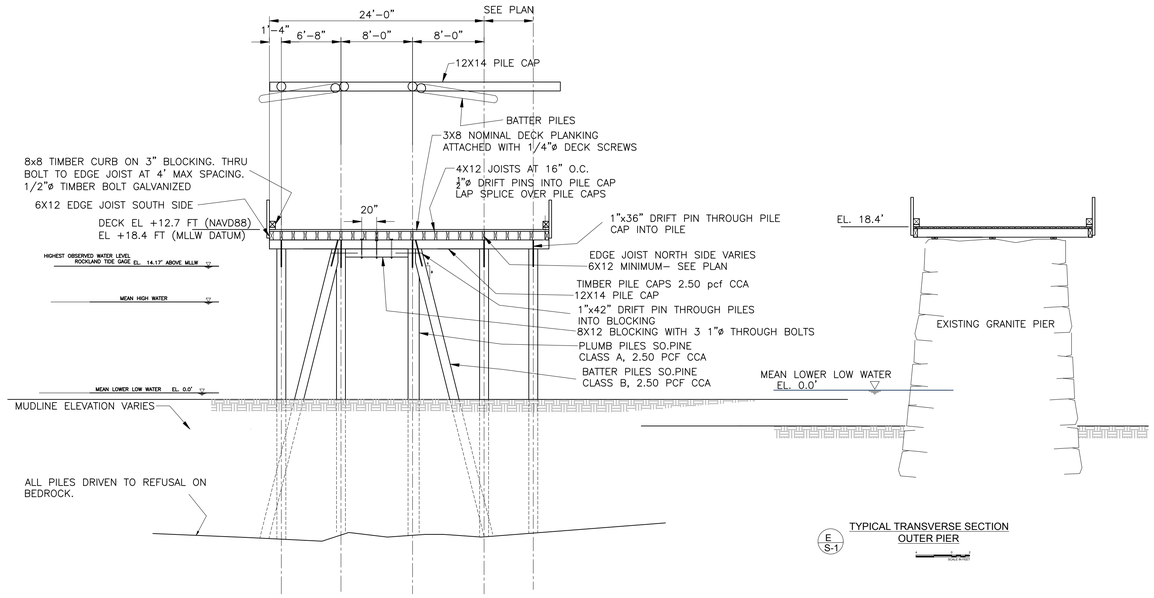
S-1
REV. O

V:\18021\Aug2022 Pre Engineering\From Steve\Final\Public Landing Pier and Harbor Wall Structural 2023.dwg
bncCAD v23

24x36 = FULL SCALE




## PUBLIC LANDING PIER FOUNDATION PLAN




D S-1 TYPICAL TRANSVERSE SECTION




E S-1 TYPICAL TRANSVERSE SECTION OUTER PIER

PRELIMINARY
FOR REVIEW AND COMMENT

PINNACLE HILL ENGINEERING
33 Pinnacle Road
Canaan, ME 04924
PinnacleHillEngineering@gmail.com

STATE OF MAINE — STEPHEN T. RUELL — No. 4396 — LICENSED PROFESSIONAL ENGINEER

PUBLIC LANDING CONCEPT
PUBLIC LANDING PIER STRUCTURES

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale: 1/8"=1'-0"
Date of Revision: 2-25-2023

DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

PUBLIC LANDING PIER
PILE AND PILE CAP PLAN

S-2
REV. O

J:\work\revit\Projects\pinnacle hill active\Rockland Public Landing 2022\design 2022\Public Landing Pier and Harbor Wall Structural 2023.dwg
bcad CAD v23

24x36 = FULL SCALE

STATIONING STARTS AT THE PROPERTY CORNER

SEAWALL BASELINE

RAISE WALL TO WALKWAY HEIGHT WITH GRANITE BLOCK MASONRY THIS SECTION

APPROXIMATE FACE OF CONCRETE SUBSTRUCTURE SUPPORTING PAVER

SEAWALL REHABILITATION SEE SHEET S-4

BASELINE IS THE FACE OF THE EXISTING CONCRETE SCAP ON THE SEAWALL. SEE SECTIONS

115'- ± OVERHANGING CONCRETE WALKWAY

R 50'-0"

R165'-0"

R162'-9"

R151'-0"

R 77'-0"

R 67'-0"

RAISE WALL TO WALKWAY HEIGHT WITH GRANITE BLOCK MASONRY THIS SECTION

CONCRETE SUBSTRUCTUR SUPPORTING PAVER

EXISTING RESTAURANT

PEARL PIER BRIDGE, SEE SHEET S-8

PEARL PIER, SEE SHEETS S-5 TO S-7

RAMP DOWN ON EXISTING BOARDWALK SEE SHEET S-1

PUBLIC LANDING PIER, SEE SHEETS S-1 & S-2

PRELIMINARY
FOR REVIEW AND COMMENT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PinnacleHillEngineering@gmail.com


STATE OF MAINE
STEPHEN T RUELL
No. 4396
LICENSED PROFESSIONAL ENGINEER

PUBLIC LANDING CONCEPT
SEAWALL REHABILITATION PLAN

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale 1/16" =1'-0"
Date of Revision:
2-25-2023

DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

SEAWALL PLAN

S-3
REV. O

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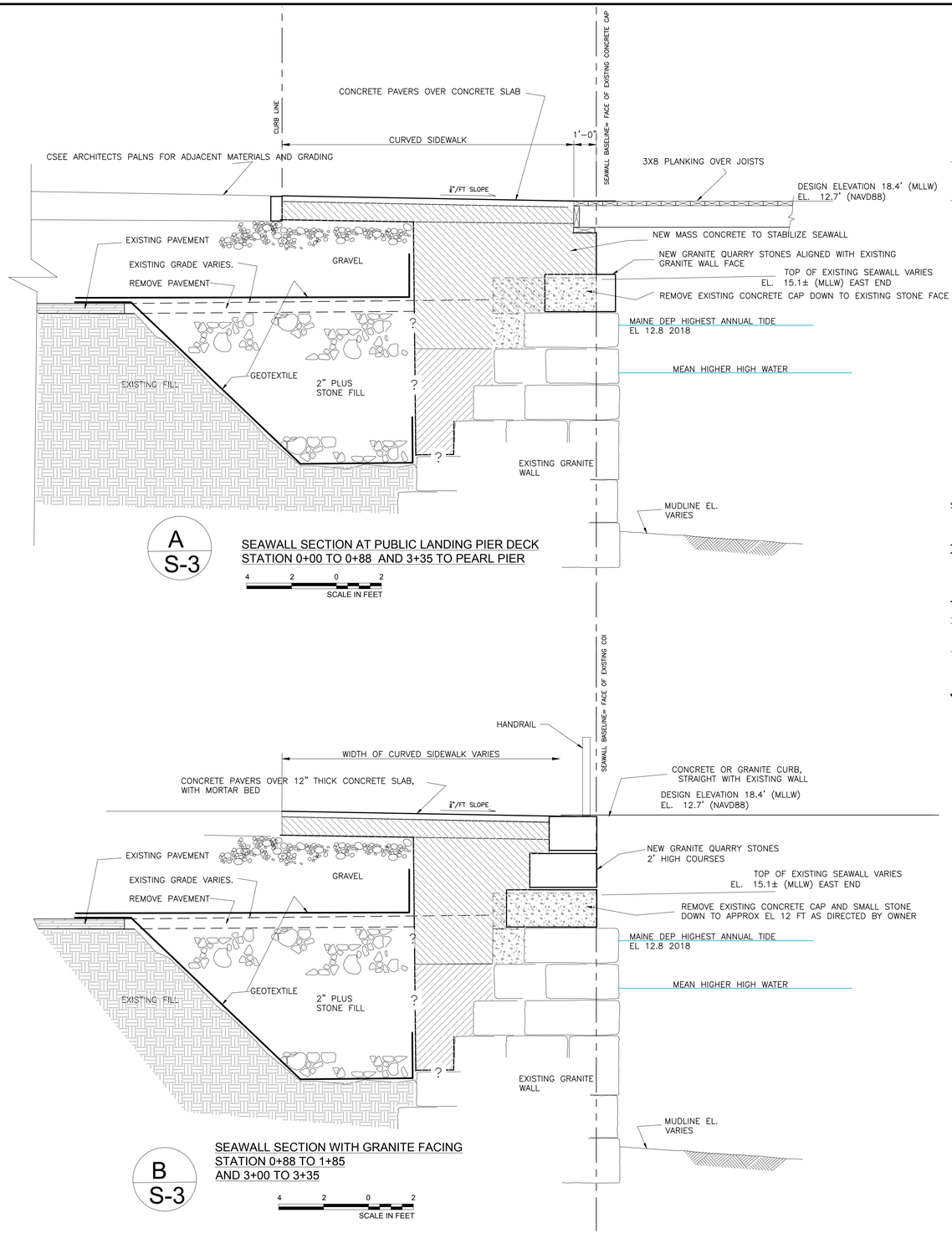
brnd/CAD v23

24x36 = FULL SCALE




A
S-3

SEAWALL SECTION AT PUBLIC LANDING PIER DECK
STATION 0+00 TO 0+88 AND 3+35 TO PEARL PIER

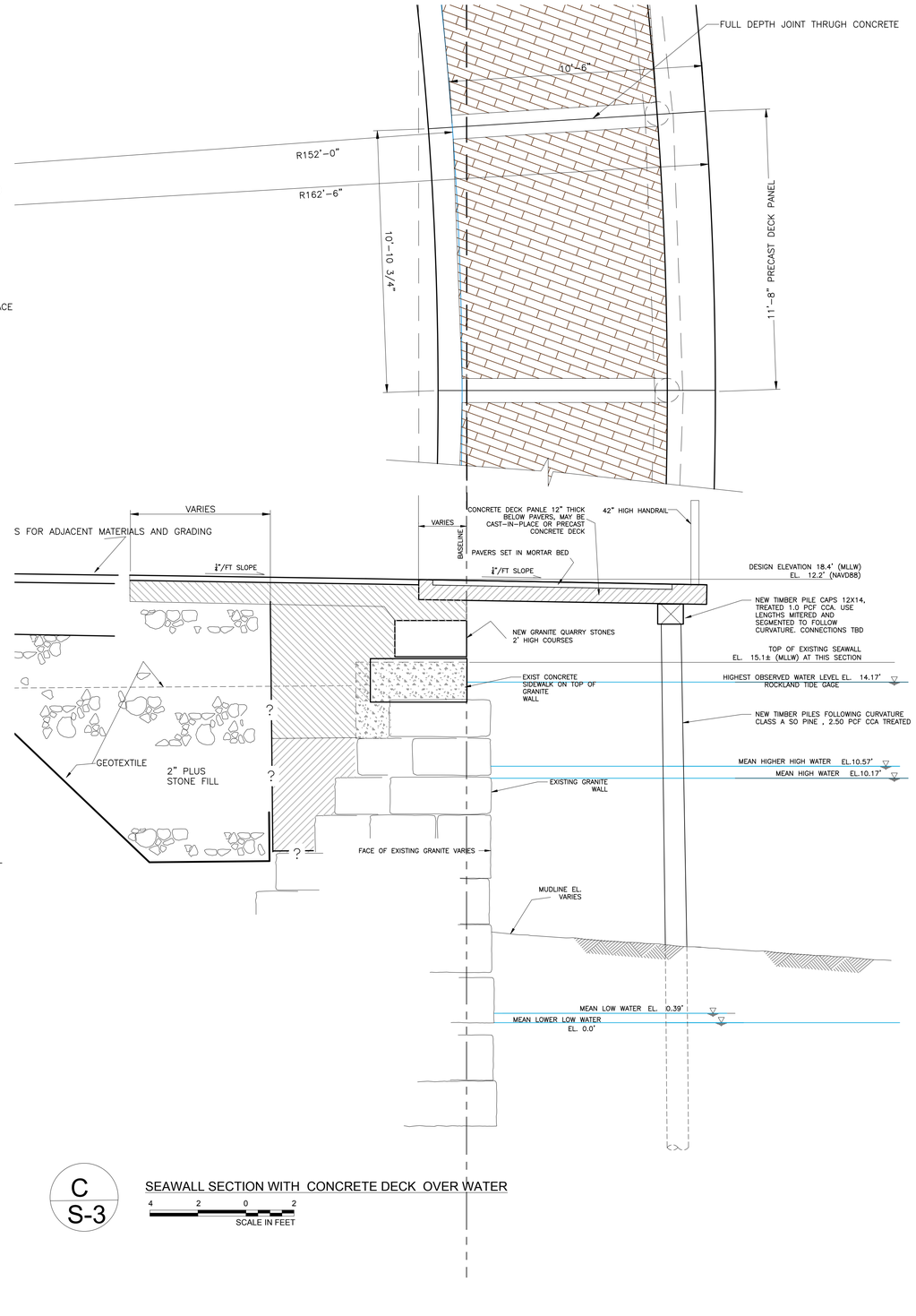
4 2 0 2
SCALE IN FEET




B
S-3

SEAWALL SECTION WITH GRANITE FACING
STATION 0+88 TO 1+85
AND 3+00 TO 3+35

4 2 0 2
SCALE IN FEET




C
S-3

SEAWALL SECTION WITH CONCRETE DECK OVER WATER

4 2 0 2
SCALE IN FEET

PRELIMINARY
FOR REVIEW AND COMMENT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Canaan, ME 04924
PinnacleHillEngineering@gmail.com


STATE OF MAINE
STEPHEN T RUELL
No. 4396
Licensed PROFESSIONAL ENGINEER

PUBLIC LANDING CONCEPT
PUBLIC LANDING PIER STRUCTURES

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale 3/8" =1'-0"
Date of Revision:
2-25-2023

DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

PUBLIC LANDING
SEAWALL DETAILS

S-4
REV. O


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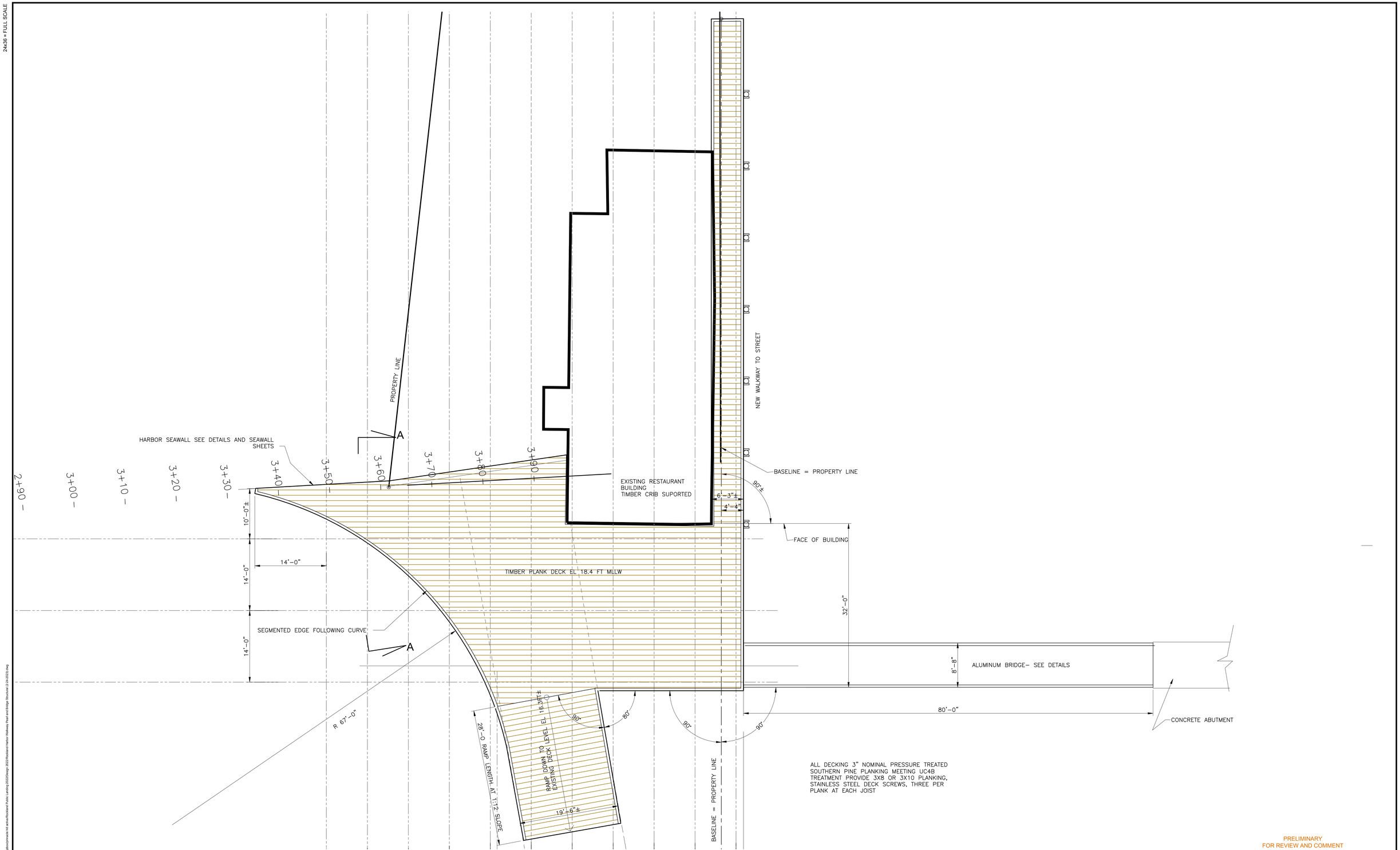
bricsCAD v23

24x36 = FULL SCALE




ALL DECKING 3" NOMINAL PRESSURE TREATED SOUTHERN PINE PLANKING MEETING UC4B TREATMENT PROVIDE 3X8 OR 3X10 PLANKING, STAINLESS STEEL DECK SCREWS, THREE PER PLANK AT EACH JOIST

PRELIMINARY
FOR REVIEW AND COMMENT


PINNACLE HILL ENGINEERING
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Canaan, ME 04924
PinnacleHillEngineering@gmail.com


STATE OF MAINE
STEPHEN T RUELL
No. 4396
LICENSED PROFESSIONAL ENGINEER

PUBLIC LANDING CONCEPT
PEARL PIER AND BRIDGE

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale 1/8"=1'-0"
Date of Revision: 2-25-2023

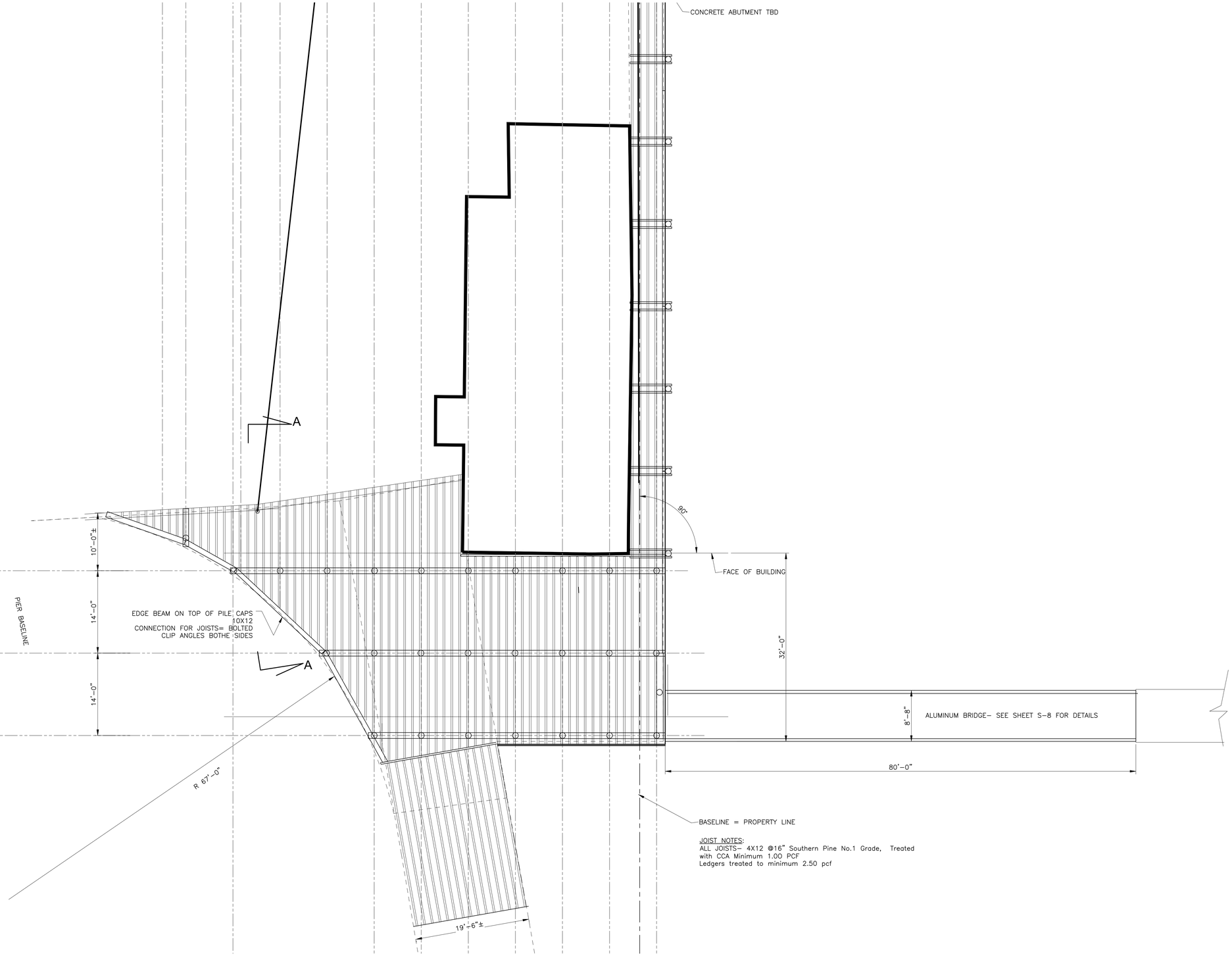
DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

PEARL PIER AND BRIDGE
DECK PLAN

S-5
REV. O

C:\Users\steve\Dropbox\pinnacle hill active\Rockland Public Landing 2022\Design 2022\Rockland Harbor Walkway Pearl and Bridge Structural (2-24-2023).dwg
bricsCAD v23

24x36 = FULL SCALE




JOIST NOTES:
ALL JOISTS- 4X12 @16" Southern Pine No.1 Grade, Treated with CCA Minimum 1.00 PCF
Ledgers treated to minimum 2.50 pcf

PRELIMINARY
FOR REVIEW AND COMMENT


PINNACLE HILL ENGINEERING
33 Pinnacle Road
Canaan, ME 04924
PinnacleHillEngineering@gmail.com


STATE OF MAINE
STEPHEN T RUELL
No. 4396
LICENSED PROFESSIONAL ENGINEER

PUBLIC LANDING CONCEPT
PEARL PIER AND BRIDGE STRUCTURES

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale 1/8"=1'-0"
Date of Revision: 2-25-2023

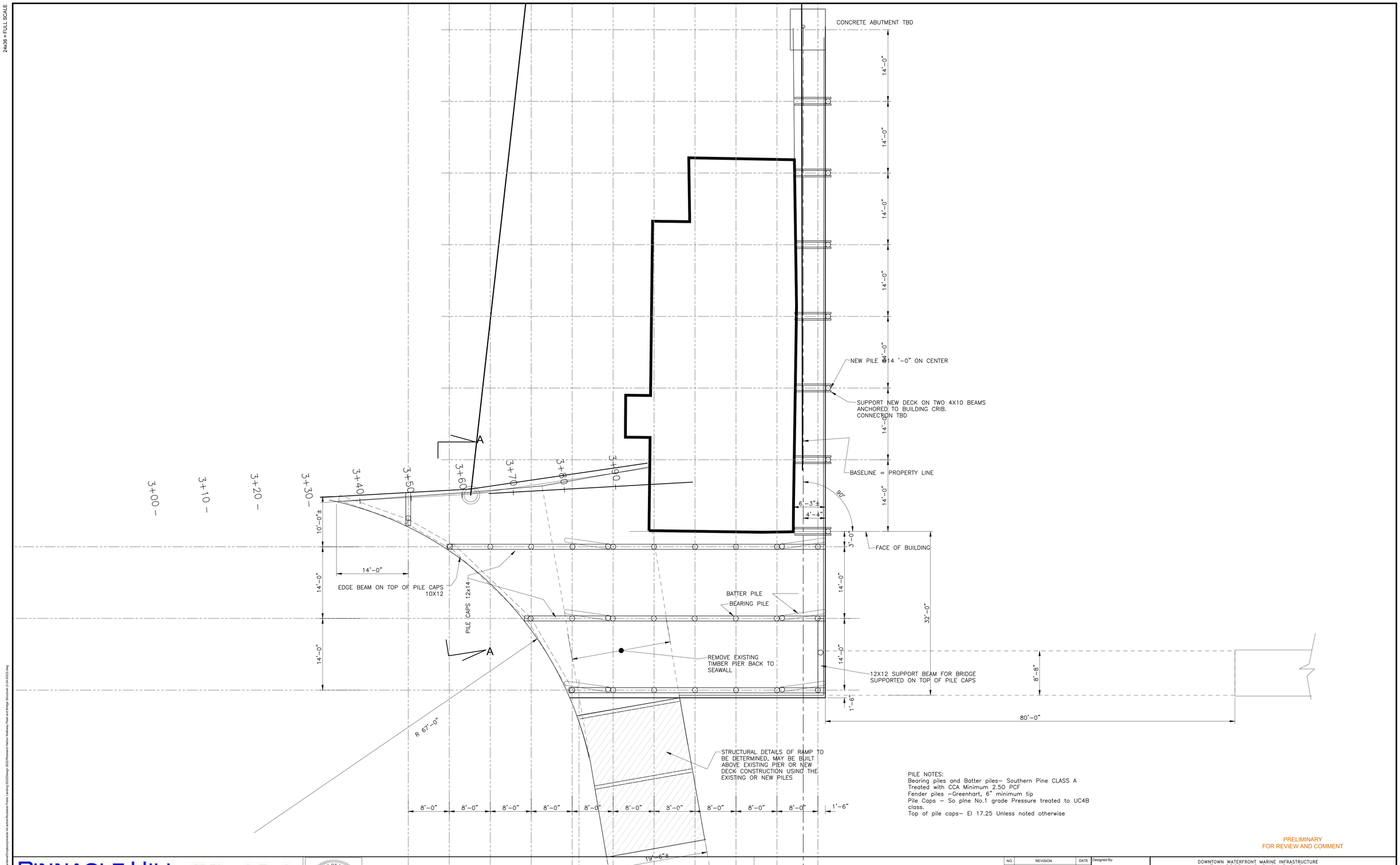
DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

PEARL PIER AND BRIDGE
DECK FRAMING PLAN

S-6
REV. O

C:\Users\Steve\Dropbox\pinnacle hill active\Rockland Public Landing 2022\Design 2022\Rockland Harbor Walkway Pearl and Bridge Structural (1-24-2023).dwg
brlcad7 (HD v23

24x36 = FULL SCALE




PILE NOTES:
Bearing piles and Batter piles– Southern Pine CLASS A
Treated with CCA Minimum 2.50 PCF
Fender piles –Greenhart, 6" minimum tip
Pile Caps – So pine No.1 grade Pressure treated to UC4B class.
Top of pile caps– El 17.25 Unless noted otherwise

PRELIMINARY
FOR REVIEW AND COMMENT


PINNACLE HILL ENGINEERING
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Canaan, ME 04924
PinnacleHillEngineering@gmail.com


STATE OF MAINE — STEPHEN T. RUELL — No. 4396 — LICENSED PROFESSIONAL ENGINEER

PUBLIC LANDING CONCEPT
PEARL PIER AND BRIDGE STRUCTURES

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale: 1/8"=1'-0"
Date of Revision: 2-25-2023

DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

PEARL PIER AND BRIDGE
PILE AND PILE CAP PLAN

S-7
REV. O


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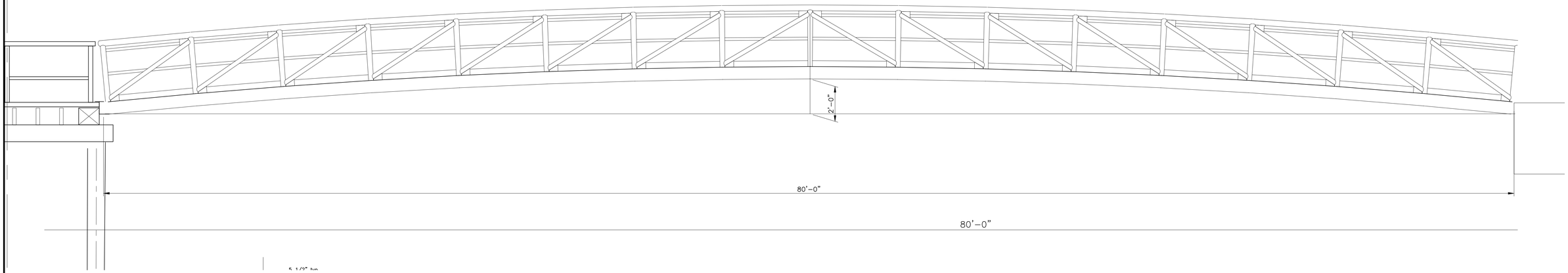
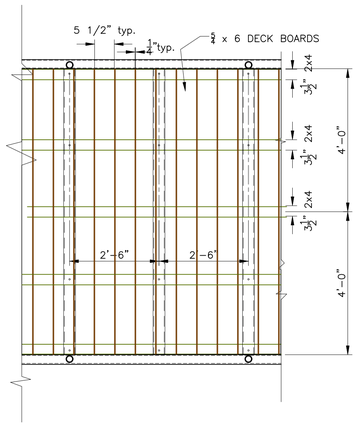
bricsCAD v23

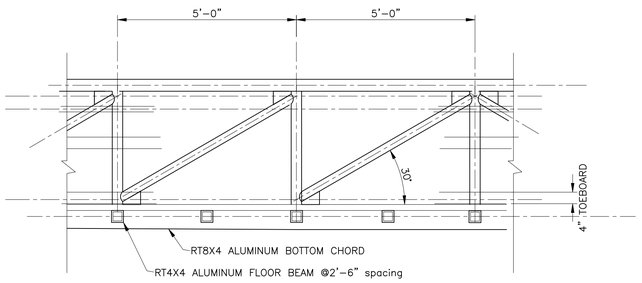
24x36 = FULL SCALE



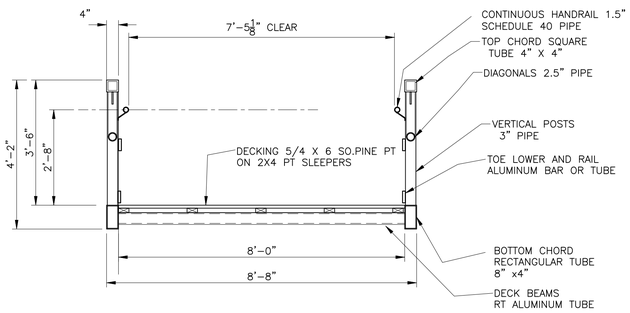

## BRIDGE ELEVATION




BRIDGE DECK DETAIL




BRIDGE TRUSS DETAIL




BRIDGE CROSS SECTION

PRELIMINARY
FOR REVIEW AND COMMENT

PINNACLE HILL ENGINEERING
33 Pinnacle Road
Canaan, ME 04924
PinnacleHillEngineering@gmail.com

STATE OF MAINE
STEPHEN T RUELL
No. 4396
LICENSED PROFESSIONAL ENGINEER

PUBLIC LANDING CONCEPT
PEARL PIER AND BRIDGE STRUCTURES

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale AS NOTED
Date of Revision: 2-25-2023

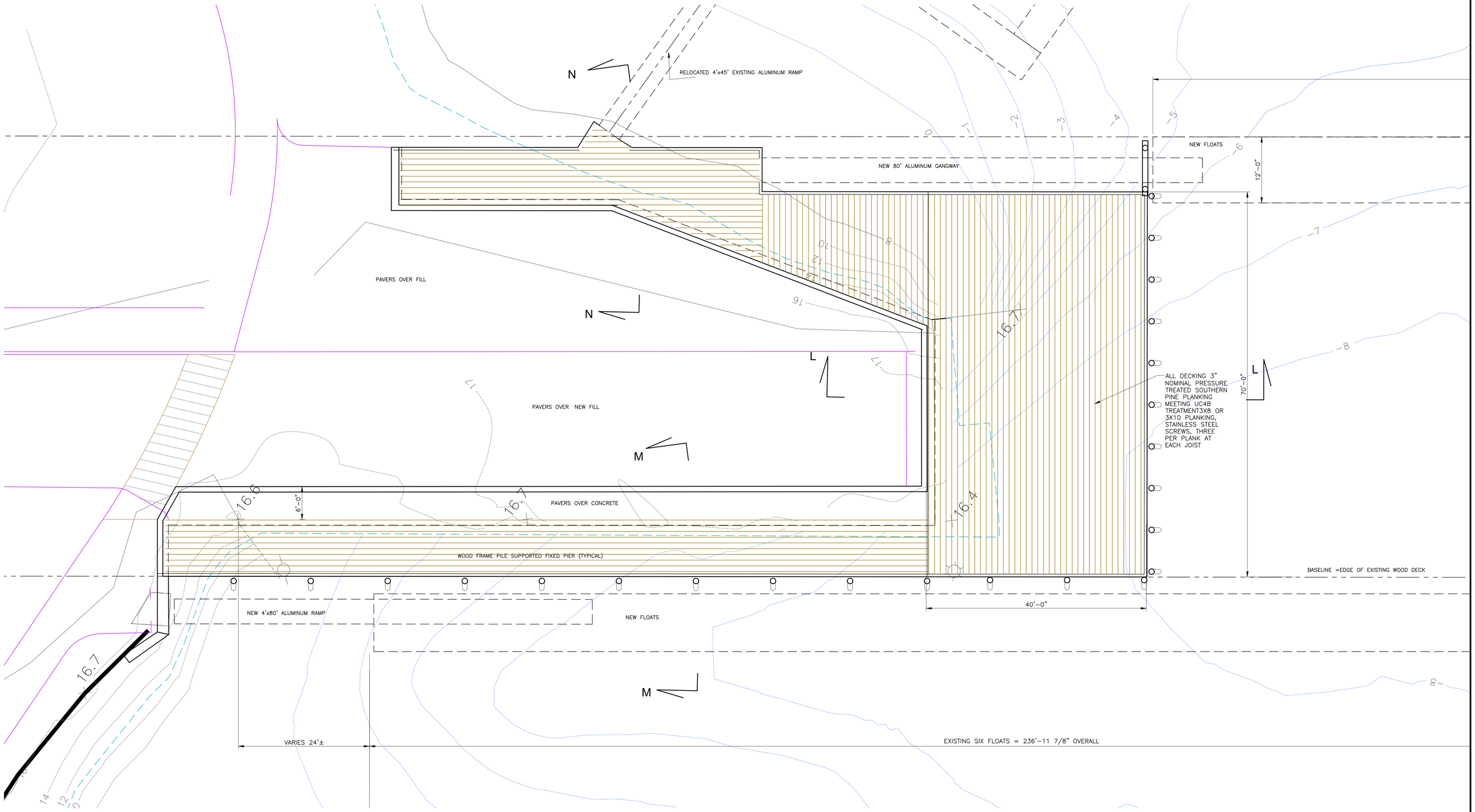
DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

PEARL PIER AND BRIDGE
BRIDGE DETAILS

S-8
REV. O

C:\Users\steve\Dropbox\pinnacle hill active\Rockland Public Landing 2022\Design 2022\Rockland Harbor Walkway Pearl and Bridge Structural (2-24-2023).dwg
bricsCAD v23

24x36 = FULL SCALE




PRELIMINARY
FOR REVIEW AND COMMENT


PINNACLE HILL ENGINEERING
33 Pinnacle Road
Canaan, ME 04924
PinnacleHillEngineering@gmail.com


STATE OF MAINE — STEPHEN T. RUELL — No. 4396 — LICENSED PROFESSIONAL ENGINEER

MIDDLE PIER CONCEPT
STRUCTURAL PLANS

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale: 1/8" =1'-0"
Date of Revision: 2-25-2023

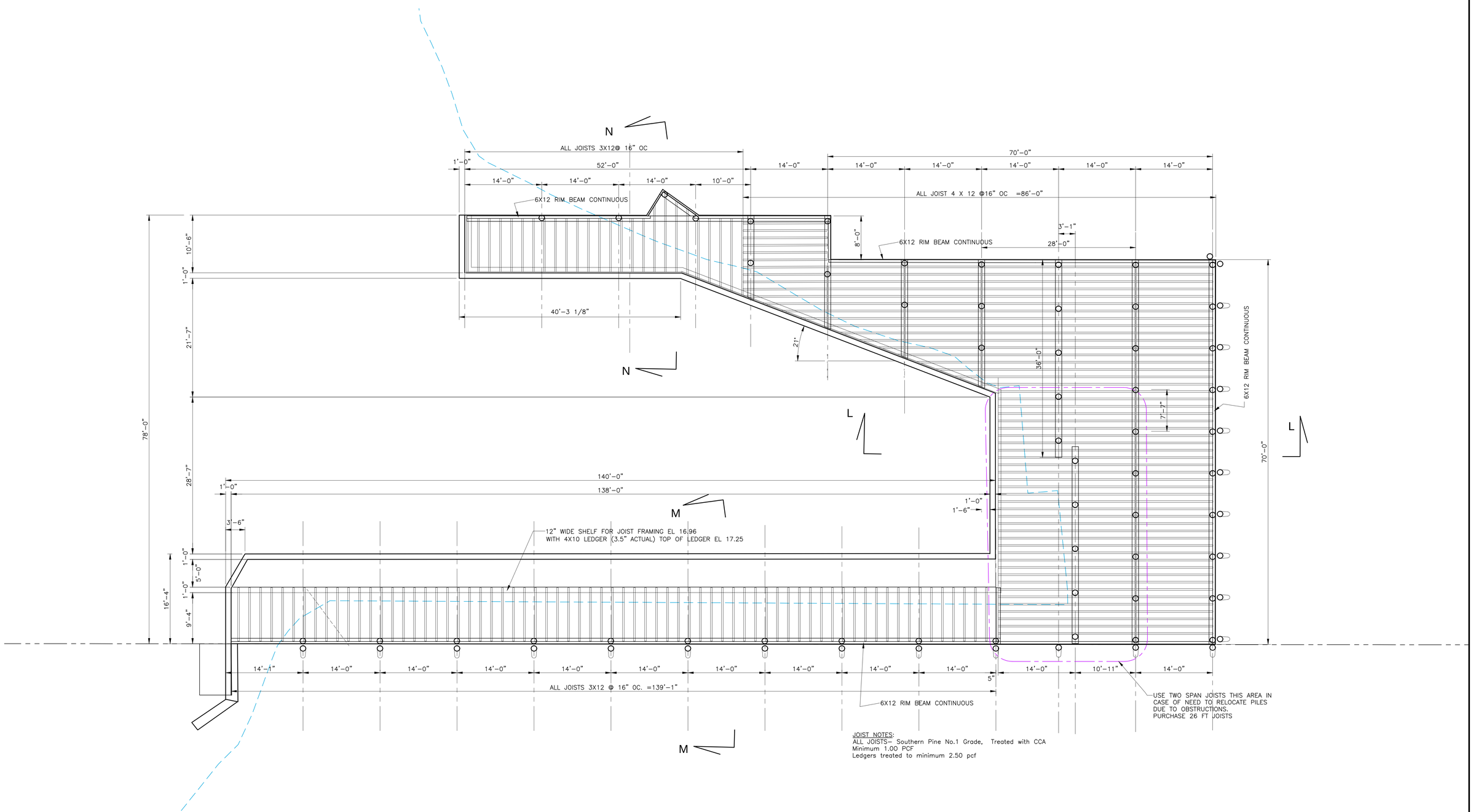
DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

MIDDLE PIER DECK PLAN

S-9
REV. O


bricsCAD V23
/Users/steve/Dropbox/pinnacle hill active/Rockland Public Landing 2022/Design 2022/Rockland Middle Pier Marine Structure Plan (2-25-23).dwg

24x36 = FULL SCALE




JOIST NOTES:
ALL JOISTS– Southern Pine No.1 Grade, Treated with CCA
Minimum 1.00 PCF
Ledgers treated to minimum 2.50 pcf

PRELIMINARY
FOR REVIEW AND COMMENT

PINNACLE HILL ENGINEERING

MIDDLE PIER CONCEPT
STRUCTURAL PLANS

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale 1/8" =1'-0"
Date of Revision: 2-25-2023

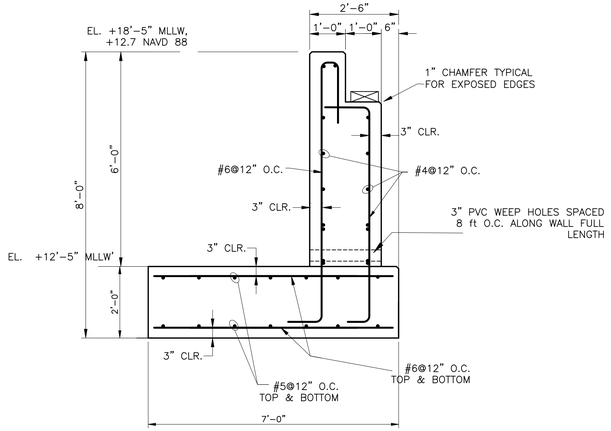
DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

MIDDLE PIER
DECK FRAMING PLAN

S-10
REV. O

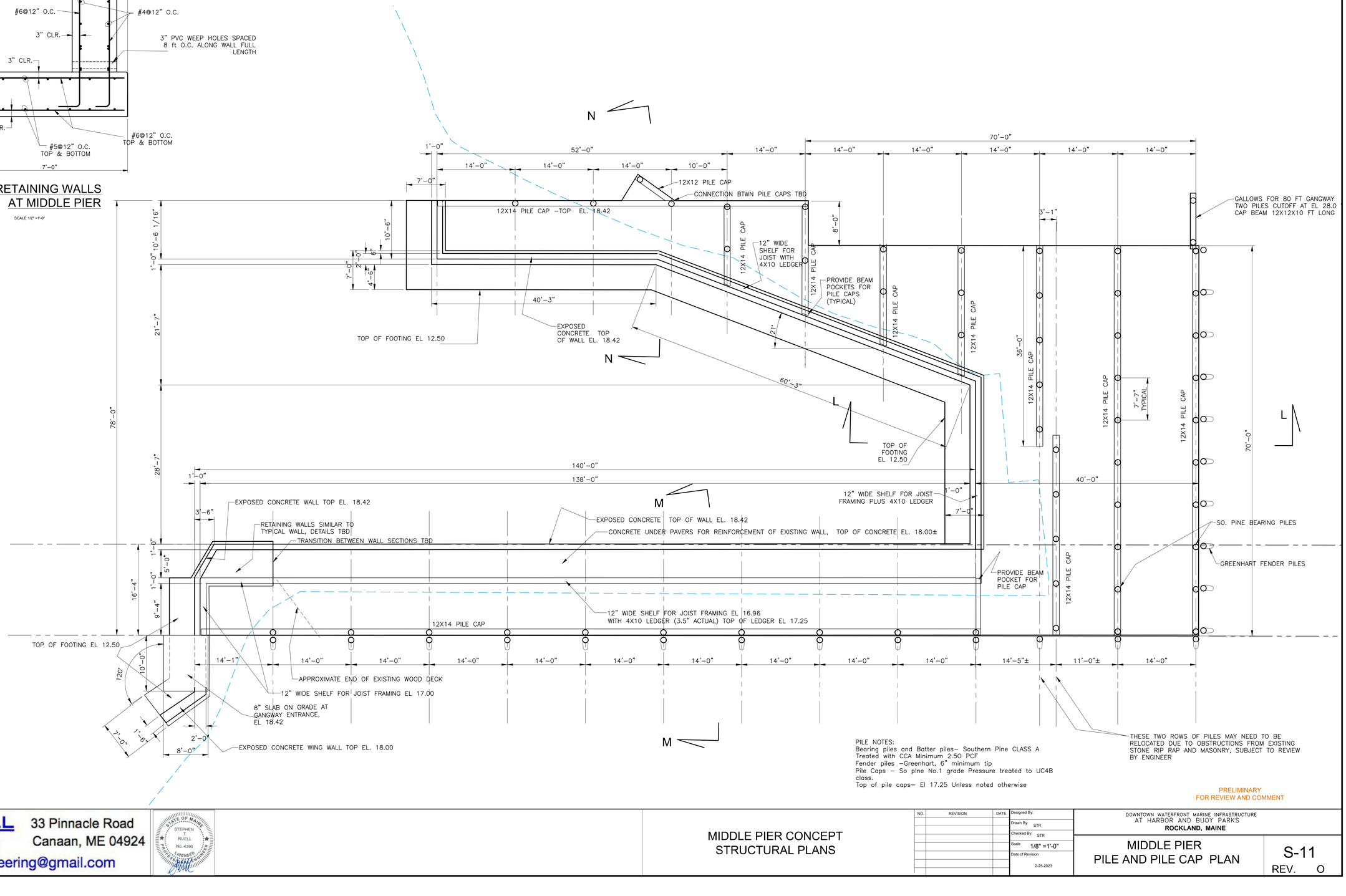
Y:\1681Dwg\2022 Pwd Engineering\From Stuart\Hall\Rockland Middle Pier Marine Structure Plan 12-20-23.dwg
bricsCAD v23

24x36 = FULL SCALE




## TYPICAL SECTION RETAINING WALLS AT MIDDLE PIER

SCALE 1/2" =1'-0"




PILE NOTES:
Bearing piles and Batter piles– Southern Pine CLASS A
Treated with CCA Minimum 2.50 PCF
Fender piles –Greenhart, 6" minimum tip
Pile Caps – So pine No.1 grade Pressure treated to UC4B class.
Top of pile caps– El 17.25 Unless noted otherwise

PRELIMINARY
FOR REVIEW AND COMMENT

PINNACLE HILL ENGINEERING
33 Pinnacle Road
Canaan, ME 04924
PinnacleHillEngineering@gmail.com

STATE OF MAINE
STEPHEN T RUELL
No. 4396
REGISTERED PROFESSIONAL ENGINEER

MIDDLE PIER CONCEPT
STRUCTURAL PLANS

| NO. | REVISION | DATE |
|---|---|---|

Designed By:
Drawn By: STR
Checked By: STR
Scale 1/8" =1'-0"
Date of Revision: 2-25-2023

DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

MIDDLE PIER
PILE AND PILE CAP PLAN

S-11
REV. O

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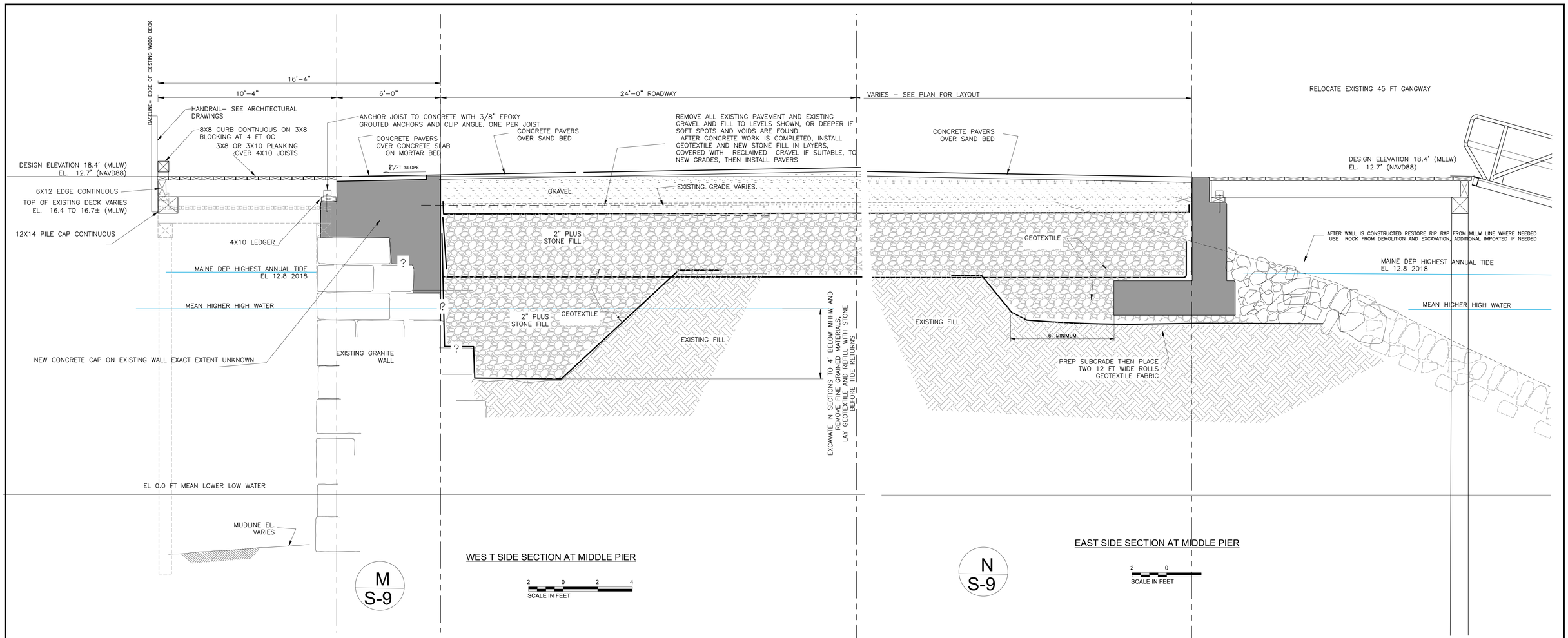
24x36 = FULL SCALE




M
S-9

WES T SIDE SECTION AT MIDDLE PIER

2 0 2 4
SCALE IN FEET

N
S-9

EAST SIDE SECTION AT MIDDLE PIER

2 0
SCALE IN FEET

PRELIMINARY
FOR REVIEW AND COMMENT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STATE OF MAINE
STEPHEN T. RUELL
No. 4396
REGISTERED PROFESSIONAL ENGINEER

MIDDLE PIER CONCEPT
STRUCTURAL PLANS

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale 3/8"=1'-0"
Date of Revision: 2-25-2023

DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

MIDDLE PIER
TRANSVERSE SECTIONS

S-12
REV. O


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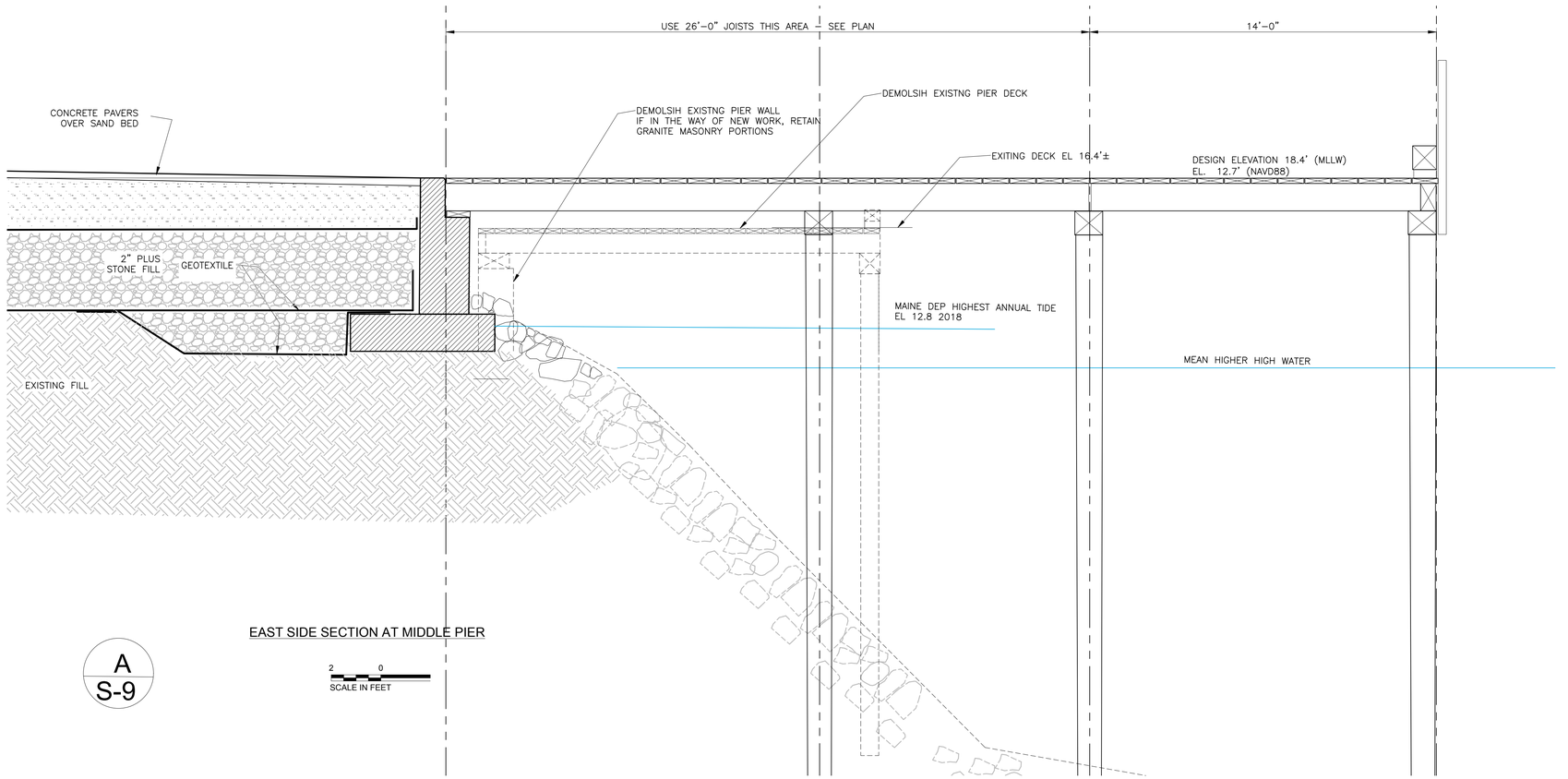
brad CAD v.23

24x36 = FULL SCALE




EAST SIDE SECTION AT MIDDLE PIER

A
S-9

2 0
SCALE IN FEET

PRELIMINARY
FOR REVIEW AND COMMENT

PINNACLE HILL ENGINEERING
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STATE OF MAINE
STEPHEN T RUELL
No. 4396
LICENSED PROFESSIONAL ENGINEER

MIDDLE PIER CONCEPT
STRUCTURAL SECTIONS

| NO. | REVISION | DATE |
|---|---|---|
| | | |

Designed By:
Drawn By: STR
Checked By: STR
Scale 3/8"=1'-0"
Date of Revision:
2-25-2023

DOWNTOWN WATERFRONT MARINE INFRASTRUCTURE
AT HARBOR AND BUOY PARKS
**ROCKLAND, MAINE**

MIDDLE PIER
LONGITUDINAL SECTION

S-13
REV. O

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bmcCAD v23

# ATTACHMENT B
# CONSTRUCTION COST ESTIMATE

**DOWNTOWN WATERFRONT**

City of Rockland, Maine

*Opinion of probable design & construction costs based upon preliminary engineering design.*

Date: Mar-23

# Waterfront Infrastructure

## Estimated Hard and Soft Costs

| Item | Material | Quantity | Unit | Unit Cost | Subtotal |
|---|---|---|---|---|---|
| ***Public Landing*** | | | | | |
| Demolition | Allowance | 1 | ls | $125,000.00 | $125,000.00 |
| Pier Replacement and Expansion | Wood frame and decking | 3800 | sf | $200.00 | $760,000.00 |
| Piles | Wood | 3420 | lf | $60.00 | $205,200.00 |
| Floats | Wood | 12800 | sf | $65.00 | $832,000.00 |
| ADA Ramp | Aluminum | 1 | ea | $60,000.00 | $60,000.00 |
| Tenders & ticket building | Allowance | 1 | sf | $25,000.00 | $25,000.00 |
| Covered shelter | Allowance; 16x24 open wood structure | 1 | ls | $40,000.00 | $40,000.00 |
| Pier Railings | Allowance | 286 | lf | $200.00 | $57,200.00 |
| Pumpout Station | Allowance | 1 | ls | $28,000.00 | $28,000.00 |
| Utility Connections | Water and Sewer | 1 | ls | $76,875.00 | $76,875.00 |
| Substation | Equipment | 1 | ea | $45,000.00 | $45,000.00 |
| Dock Substation | Equipment | 1 | ea | $38,000.00 | $38,000.00 |
| DC Charging | Equipment and Materials | 1 | ea | $200,000.00 | $200,000.00 |
| Shore Power Pedestals | Equipment and Materials | 7 | ea | $8,000.00 | $56,000.00 |
| Light Bollard | Equipment and Materials | 6 | ea | $1,000.00 | $6,000.00 |
| Fire Extinguisher | Equipment and Materials | 9 | ea | $1,200.00 | $10,800.00 |
| Ground Fault Protection | Equipment and Materials | 1 | ls | $29,650.00 | $29,650.00 |
| Electrical Labor | | 1000 | hr | $65.00 | $65,000.00 |
| Furnishings - Public Landing | Incldes Loungers, double-sided benches | 1 | ls | $70,000.00 | $70,000.00 |
| Lighting (Boardwalk) | Allowance | 1 | ls | $20,000.00 | $20,000.00 |
| **Subtotal** | | | | | **$2,749,725.00** |
| Construction Contingency(10%) | | | | | $274,972.50 |
| **Total Hard Cost** | | | | | **$3,024,697.50** |
| Design and Admin (8%) | | | | | $241,975.80 |
| ***Total Hard and Soft Costs - Public Landing*** | | | | | **$3,266,673.30** |

| | | | | | |
|---|---|---|---|---|---|
| ***Harbor Park Seawall*** | | | | | |
| Granite Bulkhead (resiliency) | Granite and Concrete | 360 | lf | $2,400.00 | $864,000.00 |
| Piles | Wood | 360 | lf | $60.00 | $21,600.00 |
| Curved Concrete Pier | Allowance | 115 | lf | $980.00 | $112,700.00 |
| Pier Railings | Allowance | 263 | lf | $200.00 | $52,600.00 |
| Structural backfill settling resiliency | Allowance | 1 | ls | $135,000.00 | $135,000.00 |
| Storm Drain | Allowance | 105 | lf | $100.00 | $10,500.00 |
| Paver Surface - Boardwalk | Concrete Pavers, premium | 400 | sy | $200.00 | $80,000.00 |
| Paver Surface - Plaza Spaces | Concrete Pavers | 600 | sy | $200.00 | $120,000.00 |
| Boardwalk railings | Allowance; Alum. Multirail | 265 | lf | $300.00 | $79,500.00 |
| Site signage | Allowance; Granite posts, full color pvc panel | 3 | ea | $4,000.00 | $12,000.00 |
| Kiosk | Allowance, TBD | 1 | ls | $7,500.00 | $7,500.00 |
| Furnishings - HM Plaza | Includes picnic tables, benches, planters | 1 | ls | $52,000.00 | $52,000.00 |
| Furnishings - Boardwalk (Custom) | Allowance, sculptural seating, boardwalk (TBD) | 1 | ls | $80,000.00 | $80,000.00 |
| Furnishings - Boardwalk | Includes benches, seating structures, planters | 1 | ls | $130,000.00 | $130,000.00 |
| Bicycle Racks | Arc style, surface mounted | 8 | ea | $800.00 | $6,400.00 |
| Loam & Seed | 4" depth loam, seeding & mulching lawn areas | 228 | sy | $6.00 | $1,368.00 |
| Planting bed soils | Based on 12" depth, amended loam | 40 | cy | $75.00 | $3,000.00 |
| Trees | Installed, 2" caliper | 3 | ea | $700.00 | $2,100.00 |
| Shrubs | Installed, #5 pots | 68 | ea | $75.00 | $5,100.00 |
| Herbaceous | Installed, #1 pots | 25 | ea | $5,000.00 | $125,000.00 |
| Lighting (Boardwalk) | Allowance, TBD | 1 | ls | $15,000.00 | $15,000.00 |
| **Subtotal** | | | | | **$1,915,368.00** |
| Construction Contingency(10%) | | | | | $191,536.80 |
| **Total Hard Cost** | | | | | **$2,106,904.80** |
| Design and Admin (8%) | | | | | $168,552.38 |
| ***Total Hard and Soft Costs - Harbor Park Seawall*** | | | | | **$2,275,457.18** |

| | | | | | |
|---|---|---|---|---|---|
| ***Pier and Bridge to Buoy Park*** | | | | | |
| Demolition | Allowance | 1 | ls | $10,000.00 | $10,000.00 |
| Concrete Abutments | Structural Concrete | 16 | cy | $500.00 | $8,000.00 |
| Pier Replacement and Expansion | Wood (City Only) | 1920 | sf | $200.00 | $384,000.00 |
| Piles | Wood (City Only) | 120 | lf | $60.00 | $7,200.00 |
| Floats - Dinghy | Wood | 700 | sf | $65.00 | $45,500.00 |
| Arch Bridge | Aluminum | 1 | ea | $80,000.00 | $80,000.00 |
| Railings | Allowance | 77 | lf | $200.00 | $15,400.00 |
| Signage, directional | Allowance; directional (TBD) | 1 | ls | $1,000.00 | $1,000.00 |
| Furnishings (Pier areas) | Backless benches, MP seating structure | 1 | ls | $30,000.00 | $30,000.00 |
| Living Shoreline and Granite Blocks | Allowance; Sill with plantings (NOAA) | 1 | ls | $50,000.00 | $50,000.00 |
| Lighting | Allowance, TBD | 1 | ls | $12,000.00 | $12,000.00 |
| **Subtotal** | | | | | **$643,100.00** |
| Construction Contingency(10%) | | | | | $64,310.00 |
| **Total Hard Cost** | | | | | **$707,410.00** |
| Design and Admin (8%) | | | | | $56,592.80 |
| ***Total Hard and Soft Costs - Pier and Bridge to Buoy Park*** | | | | | **$764,002.80** |

| | | | | | |
|---|---|---|---|---|---|
| ***Middle Pier*** | | | | | |
| Demolition | Allowance | 1 | ls | $130,000.00 | $130,000.00 |
| Concrete Retaining Walls & Backfill | Structural Concrete | 550 | cy | $400.00 | $220,000.00 |
| Pier Replacement and Expansion | Wood | 5800 | sf | $200.00 | $1,160,000.00 |
| Piles | Wood | 3005 | lf | $60.00 | $180,300.00 |
| Floats | Wood | 4800 | sf | $65.00 | $312,000.00 |
| ADA Ramps | Aluminum | 2 | ea | $60,000.00 | $120,000.00 |
| Dinghy Ramp | Re-use Aluminum Ramp | 1 | ls | $2,000.00 | $2,000.00 |
| Railings | Allowance | 208 | lf | $200.00 | $41,600.00 |
| Ticket/Utility Building | Allowance | 1 | ea | $10,000.00 | $10,000.00 |
| Pumpout Station and Sewer | Allowance | 1 | ls | $20,000.00 | $20,000.00 |
| Substation | Equipment | 1 | ea | $45,000.00 | $45,000.00 |
| DC Charging | Equipment and Materials | 1 | ea | $200,000.00 | $200,000.00 |
| Shore Power Pedestals | Equipment and Materials | 5 | ea | $8,200.00 | $41,000.00 |
| Light Bollard | Equipment and Materials | 4 | ea | $1,000.00 | $4,000.00 |
| Fire Extinguisher | Equipment and Materials | 3 | ea | $1,200.00 | $3,600.00 |
| Ground Fault Protection | Equipment and Materials | 1 | ls | $14,500.00 | $14,500.00 |
| Electrical Labor | | 800 | hr | $65.00 | $52,000.00 |
| Structural backfill settling resiliency | Gravels and Fabric | 1 | ls | $125,000.00 | $125,000.00 |
| Paver Surface | Concrete Pavers | 771 | sy | $200.00 | $154,288.89 |
| Granite bollards | Pedestrian area | 5 | ea | $1,500.00 | $7,500.00 |
| Signage, entrance & directional | Allowance | 1 | ls | $5,000.00 | $5,000.00 |
| Benches | Allowance | 1 | ls | $30,000.00 | $30,000.00 |
| Landscaping | Allowance | 1 | ls | $5,000.00 | $5,000.00 |
| Lighting | Allowance | 1 | ls | $12,000.00 | $12,000.00 |
| **Subtotal** | | | | | **$2,894,788.89** |
| Construction Contingency(10%) | | | | | $289,478.89 |
| **Total Hard Cost** | | | | | **$3,184,267.78** |
| Design and Admin (8%) | | | | | $254,741.42 |
| ***Total Hard and Soft Costs - Middle Pier*** | | | | | **$3,439,009.20** |

| | |
|---|---|
| **Grand Total Hard and Soft Costs** | **$9,745,142.48** |