

PRELIMINARY ENGINEERING REPORT

OCTOBER 6, 2023

DOWNTOWN WATERFRONT UPLAND IMPROVEMENTS ROCKLAND, MAINE



LANDMARK CORPORATION

SURVEYORS & ENGINEERS

16-012

CITY OF ROCKLAND, MAINE
DOWNTOWN WATERFRONT UPLAND IMPROVEMENTS
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Preliminary Engineering Report

Downtown Waterfront Upland Improvements

1.1 DESCRIPTION OF PROJECT COMPONENTS

The City of Rockland (City) is located on Penobscot Bay in Knox County, Maine. The City owns nearly 7 acres of park land (Harbor and Buoy Park), 2 multi-use piers, and more than 1,000 feet of shore frontage in the heart of the downtown. The City is proposing to make improvements and upgrades to Harbor Park and Buoy Park. These improvements, in conjunction with waterfront infrastructure work to the Public Landing, the Harbor Park Seawall, and Middle Pier (see Preliminary Engineering Report, titled “Downtown Waterfront Infrastructure Project”, dated March 15, 2023), will provide resiliency to sea level rise by raising the elevation of the parks, the harbor master’s building, and the storm drain system. The project will provide community resiliency by providing accessibility, open space, and connectivity from the water, along the Harbor Walk, and to the Downtown area and beyond. The project is described below into four key components. Plans are included in Attachment A.

1. **Harbor Park** - Harbor Park serves as a public access point to and from Rockland Harbor and hosts numerous other community events. It is home to the Harbor Master’s Building and is Rockland’s gateway for transient boaters and cruise ship passengers. The Rockland Yacht Club’s launch service, mooring holders, and the general public utilize Harbor Park on route to the Public Landing and the Harbor Walk. The current conditions of the park, however, are in need of repair and improvement to better serve the public now and into the future. The elevation of the park nearest the harbor ranges from 8.0’ to 10.0’ (NAVD88) which is not only well below the existing flood zone, but also non-compliant for ADA accessibility to the Public Landing and the Harbor Walk (See Figure 1). The Harbor Master’s Building with a first floor elevation of 11.5’ is below the current AE 12 flood zone and has become outdated for its intended use with regard to code and efficiency. Lastly, through an extensive public process, it was determined that the users of the park needed to strike a balance and that spaces in the

park should be better defined and allocated. It was also mandated that a 50-year design life be utilized and that a 2.7' intermediate expectation of sea level rise be considered.



Figure 1: Image showing low elevation of park and steepness of walk

To address the above concerns, the following improvements are proposed:

Accessibility and Resiliency – In conjunction with the marine infrastructure project the lower portion of the park will be filled approximately 4' to create flush surface conditions with the Public Landing and Harbor Walk. This will also serve to protect the park from flooding, erosion, and sea level rise. The weight of this fill may cause settling of underlying clay deposits, see Geotechnical Report in Appendix 1, this can be addressed with soil loading and monitoring during construction and will need to be considered during final design.

Harbor Master's Building – The existing Harbor Master's Building lies within both the VE15 and AE12 flood zones. Initially, it was planned to be moved back out of the VE15 flood zone and raised to prevent flood damage and increase resiliency. Upon investigation, it was determined that most of the historical features of the building have been modified or replaced and that bring the building to modern day codes would be more difficult and expensive than building a new building that is energy efficient and well suited for the multitude of uses required. As a result, a new 2,115 sf, one story building is proposed that will be well suited for the City of Rockland, the Harbor Master, the Yacht Club, transient boaters, and the general public. The building will be placed on a new frost wall and slab, with a finished floor elevation of 14.0 (NAVD 88). The frost wall will be resilient to erosion and the elevation will protect it from flooding and sea level rise. Lastly, placement of the building along with other elements of the site will provide ADA accessibility, public space, and multi-modal transportation access.

Space Allocation – Harbor Park has numerous and varied users, from large events to a simple picnic. With the extensive filling proposed it afforded the City the opportunity to gain input on equitable space allocation. The results are as follows:

- Relocate parking from center of park,
- Enhance park-like setting,
- Better utilize the grass slope with a formalized amphitheater

- Increase safety with access from a second entrance
- Provide for open space suited for public and large events
- Improve connectivity to downtown
- Dedicated zone for food trucks
- Balance the need of diverse users and provide waterfront access for all

As depicted on the site plan, this component includes filling, paving, and landscaping. Long lasting materials such as granite curbs, granite blocks, and concrete pavers will be utilized.

2. **Buoy Park** – Buoy Park is also a valued open space and harbor access point. It is the location of a City sewer pump station and a lobster cooker that serves the yearly Lobster Festival. Middle Pier is used for more commercial boating activities, and this would be enhanced upon its replacement and expansion. The park is mostly protected by a riprap revetment along its approximately 650’ of shoreline. Unlike Harbor Park, most of Buoy Park lies above elevation 11.0’ (NAVD 88). The exception to this is a low-lying beach and connector road with an elevation of 8.0’. The goals established for Buoy Park include raising grade for resiliency, accessibility for Middle Pier, extend the Harbor Walk, connection to the Downtown, accommodate bus drop off, incorporate living shoreline elements, and enhance personal watercraft launch facilities. An 8’ wide, concrete paver Harbor Walk is proposed along the top of the bank leading from the proposed Harbor Park bridge all the way to the bottom of Gilbert & Adams Central Park. In some instances, granite blocks will be used to raise the grade and enhance resiliency along the bank. The walk will continue with an ADA accessible path for an important connection to Park Drive and continuation of the Harbor Walk to Downtown destinations. To balance resiliency with continued beach access, the connector road will be raised from elevation 8.0’ to 11.0’. The slope of the road will be stabilized according to geotechnical recommendations determined during final design. Stone steps with a kayak rail will lead from a proposed boat rack to the beach, which will greatly improve the current conditions (see Figure 2). Based on an evaluation tool established by the Maine Geological Survey, the beach area of Buoy Park received a score of 32 out of 44 for suitability for living shoreline. A portion of the granite block/riprap slope needs repair which allows the opportunity to incorporate living shoreline adjacent and above the high-water line (see Figure 2). Plantings will be in accordance with Maine’s Coastal Planting Guide for the “lower bank”

zone (see Figure 3). To preserve views, woody low shrubs, herbaceous grasses, and low perennials can be selected that are salt tolerant and prefer sun.



Figure 2: Existing kayak rack and Living Shoreline location

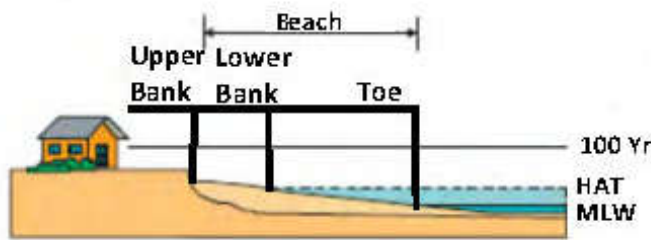


Figure 3: Maine Coastal Planting Guide-Planting Zones

- 3. Utilities (Power, Water, Sewer)** – Both Harbor and Buoy Parks will have a need for permanent and seasonal utilities. The seasonal utilities are mostly needed for the outdoor festival and marina uses. The permanent utilities are needed for the Harbor Master Building, fire protection, and non-seasonal floats at Middle Pier. Current conditions require an excessive number of temporary facilities to accommodate the festival uses. Although it is manageable, the risk for injury or environmental damage is evident (see Figure 4, 5, and 6). Goals for the utilities are to eliminate overhead lines, increase personal and environmental safety, and plan for the future (including boat electrification).

Harbor Park – Currently there are multiple service connections for power held by the City, the Lobster Festival, and the Blues Festival. The plan includes consolidating to one single 600 amp 3-phase service that will be fed overhead along the southern property line and then

distributed underground to the Harbor Master Building, the Public Landing, and seasonal outlets. Seasonal power will be fed to either a permanently mounted pedestal or to locked hand holes in which wire will be left for access by an electrician for appropriate temporary outlets.



Figure 4:Temp Electrical



Figure 5:Temp Wastewater

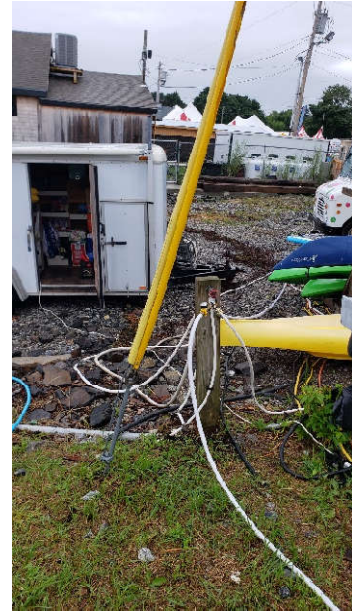


Figure 6:Temp Potable Water

Water service to Harbor Park is adequate, but it will be necessary to relocate a fire hydrant and upgrade the service connection to the Harbor Master's Building. Distribution to the Public Landing, frost free spigots, and seasonal spigots will be from Harbor Master's Building. Valve pits will be provided in order to drain seasonal spigots. Sanitary sewers are proposed to collect wastewater from food trucks and other seasonal locations. These connections will be made within a precast concrete basin and will greatly reduce the risk of environmental harm.

Buoy Park - Currently there are multiple service connections for power held by the City and the Lobster Festival. The plan includes providing infrastructure to allow up to one single 600 amp 3-phase service that will be fed underground through Harbor Park and then distributed underground to the Middle Pier, the Lobster Cooker, and seasonal outlets. A single-phase service may be adequate initially, prior to the demands of boat electrification. Seasonal power will be fed to either a permanently mounted pedestal or to locked hand holes in which wire

will be left for access by an electrician for appropriate temporary outlets. Water service to Buoy Park is inadequate and currently does not include fire protection by a hydrant. A water main will be extended from Park Drive down into the park to serve a fire hydrant, replace the service to the sewer pump station, and create a service in a meter pit for seasonal distribution. Sanitary sewers are proposed to collect wastewater seasonally from Middle Pier and other festival locations. These connections will be made within a precast concrete basin and will greatly reduce the risk of environmental harm.

- 4. Stormwater Management and Resiliency** – Harbor Park currently has two storm drain outfalls that convey stormwater from nearby neighborhoods of the City. The elevation of these outfalls, 4.2' (NAVD 88), is well below the current Highest Annual Tide of 7.2'. This places the outfalls in a tail water condition and limits its capacity. With the fill placement mentioned above and the park being much lower than the surrounding area, this will allow a portion of the stormdrain within the park to be re-placed and raised. Likewise, an existing storm drain outfall will be replaced and raised. A higher outlet will increase resiliency from sea level rise by reducing the effect of tailwater conditions and preserving capacity. In accordance with the City's recent stormwater master plan, it is recommended that stormwater quality management be implemented within the parks by a proprietary "swirl concentrator" device. This will help eliminate grit, hydrocarbons, and floatables from the stormwater stream prior to discharge to the harbor. Three (3) Cascade Separator Devices and one (1) Continuous Deflective Separation Device is proposed for this project. These devices are placed in line with the stormdrain system and can be maintained with a standard vacuum truck. The Continuous Deflective Separation device (CDS) is a swirl concentrator hybrid technology that uses a combination of swirl concentration and indirect screening to screen, separate and trap debris, sediment, and hydrocarbons from stormwater runoff. The Cascade Separator is a hydrodynamic separator technology that captures and retains sediment while also removing hydrocarbons, trash, and debris from stormwater runoff.

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

1.2. INVESTMENT COMPLIANCY

The purpose of the Downtown Upland Improvement Project includes repairs and improvements that are necessary to continue providing open space and safe access to Rockland Harbor without adversely affecting its commercial use, private businesses or tourists. On top of the growing tourism trend in Maine, Rockland's need for this project is also based on its preparedness for sea level rise. The funding from this program would protect Rockland's harborfront by reducing the risk of flooding, maintaining public access, and protecting Harbor and Buoy Parks, including the Harbor Master Building. The project components as described in this PER are consistent with the investment project description found in the Governor's Office of Policy Innovation and the Future, Application RFA# 202207107, Community Resilience Partnership Community Action Grant.

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

The project as proposed appears to be feasible with the acquisition of abutter agreements and environmental and local permitting. The owners of the land abutting Harbor and Buoy Parks are amenable to improvements, including grading and utilities on their property.

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 a City staff, the Downtown Waterfront Committee, and the general public. The scope has gained public support and has addressed issues identified during public outreach.

1.5 PROPOSED METHOD OF CONSTRUCTION

This project will be a design-competitive bid-build construction project. The upland improvements, as described herein, are based on the Preliminary Engineering Design. The Preliminary Engineering for the marine portion of the project has also been completed.

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 waterfront and upland portion of the project together. The Waterfront Infrastructure Project could be split as follows (as long as the corresponding upland work were included):

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

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 from Rockland Harbor Park, LLC and Mr. Joseph Reynolds. To the South an agreement and/or construction easement will be needed for grading and removals on property owned by Rockland Harbor Park, LLC. An agreement, license, and/or easement will be required with Mr. Joseph Reynolds for grading, utilities, and access across his property. The City has been in cooperative communication with both parties.

1.9 REQUIRED 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 Upland Improvements Project. A Flood Hazard Development Permit will also be required for work within a VE/AE flood zones.

b. **State of Maine:**

Department of Environmental Protection (DEP)

Natural Resources Protection Act (NRPA): Wetland permitting for work within and adjacent to the Coastal Wetland will be required for the Upland Improvements Project. The level of permitting will be Tier 3 (Individual), which may require a Functional Assessment and a Public Informational Meeting.

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

A Maine General Permit (Section 404) will be required for the beach slope stabilization within the resource. This permit would be applied for in conjunction with the DEP NRPA permit.

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 Upland Improvements broken down by component is as follows: Also, a more detailed itemized cost estimate is included in Attachment B.

Component 1: Harbor Park

Item	Description	Estimated Cost
1	Construction	\$1,057,500.00
2	Site Work	\$3,627,700.00
3	Equipment	\$43,600.00
4	Design and Admin (10%)	\$472,880.00
5	Contingency (10%)	\$427,880.00
	Total	\$5,6745,560.00

Component 2: Buoy Park

Item	Description	Estimated Cost
1	Construction	\$0.00
2	Site Work	\$1,098,315.00
3	Equipment	\$36,700.00
4	Design and Admin (10%)	\$113,510.00
5	Contingency (10%)	\$113,510.00
	Total	\$1,362,035.00

Component 3a: Utilities (Harbor Park)

Item	Description	Estimated Cost
1	Construction	\$54,600.00
2	Site Work	\$398,800.00
3	Equipment	\$112,000.00
4	Design and Admin (10%)	\$56,400.00
5	Contingency (10%)	\$56,400.00
	Total	\$678,480.00

Component 3b: Utilities (Buoy Park)

Item	Description	Estimated Cost
1	Construction	\$44,000.00
2	Site Work	\$345,580.00
3	Equipment	\$103,300.00
4	Design and Admin (10%)	\$49,288.00
5	Contingency (10%)	\$49,288.00
	Total	\$591,456.00

Component 4a: Stormwater (Harbor Park)

Item	Description	Estimated Cost
1	Construction	\$0.00
2	Site Work	\$455,000.00
3	Equipment	\$0.00
4	Design and Admin (10%)	\$45,500.00
5	Contingency (10%)	\$45,500.00
	Total	\$546,000.00

Component 4b: Stormwater (Buoy Park)

Item	Description	Estimated Cost
1	Construction	\$0.00
2	Site Work	\$119,220.00
3	Equipment	\$0.00
4	Design and Admin (10%)	\$11,922.00
5	Contingency (10%)	\$11,922.00
	Total	\$143,064.00

Components 1, 3a, & 4a: Total Harbor Park

Item	Description	Estimated Cost
1	Construction	\$1,112,100.00
2	Site Work	\$4,481,500.00
3	Equipment	\$155,600.00
4	Design and Admin (10%)	\$574,920.00
5	Contingency (10%)	\$574,920.00
	Total	\$6,899,040.00

Components 2, 3b, & 4b: Total Harbor Park

Item	Description	Estimated Cost
1	Construction	\$44,000.00
2	Site Work	\$1,563,115.00
3	Equipment	\$140,000.00
4	Design and Admin (10%)	\$174,720.00
5	Contingency (10%)	\$174,720.00
	Total	\$2,096,555.00

Components 1-4: Grand Total Harbor and Buoy Park

Item	Description	Estimated Cost
1	Construction	\$1,156,100.00
2	Site Work	\$6,044,615.00
3	Equipment	\$295,600.00
4	Design and Admin (10%)	\$749,640.00
5	Contingency (10%)	\$749,640.00
	Total	\$8,995,595.00