Sustainable Shorelines Designs:  
FOUNDRY DOCK CASE STUDY  
Cold Spring, New York  

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COMMUNITY ENGAGEMENT

Scenic Hudson actively engaged the community in the planning process from Brownfield Remediation
Public Access to the River
Site Use
Long Term Management
Two views of the working life of Foundry Dock - the extent of earthwork, clearing and shoreline alteration are most easily appreciated when viewing the historic condition of the site.
The new design of Foundry Dock took the space from derelict and underused to inviting and accessible – with seating, terraces, and boat launch.
Clean-up of the site and new plantings reversed the industrial legacy of damage and neglect to the shoreline – allowing a new future for Foundry Dock.
Shoreline stabilization and native plantings have contributed to enhanced shoreline access for passive and active users.
PLAN IMPLEMENTATION & DESIGN

Figure 2: Newly constructed coir rolls at the edge of the shoreline

Figure 3: A highly exposed area of the site where rip-rap was used below the coir rolls for added protection
Steep Slopes

In relatively sheltered areas, coir rolls are a soft shoreline option that is sturdy enough to stay in place even after years of heavy ice shear and wave action.
REINFORCED UPPER MARSH

EXISTING GRADE
INSTALL EROSION CONTROL BLANKING OVER DISTURBED SOILS ON BANK AND PLANT SPECIFIED NATIVE SHRUBS, FORBS, AND GRASSES

20" DIAMETER FIBER ROLLS INSTALLED AT APPROXIMATE 1:1 SLOPE AND COVERED WITH LAYER C-900 COR NETTING AND LAYER OF EROSION CONTROL MESH ON SEAWARD SIDE. UPPER 4 ROWS SHALL BE PRE-VEGETATED (LOW DENSITY (I)) AND THE LOWER ROWS SHALL BE HIGH DENSITY (H). COMPATIBLE SEDIMENT TO PROVIDE AVERAGE COVER OF 4'-0" OF COVER WITH A GREATER DEPTH AT THE BASE TO PROVIDE SPECIFIED VOLUME OF SAND NOURISHMENT

HELICAL ANCHORS ATTACHED TO 42" CABLE ANCHORS SPACED 2.5" +/- 0' ACROSS ACROSS FACE OF FIBER ROLLS

INSTALL A MATRIX CONSISTING OF 50% 8"-12" ROUNDED COBBLE, 25% COR FIBER AND COMPOST, AND 25% COMPATIBLE SEDIMENT ENCASED IN 2 LAYERS OF COR (700 GRAM) AND SINGLE LAYER OF 2002 JUTE-BURLAP PLANT AT 12' O.C. WITH SPECIFIED TRANSITIONAL HIGH MARSH SPECIES

INSTALL 8"-12" ROUNDED COBBLES ENCASED IN 2 LAYERS OF COR (700 GRAM) AND SINGLE LAYER OF 2002 JUTE-BURLAP AND FILL Voids WITH COMPATIBLE SEDIMENT

TIGHTEN AND FASTEN ANCHOR CABLES WITH ZINC PLATED COPPER CRIMP AND SECURE FIBER ROLLS

NOTE: NO ACTIVITIES TO EXTEND BEYOND NH-HWAY

REINFORCED HIGH MARSH

Scale: 1/8" = 1'-0"
South View: North Shore

Upper Shoreline

- Due to tight site constraints of preserving existing trees and being restricted from extending the slope into the river boulder rip rap combined with coir roll/Plug Vegetation was employed.
- The young plant plugs did not have sufficient time to become established due to frequent seiche.
- Severe ice and storm seiche from the North eroded the coir rolls.
South View: North Shore

Upper Shoreline

• Lower Shoreline armored by Boulder Rip Rap left Mid Shore Coir Rolls vulnerable to High Tide Storm scour

• Boulder combined with Plug Vegetation of mature plants and root structure will stabilize shore quicker.
South View: North Shore

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North View: South Shore

Mature Trees

- Preserve Mature Trees in order to minimize disturbance to subsoils – Brownfield
- Preserve Mature Trees in order to maintain soil stability
- Preserve Mature Trees in order to preserve habitat value and aesthetic enjoyment of park
South Shore Beach

Undulating Shoreline

- Existing mature trees close to shore require boulder rip rap:
- To protect trees
- Stabilize shoreline within a limited area
Kayak & Beach Access

Tidal Armoring of Beach

• Tidal fluctuations are dissipated by moderate sized Boulder armoring along Mean High Tide
• Gently sloping gravel ramps provide smoother access at Low Tide
Boulder & Tree Armoring

Shoreline Stabilization & Views

• Trees provide the strongest structure to the shoreline
• Trees need to be strategically placed to preserve views and access
• Trees can be pruned strategically to provide views
• Pruning increases root strength
River Access

Soft Shore

- Minimum 3:1 Slopes provide easy Kayak, Fishing and Wading Access
- Shoreline and High Tide Boulder Rip Rap securely anchor the beach
Boat Launch

- Timber Trail Bars add stability to the Boat Ramp Beach
- The Timber Trail Bars need to be extended beyond the ramp into the adjoining earth embankment to avoid wash out
Boat Launch

- Timber Trail Bars degraded at the surface while stabilizing the Boat Ramp
Artificial Structure

Old Barges

- Old Barge and Marine Structures must be tested for toxicity and archaeological importance
- Old Barge and Marine Structures are often best left in place particularly at former Brownfields
- Serve as habitat enhancements
Marine Structure

Sunken Marine Structures such as Barges are often found beneath Hudson River Shoreline properties.

- Leaving them in place preserves an evolved ecology.
- Leaving them in place provides long term stability.

Barge Timbers weather into Place.
Dockside Park: Design-only Case Study

OVERVIEW

The shoreline of a riverside park with picturesque views of the Hudson Highlands will be engineered and enhanced to provide ecological, recreational, and floodplain functions. It will contain design elements that allow for continued functionality as sea levels rise, while accommodating increased frequency and intensity of wave action and inundation.

LOCATION & ACCESS

Dockside Park is a six-acre property located on the eastern bank of the Hudson River, in Cold Spring and approximately 50 miles north of New York City. It is part of the Hudson Highlands State Park Preserve, managed and maintained by the Village of Cold Spring. Dockside can be accessed via West Street.

PARTICIPANTS & COST

Owner: New York State Office of Parks, Recreation and Historic Preservation
Manager: Village of Cold Spring
Design: Miron & MacBreen, Inc., Contract managed by NEIPCC
Design Cost: $72,000
Construction Cost Estimate: $955,000 (Based on 95% designs)
Funding of Design: Hudson River Estuary Program and Environmental Protection Fund

Project Timeline: Design and permitting were completed in 2019 and project construction is anticipated to take place in 2020.
For use along the West Side and parts of the North Side.
For use along west side and possibly parts of the north side.
"The universe is a communion of subjects, not a collection of objects."
~Thomas Berry

Greenburgh Nature Center