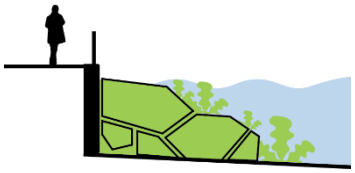
Measure Profile

Vegetated Crib Walls

Flood Adaptation Measure

ECOLOGICAL INFRASTRUCTURE



WATER LEVEL RANGE:

Intertidal to supratidal

SHORELINE LOCATION:

Shoreline

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DESIGN LIFE	ADAPTABILITY	IMPACT ON THE WATERFRONT	CONSTRUCTION COST
Decades	Medium	Minor Intervention	TBD

COASTAL FLOOD HAZARDS MITIGATED:

Enhancements can provide flood protection when combined with other physical infrastructure

Sea Level Rise | Storm Surge | Groundwater | Waves | Erosion

MEASURES COMPATIBILITY:

Flood	Seismic
Seawalls, Levees	N/A

ECOSYSTEM SERVICES: Measure may affect these shoreline values

Aquatic Habitat	Terrestrial Habitat	Water Quality	Carbon Storage
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DESCRIPTION:

Concrete crib walls are made of a concrete retaining wall framework filled with compacted backfill, which allows for vegetation to grow in crib wall openings. The vegetation prevents erosion and the crib wall openings can increase the effective roughness of the wall and, therefore, can reduce wave runup.

CONSIDERATIONS:

- Should be designed to account for future anticipated sea level rise.
- Most suitable in low wave energy environments with a high tidal range.

ADVANTAGES:

- Enhances aesthetics
- Can improve riparian and fish habitats

DISADVANTAGES:

- Mostly successful only for bank protection in fluvial environments, limiting use in coastal applications.
- Potential need to remove invasive species and debris, and trim vegetation.

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CONSTRUCTION IMPACTS TO THE PUBLIC:	SEA LEVEL RISE ADAPTATION OPPORTUNITIES:	CASE STUDIES:
• Landside access necessary. Access to the shoreline will be constricted due to construction, and may impact parts of the Promenade.	• Plantings should be compatible with design high water levels and tide range. • Future sea level rise will submerge intertidal vegetation requiring re-planting or migration of the plants up the wall.	• None cited

DESIGN OPPORTUNITIES:

Ecological Enhancements	Urban Design	Form
• Native/local plant species should be installed to maximize habitat.	• Vegetation improves aesthetics of seawalls and levees. Measures should be taken to prevent climbing over the wall.	• Form accommodates flood requirements and spatial constrictions.

DESIGN CONSIDERATIONS:

- Works best in areas with low wave and weak current conditions. Allows for high vegetation diversity in areas with a large tidal range.

SITE-SPECIFIC CONSIDERATIONS:

- Water levels, waves, currents conditions and soil characteristics should be well defined.
- Mostly used in terrestrial, rivers and bays with low wave and weak current conditions.

URBAN DESIGN CONSIDERATIONS:

- Measures should be employed to discourage people from climbing the wall.

INSTALLATION AND CONSTRUCTABILITY CONSIDERATIONS:

- Management of stormwater infiltration required.
- Planting in an existing wall would be more difficult than in a new one because of existing vegetation may need to be removed.
- Planting difficulty would be a function of wall height.

OPERATIONS AND MAINTENANCE CONSIDERATIONS:

- Watering may be necessary initially for vegetation planted above high water and subsequently if the site experiences dry conditions.
- Less maintenance is required over time once the vegetation becomes established (after up to 3 years).
- Maintenance may be required to re-plant after storm damage, remove invasive species, trim the vegetation if it grows too much, or collects floating debris.