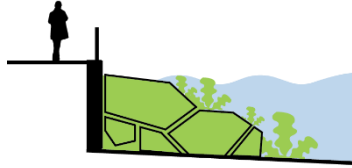


Natural Fiber Blankets

Flood Adaptation Measure



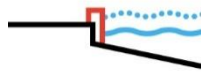
ECOLOGICAL INFRASTRUCTURE



WATER LEVEL RANGE:

Intertidal to supratidal

SHORELINE LOCATION:



Shoreline



Vegetation growing through a fiber blanket ©Wilkinson Ecological Design, Orleans MA

DESIGN LIFE Decades	ADAPTABILITY Medium	IMPACT ON THE WATERFRONT Minor Intervention	CONSTRUCTION COST TBD
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COASTAL FLOOD HAZARDS MITIGATED:

Enhancements can provide flood protection when combined with other physical infrastructure



MEASURES COMPATIBILITY:		ECOSYSTEM SERVICES: Measure may affect these shoreline values			
Flood	Seismic	— / ↑	↑	— / ↑	↑
Levees	N/A	Aquatic Habitat	Terrestrial Habitat	Water Quality	Carbon Storage
		—	—	—	—

DESCRIPTION:

Natural fiber blankets are used to prevent erosion and slow the flow of water as vegetation with extensive root systems is established. They are made of materials like straw, burlap, or coir. After the fiber blankets decompose, the vegetation continues to stabilize the site soils.

CONSIDERATIONS:

- Relatively easy and rapid installation with minimal public disruptions.
- Fiber blankets are most effective in areas with higher beach elevations with some dry beach at high tide.

ADVANTAGES:

- By helping establish vegetation, provides direct protection to eroding banks.
- Relatively easy installation. Requires minimal training to install and typically does not require heavy equipment for

DISADVANTAGES:

- Only suitable for areas with low wave and weak current design conditions.
- More susceptible to storm damage and erosion than structural shoreline measures.

Natural Fiber Blankets

Flood Adaptation Measure



	<p>construction reducing potential temporary disturbances</p> <ul style="list-style-type: none"> • Biodegradable material provides substrate to help establish target plant species. 	<ul style="list-style-type: none"> • Requires ongoing monitoring and maintenance to ensure vegetation becomes successfully established.
<p>CONSTRUCTION IMPACTS TO THE PUBLIC:</p> <ul style="list-style-type: none"> • Little to no disruption of public pathways, depending on proximity of banks and site preparation required. 	<p>SEA LEVEL RISE ADAPTATION OPPORTUNITIES:</p> <ul style="list-style-type: none"> • Most effective in locations above the high tide line where they are not continuously subject to erosion from waves and currents. • Adaptability to changes in water level depends on inundation and salinity tolerance of vegetation established. 	<p>CASE STUDIES:</p> <ul style="list-style-type: none"> • None cited

DESIGN OPPORTUNITIES:

<p>Ecological Enhancements</p> <ul style="list-style-type: none"> • Plant species can be selected to maximize terrestrial or wetland habitat. 	<p>Urban Design</p> <ul style="list-style-type: none"> • Vegetating eroded banks can improve viewsheds of the Bay. Waterfront access can be incorporated into or above the slope. 	<p>Form</p> <ul style="list-style-type: none"> • Form is adaptable to site constraints and design objectives.
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DESIGN CONSIDERATIONS:

- If erosion at the site is partially caused by surface runoff, it should be reduced and/or redirected.
- Material selection for blankets and blanket thickness should be consistent with the severity of conditions at the site.

SITE-SPECIFIC CONSIDERATIONS:

- Water levels, waves, currents, runoff patterns, soil types, and history of erosion should be determined/understood.
- Will not prevent erosion on unstable slopes or areas subject to erosion from high tides and storm waves.

INSTALLATION AND CONSTRUCTABILITY CONSIDERATIONS:

- The site should be prepared by removing vegetation, rocks, twigs, and other debris to allow the blanket to be placed in close contact with the ground.

OPERATIONS AND MAINTENANCE CONSIDERATIONS:

- Requires ongoing monitoring and maintenance to ensure that vegetation becomes successfully established.
- Prior to vegetation becoming established, blankets should be inspected frequently, particularly after severe rain events and coastal storms, and any damage addressed immediately to prevent further deterioration.
- Maintenance may include replacement of eroded fill, re-seeding or replacement of plants removed by storms, removal of invasive plants, or re-setting and/or re-anchoring blankets.