Living Shoreline Case Study

Read Avenue Retrofit, Dewey Beach

Delaware Center for the Inland Bays

Project Details

Goals:
- Retrofit drainage system outlet to reduce flooding
- Preservation and creation of wetlands and dunes
- Maintain recreation use

Energy Environment:
- Medium-high energy

Construction Dates:
- September 2019: Barrier reef
- Winter 2019-2020: Installation of drainage outlet, toe, dune and wetland
- April 2020: Planting

Partners:
- Town of Dewey Beach
- DelDOT
- Delaware Center for the Inland Bays
- RK&K
- Sovereign Consulting Inc.

See the Site Before and After

Pre-installation September 2019

Post-installation April 2020

Baseline Conditions

January 2017
Surcharge flooding

October 2019
Sunny-day flooding

Baseline Conditions

Issues:
- West terminus of Read Ave. subject to stormwater and tidal flooding
- Area an important recreation area

Site Characteristics/Important Features to Consider:
- Medium/high fetch energy
- Medium boat wake
- Upland drainage flows into bay; surcharge and sunny-day flooding occur
- Public bay access area

Living Shoreline Installation

Design Elements:

- Connection from upland urban drains to tide gates allows for drainage of stormwater while preventing surcharge flooding from the bay
- Dune placed to 3.5ft. above MHW to prevent high tide/sunny-day flooding onto Read Ave.
- Creation of salt marsh
- Oyster Bag reef located offshore to dissipate fetch energy
- Access path for paddle craft access to the bay

Permitting:

- State—Delaware Subaqueous Lands Permit with Subaqueous Land Lease
- Federal—Army Corps Nationwide Permit No.3 Maintenance of Tide Gates and Permit No. 27 Aquatic Habitat Restoration

Materials and Placement:

- Concrete box vault assembly with tide gates landward of bay
- Hesco barriers used to reinforce dunes
- Oyster Bag reef set at MLW
- Shell bags, rock used for marsh toe
- Sand for fill on dune, marsh

Monitoring Efforts

Metric	Method
Shoreline position	
Habitat	
Water Quality	
Structural	

Measured Environmental Results

- .4 acres of wetland created
- Addresses bay flooding less than 3.5ft. below MHW

Adaptive Management/Lessons Learned

- Regular maintenance of tide gates required

Project Photos

Winter 2019
Hesco barriers installed

Winter 2019
Box vault installed

Fall 2019
Completed tide valve assembly

Summer 2020
Planted salt marsh