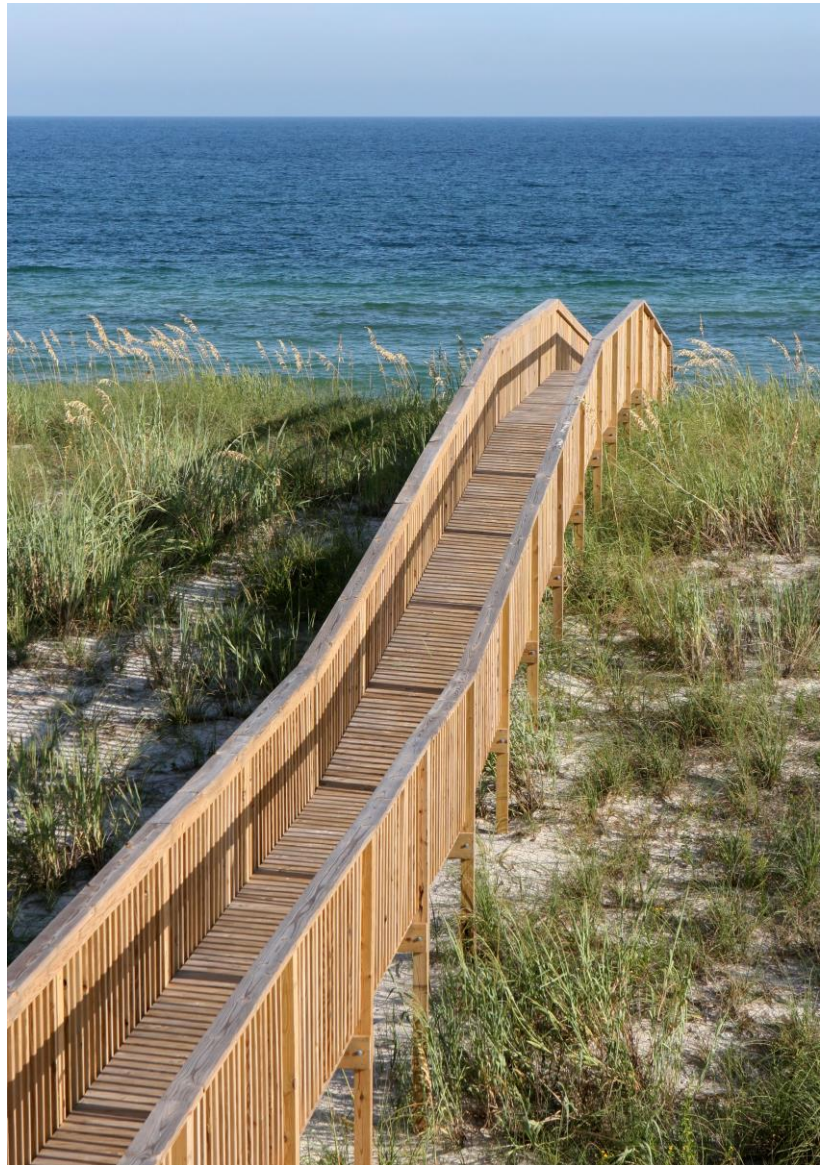


Sand Dune Crossover

Overview

- Sand dunes provide protection from storm surge flooding during coastal storms.
- When people walk or drive on sand dunes, they contribute to the erosion of the dunes.
- When sand dunes are eroded, they become less effective in protecting structures from storm surge.
- In order to prevent non-natural erosion of sand dunes while still providing beach access, install a dune crossover.
- Dune crossovers also help prevent the damage of sensitive vegetation and conserve sand dune habitat for native Delawarean coastal species.
- Types of crossovers:
 - Mobi-mat® crossovers – A roll-up walkway that is placed directly on the sand dune. The mat allows sand to filter through, which allows it to gradually rise with the dune. The mat can be rolled up and re-placed on the dune if/when it is covered by sand.
 - Wooden crossovers – A wooden constructed walkway that goes over top of the dune. The wooden crossover allows vegetation to grow below the crossover but cannot be replaced if the sand dune grows higher than the crossover.
- In addition to spanning the entire dune, the crossover should extend beyond the dune on both ends so that the dune can grow without obstructing beach access.
- Check to see if the dune is in a rare, threatened, or endangered shorebird habitat before altering the dune in any way. Action may be limited in areas within a protected shorebird habitat.



Key Takeaways

During coastal storms, high-energy waves can destroy protective sand dunes by washing away the dune base. Additionally, the high-velocity winds of coastal storms can cause erosion. Dune erosion can lead to receding and the eventual loss of dunes.

If the dune is destroyed, it no longer offers flood protection for the structures behind it.

Installing sand dune crossovers prevents non-natural erosion, which makes dunes more likely to retain sand during wind and flooding events. This can reduce flood damage costs.

I-ADAPT

Shoreline Adaptation

Sand Dune Crossover

Photo credit: DNREC

Estimated Costs/Benefits

*U.S. dollars (2022), estimates are subject to change

Potential Costs		Potential Benefits (1,000 sq ft structure)		
Item	Estimate	Post-Flooding Recovery Action	Estimate	
Mobi-mat®	\$1,450- \$2,300	Beach replenishment due to flood/wind erosion damage	\$295 per 5 tons of sand	
OR		Flood damaged structure recovery (professional clean-up, mold removal, replacement/ repair of flood damaged items)	1 inch water	\$10,800- \$53,500+
Wooden sand dune crossover and construction	\$9,000- \$11,000+		↓ 4 feet water	↓ \$43,400- \$203,300+
ESTIMATED TOTAL COST (50ft x 4ft crossover)	\$1,450- \$11,000+	ESTIMATED TOTAL SAVINGS	\$11,095 - \$203,495+	

Expected Maintenance

- Periodically inspect dune crossing for damage.
- Remove trash and debris as needed.

Additional Resources

- [DNREC Beaches and Shorelines](#)
- [DNREC Example Pedestrian Dune Crossovers](#)
- [Mobi-mat](#)
- [Sea Grant Coastal Dune Protection & Restoration](#)

Resources can also be found at <https://de.gov/iadapt>

Potential Funding Sources

- [Building Resilient Infrastructure and Communities Grant \(BRIC\)](#)

Additional Actions

- Encourage neighbors and community leaders to also steward their sand dunes.
- Install sand fences and dune signs in order to avoid damaging sensitive vegetation.

Permitting Agencies

Contacts for permitting requirements include but are not limited to the following:

- Your city and/or county government for local flood ordinances or regulations
- Your city and/or county government for building permits
- [DNREC Coastal Construction Permit](#)
- [DNREC Wetlands and Subaqueous Lands Permit](#)

Who to Contact

- Marine contractor
- [DNREC Shoreline and Waterway Management Section](#)
- [811 Call Before You Dig](#)

Technical definitions and more information are located on the I-ADAPT website: <https://de.gov/iadapt>.



This information is intended to be used for planning purposes. It is not intended to substitute or take precedence over the guidance of design engineers, contractors, utility companies or regulatory agencies.

For more information, contact DNREC's Division of Climate, Coastal and Energy at DNREC_IADAPT@Delaware.gov

