



## COLLINS COVE SEDIMENT CAP BEVERLY, MASSACHUSETTS

**Application:** A shoreline revetment and sediment capping project along the Collins Cove coast of Beverly, Massachusetts required an erosion solution.



*The Triton Mattresses protect the underlying CETCO® Reactive Core Mat®*

**The Challenge:** Trying to maintain a system that will prevent loss of soils in a dynamic coastal environment is always challenging. As in most erosion control applications the revetment is intended to protect the underlying geotextile. In this particular application, the underlying geotextile was a CETCO® Reactive Core Mat® (RCM) designed to sequester and treat contaminants within the soil.

**Site Conditions:** Coastal protection is nothing new for the Triton® Marine Mattress System, nor is the use of the mattress system in contaminated sediment capping applications. Installation during winter months presented certain challenges, including weather conditions and icing. The design wave height from modeling was approximately five feet. Within a month of construction, the east coast experienced a later season storm that included waves at the design height. The Triton Marine Mattresses performed as expected, and the revetment and underlying RCM cap remained intact, with no damage.

**Alternative Solutions:** Reno mattresses presented an alternative solution, but damage during maintenance activities was considered a greater risk for these systems when compared to the Triton Mattresses' polyethylene geogrid. Articulated concrete block mats and loose riprap armor stone were also considered in early design stages.

**The Solution:** Triton Marine Mattresses were selected for their proven performance in coastal protection, superior handling characteristics (for providing future access to the underlying RCMs for replacement, if needed) and superior aesthetics (compared to articulated concrete blocks).

### PROJECT HIGHLIGHTS

**Project:**

Former Manufactured Gas Plant

**Location:**

Collins Cove, Salem, Massachusetts

**Installation:**

December 2006 – March 2007

**Product/System:**

Triton® Marine Mattress System

**Quantity:**

~25,000 sq ft RCM, ~600 Mattresses

**Owner:**

National Grid

**Design Engineer:**

ARCADIS-US, Inc.

**Coastal Engineering Consultant:**

ARCADIS-US, Inc.

**General Contractor:**

Maxymillian Technologies, Inc.

**Materials Supplier:**

Tensar International Corporation



**The Triton System Advantage:** The owners and consulting engineer ARCADIS-US, Inc., selected Triton Marine Mattresses because:

- The armor units could be locally constructed on shore prior to installation.
- They incorporated Tensar® Uniaxial (UX) Geogrids, which have the strength and flexibility to armor the RCM without damaging it.



*This Massachusetts shoreline is now protected against severe erosion caused by weather and waves.*

- The Tensar UX Geogrids allowed the Triton Marine Mattresses to be traversed by specialized equipment (e.g., rubber-tracked equipment) and periodically removed to access underlying RCMs for maintenance, and if needed, removal and replacement.
- They offered a one-foot profile that minimized transition from surrounding riprap grades.

- They were constructible even in difficult working conditions.
- Copolymer uniaxial (UX) geogrid offers reduced brittleness in cold temperatures, easing installation and extending the service life of the mats in colder temperature climates.

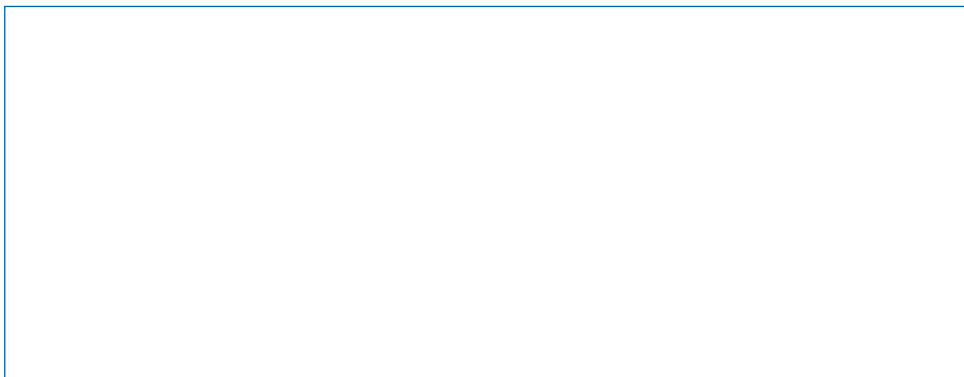
**Additional Information and Services:**

Tensar International Corporation, the leader in geosynthetic soil reinforcement, offers a number of integrated marine systems. Our products and technologies, backed by the most thorough quality assurance practices, are at the forefront of the industry. Highly adaptable, cost-effective and installation-friendly, they provide exceptional, long-term performance under the most demanding conditions. Our support services include site evaluation, design consulting and site construction assistance.

For innovative solutions to your engineering challenges, rely on the experience, resources and expertise that have set the industry standard for more than two decades.

For more information on the Triton Coastal & Waterway Systems or other Tensar Systems, call **800-TENSAR-1**, e-mail [info@tensarcorp.com](mailto:info@tensarcorp.com) or visit [www.tensar-international.com](http://www.tensar-international.com).

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**Tensar International Corporation**  
5883 Glenridge Drive, Suite 200  
Atlanta, GA 30328  
800-TENSAR-1  
[www.tensar-international.com](http://www.tensar-international.com)