



WASTE WATER PIPING PROJECT ST. ANDREWS BAY, FLORIDA

Application: The project involved armoring exposed sections of a high density polyethylene (HDPE) pipeline to protect it from marine traffic, tidal scour and storm impact.

The Challenge: The original design specified installing the 36-inch, advanced wastewater treatment (AWT) pipeline below the existing seabed. Deviation from the design meant that up to 1,400 feet of the pipeline was installed on or above grade. The installation violated State and Federal permits and exposed the project owners to significant liability.

Site Conditions: The pipeline is located in St. Andrews Bay in maximum water depths of 60 to 70 feet. Visibility is typically less than three feet. Strong tidal currents affect the construction zone, which is within a ship channel.

Alternative Solution: Installing a second sub-aqueous pipeline would have created great expense for the owners. Furthermore, shutting down the existing pipeline for modification would have forced the local government to reactivate an abandoned waste treatment plant during construction. Project engineers considered using riprap to bury the exposed sections but concluded that such an armoring technique would have been difficult to construct, subject to subsidence, and a potential impediment to navigation.

The Solution: The coastal engineering firm of Olsen Associates, Inc., recommended the Triton® Marine Mattresses as a more cost-effective armoring alternative for addressing the design deviation. With this method, five- to seven-ton, monolithic units could be preassembled on shore and then barged to the construction zone. At that point, a crane and divers could be employed to drape the 1-foot by 5-foot by 28-foot units over the 1,400 feet of exposed pipeline.

A Triton Marine Mattress is lowered over an underwater pipeline for protection.



PROJECT HIGHLIGHTS

Project:
Military Point Waste Water Treatment Facility (WWTF) Subaqueous Pipeline Armoring Project

Location:
St. Andrews Bay, Panama City, Florida

Installation:
July 1 - August 24, 2005

Product/System:
Triton Marine Mattresses

Quantity:
280 Marine Mattresses; 39,200 sq. ft.

Owner/Developer:
Bay County and the Cities of Callaway, Cedar Grove, Parker, and Springfield, Florida

Design Engineer:
Baskerville-Donnovan

Coastal Engineer:
Olsen Associates, Inc.

General Contractor:
HG Harders and Sons, Inc.

Materials Supplier:
Tensar Earth Technologies, Inc.



“Coverage by the Triton Marine Mattresses should be equivalent to burying the exposed sections of pipeline,” Erik J. Olsen, P.E. says. “They are constructible, highly flexible, and scour resistant and won’t disrupt waste-plant operations.”

The owners accepted this solution, permits were modified, and a new contract was awarded to HG Harders & Sons to perform the installation. On July 1, 2005 a crew began assembling, filling and stockpiling the mattresses using a rented filling frame and a Caterpillar 416 Loader. Non-woven filter fabric was also attached to the underside of each mattress to provide a buffer layer between the pipeline and the mattress.



Filling the Triton Mattress is quick and easy.

As quantities of mattresses became available, they were barged to the job site. In areas where the pipeline was above grade, quantities of #57 bedding stone were first placed below the pipe using a five-ton dump pan.

The mattresses were lowered using a four-point harness. Because of murky conditions on the bottom, fluorescent flagging was used to mark the center of each unit and facilitate placement.

Harders had anticipated being able to place up to six mattresses a day, general manager Bill Crittenden says. “But the crew installed 15 units

per shift. That meant we were able to place all the mattresses in only 55 days, and we completed the project more than three weeks ahead of schedule.”

The Triton Systems Advantage: The owners and special consultant Olsen Associates, Inc., selected Triton Marine Mattresses because:

- The armor units could be locally constructed on shore and then barged to the job site.
- They incorporated Tensar® Uniaxial (UX) Geogrids, which had the strength and flexibility to armor the exposed HDPE pipeline without damaging it.
- They provided scour protection well beyond the pipeline footprint.
- They offered a 1-foot profile that minimized risk to navigation.
- Their installation would not disrupt waste-plant operations.
- They were constructible even in difficult working conditions.

Additional Information and Services: Tensar Earth Technologies, 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 Systems or other Tensar Systems, call **800-TENSAR-1**, e-mail info@tensarcorp.com or visit www.tensarcorp.com.



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