TENCATE Geotube

FYI
News Bulletin
Bulletin G2007-08

Geotube® Shoreline Protection Prevents Damage To NASA Site

Almost a mile of Geotube® units are helping relaunch the beach at Wallops Flight Center in Virginia.

In the fall of 2006, Hurricane Ernesto and the resulting gale force tropical storms on the East Coast caused serious beach erosion to Wallops Island, Virginia. Aggressive winds and rains severely damaged the beaches, and consequently, posed a threat to the adjacent launch pad at NASA's Wallops Flight Facility.

With a rocket mission scheduled for early '07, a plan was needed quickly to secure the surrounding area and prevent damage to the launch site's foothold. To make the timeframe even more challenging, the work would have to take place during the normally relentless, pounding tides of the winter storm season.

"TenCate, we've got a problem."

Civil engineers at NASA turned to TenCate for a Wallops Island site assessment. The outcome of that visit was an aggressive, two-month plan using Geotube® containment technology to rebuild the shore and protect it from further damage.

TenCate develops and produces materials that function to increase performance, reduce cost, and deliver measurable results by working with our customers to provide advanced solutions. For the Wallops Island challenge, Geotube® shoreline protection proved to be the right solution at the right time.

The Solution

The plan called for designing, mobilizing, setting up, and filling 4,600 linear feet of Geotube® units, then demobilizing – all within a two-month timeframe. Time for design and mobilization was abbreviated in an effort to maximize available pumping time while on site. Creating strategically-placed slurry pits along the tube structure was key to speeding up the tube filling process.

A wall of Geotube® containers, 4,600 linear feet long and 6-feet high, was installed to protect NASA's Wallops Flight Center on Wallops Island, Virginia.

To ready the beach for tube placement, a D6 hightrack dozer was used. Once prepped, scour aprons, secured by anchor tubes filled with sand slurry, were positioned underneath each tube section to protect their foundation from rough wave and ocean current action. A total of 23 Geotube® units were used—each 200-feet long, 34-feet in circumference, and filled with slurry mix to six feet high.

The slurry was made in two makeshift pits by mixing sand, brought in from off-site, with water pumped from both the ocean and the river estuary, which provided both fresh and salt water.

(More)

After Hurricane Ernesto and before Geotube® shoreline protection.

Sand was added to each pit using an excavator with a two cubic yard bucket. Water was added via multiple 6-inch diesel operated dry prime pumps.

The resulting 10% slurry was then pumped into the tube's fill ports at an average of 1,200 gallons per minute using a header system that branched out into multiple lines. With the positions of the two slurry pits, the slurry mix had to be pumped anywhere from 200 feet to 2,500 feet. As the filling process proceeded down the almost mile-long line of Geotube® units, the header system had to be assembled and disassembled many times as the construction crew got further away or closer to the slurry pits. Only two of the TenCate Geoport™ GP 8-inch filling ports were pumped into at a time, using a 75-horsepower hydraulic submersible pump with an 8-inch discharge header.

The Wallops Island restoration was a major success and paved the way for the NASA rocket launch to take place as scheduled. Beach erosion has subsided and it appears the success is long term. In mid-April, the region encountered its first nor'easter. And not only did the Geotube® units stand up impressively to Mother Nature's threat, they caused significant deposition of additional sand on the beach. "In fact, most of the 4,600' of Geotube® units that stood five to six feet tall in most places are now showing continuous sand build-up on the ocean side," according to Project Manager Dana Trierweiler, of Infrastructure Alternative, Inc., (IAI.)

To find out more, call 1-888-795-0808 or visit www.geotube.com.

Imported sand and water from the ocean and river estuary were mixed together in two slurry pits and pumped into the Geotube® units.

Scour aprons were placed under each Geotube® container and secured with sand-filled anchor tubes.

A header system with multiple flexible lines fed the sand slurry into the Geoport™ filling ports.

Since project completion, the sand continues to naturally build up on the ocean side of the Geotube® protective wall, promising long-term success. "I'm very impressed with the performance of the material so far," noted Paul Bull, P.E., NASA—Wallops Flight Facility.

Geotube® Geocontainment Technology Applications

- Sand Dune Cores
- Wetlands Creation
- Breakwaters
- Jetties
- Underwater Structures
- Diversion Dikes
- Island Creation

Contact:
Vicki Ginter
1-888-795-0808
Cell: 678-227-9944
v.ginter@tencate.com
www.geotube.com

3680 Mount Olive Road
Commerce, Georgia 30529
706-693-1897
Toll Free 888-795-0808
Fax 706-693-1896

TENCATE
materials that make a difference