

Geotube® Shoreline Protection and Breakwater Construction Bring Cancun Beaches Back To Life

Millions of Dollars of Property and Tourism Are Restored And Permanently Protected Using Geotube® Marine Structures Technology.

The famed, white sand beaches of Cancun, Mexico have been pounded mercilessly twice in recent years. First by Hurricane Gilbert in '88, then by Hurricane Wilma in '05, the two most intense and destructive hurricanes ever recorded in Atlantic basin history. Both storms took a tremendous toll, destroying lives, property and tourism.

After Wilma, Cancun's beaches were totally eroded and resort hotels were left in rubble. Beautiful views and long stretches of sand were erased. Instead, there were steep drop-offs and oceanfront water pounding at hotel doors.

If the shoreline devastation wasn't enough, the natural sand bar 600 feet offshore was also destroyed, leaving the beaches even more vulnerable to the relentless waves.

The Solution

TenCate was called in about a month after Hurricane Wilma hit. They worked with both the Mexican Tourism Foundation, Fonatur, on a master plan to rebuild the beaches, as well as with individual hotels to renovate their beach fronts and protect them from future damage.

Geotube® marine structures technology has been used in scores of countries to rebuild beaches, protect property, create jetties, even build entire islands. The process is simple: large tubes made of specially engineered textile are filled with sand and lined up along the shoreline. Each tube can be hundreds of feet long, and in most cases, the installation is permanent. When rough weather threatens, the tubes hold the sand in place, preventing erosion and property damage.



The red lines indicate the placement of a 4-section breakwater off Cancun's shoreline built with Geotube® containers. By changing wave patterns, this will help replenish the hurricane-damaged beach and protect ocean-front resort property from future erosion.

One of the big advantages of using Geotube® technology is that the original slope of the beach can be recreated.

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 beaches of Cancun, Geotube® shoreline protection proved to be the right solution at the right time.



(More) Total devastation was the scene as far as the eye could see in the aftermath of Hurricane Wilma in 2005.

Step One: Property Protection

The immediate goal was to protect the property that was left and prevent further deterioration. This emergency protection was accomplished by installing 1.24 miles of Geotube® units in the summer of '06 in front of property structures on the badly damaged beach.

Step Two: Beach Restoration

That same summer, with the Geotube® units in place, a dredging ship, collecting sand from 13 miles out in the Gulf, pumped sand onto the shoreline to begin restoration of the beach areas. Today the beaches are 60 to 100 feet wide.

Step Three: Rebuilding the Sand Bar

In May of 2007, TenCate began offshore submerged breakwater construction to function as the original sandbar that was destroyed. The submerged Geotube® breakwater was engineered to encourage beach replenishment by altering the water flow and wave patterns. This third and final phase, due to be finished before the '07 hurricane season, will help provide permanent protection of the beaches.

The tubes and scour aprons were connected on the shore, floated out into the water, secured by divers, and then pumped with sand fill under water. The finished breakwater is submerged 12 to 17-feet, with the top 3 to 4-feet below water level. A total of 80 Geotube® units were used, each one measuring 8-feet tall, 75-feet long and 18-feet wide. There were 20 tubes in each of four sections, creating a structure about 1,300 feet long.

The breath-taking beaches are back. And so is Cancun as Mexico's top international tourist destination. One that's much better prepared for hurricane seasons to come.

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



Before TenCate was called in. The beach had been erased.

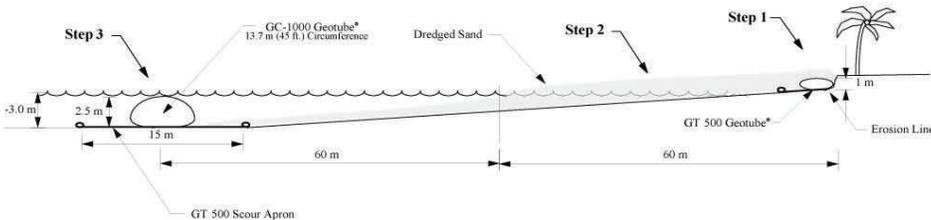


A total of 1.24 miles of Geotube® units were used for emergency protection and restoration.



The same view, after Geotube® repair and restoration technology. The beach is coming back.

- Step 1 - Install Geotube® units for shoreline protection.
- Step 2 - Dredge sand onto beach to re-establish original beach profile to +60 m.
- Step 3 - Install offshore submerged Geotube® breakwater.



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Geotube® Geocontainment Technology Applications

Sand Dune Cores

Wetlands Creation

Breakwaters

Jetties

Underwater Structures

Diversion Dikes

Island Creation



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