



Sustainable Solutions

Client

Carnival Corporation

Location

Cozumel, Quintana Roo, Mexico

"In cleaning up the remnants from the previous pier that was destroyed by Hurricane Wilma, we're recycling all steel reinforcements and any concrete sections bigger than 12 inches. The remainder of the debris will be put into an artificial reef."

David Mock,
Lead Engineer,
Puerta Maya Pier Project
CH2M HILL

Redesign of Puerta Maya Pier

Project Description

When Hurricane Wilma hit the Atlantic basin in October 2005, her 280-kmph (175-mph), Category 5 winds took 36 hours to move across the island of Cozumel, Mexico, the home of pristine coral reefs that attract tourists and divers from all corners of the world. Carnival Corporation's Puerta Maya Pier, just south of the island's tourist hub of San Miguel, was destroyed as the hurricane tore away massive chunks of concrete.

While the island was still recovering from the disaster, Carnival asked CH2M HILL to redesign the Puerta Maya Pier. By June 2006, we had completed an emergency post-event assessment, a replacement feasibility study, and debris removal studies and provided permitting support and related cost estimates. CH2M HILL presented Carnival with a design for a new pier—one that could resist the wind and wave loads of a threshold Category 5 hurricane producing winds of 250 kmph (155 mph) or greater.

Protection of the island's fragile ecosystem was just as important as safeguarding the pier's survival in the face of future hurricanes. With coral reefs and dive sites within just a few thousand feet, construction of the new pier was an especially sensitive undertaking. The CH2M HILL team designed ways to minimally impact the island's natural resources. By driving hollow, 40-inch-diameter pilings into the sea bed and using turbidity screens, the construction crew was able to drill inside the piling, bail out debris, and prepare materials for cleaning, recycling, and reuse, thus, minimizing effects on the fragile ecosystem.

Sustainable Components

- Construction approach minimized turbidity to protect coral reefs
- Designed to withstand future storms that will result in less future reconstruction needs
- Recycled materials from old pier and turned remainder of debris into artificial reef
- Used local materials for pier construction