

CASE STUDY

Port of Manzanillo Port Access Expansion

Colima, Mexico

History

The Port of Manzanillo, the second largest port in Mexico by cargo volume handled, is the most important port on the Pacific Ocean coast. It serves as the main entry point for goods going to, and from Mexico City, the largest city by population in North America.

Problem

The Port Authority of Manzanillo (API) wanted to modernize the port infrastructure, starting with the expansion of the access channel to keep up with the increase in cargo volumes as a product of the extensive trade with major partners in the Pacific Ocean, including China and the United States.

As it existed, the port was unable to receive PostPanamax generation cargo ships, the first of a new class of ships that exceeded 32.2 meters wide (at 105 feet, it is the width of the Panama Canal) with capacities that reached 6,600 TEU. Initially, the access channel of the Port of Manzanillo was 105 meters wide at the bottom with a dredging level to negative 16 meters (negative 52.5 feet) from the mean low-water mark – or low tide.

In order to accept the ever-increasing size of container ships, the port needed to expand the bottom of the channel to 165 meters (541 feet) with the same level of dredging. Vertical cuts of 7 meters (23 feet) up the existing slopes were required, and that measure would compromise overall channel instability if a formidable retention system was not installed.

Solution

The technical team of API Manzanillo completed a retaining system made from a



PZ 35 steel sheet pile section 16 meters (52.5 feet) long provided by Skyline Steel at A572-60 steel grade.

From the construction point of view, the process was complex because the piling head was planned at a minus 9 meter (minus 30 feet) elevation, thus crossing a series of layers

of dense to very dense sands produced from alteration of diorites and granites. To resolve the situation, the contractor COMSA used a submersible vibro hammer (ICE 66) aided by high-pressure water jetting, which had a performance of up to 16 meters (52.5 feet) per day. All of the pile driving was done from equipment mounted onto a barge.

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The sheet piling work carried out between 2007-08, along a total of 1,343 linear meters (4,400 feet) increased both sides of the access channel. For this purpose, more than 1,100 assembled pairs of PZ 35 sheet pile were used.

The port, with the expanded access channel, is a large part of Mexico's plan to improve its stock among ports in Latin America. After anticipated completion of the overall port expansion in 2012, the port would have an annual capacity of two million TEUs, an increase of 100 percent over its previous capacity.

Project Partners

Owner

Integral Port Administration
Manzanillo, Colima, Mexico

Contractor

Manzanillo Construction Co. (CMSA)
Manzanillo, Colima, Mexico

Products

3,670 tons of PZ 35 sheet pile

