

ARMORED UP

Historic village improves flood protection

By Jeff Holm

The village of Swan Quarter, N.C., is located on Swanquarter Bay, an inlet of Pamlico Sound, 75 miles east of Greenville. The village was established in 1812, sits just a few feet above sea level, and was named after the number of swans that once frequented its bay.

The village has survived for more than 200 years, despite recurrent flooding and the challenges it brings. While repeat floods and wind tides always threaten life and personal property, they also can cause structural damage, including mildew and rot, septic tank system failure and more. Floods also are potentially devastating to local agriculture and public services.

In just over a decade, the village of Swan Quarter was pummeled by at least eight hurricanes, causing almost a billion dollars in damages and seriously compromising its agricultural industry. After so many back-to-back hurricanes,

flood prevention became a high priority for the village.

The Project Begins

Crane Materials Intl. (CMI) partnered with TA Loving, Balfour Beatty and the Natural Conservation Service to assist Swan Quarter with its flood protection by creating a 17.7-mile dike that encircles the village of Swan Quarter and its surrounding agricultural land. The dike protects approximately 2,400 acres and required three separate phases of completion. The first phase began in 2008, and included the construction of a 6-ft-high floodwall composed of CMI's ShoreGuard synthetic sheet piling and composite round pilings. ShoreGuard-425 offers durability and patented XCR technology, which provides protection against UV degradation and attacks from boring animals or insect infestation.

The design also featured two horizontal

aluminum wales and a structural aluminum cap for additional strength. CMI's ArmorWare wales provided strength and corrosion resistance as well as the color options desired by the community.

Brown panels were selected by the community in order to best integrate into the natural surroundings. Coordinating bronze cap and wales were selected to provide additional strength and rigidity to the floodwall. For additional reinforcement, composite fiberglass pipe piles were driven every 4 ft for the entire length of the floodwall (5,936 ft).

Installation went smoothly and quickly. The team used CMI's PileClaw Mandrel to drive the 24-in.-wide sheets to 16-ft depths. The soil ranged from cohesive, heavy clays to sandy, loamy clays—and, as is common, quite a bit of buried debris. A road, owned by the North Carolina Department of Transportation,





The floodwall held back rising waters from Hurricane Irene in August 2011, and damage from the hurricane was minimal.



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was in close proximity to the floodwall installation and could not be disturbed. The mandrel is built to drive sheets into the ground, even next to a roadway and in tough conditions, like the heavy root masses on this site.

After Installation

“This installation of this floodwall went smoothly,” said David Trzeciak, area sales manager with CMI. “We were fortunate that the weather cooperated. Our teams worked together to find innovative solutions, and [the project] was completed just in the nick of time.”

The final phase of the project was completed in June 2011, just two months before the entire Atlantic Coast—including Swan Quarter—was battered by a Category 3 Hurricane: That August, Hurricane Irene bore down on Swan Quarter. The recently installed floodwall held back rising waters, however, and damage from the hurricane was minimal. The new flood solution was not compromised or damaged by the storm in any way.

The Impact

The project involved many partners, phases and years of planning, with benefits that far exceeded the immediate village, but included reduced maintenance costs for the small village of Swan Quarter.

The floodwall installation reduces potential flood damages to homes and businesses; decreases utility and community service disruptions; and protects farmland from saltwater contamination. It also directly benefits the Mattamuskeet National Wildlife Refuge, located 9 miles east of Swan Quarter, which provides a habitat for migratory waterfowl, other birds and endangered species.

“Our teams have seen firsthand just how important this investment was for the entire village and beyond,” Trzeciak said. “It protects a large agricultural system, with an impact that extends much further than the village of Swan Quarter.” **SWS**

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