Abstract

Fish Haul Creek Shoreline Restoration and Protection Project, Town of Hilton Head Island, S.C.

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The proposed paper will present an overview of a recently completed shore restoration and stabilization project on Hilton Head Island, SC. The purpose of the project, located along the island's Port Royal Sound shoreline, was to restore a localized reach of highly eroded shoreline, reduce future erosional stress, prevent sand migration into a sensitive shore-bird forging intertidal mud flat area, and offer an opportunity to restore marsh grass areas. The project included shoreline restoration and stabilization with the placement of approximately 90,000 cubic yards of sand fill along 2,100 feet of Sound shoreline and construction of six (6) detached rubble mound (rock) breakwaters. The latter served to both stabilize a portion of sand fill and reduce the potential for sand fill migration into a sensitive shorebird forging mud flat and *Spartina* marsh grass area. The project also included the planting of *Spartina* marsh grasses in the lee of the breakwaters to compensate for previously eroded marsh grasses in the area.

Over the past 60 years, the sand beach width along this section of Port Royal Sound shoreline varied by more than 250 feet due the alongshore movement of large sand waves. A recent reduction in the size of these sand waves contributed to erosion in excess of historical levels at this location. In response and to protect upland public and private interests, the Town of Hilton Head Island elected to pursue a restoration project that would offset the sediment deficient and associated erosion.

The project, originally designed as a fill only project, presented unique challenges during permitting as local Audubon Society interests raised concerns regarding sand placement in and adjacent to sensitive shorebird forging areas. It was concluded that these concerns could be addressed with a reduction in fill length. This, however, would have affected project performance and likely made the project infeasible for the Town to pursue. A solution was developed that called for the inclusion of six (6) detached breakwaters along the end of the fill where the project length had been truncated. The breakwaters were intended to stabilize an abrupt fill transition and reduce the diffusive loss of sand to the adjacent shorebird forging and marsh grass areas. This approach, the first in the State of South Carolina, was met with approval from the Town of Hilton Head Island, State and Federal regulatory agencies, and the Audubon Society.

The project was completed in November 2007 (see Figure below). A unique element of the project was the use of a relatively lightweight stone-filled marine mattress foundation system (Tensar BX Marine Mattress) to "float" the breakwaters upon the highly unstable intertidal sediment conditions.

Project permits required 18 months of high frequency post-project monitoring to evaluate project performance, and potential adverse effects to adjacent areas including sand migration into the shorebird forging areas. To-date, the project has exceeded expectations. There has been no documented settlement of the structures into the soft intertidal sediments, sand losses of the adjacent mud-flat and marsh grass areas has been minimal, sand loss rates from the project have stabilized to predicted rates, and the planted marsh grasses are stable and expanding leeward of the breakwaters. The results of project monitoring through May 2010 will be presented in the paper.