

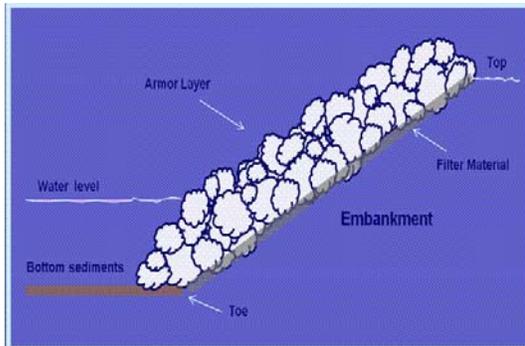
**Introduction** - Jungle Trail is a historic road along the eastern shore of the Indian River that provides a popular scenic drive through maritime hammocks. Over the last decade areas of the Jungle Trail roadway had experienced severe and chronic erosion due to inclement weather events and vessel wakes in the adjacent waterway, particularly at gaps in mangroves and vegetation along the shoreline.

The Jungle Trail project is intended to provide on an aesthetically pleasing structural alternative in order to stabilize the eroding shoreline by placing coquina boulders, planting native vegetation along the seaward edge of the roadway and incorporating Riley Encased Methodology® (REM) for mangrove habitat creation.

**Location** - The project site is located in Indian River County, Florida, south of the Wabasso Causeway at County Road 510 and east of the Intracoastal waterway between Channel Markers 85 and 89.



**Construction** - the project consisted of placing approximately 2,191 tons of coquina boulders along the shoreline and planting native vegetation within the newly constructed roadway shoulder. Mangrove mitigation utilizing REM methodology was implemented subsequent to completion of the revetment construction since conventionally planted mangroves did not survive the first monitoring period. The erosion control project covers approximately 950 feet of shoreline running along the west side of the unpaved Jungle Trail roadway.



Revetments are commonly constructed on sloping embankments to protect against erosion caused by waves and currents. The revetment may be a rigid cast-in-place concrete structure; but more commonly it is a flexible structure constructed of stone riprap or wire mesh filled with stone (gabions). The typical revetment employs stone riprap as the armor material (see illustration), which resists wave and current-induced hydraulic forces. Major components also include a filter layer under the armor to permit water seepage out of the underlying sediments while retaining fine soil particles making up the embankment. The establishment of a mangrove fringe with REM provides a mechanism to stabilize the toe as-well-as help maintain the long-term structural integrity of the construction.



The establishment of reproductively mature mangroves along revetments and bulkhead utilizing Riley Encased Methodology® improves stability of the hardened structure, softens the shoreline to dissipate wave energy and provides additional habitat contributing to the marine ecosystem.

