

# St. Vincent Airport Revetment, St. Vincent & the Grenadines

site investigation



Coastal Systems conducted field investigations to assess hurricane impacts on the coastal revetment at the E. T. Joshua Airport which is located east of Kingstown. The revetment was impacted by waves and storm surge from Hurricane Ivan in September, 2004. A coastal engineering team was mobilized to the site shortly after the hurricane to perform hydrographic surveys along the 300-meter revetment that protects a portion of the airport's runway and associated infrastructure. The hurricane was reportedly the most severe hurricane that impacted the island in over 20 years with a storm surge of three (3) meters and wave heights of seven (7) meters. The assessment revealed extensive damage to the existing revetment, with armor stone lifted and placed further up the shore. Extensive erosion was mapped along with additional infrastructure damage. The existing revetment armor stone was evaluated relative to stability and soundness.

A coastal engineering study was performed to evaluate the waves from the hurricane and to establish wave heights and water levels based on established return periods. Based on the study results, the existing revetment with the current stone size and density would continue to be damaged from hurricanes and coastal storms with a return period greater than 5 years. Design conditions were evaluated for coastal storm events for 25, 50 and 100-years, and recommendations provided to enhance the revetment with larger armor stone. Concrete armor units were also sized and evaluated for the revetment. Quantities for the revetment improvements were developed and cross sections prepared. An engineering report was prepared to document the post-storm assessment and to provide recommendations for revetment improvements.



Post-Storm Revetment Conditions



Post-Storm Revetment Conditions

**Client:** Jacob's Consultancy (fka Sypher Mueller International)

**Location:** St. Vincent, The Grenadines, West Indies

**Date of Completion:** 2004

**Construction Cost:** N/A

