

PROTECTION FROM SEA EROSION USING GEOTEXTILE TUBE IN AMBALAPUZHA AMBALAPUZHA, KERALA, INDIA

Seawalls and Shoreline Structures

Problem

Ambalapuzha is located in Alappuzha district, one of the well-developed coastal districts in southern part of Kerala. Coastal erosion was one of the grave natural hazards affecting the district. During southwest monsoons, this thickly populated area was facing severe problems due to attack of high waves. Many parts of the existing rubble mound sea wall failed structurally due to storm surges and wave overtopping was predominant during high tides. The adjacent villages were also prone to submergence and there was an utmost need to undertake urgent reformation works for the damaged sea wall of about 100m stretch length.

Solution

Maccaferri's expertise and engineering solutions were integrated in this project. The Irrigation department, Govt of Kerala, decided to construct a sea wall using a geotextile tube in place of the conventional method of sea walls to save the coast from the high sea. This innovative and environmentally friendly solution was implanted in 100m area near Neerkunnam coast by considering the high tides in this area. Maccaferri supplied MacTube of length 20m and diameter 3m. MacTubes were made up of woven multifilament polyester material having tensile strength 175kN/m and covered with shroud layer of 500 gsm polypropylene nonwoven geotextile.

Geotextile tubes enables the water to flow through the pores of retaining sand materials that have been used for the filling.

The geotextile tubes were placed behind the existing sea wall in a 2+1 configuration. The top level of tube was such that it prevents overtopping of waves during storm surges. The total height of the structure was 3m of which 1.5m was embedded into the ground. This solution was cost effective and environmental friendly as there was no use of scarce boulders.

The advantage of this solution is that the force of waves is reduced as it hits the sand filled geotextile tubes. On the other hand, the rock structure was unable to suppress the high energy scouring the toe. Moreover, it took approximately 5 hours to lay a single tube of 20m length and 1.5m height which is much faster than the rock structure works.

Client: Irrigation Department, Kerala

Contractor: APM MARINES, KERALA

Products used (Qty.)

- MacTube Coastal 100 nos.

Date of construction: 03/2016 - 04/2016



Photo 1: Preparation of ground surface



Photo 2: Installation of bottom tubes



Photo 3: Laying of top tube



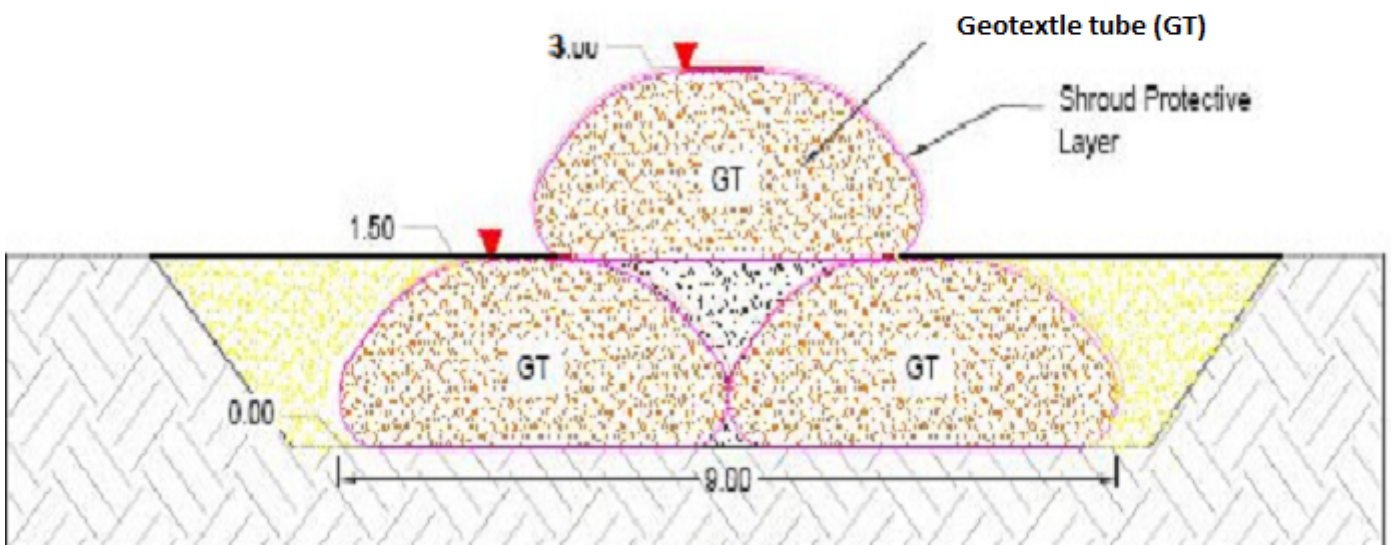
Photo 4: Pumping of sand slurry



Photo 5: Completed structure



Photo 6: Completed structure



Cross section details of sea wall