

PERFORMANCE OF COASTAL VEGETATION IN DISSIPATING THE ENERGY OF THE INCOMING FLOW

**R.M.C.L. Bandara¹, E.A.D.D.D. Egodawatta², H.R. Abeywickrama³,
and S.S.L. Hettiarachchi⁴**

^{1,2,3,4} Department of Civil Engineering, University of Moratuwa, Sri Lanka.

¹ lakmalbandara87@gmail.com, ² danudk@gmail.com, ³ hashan088@gmail.com,
⁴ sampens1955@hotmail.com

Several field investigations carried out in the aftermath of the Indian Ocean Tsunami disaster in 2004 reported significant reductions in inundation depths at locations where different types of coastal vegetation were present. Since most of the other geographical features such as seabed topography and environmental conditions could be assumed to be homogeneous for the surrounding coastline, it has been identified that the presence of vegetation has led to localized reductions in inundation depths at such locations. Coastal vegetation, which performs effectively in mitigating the impacts of the incoming waves, has been identified as a cost-effective and sustainable counter measure against coastal hazards. The resistance offered by vegetation barriers against the flow depends on the characteristics of the individual plant species and the characteristics of the vegetation as a whole and would ultimately be governed by the ability of the plants to resist the flow without being damaged or uprooted.

This study is mainly concerned with the influences of overall porosity and extent of the vegetation barriers on the performance of barriers against incoming flow. Small-scale physical model tests were carried out in a hydraulic flume to investigate the flow behavior through porous vegetation barriers from a viewpoint of hydraulics of flow through a porous barrier. Hydraulic flow parameters, which could be used for all practical applications of analyzing the flow through porous vegetation barriers, were investigated by analyzing the test results.

The results reveal the effectiveness of even shorter vegetation barriers in dissipating the energy of the incoming flow.