

3D WAVE BASIN - 60m x 32m x 600mm



DESCRIPTION

This 3D basin is used for physical model tests of breakwater stability and overtopping studies, sediment dynamics and current dynamics around coastal structures. The model is serviced by two overhead gantry bridges for easy mobility around the test area during testing and for the purposes of measurements during tests.

SPECIFICATIONS

Length: 60.0m
Width: 32.0m
Max. Water Depth: 1.00m

The wave makers can generate waves of 20cm high at periods of between 1.0s to 2.0s. Both regular and irregular waves can be generated.

The wave generation system is designed for ease of mobility in and around the test basin. Thus wave directions can varied in greater amounts than the -15° to $+15^{\circ}$ that is allowed for in the wave signal generation software.

Peak factors for various energy spectrums can be selected in the ave software program, as can the frequency limits, length of the wave series, number of waves in a series and the phase limits.

Wave height is controlled by means of a voltage regulator, which is regulated manually with a PC. Wave heights and periods are measured through twin wire resistance probes.

There is no mechanism of reflection compensation fitted on the wave makers. Reflection is separated from the incident wave field after testing using the method of Mansard and Funk (1980)

The wave signal, wave reflection and wave analysis software has all been developed in house.

A 1:10 slope in front of the wave makers is required for correct transformation of the incoming wave spectrum. Bathymetry can be built to suit all types of terrain from a sand/cement mixture, within extremely accurate tolerances.

PREVIOUS STUDIES

Previous model studied in this 3D basin include:

- *Durban Harbour Sand Bypass Structure:*



The tests involved sediment dynamics, wave measurements along the length of the structure and visual current assessments.

- *Port of Nqura Breakwater Stability:*

Stability and overtopping tests on the full length of the eastern and western breakwater.

- *Port of Durban Entrance Channel Widening Ship Motions and Breakwater Stability tests:*

Stability and overtopping tests on breakwater, studies of proposed widening of entrance channel on the wave penetration into the harbour and moored ships.



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