

Summary of Experimental Works

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Summary of Experimental Works

Ramsden, 1996-USA

Aim:

To measure forces and overturning moments on a vertical wall

Channel dimensions:

36.6*0.396*0.61

Model Scale:

-

Wave Generator Type:

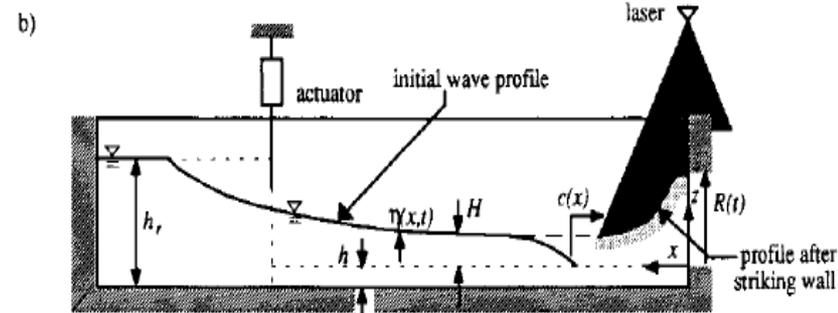
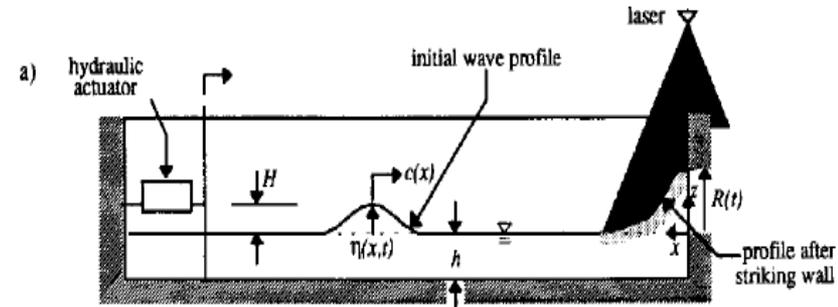
Piston type

Structure Type:

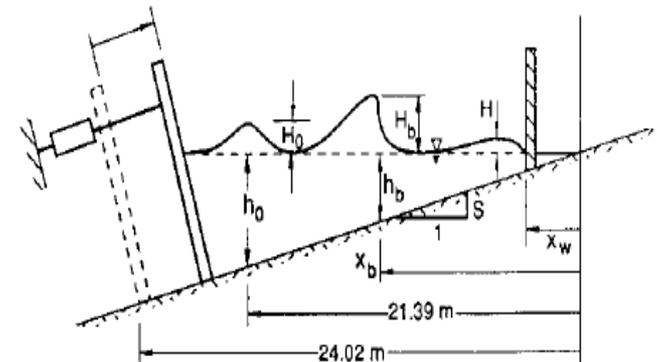
Vertical wall

Wave Type:

Turbulent bore



- (a) Solitary Waves in Horizontal Tank
- (b) Bores and Dry Bed Surges in Horizontal Tank; and
- (c) Broken Solitary Waves in Tilted Tank with 1/50 Slope



Miles, 2007-USA

Aim:

To test a model house under surge loading and record the uplift and compression forces

Channel dimensions:

-

Model Scale:

1/36 and 1/6

Wave Generator Type:

-

Structure Type:

Scaled wooden house

Wave Type:

Breaking waves and bores

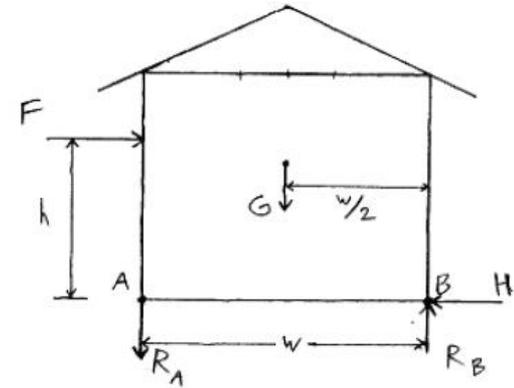


Figure 2. Free Body Diagram of Scale Model



Figure 3. Scale Model

Summary of Experimental Works

Young et al., 2008-USA

Aim:

To investigate the liquefaction potential of planar fine sand slopes during tsunami runup and drawdown

Channel dimensions:

48.5*2.16*2.1

Model Scale:

-

Wave Generator Type:

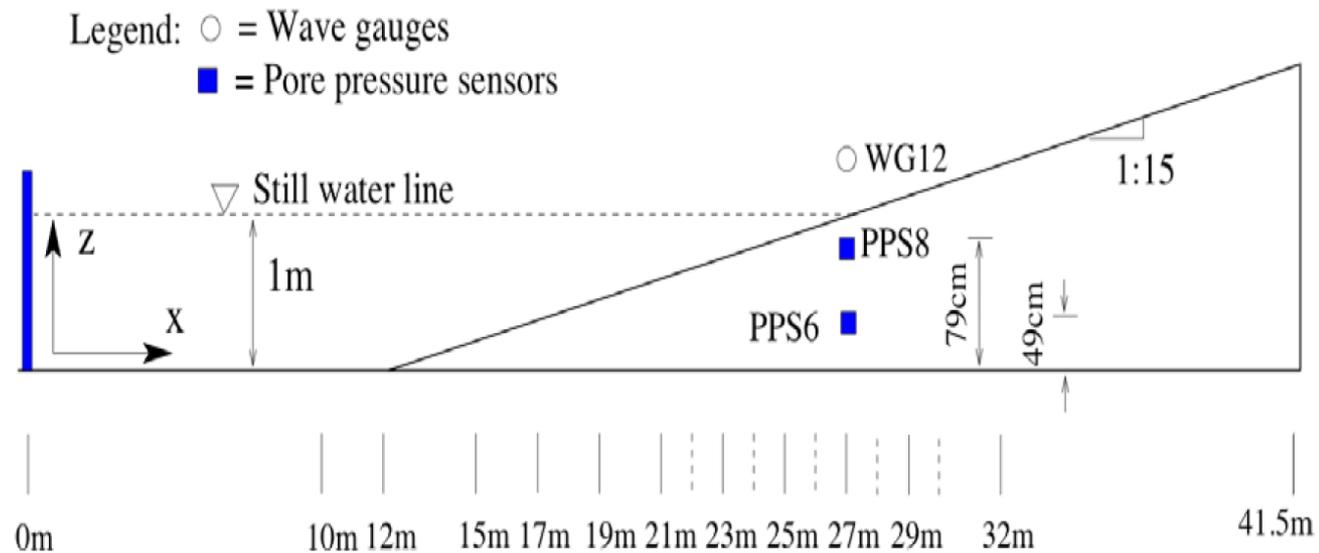
Tsunami Wave Basin

Structure Type:

fine sand beach

Wave Type:

Breaking waves and bores



Summary of Experimental Works

Lukkunaprasit et al., 2008-Thailand

Aim:

To investigate tsunami forces on a Reinforced concrete (RC) buildings

Channel dimensions:

40*1*1

Model Scale:

-

Wave Generator Type:

by a sudden release of water through a controlled gate at the bottom of the water tank

Structure Type:

Reinforced concrete (RC) buildings

Wave Type:

-

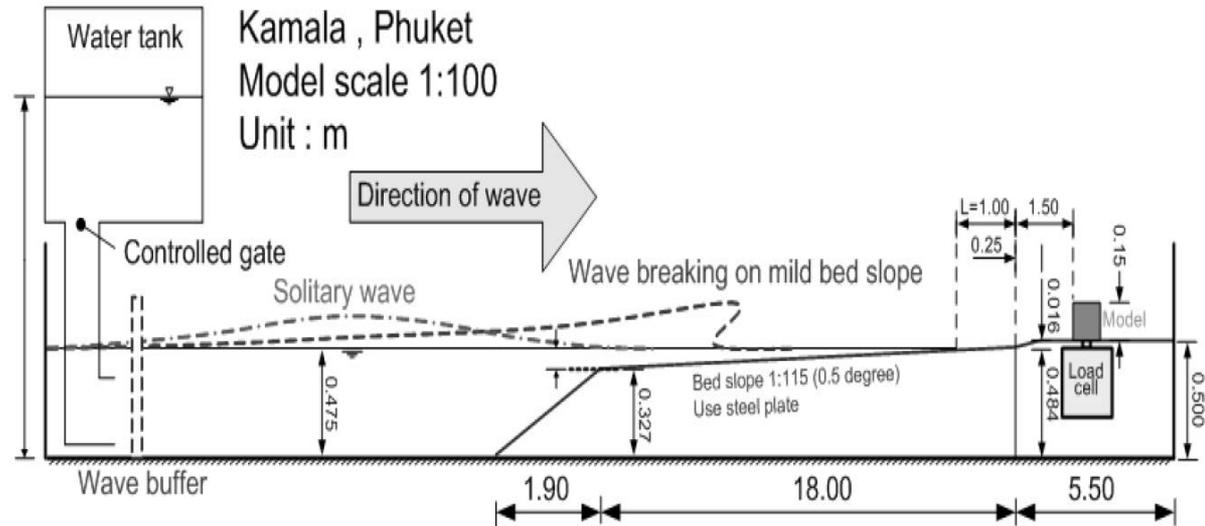


Figure 1 Experimental set-up



Summary of Experimental Works

Palermo et al., 2009-Canada

Aim:

To advance the existing understanding of the complex interaction between hydraulic forces and the impacted structures

Channel dimensions:

10*2.7*1.4

Model Scale:

Large scale

Wave Generator Type:

pumps with a variable discharge flow

Structure Type:

square and circular sections

Wave Type:

turbulent bores due to a typical of a dam break phenomenon

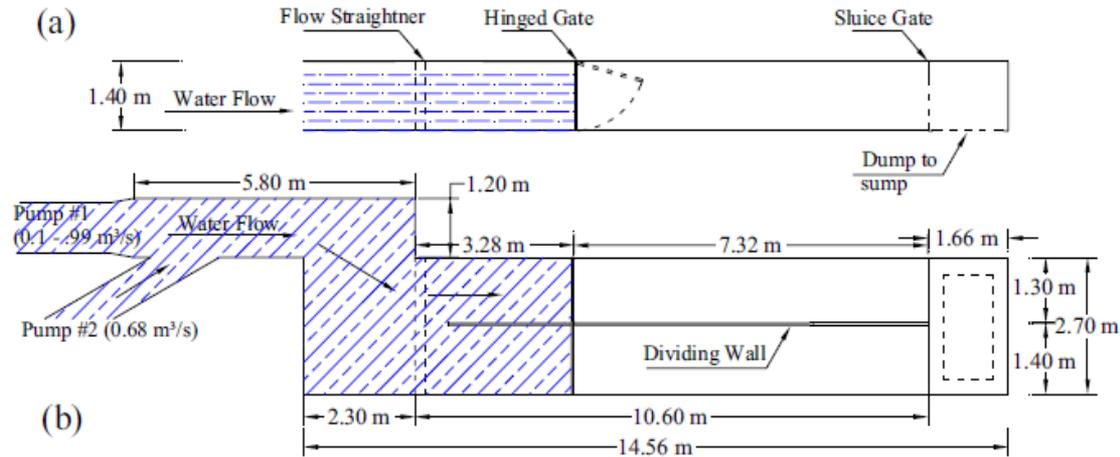
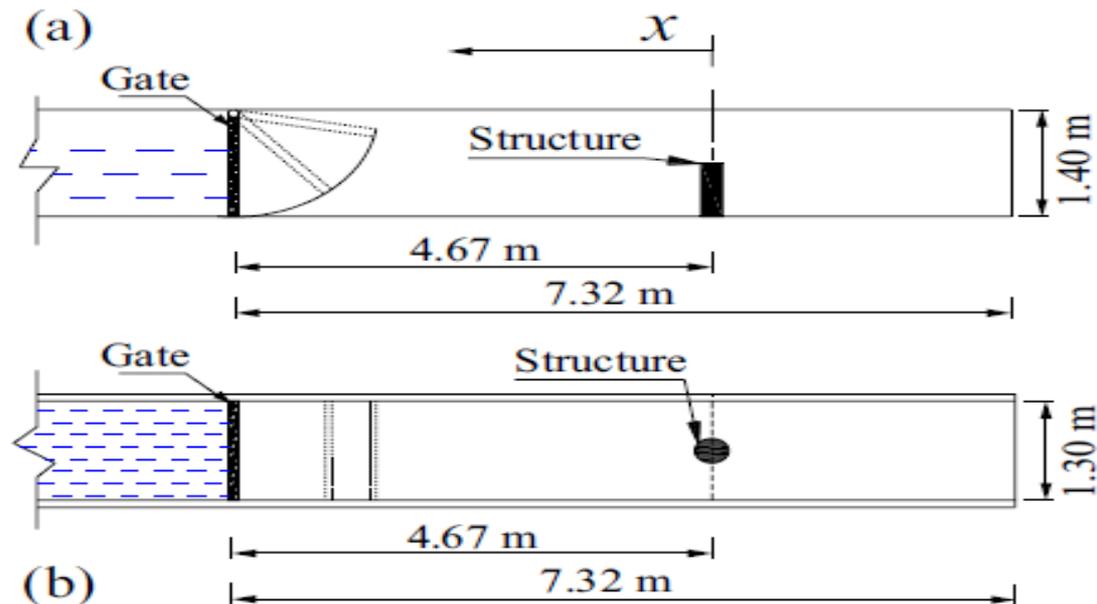


Fig. 4. Outline of the high-discharge flume: (a) side view; (b) plan view.



Summary of Experimental Works

Fujima et al., 2009-Japan

Aim:

To estimate tsunami wave force acting on rectangular onshore structures

Channel dimensions:

11*7*1.5

Model Scale:

-

Wave Generator Type:

Piston type

Structure Type:

Vertical wall

Wave Type:

A wave paddle was programmed to move back and forward slowly

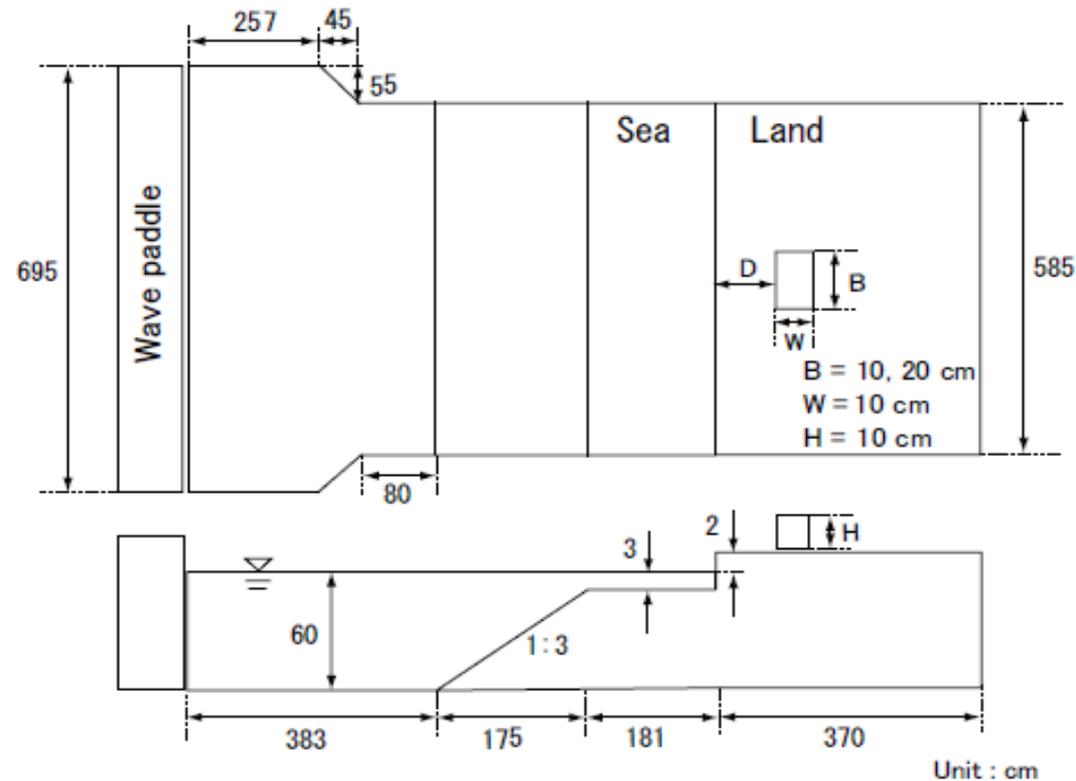


Fig. 1. Experimental setup.



Summary of Experimental Works

Mizutani et al., 2009-Japan

Aim:

To investigate drifted vessel due to a tsunami and the reflection of the tsunami from a quay wall

Channel dimensions:

30*0.7*0.9

Model Scale:

1/40

Wave Generator Type:

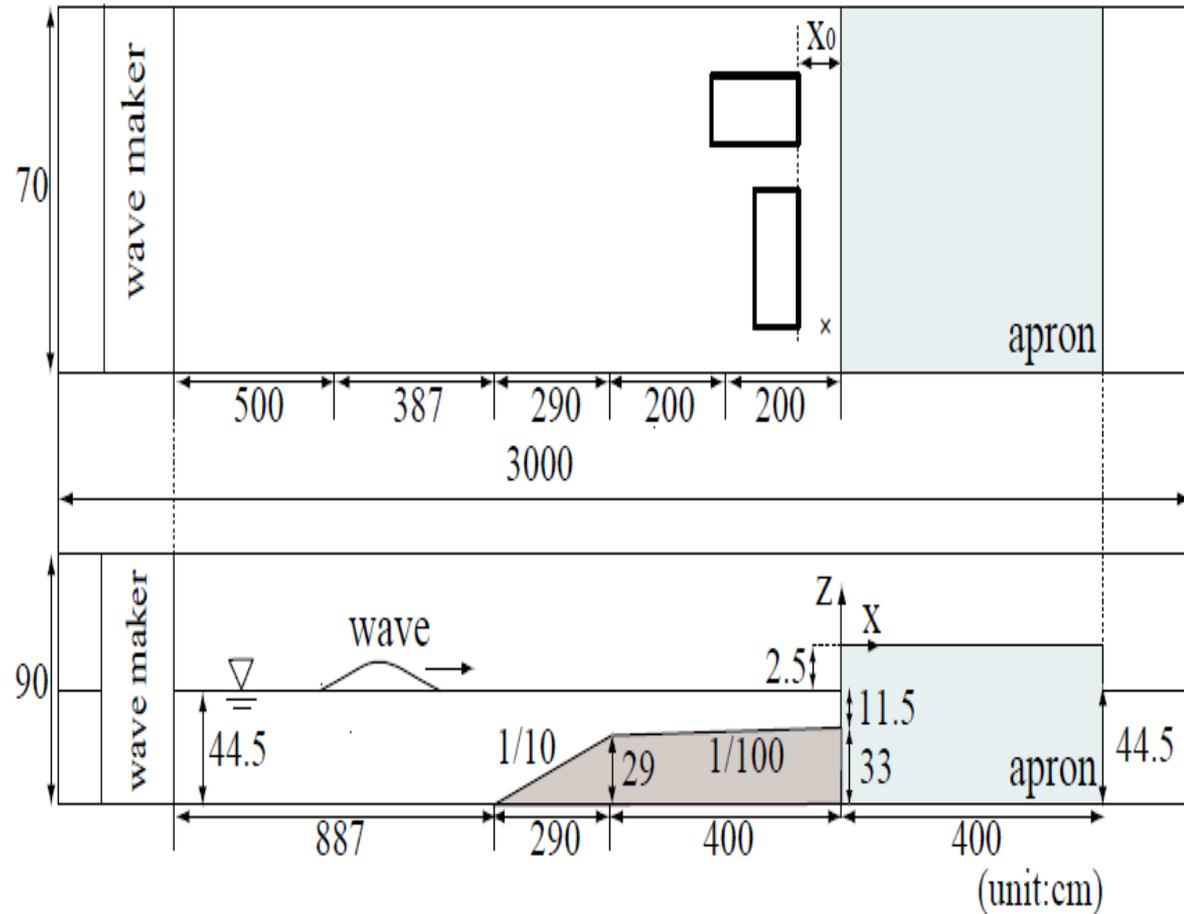
Piston type

Structure Type:

A quay wall

Wave Type:

Generated as half-sinusoidal waves



Summary of Experimental Works

Kato et al., 2011-Japan

Aim:

To investigate coastal dike failures caused by the Great East Japan Earthquake

failure from scouring at the landward toe is the dominant failure pattern.

Channel dimensions:

40*2*1.5

Model Scale:

1/25

Wave Generator Type:

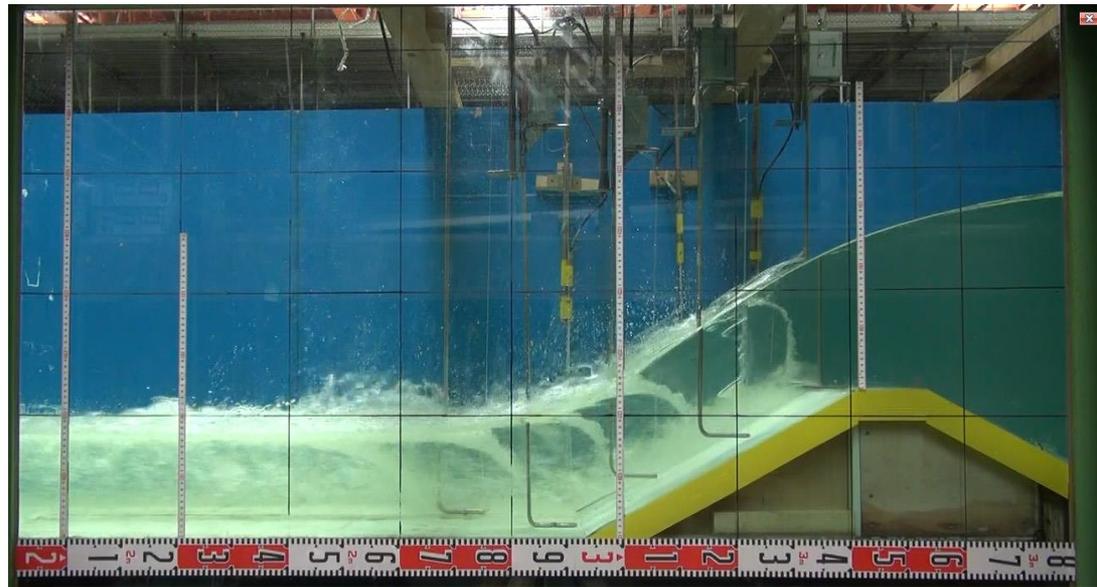
Overflow with pump

Structure Type:

Dike

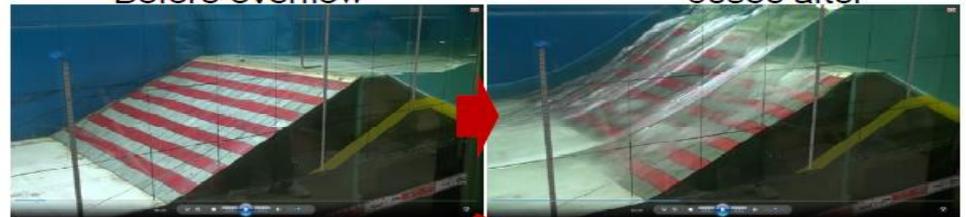
Wave Type:

-



Before overflow

60sec after



65sec after

120sec after



Summary of Experimental Works

Hanzawa et al., 2011-Japan

Aim:

To discuss the stability of wave-dissipating blocks of detached breakwater against solitary tsunami waves

Channel dimensions:

30*0.5*1

Model Scale:

-

Wave Generator Type:

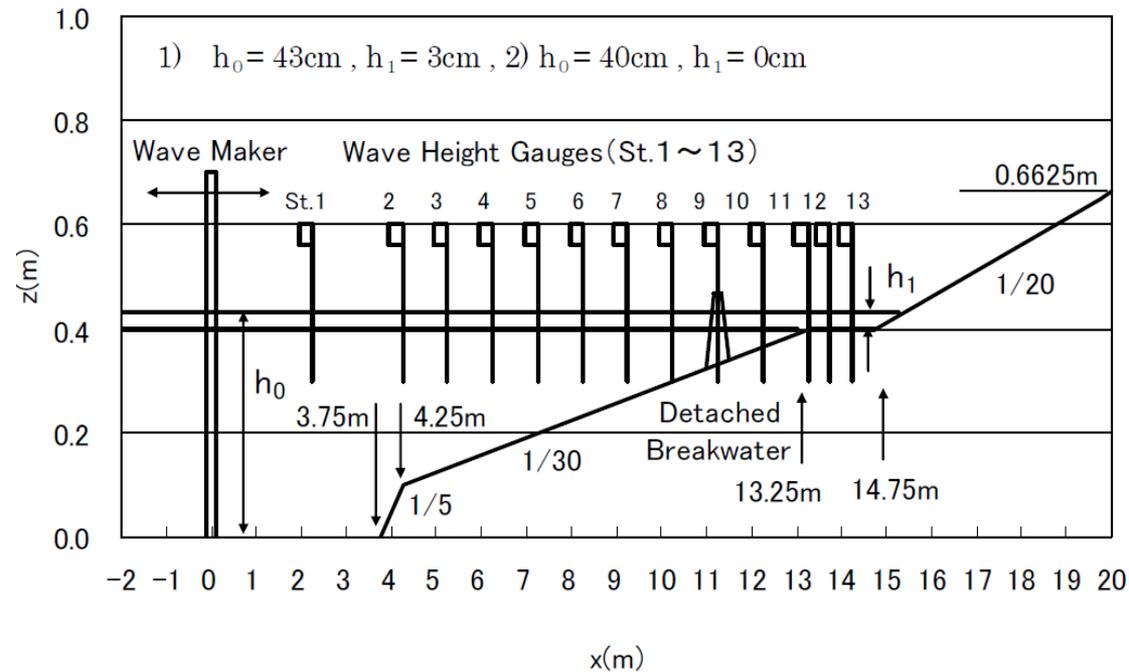
Piston type

Structure Type:

RMB Tetrapods

Wave Type:

-



Summary of Experimental Works

Linton et al., 2013-USA

Aim:

To observe hydrodynamic conditions and structural response for a range of incident tsunamis

Channel dimensions:

104*3.66*4.57

Model Scale:

Large scale

Wave Generator Type:

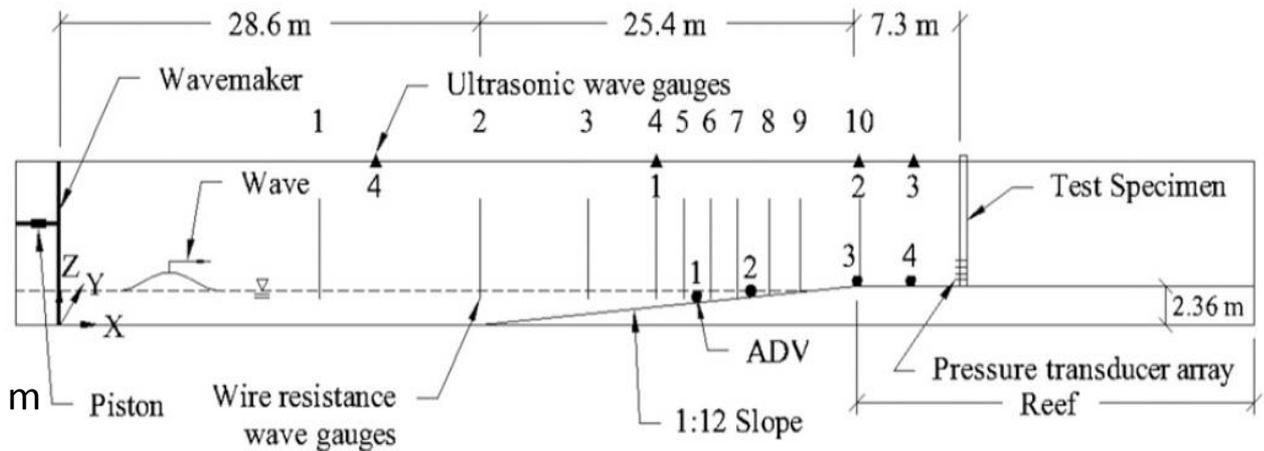
Piston type wave maker with 4 m stroke

Structure Type:

A full-scale light-frame wood wall

Wave Type:

Idealized solitary waves



Thank you very much for your
attention

