7.3.3 Beach / seawall characteristics

Parameter: **Shoreline type**

Required for:

Ocean side calculations of:

- Wave run-up levels
- Wave overtopping

Lagoon side calculations of:

- Wave run-up levels
- Wave overtopping

Description:

The beach / seawall characteristics determine how much wave run-up occurs (beach / revetment (sloping seawalls) or overtopping occurs (seawalls).

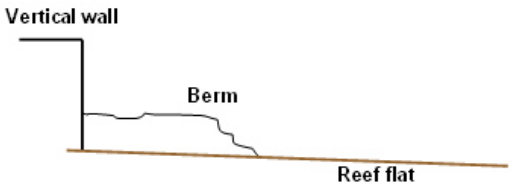
Select from:

Sand beach

Coral rubble beach

Revetment (sloping) seawall

Vertical seawall



Composite vertical wall

Parameter: **Beach / seawall crest level**

Required for:

Ocean side calculations of:

- Wave run-up levels
- Wave overtopping

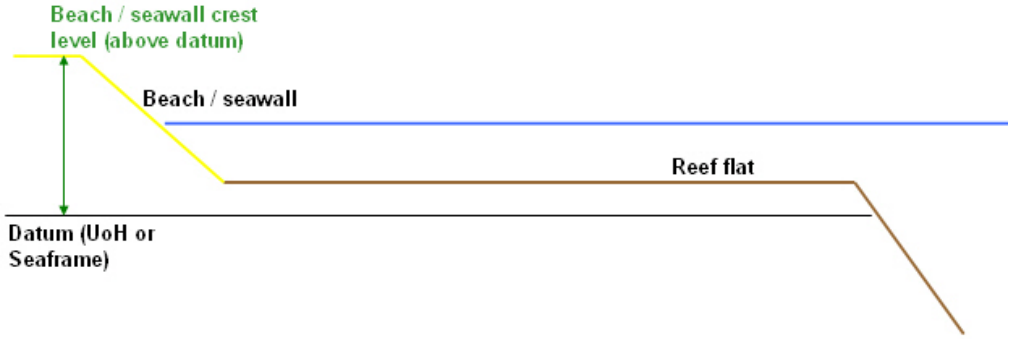
Lagoon side calculations of:

- Wave run-up levels
- Wave overtopping

Description:

The beach / seawall characteristics determine how much wave run-up occurs (beach / revetment (sloping seawalls) or overtopping occurs (seawalls).

Select from:



Parameter: **Seawall (revetment) slope**

Required for:

Ocean side calculations of:

- Wave run-up levels
- Wave overtopping

Lagoon side calculations of:

- Wave run-up levels
- Wave overtopping

Description:

The slope of a revetment (sloping) seawall influences how much wave run-up or overtopping occurs.

It is expressed as 1: x where x is the horizontal distance for a 1 m change in vertical level.

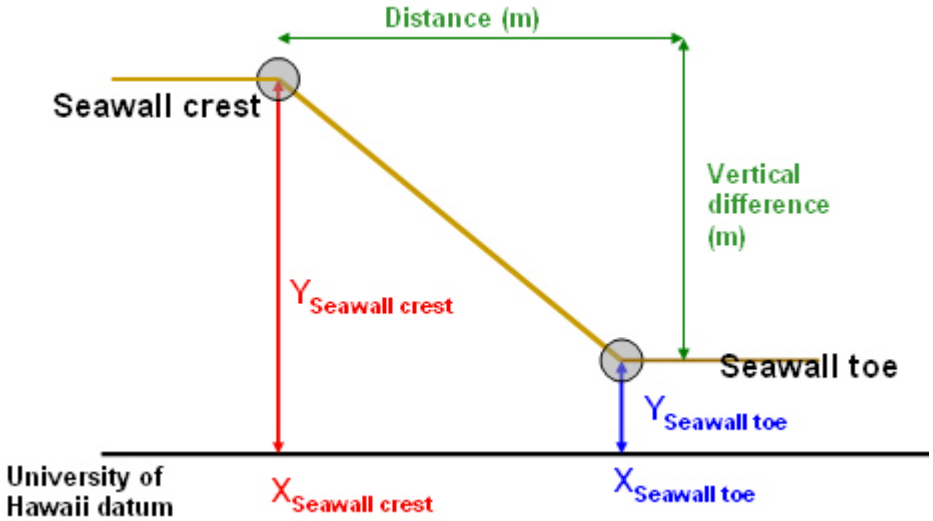
The seawall slope entered should be between 1:1 and 1:5.

It is calculated by:

1 The horizontal distance (H) between seawall crest and toe divided by the vertical difference (D) between the seawall crest and toe = D / H

3 If survey data is available by using the X,Y coordinates of the seawall crest and toe to establish D and H.

The seawall slope can be calculated automatically using one of the tools in the “Help” section of the coastal calculator.



Parameter: **Seawall crest width**

Required for:

Ocean side calculations of:

- Wave overtopping

Lagoon side calculations of:

- Wave overtopping

Description:

The width of the crest of the seawall (metres) influences how much wave overtopping occurs.

The crest width makes little difference in overtopping rate for:

- Concrete or solid seawall structures (it has more influence with seawalls built from rock or concrete armour units).
- Crest widths less than 1 m.

Parameter: **Level of the toe of the seawall**

Required for:

Ocean side calculations of:

- Wave run-up
- Wave overtopping

Lagoon side calculations of:

- Wave run-up
- Wave overtopping

Description:

The level relative to datum (University of Hawaii or SEAFRAME gauge 0 datum) of the toe of the seawall (if different from the level of the landward edge of the reef / sand flat entered previously.

The level must be relative to either University of Hawaii Gauge Datum or SEAFRAME Gauge Datum.

Accurate levels need to be measured by survey. However, an approximation could be made based on comparison with high tide levels on a particular day.

Parameter: **Seawall revetment armouring**

Required for:

Ocean side calculations of:

- Wave run-up
- Wave overtopping

Lagoon side calculations of:

- Wave run-up
- Wave overtopping

Description:

The material used to construct a sloping seawall has an influence on wave run-up levels and overtopping.

A wide selection of standard seawall construction types are available for selection.

For south Tarawa the most likely selection will be:

- Concrete bags.
- Smooth concrete blocks.
- Concrete filled mattress.
- Rocks (1 layer, impermeable core) – where coral rubble has been roughly cemented in place.

Concrete bags

Concrete filled mattress

Rocks (1 layer, impermeable core)

Parameter: **Revetment crest wall**

Required for:

Ocean side calculations of:

- Wave overtopping

Lagoon side calculations of:

- Wave overtopping

Description:

A vertical wall at the top of a sloping revetment seawall can significantly reduce the volume of wave overtopping.

A simple approach is adopted that takes account of the presence of a crest wall and adjusts overtopping volume.

This does not take account the height of the crest wall, just its presence.