Research on Stilling Wave basin concept

Introduction

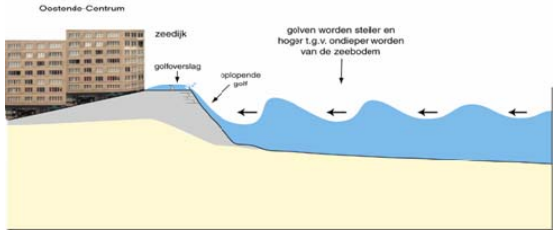
Undesirable wave overtopping over coastal defense structures can be decreased by raising the crest level of the breakwater or the dike. However, this is not always desirable or possible (e.g. visual hindrance). The Department of Civil Engineering at Ghent University (AWW) is involved in several studies to find more elegant strategies to decrease the wave overtopping for existing seadikes. One of the most important concepts is the “Stilling Wave Basin”.

Principle

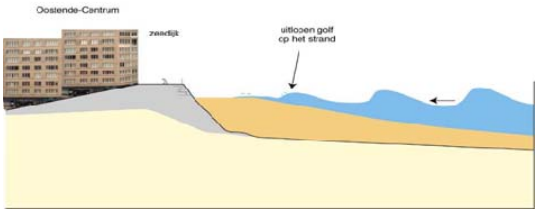
The principle of the “Stilling Wave Basin” is as follows. Waves run up the foreshore of the dike and run into a double row of low walls (at the seaside). As such the waves are partially stopped and partially thrown over the walls where they loose their energy in a basin. This basin is created between the two rows of walls and another higher wall at the landside.

Application: Oostende

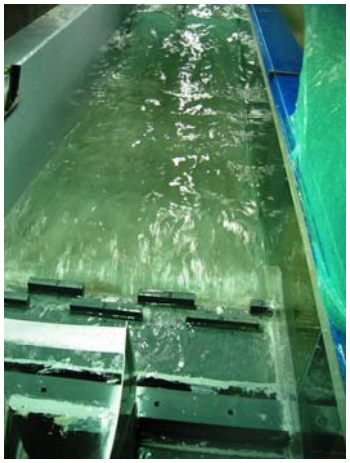
The city center of Oostende at the Belgian coast is at a much lower level than the crest level of the sea dike. As a consequence, wave overtopping can be a potential cause of danger for the inhabitants of Oostende. Beach nourishment – due to which the waves break faster and thus loose a lot of energy before reaching the dike - has been used as a temporary solution for the problem of too much wave overtopping during heavy storms. AWW carried out experiments in the lab to evaluate a possible “Stilling Wave Basin” at Oostende.



Original situation Oostende



Situation with beach nourishment



Scale model of the “Stilling Wave Basin” for Oostende.

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