

DETAILS OF INTERESTING CLAIM

No: DOIC 61 (CAR)

Type of Insurance:

CAR

Description of damaged item:

Outfall structures in the container terminal of harbour

Cause of Loss:

(2) Faulty material or workmanship

Claim Cost

1 m USD

Description of Incident and Loss Prevention Measures initiated:

In order to cater for settlement of the prepared fill material each culvert outfall unit was set to a pre-elevation. The settlement of the structure had been calculated at approx. 300 mm but in reality this turned out to be 600 mm. Relifting, backfilling the space between lower slab and the sand bed and repositioning was discarded as being too difficult. Instead it was decided to demolish the soffit slab and simply extend the vertical walls to each cell before recasting the soffit slab to the design level. A claim was submitted for this modification work but was declined by insurers on account of the settlements being neither sudden nor unforeseen but merely incorrectly calculated.

In order to execute these modifications in the dry the contractor's method involved sealing each cell within the outfall unit and pumping out water from within each cell one by one. It should be noted that in order for negative buoyancy to remain, only one cell at any given time was to be drained. However, after removing the soffit and walls between the individual cells, a high tide occurred which reduced the safety factor and this, in combination with a pump inadvertently left running overnight within one of the flooded cells, the outfall element became buoyant. With water pressure acting on one end of the outfall structure; the landward side at this stage was being drained, the structure floated and displaced at one end, tilting and slipping on the underlying sand bed and coming to rest out of position but without being damaged itself.

Outline the interesting or unusual aspects of this claim or problems experienced during settlement:

An outfall structure in the container terminal of an Asian harbour: To facilitate internal reclamation to proceed in parallel with construction of quayside structures, the reclamation interface was constructed early on in the programme. Drainage outfall

structures were pre-cast as open four cell box culverts. The adopted method of construction involved excavating a trench in the seabed and replacing marine deposits with graded material and a top sand layer. The outfall units were subsequently floated into position and placed on to a prepared foundation bed.

Whilst the claim for repositioning after excessive settlements had been correctly declined, the tilting and sliding of the outfall structure was caused by human failure and/or faulty workmanship. The structure had to be split into two elements and floated separately into the correct position after repairing and preparing the backfill underneath, using divers.



Tilted outlet structure

A clear method statement should be presented before works are executed and ways should be found to guarantee its correct implementation. Preparation of method statements should consider all external factors which are present and which might potentially influence the works to be undertaken. In this example, repositioning has to be declined if it is found that movement was due to gradual influences, whilst the same has to be indemnified if caused accidentally. In this case the human error had to be considered as a break in the original chain of causation or as a supervening event.

(From [Engineering Insurance Exposure related to Wet Risks](#) - IMIA Paper WGP50(07)E)