

Cape Lambert Port B Temporary Works

Client: John Holland Group Pty Ltd

Overview

AEC was engaged by JHG to design the temporary bracing, personnel access platforms, walkways and workboxes for construction of the Cape Lambert Port B Iron Ore Export Wharf.

The Challenges

The temporary bracing struts and access walkways were required to be installed immediately after the 1500dia painted steel piles were driven into the seabed. JHG requested that the design not interfere with the pile coating (no weldments on piles). The temporary bracing design was required to resist cyclonic wind and wave loads imposed on the piles. The weight of the temporary bracing and access steelwork was in excess of 500 tonnes, which had to be supported by friction clamps.

The workboxes also had to clamp onto the piles. There were three different pile diameters (1000, 1400 and 1500mm). Some of the piles were raked at various angles and others were vertical. JHG requested that one workbox be designed to accommodate all pile diameters and rake angles.

For all components that were designed, the aim was to minimise sitework and prevent pile coating damage or local yielding of permanent steelwork.

The Solution

AEC designed neoprene lined and raked friction clamps that accommodated pile size and ovality tolerances of the 1500mm diameter piles. Specialised analysis was required in order to achieve the required frictional resistance without yielding the pile walls, whilst keeping the clamp size and weight to a minimum.

The temporary brace struts utilised “wishbone” connections to create an envelope in order to accommodate the 150mm position tolerance of the piles and minimise site work.

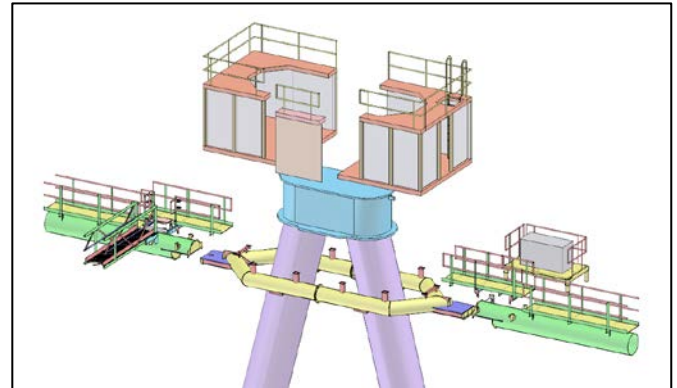
Outcome

The Cape Lambert Port B Project was awarded the **Australian Construction Achievement Award for 2013**. The judges mentioned the temporary works as one of the reasons for the project winning the award.

The neoprene lined friction clamp design achieved the aim to support all temporary bracing and access ways with associated live loads from personnel, welding units and other construction loads without damaging the pile coatings.

The “wishbone” strut design achieved the aim of accommodating all permutations of pile position and rake tolerances without additional site work.

The workboxes accommodated all combinations of pile sizes and rake angles with interchangeable hinged clamps that were a new innovation in workbox design.



AEC Designed Workboxes, Friction Clamps and Wishbone Struts (copy of photo published in Engineers Australia Magazine, March 2013)