



Case Study

Cape Flattery Silica Mine Wharf Pile Repairs 2001

Client Name: Transfield Construction

Description of Works: PMG were contracted to seal holes in 142 piles at the Cape Flattery Silica Mine Wharf, using underwater welding techniques.

The works were conducted in the following stages:

1. Locating of Holes

All holes present in the piles were systematically located and logged using the following method. This was completed using a combination of visual examination, injection of pressurised air into the piles and progressive repair of holes. A Gr316L stainless steel $\frac{3}{4}$ inch BSP socket was drilled and seal welded into the pile approximately 100mm below each pile cap. Pressurised air was then injected into the piles until the pile was repaired to

the point that it would hold 70 psi pressure for 30 minutes.

1. Logging of Holes

Following identification, all holes were immediately marked on the piles for ease of location during the progression of the works. Each hole was sequentially numbered, and the following information was recorded immediately after locating a hole:

- pile designation;
- hole number;
- date and time located;
- diameter of hole;

depth below low water datum to an accuracy of 100mm;

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- location around circumference of pile (compass reading) to an accuracy of 22.5°,

The above information was collected for every hole to provide a complete record of all hole locations for future reference.

2. Cleaning of Piles

As piles were worked on and holes located, the immediate area around the hole locations was then cleaned to effect the repair of the hole. The piles were cleaned by mechanical scraping and/or high pressure water blasting.

Disused jetting / grouting pipes and manifold rings were removed as required by cutting off with pneumatic / hydraulic tools or Broco ultrathermic cutting equipment.

3. Sealing of Holes

All holes were sealed by pit welding, tapered plug or a welded patch, depending on the size and configuration of the holes located. The welded patches were fabricated from 8mm thick, Grade 250 steel to AS3678. The patches were pre-rolled such that their inner diameter was equal to the outer diameter of the pile that was being patched.

The patches were generally be cut in a diamond shape with rounded corners, but could be profiled individually to suit odd or irregular shaped holes, or a combination of holes, and sized such that a minimum distance of 25mm existed between the edge of the patch and the outside edge of the hole on the external side of the pile wall.

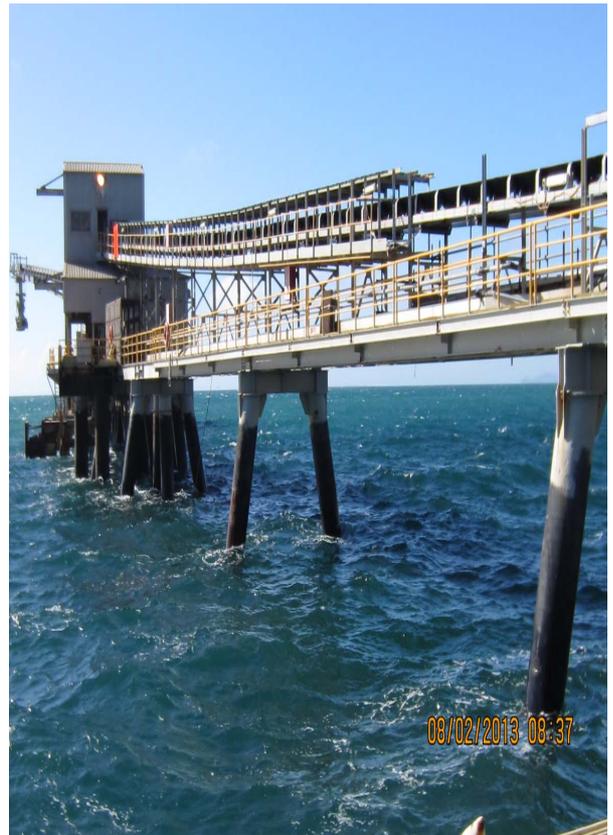
A full sealing run around the perimeter of the patch is the minimum requirement.

4. Logging of Hole Sealing

The sealing of every hole was logged to provide a complete record of all repairs for future reference. The following information was recorded immediately after the sealing of each hole:

- pile designation;
- hole number;

- date and time of repair;
- depth below low water datum to an accuracy of 1 00mm;
- location around circumference of pile (compass reading) to an accuracy of 22.5°, and size of repair.



A portable dive spread, decompression chamber, underwater welding spread and Broco ultrathermic cutting spread were utilised for the project.

