

## ACCESS SAFETY

# NZCF awards recognise safety in confined spaces



Brian Perry Civil project manager Jason Giacopazzi and his team prepare to gain access to the ventilation shaft

Blasting 87 m through solid rock and building next to a live furnace or high-speed trains all pose unusual safety challenges, but construction companies Brian Perry Civil and Waihola Excavation managed to devise solutions that not only ensured safe, high-quality outcomes for these 'confined space' projects, but also helped them reach the finals of the 2007 Hirepool Construction Awards.

The awards are open to all members of the New Zealand Contractors' Federation, and NZCF executive officer Malcolm Abernethy says the companies' achievements highlighted the innovative solutions New Zealand companies produced in challenging situations.

Brian Perry Civil constructed and installed a new concrete foundation structure for Aluminium Smelter Metal Products at Tiwai Point, near Bluff. Dean Quickenden, the company's South Island manager, says the project required an extremely innovative approach.

The structure had to be installed next to very sensitive plant, within metres of a live furnace operating at temperatures of up to 750 degrees Celsius. Work had to be completed within a five-week period, without vibration or disruption to the production process of the smelter.

The company constructed a pre-cast concrete open-bottomed caisson with a special shoe cast in the base, built at ground level above its final position. Small diggers excavated beneath the shoe, and spoil was removed by a larger excavator located on top of the structure. As excavation proceeded, the caisson was successfully sunk under its own weight to a depth of 4.6 m with work carried out by hand and in water for the final 250 mm.

Dunedin-based Waihola Excavation constructed the Ravensdown walkway and cycleway for Otago Regional Council. Work was carried out in a narrow corridor, just 5 m wide in places, bounded on one side by the South Island Main Trunk Railway and on the other by Otago Harbour. Workers had to remain at least 4.5 m from the track.

Project manager Robert Harris says: "This was a very interesting project which raised a number of challenges. The first thing we did was build a 1.2 km fence to provide a clear separation

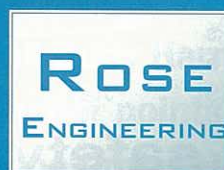
between the railway and work area." In one area the harbour wall had fallen away, and two none-too-friendly sea lions were regularly accessing an area of the land for breeding purposes.

Waihola diverted the walkway away from the area used by the animals, and the council funded extra fencing to provide protection for the pair. "We were very careful not to disturb them – and they tolerated us being there," says Mr Harris.

Brian Perry Civil was also shortlisted for sinking new access and ventilation shafts at the Waihi mine. Initially a single 4.5 m diameter shaft 100 m deep was proposed. But technology resources available and the client's time constraints led to Brian Perry Civil proposing an alternative construction of two 2.5 m permanently cased shafts.

Many risks were identified at the outset, including rock conditions, feasibility of the chosen drilling method and casing jamming. Specialist equipment was used for drilling, and the Red Bull Powder Company was brought in to blast through hard rock material encountered at a depth of 40 m.

"Arguably at 2.5 m diameter, a depth of 87 m and through compressive rock hardness later found to be 330 MPa, these were the largest, deepest shafts attempted at the mine and through material not previously attempted," says Brian Perry Civil's Auckland manager, Brent Leach. "The project was completed successfully using Kiwi ingenuity and a can-do attitude."



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