

Transfield – Removing overhanging face

Oparure Road – Waitomo, New Zealand

Site Profile

Transfield Services Ltd. Infrastructure division (Transfield) provides road maintenance services to the Waitomo District Council (WDC) on the North Island of New Zealand. Transfield were recently engaged by WDC to rehabilitate pavement on Oparure and Haurua Road 12km west of Te Kuiti.

One area of this project required the removal of an overhanging limestone face on a tight corner of Oparure Road to:

- Increase visibility, and,
- Ensure that the road could be repaired to prevent trucks from slipping down the road verge towards the inside drain.



Limestone face to be removed – looking south west



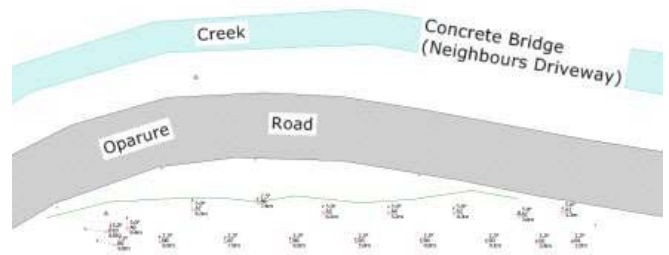
Limestone face to be removed – looking north east

The Situation

A ramp approximately 7m wide, 40m long from road level and 10m high needed to be removed. Transfield made the decision to remove the rock using explosives, rather than excavate it using mechanical methods.

In order to ensure the success of the blast, the following criteria needed to be met:

- The road must be re-opened so that a single lane of traffic could get through within one day of the blast being fired
- The creek on the far side of the road must not be blocked. This required the blasted material from the 10m high face moving no further than 8m across the road.



Shot Plan

Technical Solutions

An optimal blast design was formulated by taking data collected using a Measurement Devices Ltd's (MDL) Quarryman laser profiler and importing it into Orica's ShotPlus™ 5 software.

Large front row burdens were necessary to minimise rock movement and the accuracy of the drilling was checked using MDL's Boretrak® system.

Using Orica's Exel™ non-electric detonator system, slower timing was used along the control row and faster timing through the echelons to direct movement along the road, thus minimising material movement towards the creek.

By reducing the burden on the second row, the powder factor was increased to promote good fragmentation

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through the body of the shot and to ensure that the final face was stable and in the desired location.

The Result

The shot was fired successfully on the 30 November 2012 with the control measures in place ensuring that the blasted muckpile remained on Oparure Road and did not block the creek on the far side of the road.

Despite some oversize being generated from the heavily burdened front row, the earth moving contractor, Johnston Drainage and Contracting Ltd, reported that fragmentation in the body of the shot was well matched for the 14t and 20t excavators on site.

The final wall left by the shot was in good condition and visibility around the corner blasted increased substantially.

Testimonial

“Orica provided us with a cost effective solution, they were extremely easy to deal with responding at the drop of a hat when requested.”

Dennon Bell – Transfield Services

Acknowledgements

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Minimal Material in Creek



Final Face