

Rockfall Protection - LDS Church, Dunedin



Leon Gerrard

Leon is a Project Manager with Abseil Access in Christchurch. Leon has completed a BSc in Geology and PG Diploma in Engineering Geology at the University of Canterbury. He worked for Aurecon prior to joining Abseil Access and has been involved with a range of projects in the North and South Island, including Port Hills Slope Stability work for the past 5 years.

A **DISUSED 35M** high quarry face bounds the access road and associated carpark for the LDS Church and the Frances Hodgkins retirement village. The access road has been affected by rockfalls from the basalt, breccia and volcanic ash layered cliff face, typically as a result of heavy rainfall events.

Abseil Access carried out the cliff stabilisation works, designed by GeoSolve in Dunedin. The cliff stabilisation works were an extension of previous stabilisation works carried out above the Frances Hodgkins retirement village and included:

- Reinforced shotcrete over the volcanic ash layer.
- Spot bolting of unstable blocks identified by GeoSolve.
- Scaling of loose material as required to gain safe access.

A flexible rock mesh anchored to the overlying basalt was used as re-enforcing

on the undulating face. 50 mm diameter drainage holes at 2m centers were added to ensure ground water could escape. A 100 mm thick layer of 30 MPa shotcrete was applied over the reinforcing mesh on an area more than 250 m². The shotcrete was applied as a dry mix (gunite) using rope access and a crane positioned on the access road below where possible.

Several loose and unstable blocks were identified on the cliff face and 28 No. 4m long Bluey 25mm GRP bars with power nut and plate rock anchors in 90mm diameter holes were installed. The holes were drilled using a drill rig mounted to the basket frame of a long reach boom lift, which moved along the rockfall catch ditch at the base of the cliff.

The project was completed to ensure timely completion and minimal inconvenience to the LDS Church and the Frances Hodgkins retirement village.