

COTTER DAM, ACT

REMEDIAL WORK
PERMANENT GROUND ANCHORAGES



Sustainable Technology



Client: ACTEW Corporation
Superintendent Rep: Snowy Mountain Engineering Corporation

Contractor: Guideline ACT Pty Limited
Specialist Contractor: Austress Menard Pty Ltd

THE PROJECT

Cotter Dam is located just upstream from the confluence of the Cotter and Murrumbidgee Rivers, approximately 20km south west of Canberra. The structure is a 31m high concrete gravity dam, which was constructed in 1915 to a height of 19 metres and raised to 31m in 1951.

Cotter Dam was upgraded and strengthened to ensure the Dam will resist extreme floods and an earthquake of 7.5 Richter. This work included the excavation of the top of Cotter Dam by 1.8m, construction of a load distribution beam on top of the dam, and drilling and installation of 45 permanent ground anchors to tie down the new raised dam spillway.

AUSTRESS MENARD'S ROLE

Austress Menard were engaged as the specialist subcontractor to undertake the permanent anchoring works associated with this project after considerable development of the scheme at tender stage with the main contractor. This work included drilling and waterproof grouting of 45 holes from 215mm to 254mm diameter, ranging from 20 to 57m in depth, through cyclopean concrete and dacite bedrock, and the supply, installation and load testing of 45 load monitorable, restressable permanent ground anchors with up to 36no. 15.2mm diameter SGLR strands.

The dam is sited in a narrow valley with no easy access for construction. Most of the civil works were water based and so

floating in the anchors for individual installation was foreseen at tender stage.

However installation of the 45 anchors was grouped into four distinct helicopter lifting operations, each being determined by the weights of the individual anchors. The services of Hevi Lift (PNG) were engaged to provide the specialist lifting using a Bell 212 helicopter for the anchors weighing up to 1400kg each and a double rotored Kamov 32 with a maximum lifting capacity of 5000kg for the remaining 35 anchors, the heaviest being 2600kg.

Now sited out of the flood zone, anchors were fabricated downstream, then lifted out of the fabrication area with the helicopter, flown to the dam face and lowered into the anchor holes to be supported on the installation frames for grouting into place. The lifting operation and installation took approximately 12 minutes for each anchor. Grouting of the anchors followed immediately thereafter with load testing at 28 and 56 days.

The use of helicopters by Austress Menard to install anchors on this project is a first by any company in Australia.

This innovative construction technique proved to be financially beneficial to the project as a whole, with the risk of damage to anchors during installation minimised, and overall installation times greatly reduced.

The project was completed in November 1999, ahead of schedule.

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