



Meander Dam relies on precast

Proposals to build a dam on the Meander River in Northern Tasmania go back to at least 1968. After more than thirty years of discussions, construction of the Meander Dam commenced in January 2007, using a high speed construction method of precast and roller compacted concrete (RCC).

The basic construction method involved the placement of the upstream precast panels and downstream precast blocks, then layering RCC between, with compaction by vibratory rollers. Around 200,000 tonnes of RCC was in effect sandwiched between the upstream and downstream precast faces. The final phase of construction involved the installation of a PVC “membrane” on the upstream face. The membrane was sealed against all sides of the dam, making the dam project virtually watertight.

The Meander Dam is 170 meters from abutment to abutment and 50 metres from upstream toe to downstream toe. Over 4,000 precast concrete units were made by National Precast Member Duggans Pty Ltd. Whilst panels and blocks were made in the precaster’s Launceston factory, the intake tower sections and crest units were made at their Cradoc factory.

Upstream panels

Manufacturing for the upstream face included 484 precast concrete panels which form a smooth vertical surface. Each panel measured 5 metres by 1.8 metres by 100 mm and weighed 2.3 tonnes.

The 484 upstream panels were manufactured on four fabricated concrete mould beds. Moulds were set up for one type at a time on each table, then QA checked by Duggans’ Project Leading Hand and QA Inspector and then by engineer McConnell Dowell, prior to major production.

Precast manufacturer

Duggans Precast

www.nationalprecast.com.au



Panels were generally poured before 2.00 pm, so they could be lifted before 7.30 am the following day. Prior to lifting, the moulds were released and eye bolts placed in ferrule holes.

Using a gantry crane, the panels were flat lifted off their mould beds into a vertical position, then moved to a temporary storage A-frame inside the factory. They remained in the inside temporary storage area for approximately three days, before being moved by loader to an external A-frame storage location. The panels were then covered and mist water cured for seven days.

The panels were transported in to the dam construction area on the A-frames (generally 10 per load), then unloaded onto other A-frames at the dam face and lifted individually by the tower crane into place.

Downstream blocks

The downstream spillway's stepped incline was made up of 3,060 concrete blocks, each measuring 2.4 metres by 600 mm) and weighing 1.2 tonnes.

These blocks were manufactured in 4 groups of 6 mould forms, allowing a maximum of 24 of the downstream block to be manufactured per day.

Because access to the construction area was very tight, the downstream blocks could not be stored at the dam face. Once made in the factory, the blocks were loaded into specially manufactured cradles which carried six blocks each. Three cradles (18 blocks) per semi-trailer were transported to site and then were tower craned onto the dam in these cradles”.

He added that the downstream blocks were doweled together, and were tied back into the RCC with tie bars, with the upstream panels' inter-locking edges locking into each other, and again with tie bars securing them into the RCC.

According to precast Project Foreman Dom Sandric, “Given the size and complexity of the job, and the huge number of individual components, it is amazing to think that only six to ten men at any one time were engaged in manufacturing the components. They did this over an eight month period.”