

DEOH Explosive Storehouse

Project Director: Chris Pines
Project Manager: Rod Smyth
Site Foreman: John Downes
Safety Officer: Peter Lucas



Client: **Department of Defence**

Location: **Defence Establishment Orchard Hills, NSW**

Project

Cost: **\$2,800,000**

This project involved the construction of a new Explosive Store House on a greenfield site at Defence Establishment Orchard Hills. The storehouse was to hold soon to be purchased explosive ordnance and had to be built within extremely tight time frames.

The project involved 1000m³ of concrete, 120 tonnes of steel reinforcing, over 20,000 tonnes of imported fill and 600m of new armoured electrical cable set into a new trench. The entire bunker was sealed with a waterproof membrane and then covered with compacted earth for protection. 7000m² of turf was then laid over the building and batter slopes. A Type 1 SCEC endorsed security system was installed to monitor the building and the new electrical supply line was earthed every 75m for protection. All reinforcing was also earthed to the main earth stake adjacent to the building in order to ensure no static electricity could build up around the ordinance.



The floor slab and ground beams were poured on imported and compacted virgin sandstone. The 600mm deep ground beams were accurately excavated and then poured following placement of a blinding layer, a waterproof membrane and the steel reinforcing. The floor slab took 240m³ of concrete.



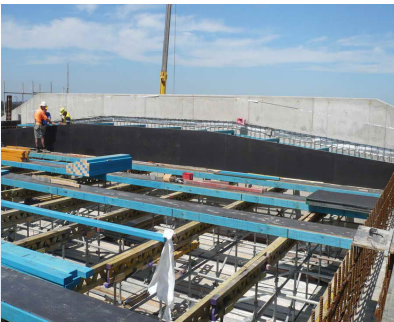
The floor slab was poured in winter and had to commence at 5am to allow the concrete to cure enough to be finished during day light. The pour was achieved using a boom pump although several truckloads were also placed "off the chute" for increased speed.



The main walls are 450mm thick 7m high. They were poured in a single day using a two pump, four truck feed. Extra long vibrators were required to ensure no “honeycombing” took place. The pour went extremely well and 210m³ were placed by 10am.



This photo shows the internal walls as they were being stripped. We used a system formwork by RMD (as opposed to traditional stick formwork) due to the time limitations. The gap for the main access doors and the personnel entry door is also visible in the front wall.



The concrete roof involved 1300mm deep beams and a 250mm thick slab. Traditional propping and formwork had to be used due to the complexity of the structural system. The main reo consisted of three layers of 32mm deformed bar and in total the roof structure weighed 600 tonnes.



The whole structure was waterproofed using a Tremco Paraseal membrane prior to being completely covered with earth. It had to be carefully backfilled with granular material to avoid puncture and we sourced specific material for this purpose. Compaction against the walls had to be done with small mechanical equipment only.



This photo shows the backfill coming up in height against the side wall and behind the headwall. The entire building was then covered with earth to complete the project and a concrete hardstand was poured out the front of the main access doors (shown on the right-hand side of photo).