

Infrastructure Upgrade at Orchard Hills

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Client: **Department of Defence**

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

Project Cost: **\$10,750,000**

Starting mid 2008 and based at several locations across Defence Establishment Orchard Hills, CC Pines undertook three work packages. These works focused on providing new storage facilities while improving existing testing and administration facilities across all sites.

EXPLOSIVES STOREHOUSE: Work Package 1 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 works 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.

MISSILE TEST FACILITY: Work Package 2 was Design and Construct which involved modifying and upgrading building and services infrastructure so new missiles could be tested for serviceability. This package involved extremely technical HVAC and electrical systems as well as steel missile restraint components built to a tolerance of less than 1mm.

FRONT GATE AND OFFICE ACCOMODATION: Work Package 3 was also Design and Construct and involved the refurbishment of four buildings, relocation of a demountable building, and redevelopment of the main base entry precinct to improve security and functionality. All facets of this package required careful planning as all buildings and areas involved remained operational throughout.



EXPLOSIVES STOREHOUSE: 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 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.



EXPLOSIVES STOREHOUSE: 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.



MISSILE TEST FACILITY: The test cell and adjacent storage rooms were upgraded with new electrical infrastructure that required complex frequency and voltage conversions, as well as a UPS system. The HVAC system was also unique due to the extremely tight temperature and humidity “windows” and the requirement to eliminate any sparks from the air flow.



MISSILE TEST FACILITY: To ensure missiles are not subject to stray currents, all electrical and metallic objects required earthing to one of the four earth girdles that serve the facility. These earth girdles required mapping prior to augmentation.



FRONT GATE AND OFFICE ACCOMODATION: The existing front gate precinct was redesigned and rebuilt by CC Pines to improve functionality and security, especially during peak traffic flow periods. The rebuild involved a new guards’ hut similar to the existing one and the works were delivered in such a way that the precinct remained operational throughout.



FRONT GATE AND OFFICE ACCOMODATION: The demountable building shown was relocated in such a fashion that it joined the brick building on the left. The relocation involved a full BCA assessment, and required removal and replacement of all services including DSN, DRN, fire hydrants, power and A/C. The refurbishment of the demountable building involved a complete internal refit and improvement of physical and electronic security in order to meet ‘secure area’ status.