



SYDNEY INTERNATIONAL AIRPORT

Sydney Airport Corporation Limited



Fig. 1 – Rapid-setting concrete offers technological advances for spall, crack and crater repairs on military airfields.



The CTS trained and certified concreters were able to complete the placing and finishing of a slab in one continual pour.

Sydney International Airport invited Volumetric Concrete Australia to perform slab replacement works on the East West Runway 25.

The methods to be used were those that had been presented to Sydney Airports Corporation during the preceding 12 months and included:

- A new, faster method of slab demolition
- New Dowel Pin Drilling Technology
- New CTS Rapid Set Concrete
- Introduction of the IMMixer and its capabilities
- New specialized Concrete finishing tools

The slabs were located at the eastern of the Runway and were scheduled to be completed in a 48 hour shutdown period.

Plant and machinery were mobilized on site for the construction period of the 10th and 11th June 2009.

Four (4) slabs in total were to be demolished and replaced with the CTS Rapid Set Concrete produced via the International Mobile Mixers. An approximate total of 48m³ was to be produced and placed within the shutdown period.

DEMOLITION

VCA trialed a new method of slab removal at Sydney International Airport which included bulk mass removal of slabs as well as performing the demolition using the traditional method of saw cutting and breakout with a hammer.

The use of the Minnich drill enabled significant time savings estimated at over 3 hours per slab and eliminated a manual handling operation and potentially hazardous part of the project.

CONCRETE PLACING AND FINISHING

CTS Rapid Set Concrete was produced via International Mobile Mixer units VCA 1 and VCA 2. The two IMMixers combined have the capability and capacity to produce a combined total of 18m³ of Fresh, On-time, Consistent, Controlled, Concrete.

The CTS trained and certified concreters were able to complete the placing and finishing of a slab in one continual pour. No waiting for the two or three traditional mixers to turn up was necessary due to the IMMixers. The specialty concrete tools enabled a quick, professional, quality finish to be achieved.

Project Summary

- Average time to saw cut each slab – 1 hour
- Average time to demolish each 6m x 4m x 100mm slab – 1 hour
- Average time to drill dowel holes (250mm deep x 44mm diameter) per slab – 1 hour 30 minutes
- Average time to pour, place and broom finish each 12m³ slab – 31 minutes
- An average of 4 hours and 1 minute to complete the works per slab with 2 hours curing time prior to hand over back to the client
- Curfew hours allowed for 6 hours (11 pm to 5 am) to complete the work

Test Results

Compressive strength results of up to 23 MPa after 2 hours, 43 MPa after 4 hours, 47 MPa after 48 hours and 60MPa after 7 days. Flexural strength of up to 2.9 MPa after 2 hours, 4.3 MPa after 4 hours, 6.2 MPa after 48 hours and 6.1 MPa after 7 days.



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Fig. 2 – Traditional method of breakout.



Fig. 3 – New, faster method of slab removal.



Fig. 4 – New Minnich Drill in action.



Fig. 5 – Placing and finishing of a slab.

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