BORAL ASPHALT
Build something great™

CASE STUDY

Airports & Major Projects

SYDNEY AIRPORT

2018 EDITION

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Project Impact Statement

Sydney Airport Corporation Limited [SACL] is Australia's busiest airport with over 320,000 aircraft movements and 37 million passengers annually 2011. Construction and rehabilitation of infrastructure is an ongoing part of the master plan to keep this facility at the leading edge. When improvements involve work on runways, aprons, taxiways or any aircraft pavement it is critical that they be completed with minimal disruption to airport operations and to the highest standard.

In late 2010, Boral Asphalt NSW was awarded a contract to re-sheet sections of SACL's main and cross runways with the objective of meeting airport specifications and completing paving in a tight timeframe governed by access only during flight curfew periods. Runways at SACL are expected to support the 600 tonne weight of an A380 aircraft.

Boral has a long association with SACL with previous visits in 1994 to place 56,000 tonnes as part of the asphalting of the third runway and then again in 1997 to deliver 12,000 tonnes for a runway overlay. This case study project involved the placement of 45,000 tonnes of asphalt on two runways and several taxiways.

Client/Construction Team:

Client: Sydney Airport Corporation Ltd (SACL)
Contractor: Boral Asphalt, New South Wales

Project Scope

Works undertaken over an eight month period between October 2010 and June 2011 covered an area of 255,000 square metres and required 45,000 tonnes of asphalt. Since October 2010, more than 90 people and 70 pieces of equipment were mobilised each night to remove existing asphalt and replace it with fresh material, clearing the runway by 6am to allow air traffic to resume. There were 74 nights of paving shifts subject to maximum allowable time of 6.5 hours on site during nightly curfew.

A project of this importance needs more than careful delivery and placement of asphalt. The contract scope included:

1. Survey of existing surfaces/fixtures and line marking;
2. Dilapidation survey;
3. Programme generation;
4. Aeronautical ground lighting (AGL) removal;
5. Mark up of surface for profiling (levels and runs);
6. Mobilising machinery;
7. Protection of structures;
8. Profiling to level and removal of profilings;
9. Survey for conformance;
10. Calculating volume required for overlay;
11. Cleaning to remove dust;
12. Treatment of delaminated areas and Foreign Object Debris (FOD) hazards;
13. Removing redundant AGL cabling;
14. Line marking trafficked pavement;
15. Marking up surface for paving;
16. The application of tack coat and managing its performance;
17. Placing asphalt to level;
18. Compacting asphalt;
19. Undertaking survey to relocate line marking/AGL;
20. Applying line marking;
21. Installation of AGL;
22. Cleaning up area and removing any FOD;
23. Demobilisation of machinery and the construction site.

To achieve operational precision of this level, significant planning preceded the October start date. Skills at planning and programming were further tested by the change to wetter weather conditions that followed the drought.

Put into perspective the extent of work was equivalent to 25 kilometres of a standard 10 metre wide public roadway.

Images courtesy of Sydney Airport.

Image above courtesy of Boral.

Existing Conditions

The singular mandatory daily construction condition on the project was to complete scheduled work before the 6am deadline thereby avoiding flight disruptions and passenger delays.

The need to properly prepare for the short turnaround on nightshift meant that it was also necessary to have day shift personnel to conduct the works planning and liaise with day shift contacts from the client and subcontractors. The management of several sub-contractors was also a primary function for Boral under the terms of engagement with SACL.

The high profile nature of an international airport also required that contingencies were in place to ensure that the pavement was accessible for operation regardless of any unplanned events like plant breakdowns during the night.

Under the challenging schedule and obligatory quality of the job, it was critical to manage safety as a very high priority. Quite apart from safety management initiatives, Boral was able to achieve nil lost time injury during re-sheeting, mainly due to the strong safety culture adopted by its crews.

Due to unusually wet weather in 2010 and 2011, a larger number of shifts had to be cancelled and this was firmly supported by Boral in order to eliminate risk to the asphalt pavement.

Design

A stringent airport specification that has evolved over time in the Australian airport environment was applied to the re-sheet asphalt at SACL. The asphalt nominated was a Size 14, Dense Graded Asphalt with multigrade binder. The mix was tested for stripping using performance tests that are recognised at an international level as the latest technology available.

To complement the extensive quality assurance testing undertaken on this project, quality conformance charts were developed to provide greater clarity around reliability and facilitate rapid response to production variables.

At the site level, asphalt paving was carried out with two pavers in echelon. The benefits were:

- Increased productivity by using two pavers at the same time;
- Better shape and compaction of longitudinal joints because the joints were constructed hot.

Performance

In the face of unusually wet weather conditions on the back of drought, compressed access periods due to airport curfews and the high standards inherent in a facility with international profile, Boral was able to successfully manage the resurfacing contract and deliver a functional and structurally adequate asphalt pavement to carry the aircraft at Sydney Airport.

Throughout the project, Boral initiated and contributed to several enhancements in process that improved project outcomes and anticipated pavement life.

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SDS: A Safety Data Sheet is available on the Boral website or by contacting Boral Asphalt customer service.