

CENTRAL TERRACE BUILDING

CONSTRUCTION COMPANY : Abigroup Contractors
ABIGROUP PROJECT MANAGER : Philip Bermingham
CLIENT : SACL (Sydney Airport Corporation Limited)
COMPLETION : June 2011
ARCHITECT : DesignInc
STRUCTURAL ENGINEER : Robert Bird Group
PROJECT END VALUE : \$30 Million

ABIGROUP FLYING HIGH

The commercial property hub of Sydney International Airport has been given a sense of elegance with the design and construction by Abigroup of Sydney Airport Corporation Limited's A-grade commercial office, Central Terrace Building. Spanning nine levels and offering 10,700 m2 of gross floor space, its prime location directly opposite the high traffic international terminal emphasises the growing economic importance of Sydney Airport.

The building adjoins the new multi-storey car park which was also designed and constructed by Abigroup. Benefits for Sydney Airport included:

- Abigroup's ability to provide feasibility and cost planning advice on the commercial build during construction of the car park. Following the

decision to award Abigroup the Central Terrace Building contract, a variety of cost effective options for the non-standard façade were put forward to Sydney Airport.

- Abigroup fast-tracked design to allow early works to be completed while the car park was still under construction.
- Abigroup was flexible in the design of the façade for the multi-storey car park, as it could take into account the future construction of the commercial office building by treating the car park with a designed 'fence' system. This eliminated the need to install a façade on the east elevation, which would have had to be removed for the construction of the Central Terrace Building.

Construction spanned a 60-week period. Major existing underground services ran through the site that supplied facilities at the airport. This required extensive exploratory works to locate the services and non-destructive excavation techniques via vacuum extraction. Concrete-injected Continuous Flight Auger (CFA) piles were used.

Due to the striking design of the building's bespoke raked column façade and the existing services in the ground, a network of ground beams was utilised to link all the piles. This distributed the high lateral loads from the raking columns to all piles and thereby restricted the number of piles to 65, of which 33 were 900mm in diameter and 32 were 750mm in diameter and generally limited to 28 metres in depth.

These special feature columns along the eastern and northern elevation were formed in-situ using conventional formwork in a twisting triangular prism to produce an off-form concrete finish in a three dimensionally raked 'V' shape. The foyer of the office tower has attractive granite walls and floor tiles and is finished off with a featured timber ceiling. The ceilings to the commercial floors are standard exposed suspended grid with acoustic drop in tiles.

Three mono space lifts service the nine floors. The façade system and materials vary on each elevation, with the eastern elevation comprising a utilised aluminium and glass curtain wall system with panel sizes of 4200mm x 3600mm (and weighing approximately one tonne each). The north and south elevations comprise of a floor-to-floor aluminium and glass window system. The western elevation facing the car park consists of fair-faced block work walls.

The structure is in-situ post-tensioned concrete slabs, typically with band beams, and a special purpose flat floor (i.e. no band beams) on level six to accommodate specific tenant requirements.

The completed base building accomplished the targeted 5-Star Green Star

design rating, as well as the 4.5 star NABERS design rating. Features include the use of recycled water via the Airport's blackwater treatment plant for the air-conditioning cooling towers and for toilet flushing.

As well as its environmental achievements, the project was delivered by Abigroup on budget, two months ahead of the contract completion date, despite the loss of 23 per cent of project days due to inclement weather. There were no Lost Time Injuries (LTI) during construction.

Abigroup's NSW Building Manager, George Bardas said, "We're proud to have delivered another prestigious project for Sydney Airport two months ahead of schedule despite losing almost a quarter of allocated project days to bad weather.

Our innovative approach enabled the project to be fast-tracked without any compromise on quality and the safety of our workforce with zero LTI achieved."

ABIGROUP CONTRACTORS
Level 20, The Zenith Tower B
821 Pacific Highway
Chatswood NSW 2067
t. 02 9499 0999
www.abigroup.com.au



Central Terrace Building, NSW





GLAZED BUT NOT FAZED

Established 1998, Sharvain Projects are a specialist company in the design, fabrication, installation and project management of large commercial glazing and façade projects. Their impressive list of clients continues to grow and in 2011 they have already completed projects to the combined contract value of \$28,000,000. This includes the fabrication and installation of external and internal architectural façade and shop-front glazing (framed and frameless), structural steel and architectural balustrades and metalwork for 1 Bligh (Grocon), Energy Australia (Brookfield Multiplex) and Chatswood Civic Place (AW Edwards).

For the recently completed award-winning No 1 Bligh Street (Grocon), Sharvain provided the impressive 30 storey atrium to the commercial building – currently, it's said, the most expensive commercial real estate in Australia. For the Central Terrace Building, Sharvain Projects provided the design, fabrication and installation of the custom-made façade systems and specialised glazing.

Sharvain Projects displayed itself to have the capability to deliver unique solutions and to collaborate effectively with the architect and builder on this challenging project.

Their in-house design and engineering expertise and facility to develop custom-made glazing and façade applications enabled Sharvain to meet the design requirements for the very large panels. At up to 4200mm long, with some of the larger panels weighing over 1 tonne, the panels

required a unique fabrication set-up as well as specially fitted open top overhead containers with custom-made stillages, used to deliver the panels to the site from overseas.

Once at the site, the challenges weren't over, as special fixing arrangements needed to be worked out to ensure accommodation with slab deflections due to the long spans.

Sharvain Projects' head office, two large warehouses and workshops are located in the Sydney area. They also have a fabrication base in China (a joint venture agreement with local company in Guangdong) and exclusive supply agreements with companies in Shanghai and Shantou.

Design offices are located in Sydney, Hong Kong and Guangdong, all of which enables Sharvain Projects to provide the requisite flexibility and capacity to deliver specific solutions to overcome the most demanding of design constraints.

SHARVAIN PROJECTS
 U7/119 McEvoy Street
 Alexandria NSW 2015
 t. 02 9698 3411
 f. 02 9690 1006
 e. kostura@sharvainprojects.com
www.sharvainprojects.com

STRONG SUPPORT ALL ROUND

De Martin & Gasparini Pty Limited is a specialist concrete structures subcontractor that commenced operations in 1947. Boral Limited acquired the company in 1982. While maintaining the core business of high quality concrete placing, the business has steered towards contracts combining other elements that are required for a complete concrete structure package, including materials handling and supervision/management and design.

Alongside their direct workforce, De Martin & Gasparini employs subcontractors with whom it has built a longstanding working relationship. These subcontractors come under direct supervision and work within the company, which ensures that De Martin & Gasparini's highly regarded reputation is continued throughout all works.

Abigroup contracted De Martin & Gasparini to construct the complete structural frame of the Central Terrace Building, which comprised of post tension design and installation to suspended slab, formwork, reinforcement and concrete supply and placement. In particular, De Martin & Gasparini needed to address the methodology for the fabrication of the intricately detailed splayed columns, which span from ground floor to the second level. These splayed columns provide the principle support to the cantilevered suspended slab and required extensive modelling and preplanning to ensure that they could be fabricated in situ to take the concrete load and the design tolerances and finishes required.

It was also crucial that concrete fully occupy the forms in a homogenous manner. De Martin & Gasparini in association with their concrete supplier Boral Concrete, introduced the application of self-compacting concrete that minimised the risk of "honeycombing" and ensured that each element was filled to avoid any potential empty pockets.

De Martin & Gasparini are proud of the result achieved on the Central Terrace Building. The architectural design of the supporting columns provides a focal point for the entire building and was a challenge in formwork fabrication and concrete placement. It is the "Build something great" approach that sets the standard at this company. As De Martin & Gasparini's Project Manager, Gaby Daher commented, "Extensive design and innovation was required. Above all, the safety considerations in building the splayed columns and ensuring the ground bearing pressure was sufficient to withstand the massive loads implied was paramount. Our "can do attitude" and great team effort were strong contributing factors in delivering on time and to the satisfaction of our client, Abigroup."

DE MARTIN & GASPARINI PTY LTD
 16 Hill Road
 Homebush Bay NSW 2127
 contact: Louie Mazzarolo
 t. 02 9748 5100
 f. 02 9748 0041
 e. dmg@boral.com.au
www.boral.com.au



AN INTEGRATED APPROACH

DesignInc was the architectural practice responsible for the design of the Central Terrace Building and they were also engaged directly by Sydney Airport Corporation Limited (SACL) to design its new Head Office within the Central Terrace Building.

DesignInc focuses on creating quality environments that reconcile natural, social and economic imperatives. They recognise that design is more than just the planning of spaces; a single building is only the mid-point in a spectrum that spans from the quality and texture of materials, to the vitality and identity of a successful city.

A holistic process was undertaken to develop a master plan, exploring the future “look and feel” of the airport precinct, of which the Central Terrace Building forms the initial part.

It incorporates distinctive architectural elements with a covered pedestrian forecourt with feature “V” columns at ground level on the east and north side.

The glazed curtain wall along the eastern façade that fronts the terminal reflects the predominantly horizontal architectural elements at the airport and provides an uninterrupted view of the airstrip.

The grade “A” integrated fit-out for the SACL offices covers most of the ground floor reception area, entire floors on 3 levels, and

the semi-open roof terrace. The design approach adopted by DesignInc is similar to the experience of air travel. There is a point of arrival (the reception) that is transparent and light via the use of natural material and finishes. There are check-in hubs (the lift lobbies), a lounge feel with leather upholstery, and transit lounges (the kitchen breakouts) which have been designed to reflect sophisticated food halls.

Anthony Quan, Director DesignInc Sydney, is excited by this project, “This office building is a glimpse into the future and yet fits within the present setting. It’s a snap shot of Sydney Airport Corporation’s implementation of a master plan to progressively upgrade the airport environment.”

DESIGNINC SYDNEY PTY LTD

Level 12, 77 Pacific Highway
North Sydney NSW 2060
t. 02 8905 7100
f. 02 8905 7199
e. sydney@sydney.designinc.com.au
www.designinc.com.au