ABOVE THE BOX DESIGN

Chau Chak Wing Museum is a state-of-the-art 5-level exhibition, research, and teaching building, featuring display galleries, object-based learning studios, education room, auditorium, conservation laboratory, and a shop, the space was designed to inspire creativity, visual literacy and lateral thinking.

The Chau Chak Wing Museum brings together the University of Sydney's Art collection, Macleay collection and the Nicholson collection. The museum has 2,000m² of public exhibition area and triple the display space available at the University's previous museums.

Construction of the 5-level museum began in 2019. Due to the sloping site, three of the floors are below ground at the northern end of the building (closest to the Quadrangle) with one underground floor at the southern end. The building's underground basement is dedicated to onsite storage, with the remaining 4-floors dedicated to display galleries, object-based learning studios, education and lecture spaces, offices, conservation laboratory, a shop and terraced cafeteria.

The innovation, execution and detail in this structure is second to none. The main feature of the Museum is the concrete 'box' shape of the building. Strict quality control, prototyping, workshopping and product/subcontractor selection played a major part in the success of this element of the works, which was created using off-form class two concrete walls.

The precast concrete methodology for the alignment had to be quickly resolved between all stakeholders to ensure the constructibility of the project. A minimum of 25% of the wall reinforcement was galvanised, to ensure that the project achieved the specified structural design life of 100 years.

Coordinating the installation and reinforcement of the Level 3 ceilings also required careful attention. The ceilings are predominately off-form Class 2 concrete, so all lighting and sprinkler services were either cast into the slab or reticulated above the slab to ensure a unique finish.

Strict temperature and humidity control is extremely important within certain spaces within the Museum, requireing a purpose built mechanical system designed to maintain conditions to ASHRAE 'AA' Standard.

A rare aspect of the project brief, was the inclusion of a 5 tonne lift. Measuring 5m x 3m x 3m, the lift ensures that any artefact can be manoeuvred within the museum.

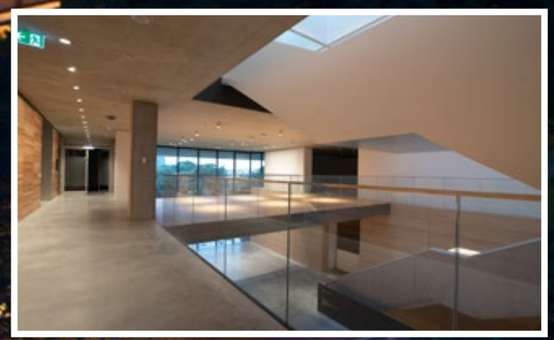
The Chau Chak Wing Museum is framed by heritage trees which were continually monitored throughout the project as they lie in a tree protection zone, north and south of the project. Although this caused major restrictions in terms of access to the site, it was extremely important to the project.

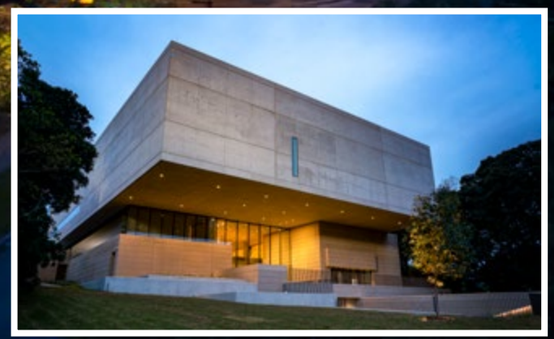
"Even at opening the museum will look as though it has been there a long time," said Dr. Paul Donnelly, Associate Director of Museum Content. New landscaping has been designed with Australian natives in mind and will incorporate scribbly gums, tuckeroos, lilly pillies and kangaroo grass. "Purpose built lawns, outdoor sculptures and gathering spaces will improve the public outdoor areas surrounding the museum for staff, students and broader community use."

FDC are space creators and relationship makers; independently owned and operated, delivering best-in-class construction, fitout, refurbishment and building services. FDC had up to 15 staff working on the project with a full time presence, with site wide trades tallying up to 130 per day, and a peak of up to 150 workers onsite as the project neared completion.

For more information contact FDC Construction & Fitout, 22-24 Junction Street, Forest Lodge NSW 2037, phone 02 8117 5000, website www.fdcbuilding.com.au

DEVELOPER : University of Sydney
MAIN CONSTRUCTION COMPANY : FDC Construction & Fitout
ARCHITECT : Johnson Pilton Walker
STRUCTURAL ENGINEER : Northrop
CONSTRUCTION VALUE : $50 million

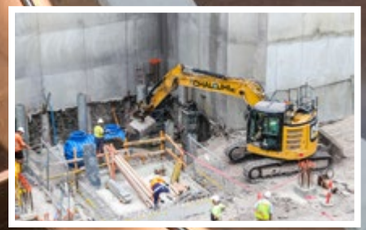


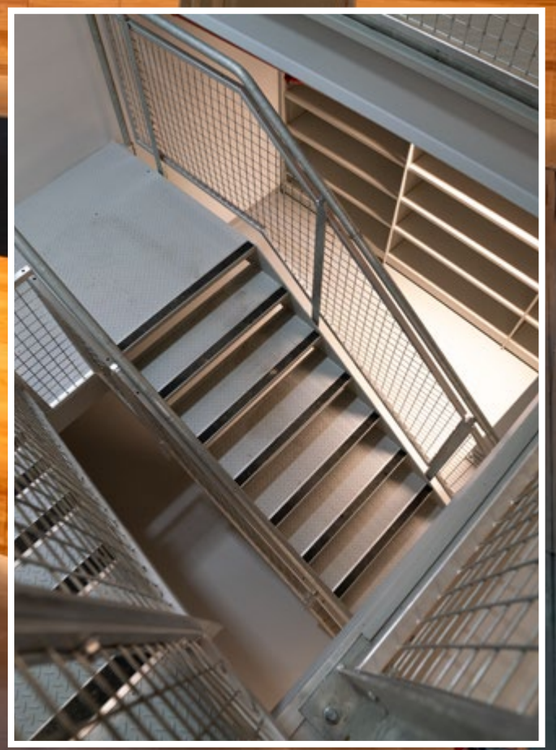


Below Chalouhi completed over 24,000m³ in bulk excavation including the excavation of an OSD Tank and 400m³ in detailed excavation.

> **Reshaping Sydney's Future through excellence and experience**

Below Unistor Global supplied and installed equipment and accessories required to fitout, the new museum.





Chalouhi's longevity in preconstruction excellence across the educational sector continues with their work for the development of Sydney University's latest cultural exhibition facility the Chau Chak Wing Museum. Planned to house some of Australia and the world's most significant collections, the early works package for this project involved a comprehensive scope of site preparation and deep excavation works.

Working across multiple areas and utilising the latest in modern techniques and machinery, Chalouhi commenced with the demolition of existing structures and the removal of waste and vegetation.

Chalouhi's highly experienced team carefully dismantled the existing high density sandstone walls for re-use before proceeding to over 24,000m³ in bulk excavation including the excavation of an OSD Tank and 400m³ in detailed excavation.

It was vital for the ground engineering model of the prestigious Chau Chak Museum to be designed for a life span of a minimum 100 years. Chalouhi carried out all aspects of design and construct including analysis, producing structural plans that ensured the shoring structure was durable, safe and of high quality.

Backed by multiple accredited engineering professionals, Chalouhi's shoring design was approved, certified and sent for construction. The design covered soldier piles up to 17m in length, shotcreting and anchoring. Throughout the remaining stages of the project, the shoring wall was monitored to ensure its performance in stabilising the earth was proven to be safe and in-line with the design.

During the duration of works, Chalouhi encountered unforeseen challenges to the programme including the high presence of ground water ingress during both excavation and piling works and the inclement weather conditions causing delay to planned site activity. Despite these unforeseen encounters, the team successfully mitigated these risks with professionalism, safety and environmental sustainability.

Technically challenging, Chalouhi successfully delivered this high quality project to the expectation of their client FDC.

CHALOUHI
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Unistor Global Pty Ltd is a leading warehouse storage solutions provider. Founded in 1987, the company have been in business for over 30 years and remain an Australian owned and operated business with 28 full time employees.

Unistor design, manufacture and distribute a wide range of storage components and materials handling products. They offer high quality equipment and accessories required to fitout, refit or refurbish spaces such as mezzanine floors, pallet racking, shelving, staircases and handrail systems, together with design and consultation services.

Unistor ship Australia wide and export throughout the South Pacific, servicing industries such as logistics, warehousing, manufacturing, industrial and automotive. Founded on ethical principles, Unistor are committed to the highest quality of workmanship, materials and service.

Construction of the 5-level Chau Chak Wing Museum inlcuded an underground basement dedicated to onsite storage to allow more objects to be readily available. Unistor assigned seven full time staff members, where they have built multiple mezzanine floors, including stairs and handrails.

It was a requirement on this project that the handrails be produced as a custom design, which Unistor made specifically to order.

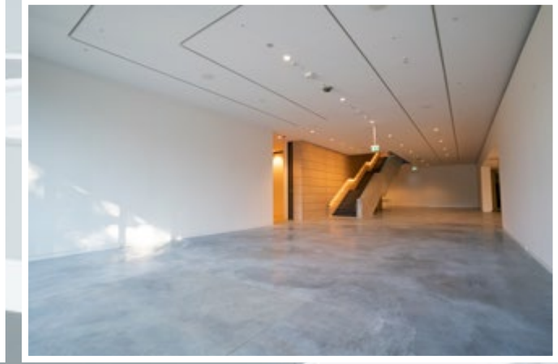
To work within Green Star rating guidelines, Unistor utilised low VOC (Volatile Organic Compounds) water based two pack paint on all structural steel used for the handrails.

"The basement is equally exciting to the curators. It will eventually house more than half of our museum collections in the best possible environmental conditions," said Paul Donnelly, Associate Director of Museum Content.

Unistor are currently working on a range of projects including a new Linfox Logistics Distribution Centre in Kemps Creek, providing an additional 400m² at one of FoodBank's warehouses in Glendenning, and adding a 1,000m² mezzanine to a new building for Total Fusion Gym.

For more information Unistor Global Pty Ltd, PO Box 268, Rutherford NSW, phone 1300 137 220

Below Prestige Form Group NSW completed the formwork for the building envelope and the internal walls of the museum.



Prestige Form Group NSW is a formwork specialist to the construction industry, providing exceptional service to their clients across Sydney. The quality of Prestige's work has won them many contracts with Australia's top builders.

FDC Constructions engaged Prestige Form Group to undertake all the formwork required to ensure structural integrity in the new Chau Chak Wing Museum, a contemporary 6-level exhibition, research and teaching at Sydney University. The contract scope covered formwork for the building envelope and the internal walls of the structure.

The design provided for a variety of spaces including galleries, artefact storage rooms, classrooms and an auditorium, presenting a number of interesting challenges. Prestige had to achieve a Class 1 finish to walls and soffit, with all gaps between the plywood formwork delivering a smooth and aligned finish. "We also had to deal with the construction requirements of the building's external walls which had a thickness of 400mm and a height of 9.2m," said Prestige Form Group's Project Manager, Ahmad Derbas.

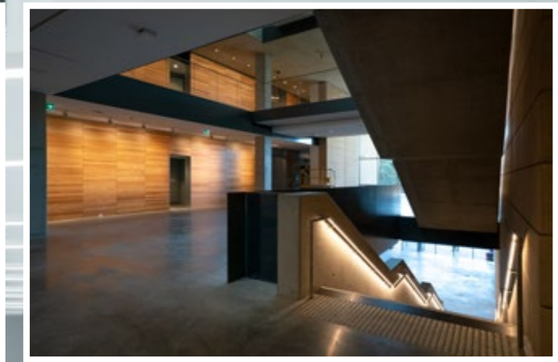
One of the galleries was 480m^2 of open plan, so Prestige had to utilise a large number of props to bear the weight of a 9.6 m high reinforced concrete wall with a load of 210KN/LM. The gallery included a cantilever at a height of 13m in a critical part of the building, so the formwork had to be strong enough to ensure no movement occurred in the cured concrete which would have resulted in cracks.

Prestige began work in October 2018. "We allocated 30 members of our team to the project. We had excellent channels of communication with the builder and followed the highest standards of safety as we do on all our projects," Ahmad said.

Prestige Form Group is currently working on numerous projects including a residential development at 511-515 Botany Road, Zetland and at St Andrews College in Camperdown.

For more information contact Prestige Form Group NSW, 1/10 Straits Avenue, South Granville NSW 2142, phone 02 9632 5882, email admin@prestigeform.com.au, website www.prestigeform.com.au

Below Dewpoint Group installed air conditioning and mechanical services to strict ASHRAE standards, throughout the project.



Dewpoint Group, recognised as being at the forefront of the air conditioning and mechanical services industry, were engaged in a complex design and construct project at Sydney University's Chau Chak Wing Museum for builder FDC Constructions. The 6-level exhibition, research and teaching facility contains a multiplicity of display galleries, learning studios, auditorium, conservation laboratory and terraced cafeteria.

The team at Dewpoint Group faced three main challenges on the project. The first was planning mechanical systems around a specific architectural design which had no allowance for variation. The systems had to physically fit within the building design. The second challenge was meeting the stringent guidelines set out by ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers) for gallery and museum spaces which requires minimal climatic variances within the spaces. Third, the system had to be robustly designed, installed and commissioned to allow for the fact that there would be no or limited future access.

The numerous spaces connected via a single atrium, with adjoining spaces falling under different ASHRAE ratings. The team at Dewpoint Group utilised 3D modelling of gallery spaces, proving the effectiveness of high induction linear swirl diffusers, with each diffuser being customised to its location on the duct run and within the space.

A chilled water system and heating hot water system were installed with duty standby pumps. The air distribution system employed air handling and fan coil units, humidifiers, duct heaters, high induction diffusers and thermal actuated diffusers. Highly accurate sensing and control devices were installed to meet ASHRAE guidelines within plus or minus 1º and plus or minus 5% humidity.

The Dewpoint Group allocated eight of their design team and 40 skilled installers to this outstanding project, illustrating the depth of knowledge and experience within the Group which has capabilities across the commercial sector, laboratories, hospitals and education facilities.

For more information contact Dewpoint Group, Suite 1.21A, Precinct 75, 75 Mary Street, St Peters NSW 2044, phone 02 9071 9170, email reception@dewpointgroup.com.au, website www.dewpointgroup.com.au