

SUPPORTING EDUCATION & RESEARCH EXCELLENCE

DEVELOPER : University of Sydney
MAIN CONSTRUCTION COMPANY : Laing O'Rourke
ARCHITECT : Cox Architecture
DEVELOPMENT VALUE : \$105 million



The University of Sydney Engineering and Technology Precinct redevelopment involves the integration of a new 8-level building with the Engineering Link Building and Mechanical Engineering Building, the upgrade of the retained southern tower of the Electrical Engineering Building, and the creation of open plazas.

The redevelopment of the Engineering and Technology Precinct at the University of Sydney is well underway with the new Engineering and Technology Building providing world class research and teaching spaces for the University community. The works are part of the ongoing Campus Improvement Program to transform the University's infrastructure for generations to come.

"This part of the Darlington campus has been fairly untouched for a period of time so an update and refresh was needed," said Seamus O'Connell, Project Manager. "The new Engineering and Technology building is the first in a potential series of precinct redevelopment projects."

The new facility incorporates an existing and a new building connected by a central atrium and houses three separate schools: the new School of Biomedical Engineering, and the schools of Chemical and Biomolecular Engineering, and Electrical and Information Engineering. The facility includes a range of laboratory, workshop and teaching spaces as well as communal areas and a new hub for receiving deliveries.

The facility has been designed to create opportunities for people from different backgrounds and disciplines to mingle, share ideas and work together with cutting edge research spaces and collaboration areas to foster beneficial interactions between people.

"It's an unusual building in some ways," Seamus explained. "The design endeavours to put engineering on display with a lot of exposed and visible services. The project also includes a reinforced concrete bridge with fibre optic cables to show how the structure works under load as people walk across it which is a first in Australia."

The building has been awarded a Best Practice 4 Star Green Star rating. The curvilinear arrangement of internal spaces and feature mesh screens within the building reflect the University's Wingara Mura Indigenous design principles.

Initial discussions and early design development commenced in 2014. After an Early Contractor Involvement (ECI)

phase Laing O'Rourke were appointed as main contractor in 2017. Demolition works were carried out in 2018 with construction underway from 2019. Practical completion of the tower was achieved in May 2021.

"It was a long and often challenging process," Seamus said. "The existing building remained partly operational throughout the works so the interface with students, researchers, academics and staff had to be carefully managed to avoid disruption. Additionally, deliveries and vehicle movements were carefully planned to minimise inconvenience to other schools in the University and surrounding residences."

Weekly meetings were held between Laing O'Rourke and University stakeholders to plan activities around University operations. "There was a lot of goodwill and collaboration from the University and local residents also worked very well with us to allow the project to happen," Seamus said.

During construction, the project team also engaged with the University to showcase the works. "Laing O'Rourke offered the opportunity for some schools at the University to come and see the live construction site," said Seamus. "It was interesting and exciting for students to see the works and get a feel for what was happening."

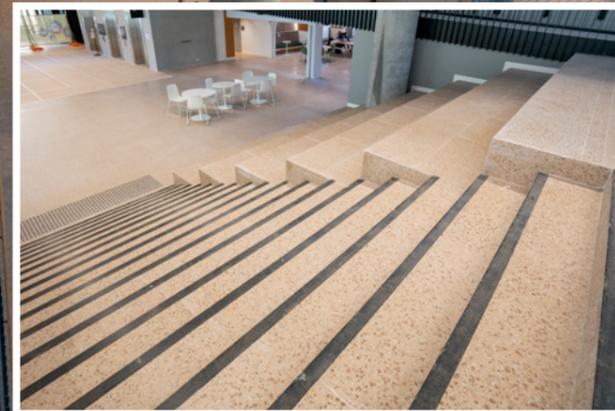
Building Information Modelling (BIM) was used to position solar shading to maximise daylight penetration through the façade while minimising glare. The BIM model was also used to visualise the structure before it was built and show the impact of demolition works. This enabled better stakeholder engagement and early planning.

Preparations are now underway for the new facility to be occupied by students in time for the start of the August 2021 term. "What the team achieved here to construct this facility adjacent to an existing building is a great feat," said Seamus. "The hard work and planning of many people made happen and the whole team deserves credit."

For more information contact University of Sydney, phone 02 9351 2222, email info.centre@sydney.edu.au, website www.sydney.edu.au

Below O'Hara Brothers provided full remediation works on the site including connections into existing Sydney Water infrastructure.

Below Pebblecrete In-situ manufactured, supplied and installed approximately 1,300m² of new terrazzo flooring, as well as terrazzo stair treads.



O'Hara Brothers are a multi-utility civil construction and remediation company with a focus on providing safe, dependable, competitive and high quality solutions for challenging projects.

Founded in 2011 by brothers Adrian and Jarlath O'Hara, the company has worked with some of Australia's largest contractors and infrastructure providers. The company was engaged to provide earthworks, FRP (formwork, reinforcement and pour) concreting works and installation of stormwater pits for the new Engineering and Technology Precinct redevelopment.

Focused on the southern courtyard of the new development, the works included full remediation works on the site and connections into existing Sydney Water infrastructure. "The works had to be completed in a tight timeframe and in constrained conditions," said Adrian O'Hara. "There were also many different stakeholders to engage with including Sydney Water, Sydney University internal stakeholders and other subcontractors."

"Much of the external stakeholder management was conducted by the main contractor Laing O'Rourke, who also kept the site very clean and well organised which made our work easier."

The Engineering and Technology Building was O'Hara Brothers' first contract at Sydney University, however they have wide experience on many large scale civil infrastructure, utilities, transport and industrial projects throughout New South Wales. Current projects include upgrade works at Sydney Airport and pipeline maintenance in Strathfield.

"We are a very diverse company and we always try to exceed our clients' expectations," said Adrian. "I believe that our staff are what drives us forward and many of our original staff are still with us today."

"We also have a big focus on training young people, passing on our knowledge and experience to grow their talent," Adrian said. "On this project we employed students studying civil engineering at Sydney University so they could learn first hand what goes into the structures they visit and study in every day."

For more information contact O'Hara Brothers, PO Box 2039, Maroubra NSW 2035, phone 02 9665 1631, email adrian@oharabrothers.com, website www.oharabrothers.com

The Engineering and Technology Precinct required hard wearing, high quality finishes on the hard surfaces throughout, which included terrazzo flooring in the major circulation areas.

Sydney based terrazzo tile and paving specialists Pebblecrete In-situ manufactured, supplied and installed approximately 1,300m² of new terrazzo flooring and 162 linear metres of terrazzo stair treads for the project.

Pebblecrete was founded in 1963 as a family owned company and has remained in the same family ownership ever since. The traditions of quality and precision run through the company to this day with all orders custom made and no stock items.

Pebblecrete offer products suitable for internal and external applications and available in a diverse range of sizes and thickness to satisfy the needs of individual clients.

All tiles and pavers manufactured by Pebblecrete, including those used at the University of Sydney, are 100% Australian made at their Smithfield factory using modern technology and production processes.

Pebblecrete were able to bring their extensive university experience to the project, having previously worked at Macquarie University and University of New South Wales in addition to the University of Sydney. They also have a wide range of experience in other sectors in Australia and overseas. Completed projects include shopping centres, airport terminals and railway station platform surfaces for the new Sydney Metro.

With the capability to supply high quality Australian made products across the country at a competitive price, backed up by their decades of experience, Pebblecrete are a natural choice for all projects demanding attractive, versatile and easily maintained terrazzo and paving.

For more information contact Pebblecrete In-Situ, 238 Woodpark Road, Smithfield NSW 2164, phone 02 9604 3100, email enquiries@pebblecrete.com.au, website www.pebblecrete.com.au

Below Planex's extensive range of contemporary steel products offered an innovative storage solution for the project.

arris Architectural Joinery.

Below Arris Projects fabricated and installed all joinery including bespoke joinery arches and banquette seating.



Planex is a designer and manufacturer of adaptive steel storage solutions for the workplace. They offer innovative and award winning products manufactured in Melbourne from locally sourced material with a commitment to sustainability and quality.

Planex lockers and storage products were specified by Cox Architecture for the new Engineering and Technology Building at the University of Sydney. The products were selected from Planex's extensive range of contemporary storage solutions and included Virtu Swing Door, Linea Acoustic Sliding Door Cabinets with planter boxes and xLocker2 lockers.

"All products provided for the project are AFRDI Blue Tick certified and the Linea and xLocker2 products also have the AFRDI Green Tick Platinum Level A for sustainability," said Wendy Claydon, Sales New South Wales and Queensland.

"The Linea sliding door cabinet also offers unique workplace sound attenuation features," Wendy said. "We conducted tests to compare its acoustic performance against a comparison cabinet without sound absorbing qualities. The tests showed that the Linea cabinet offered better sound absorption and superior suppression of workplace noise."

The xLocker2 system also offered unique features for the project. The system is comprised of reconfigurable steel modules that connect together in flexible ways. Units of different heights and widths can be joined together to create project specific designs. The patented system also accommodates data and power reticulation and a range of access control solutions.

Planex has built a market leading reputation over 48 years of innovation in storage solutions. Their values of sustainability, integrity, simplicity and performance run through all aspects of the business. They are committed to providing affordable, high quality products that cause no environmental harm and reflect Indigenous culture through designer partnerships on selected products.

With a customisable range and over 300 colour options for all commercial, educational, sports, hospitality and residential application, Planex have the right solution for your evolving workplace.

For more information contact Planex, 191 Princes Highway, Hallam VIC 3803, phone 03 8795 1100, fax 03 8795 1122, email info@planex.com.au, website www.planex.com.au

Arris continues to deliver their intricate, high-end joinery to prestigious Sydney projects, with the University of Sydney being their latest success. Not only is the University of Sydney one of the world's finest universities, it's been voted among the top 10 most beautiful universities in the world. The opportunity to add their mark of craftsmanship to this icon was a privilege embraced by Arris.

Partnering with Laing O'Rourke and Cox Architecture, Arris fabricated and installed the joinery throughout the new Engineering and Technology Precinct at the University of Sydney. The arch work is a feature of the project, working subtly to blend the classic with the contemporary by incorporating booth seating, flexible LED neon lighting, mesh screens and laser cut aluminium trims. The 2pac polyurethane coating provides a superior seamless finish.

Arris has a growing reputation as the 'go-to' people for challenging joinery – the stuff that keeps architects awake at night. Their highly skilled team love a challenge and teamed up with Shape to deliver the WeWork co-working space in George Street, Sydney and are currently working with Hassell and Lyons on two more high-profile projects at another prominent sandstone university.

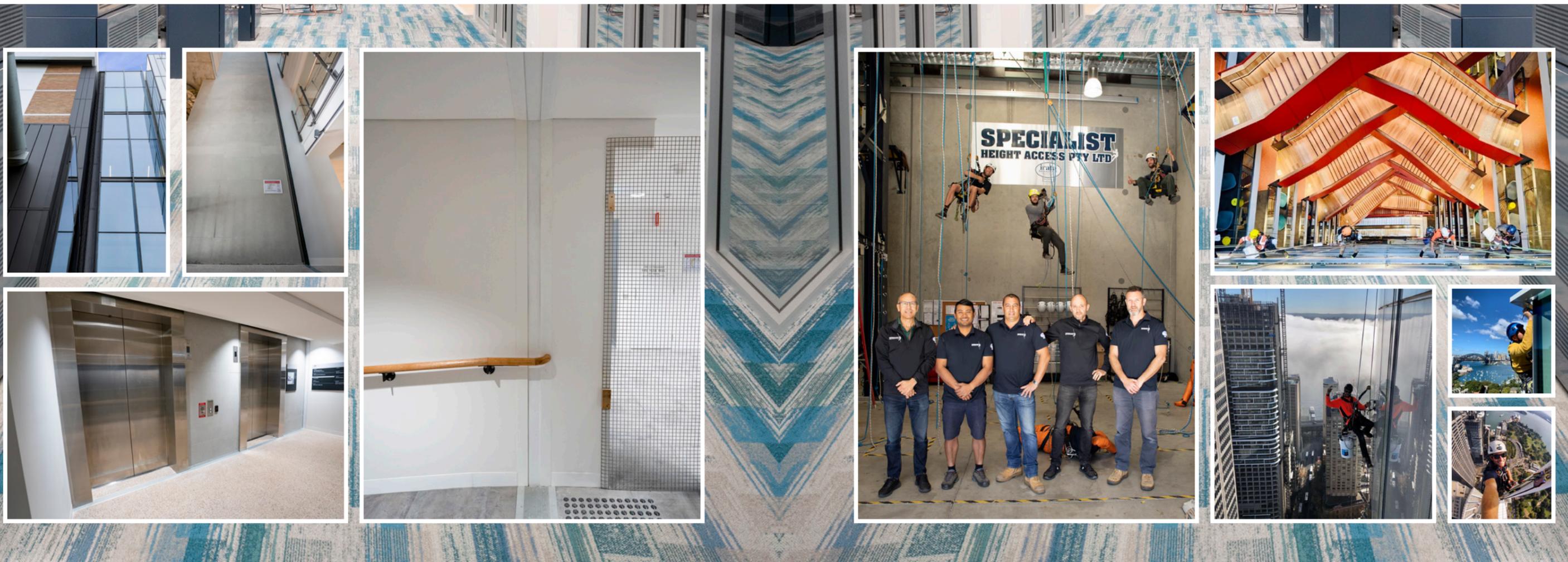
Arris takes joinery to the next level and are available to talk to you about how they can make your vision a reality.



For more information contact Arris Projects, 244 New Cleveland Road, Tingalpa QLD 4173, phone 07 3908 4888 (Amber Bishop), email admin@arrisprojects.com.au, website www.arisprojects.com.au

Below Unison Joints supplied architectural cover plates and fire seals to conceal large expansion joints between the new and old buildings.

Below Specialist Height Access developed a Working at Height Safety system for the building using 3D modelling.



Established in 2001, Unison Joints is an Australian owned business operating both nationwide and internationally, specialising in the manufacture and supply of innovative, sustainably sourced movement joint systems to meet the engineering and design requirements of construction projects.

Unison Joints were appointed by main contractor Laing O'Rourke to supply architectural cover plates and fire seals for the new Engineering and Technology Precinct at the University of Sydney. All the products supplied by Unison Joints complied with applicable Australian standards and the national construction code and arrived at site fully assembled and installation ready, saving time, and reducing error onsite.

The aluminium three piece mechanical cover plates were used to conceal large expansion joints between the new and old buildings which were required to deal with settlement, shrinkage, thermal, seismic and wind movements.

Unison Joints also provided fire blankets to stop fire spread within pressurised risers. A new clamping method had to be designed to ensure the blankets could withstand the riser pressure.

"It's very common for us to design bespoke solutions," said Bernie Scott, Managing Director. "We liaise with the designer or contractor to explore design alternatives and value engineer solutions."

In addition to developing bespoke solutions, Unison Joints holds a large range of stock products which allows them to dispatch materials very quickly in most cases, helping builders meet challenging timescales. Unison Joints offers a combination of excellent customer service, expertise and inhouse manufacturing and certification capability. "We never stop developing our products," said Bernie. "We are always looking for ways to expand our product offering and deliver better solution for our clients."

As Australia's leading provider of cover plates, expansion joints and movement solutions for construction, Unison Joints have a close relationship with all leading contractors. Their prior experience with Laing O'Rourke includes Brisbane Airport, IKEA Logan, Brisbane International Convention Centre and many other projects.

For more information contact Unison Joints, 2/282 New Cleveland Road, Tingalpa QLD 4173, phone 07 3907 0500, website www.unisonjoints.com.au

Due to the complexity of the new Engineering and Technology Precinct's shape, conventional access methods such as building maintenance units (BMUs) were not practical and a more sophisticated solution needed to be found.

During design development and from the early project stages, the leaders in rope access solutions, Specialist Height Access (SHA) engaged closely with Cox Architecture. They used 3D modelling to ensure the proposed systems enabled access to all areas and overlaid other trades' drawings to identify and mitigate clashes and then developed and installed a safe access system to all areas of the roof, internal atrium and external façade. The system also has the advantage of providing for external glass and louvre replacement, cleaning and general building maintenance. "We have a range of suppliers and the inhouse engineering capability to put them all together into a tailored system for every project," said Scott Noble, Director. "All the components we supply and install are tested and certified to applicable AS/NZS standards. Our focus is always on finding the right solution for the end user."

With prior experience at the University of Sydney, SHA were well placed to deliver on this project. "There were some challenges,

especially the need for social distancing between site trades," said Scott. "However, Laing O'Rourke were very professional and had all the right procedures in place which we appreciated."

Established in 1998, SHA work nationwide and offer inspection and testing, maintenance, installation and repair services in all industrial and commercial sectors. With clients ranging from small businesses to major global companies, they have provided access solutions to some of Australia's most iconic buildings and infrastructure.

If you also have a head for heights and spend a lot of time on roofs, SHA also offer IRATA accredited Rope Access Training in their state of the art facility in Banksmeadow, situated close to Sydney airport and major motoways. The ultimate hands on experience with a qualification recognised around the world, you will learn how to ascend and descend the ropes using the appropriate equipment and also learn safe rigging practices and recreate real-life rope access scenarios.

For more information contact Specialist Height Access, Unit 6/3 Exell Street, Banksmeadow NSW 2019, phone 1300 000 742, email enquiries@specialistheightaccess.com.au, website www.specialistheightaccess.com.au