



## A RECORD OF SUCCESS

The Central TAFE building in Perth was by no means a walk in the park, but the challenge of working on such an unusual and intricate design as doing so in a limited site was what made the job so interesting for Cooper and Oxley Builders.

Cooper & Oxley is one of Western Australia's most respected construction companies and holds market leading positions in education, health and industrial construction - a record of success built on four key business principles: quality, safety, integrity and service.

The firm commenced in 1952 as a partnership between Tom Oxley and Bob Cooper in the central wheatbelt town of Northam in Western Australia. In 1973, an office was established in Perth when Cooper & Oxley's building and construction operations expanded throughout the metropolitan area, the eastern goldfields and into other remote mining areas of the State.

Since then Cooper & Oxley has forged its reputation on constructing facilities of the highest quality, delivered safely, on time and on budget. Cooper & Oxley's core business is providing innovative design and construction solutions for its clients and their in-house services are tailored and include: Cost Planning for accurate quoting and pricing for projects.

Cooper & Oxley are also involved in many design and construction projects in which the company takes a consultative approach customizing designs to reflect clients' long term business needs, with thorough construction programming and critical safety and quality imperatives; construction management with experienced and active on-site management.

The Central TAFE project was certainly one of the more complex Cooper & Oxley has undertaken with its geometrical variations and

unusual construction methodology. Add to that a tight and restrictive site on which the contractors had to work, and the job required the utmost skill and preparation to complete.

The site is located on two very busy roads – two main arteries into the CBD – on top of that Cooper & Oxley also had to protect and ensure the safety of pedestrians at all times. There was a lot of hoardings and traffic management to be considered and organized.

The unusual nature of the structural steel meant that Cooper & Oxley couldn't finish or start certain sections of the roof until the steel was almost completely finished.

The combination of curtain walling and aluminum cladding all around the façade meant that it was a pretty intricate design.

Cooper & Oxley have completed more than 350 projects valued in excess of \$2 billion and has a balance sheet strength with turnover averaging over \$200 million per annum. Its key regional WA focus also ensures that it has good communication with all levels of government and major universities, private healthcare providers and leading property developers.

Another high profile project Cooper & Oxley are currently working on is the Derby Prison in the West Kimberley.

**COOPER & OXLEY**  
 9 Bishop Street  
 Jolimont WA 6008  
 t. 08 9387 9000  
 f. 08 9387 9090  
 e. info@cooperoxley.com.au  
 www.cooperoxley.com.au



# CENTRAL METROPOLITAN COLLEGE OF TAFE

**MAIN CONSTRUCTION COMPANY :** Cooper and Oxley  
**DEVELOPER/CLIENT :** BMW, Department of Treasury & Finance  
**COMPLETION :** June 2010  
**SURVEYOR :** Davis Langdon  
**ENGINEER :** Airey Taylor  
**ARCHITECTS :** Lyons / T & Z  
**PROJECT END VALUE :** \$59.5 Million



## AIREY TAYLOR- ELEGANT SOLUTIONS

Airey Taylor Consulting is renowned for its advanced engineering design and its extensive knowledge of the construction industry, which has been a hallmark of the company's professional strength.

Its background includes working in some of the more extreme environments around the world, including Alpine environs, Asia Pacific and the Middle East.

Having its roots stretching back to 1971, Airey Taylor Consulting has longevity and a proven track record in both structural and civil engineering disciplines. Based in Perth, the company has national and international affiliations. Airey Taylor Consulting provided the structural design for the Central TAFE project. Innovative leveraging off the unusual architectural design required incorporation of local condition factors, as well as delivering significant cost savings with value reengineering.

Organisationally, it made sense for the preliminary design to be performed in Melbourne, to assist the architects charged with base design and to document the project in Perth. Unexpected difficulties were encountered as the forms of construction, cost effective and appropriate in Melbourne, were found to be cost ineffective and inappropriate in Perth. This led to the need to principally modify the structural design development to achieve budget objectives.

Technically, the challenges faced because of the geometric complexity of the architectural design, impacted on the inherent stability of the building. Burdens of differential movement between the portion of the building resting on the freeway tunnel and the portion on the sands impacted on the design solution.

"From the building perspective the presence of one of the main gas mains supplying Perth had a large impact on the options available to the builder" said Peter Airey, Managing Director of Airey Taylor Consulting.

Structural solutions adopted included extensive use of post-tensioned floor slabs, extensive use of pressed metal instead of extruded rolled steel in the building structure, and the use of retaining walls which were cavity filled reinforced brick walls instead of reinforced concrete walls.

The project is notable for the 12metre high glass façade to Aberdeen Street. The façade was supported totally by 500mm diameter exposed architecturally sculpted pipe frames, returning back into the building. These compliment the raking pipe, which carries the upper cantilevered sections of the building.

This project used partial 3D modelling of steel sections within the design in order to ensure accuracy in the complex configuration. Instead of using 2D plans, the builder had access to 3D model which was used to ensure the dimensional accuracy of the steel framework was maintained.

**AIREY TAYLOR CONSULTING**  
23 Hamilton Street  
Subiaco WA 6008  
t. 08 9381 7544  
f. 08 9381 7577  
e. mail@atconsulting.com.au  
www.atconsulting.com.au



## THE COMPLETE PACKAGE

Providing the complete package for Central TAFE was all part of the program for Complete Steel Projects. This WA company provides all services related to structural steel from concept to completion including design, fabrication, blast and paint, and erection. And the Central TAFE construction highlighted Complete Steel Projects' ability to overcome all challenges in its way.

"Putting together the components of this job took a long time. There was a lot of steelwork especially on the lower levels of the building, and the logistics of working in such a tight environment in an intense city setting required a lot of forward planning," said Dom Carbone, director of Complete Steel Projects.

Complete Steel Projects provides a streamline service as a result of its in-house fabrication team, in-house painting team, and in-house installation team. Logistically it has a greater advantage due to increased flexibility, response time and work ethic.

The company's facilities have been fully-equipped for structural steel fabrication and in-house blasting and painting and with a yard of 20,000sqm and production area of 4,000+sqm there is ample space for quality fabrication and painting. It is capable of pumping out more than 2080 tonnes of quality fabricated steel each year.

"The site of this project meant we could not send in large amounts of steel at one time, but had to send it in very carefully in small lots," said Mr Carbone. "The job required around 300 tonnes of steel and the detailing of that took us about 12 months." The complexity of the design meant the company had to fabricate different elements including the architectural pipe fittings and framing for the façade.

"The Job was a real testament to the quality and processes of our team. They all worked together so well and their combined experience, skills and the 'work together and can do' attitude was instrumental to the job going so well. This was from the detailer to the fabricators to the painters and finally to the riggers. We are very proud of the tremendous effort from all of the team," said Mr Carbone. "On a job like this unless you work together there is so much room for error, and the errors can be catastrophic."

The high quality of Complete Steel Projects' work has seen the company triple its turnover in the five years it has been in operation and the Central TAFE job has cemented the company's reputation in the industry. Its work on the McMahon's Offices and Workshops Precinct also helped Southern Cross Constructions win the best industrial building over \$10 million in the 2009-2010 WA building awards.

"This was one of the biggest jobs we have worked on in terms of the intensity. It was not the type of job you can just get in and move out," Mr Carbone said.

"We are very much focused on our customer service and we offer a complete and reliable service – from our suppliers through to employers and ultimately to our customers."

**COMPLETE STEEL PROJECTS**  
31 Cooper Road  
Jandakot WA 6164  
t. 08 9414 8579  
f. 08 9414 8623  
www.completesteelprojects.com.au



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In addition to drilling and grouting, the company supplies an extensive range of specialised equipment and technical expertise and with these integrated services, can meet the challenges of any major construction, mining, marine and infrastructure development.

Drilling and Grouting Services were contracted to the Central TAFE development to provide post-tensioning and pre-stressing services for the intricate and complex building.

For the post-tensioning of the concrete floors of the Central TAFE building it used the TENSACCAI Post-Tensioning System which delivers state of the art innovations in post-tensioned concrete.

Its pre-stressing services use European Technical Approval (ETA) which is proof of the highest possible standard of independent review, system testing, quality assurance and auditing. All the company's products are tested under the same standards. Independent auditing after delivery and installation ensures full compliance with test results.

Drilling and Grouting Services invests heavily in training and technical improvement and is committed to quality, including following best practice in Occupational Health and Safety and minimising environmental impact.

It's 15 years in the business means it has an experienced workforce, strong management from principals who maintain hands-on involvement in all projects and the resources to work in the most remote and isolated locations in Australia and overseas.

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**DRILLING AND GROUTING SERVICES Pty Ltd**  
1 Kew Street  
Welshpool WA 6106  
t. 08 9361 3200  
f. 08 9361 7036  
www.dgswa.com.au

**I**n its short history IFS Construction Services Ltd incorporating International Formwork and Scaffolding Ltd and Hire Access Pty Ltd has gained considerable ground. In just over a year, they have listed on the Australian Securities Exchange following a reverse merger with Advanced Ocular Systems Ltd.

Since setting up its first company division and head office in Perth in January 2008, International Formwork and Scaffolding (IFS) has become a multi-region company with operations in Australia, South East Asia and the Middle East.

Its reputation was a major factor in securing the tender to provide the external maintenance on Central TAFE, and required access to the structural supports and facia coupling of the building.

To do this IFS had to work around the building's unusual design while maintaining the highest level of public safety in handling the materials on site.

The company combines an experienced management team with extensive Australian and international experience, alongside high-level networks and powerful strategic partners.

"We had to work in with all the trades to finish the job and provide the full package of scaffolding and formwork," said Scott Williams, Managing Director of IFS.

IFS provides formwork and scaffolding services, with the added benefit of in-house engineering and design creating a unique 'one-stop' service to clients.

In Australia the scaffolding service is provided by the well regarded scaffolding business Hire Access Pty Ltd, acquired by International Formwork and Scaffolding (Australia) in late 2008.

"One of the biggest challenges with this job was there was no crane onsite so we had to basically walk the gear in. Then accommodate limited access to dismantle and demobilize gear as the building neared completion. It was a very tight program and timeframe in which we had to work, which meant adapting the scaffolding as we went.

"The very tight site also meant that we had to manage traffic very efficiently and we had to consider safety as our primary focus."

## HIRE ACCESS

**HIRE ACCESS Pty Ltd**  
332 Treasure Road  
Welshpool WA 6106  
t. 08 6253 6888  
f. 08 6253 6889  
e. sales@iformscaff.com  
www.iformscaff.com



An IFS Company

# SKYWARD MOVES TO NEW HEIGHTS

Teamwork, planning and an eye for detail were paramount when Skyward Roof Plumbing began work on the Central TAFE project.

“It was a challenge working in and around all the other trades,” says Rhys Fode, managing director of Skyward Plumbing.

The WA-based company was contracted to install all the roof plumbing on the geometrically complex building including all the flashing, roof sheeting and box gutters. And working on such a tight site made the project all the more challenging with limited access as well as the variety of angles and shapes the team had to work around.

Mr Fode said Skyward’s repeat business is based on performance satisfaction for clients.

Skyward Roof Plumbing has been operating for the past 12 years, and its success in the WA construction industry has seen it expand its operation and move to new premises in Stirling, closer to its major suppliers.

“Performance is the essence of the company,” he said. “And we are proud to be contracting to many of Perth’s top major builders.”

Its growth over the past decade can be put down to excellence in quality and its commitment to ensuring a safe and hazard-free environment, which on the Central TAFE project was extremely vital with a large number of trades, materials and work going on simultaneously.

**SKYWARD ROOF PLUMBING**  
 Suite 9, Level 1, 43 Cedric Street  
 Stirling WA 6021  
 t. 08 9207 2822  
 f. 08 9207 3822  
 e. skyward@iinet.net.au  
 www.skywardroofplumbing.com.au



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