

WA awards showcase steelwork in its many forms

A city courthouse that utilises steel from many angles, a residence that takes advantage of steel construction's speed and efficiency for difficult terrain, the bend form that levels a water crossing for pedestrians and a new collage building with a steel skeleton that seamlessly integrated with its skin topped the latest Western Australian Steel Excellence Awards.

The entire structure of the winning project in the Buildings – Large Projects category is steel with numerous innovations in its use, be it cantilevered, tensioned or expressive. The new courthouse in Perth overcame a number of complexities to realise a new benchmark in civic facilities design.

The adoption of a predominantly steel structure for a new residence on a very narrow elevated site enabled living spaces to be maximised to garner the top accolade on the Buildings – Small Projects stakes.

Strikingly slender waveform support arches of the winner in the Engineering Projects category working in conjunction with a s-curved pathway to balance loads that enabled a relatively level crossing for pedestrians whilst allowing vessels to pass underneath.

A steel-intensive approach that produced a new building at John Curtin Collage that is highly serviceable with a relatively modest budget won in the Steel Clad Structures category.

Overall, the judges found that the steel structures designed, fabricated and erected by Western Australian designers, detailers, fabricators and erectors are of high quality and low maintenance and cost effective.

Buildings – Large Projects

WINNER: Kununurra Courthouse

Buildings – Small Projects

WINNER: Rivers Residence

Engineering Projects

WINNER: Elizabeth Quay Bridge

Steel Clad Structures

WINNER: John Curtin College of the Arts

Judges Commendation

Airport T1 Domestic and International Departures Expansion

Judging Panel

Luiz Aguiar (Design Manager, Jaxon Construction – Architect)

Glen Bersan (Managing Director, Chemical and Process Engineering)

Peter Bruechle (Founder of BG&E – Engineer)

Brian Nelson (Founder of Capital House – Engineer)

BUILDINGS – LARGE PROJECTS Kununurra Courthouse (Winner)



The entire structure is steel and steel forms the primary visual element to provide shade protection to occupants and preserve privacy with the view outward proportioned by a weathering steel brise-soleil. Structural steel and visual elements were prefabricated and bolt fixed to reduce construction time and increase durability and future adaptability. There are numerous innovations with the use of steel cantilevering, tensioned (over the external secure courtyard) and expressive in reflecting the local topography in form and colour. The building was also recognised by the West Australian Department of the Attorney General for creating the new benchmark in courthouse design.

PROJECT TEAM

Architect: TAG Architects and iredale pedersen hook architects • **Structural Engineer:** Terpkos Engineering

Head Building Contractor: Cooper and Oxley • **Distributor/Manufacturer:** OneSteel • **Steel Fabricator:** Metro Steels

Steel Detailer: Metro Steels • **Coatings Supplier:** Metro Steels

BUILDINGS – SMALL PROJECTS Rivers Residence (Winner)



This residence is located with an 8.95 metre frontage near Monument Hill in Fremantle. The original brief required a modest house to capture the full potential of the elevated site with each room or space to have a discrete identity. The building is fluid in form, achieved through a steel structural skeleton that the judges found offers a surprising sense of flexibility with the adoption of a steel structure for this building on a very narrow site being a clever choice highlighting the advantages of steel construction for sites with difficult access and uneven terrain and efficiencies in speed of erection and off-site fabrication. Its pedestrian entry is sheltered under a dramatic cantilevered glass box made possible through the use of a steel cantilever creating a porch.

PROJECT TEAM

Architect: The Buchan Group – Perth • **Structural Engineer:** Burdett & Associates • **Head Building Contractor:** Owner Builder – Malcolm Rivers • **Distributor/Manufacturer:** Fielders Australia • **Steel Fabricator:** Parise Steel Fabrications • **Steel Detailer:** Davies Drafting
Coatings Supplier: BlueScope Steel • **Metal Building Contractor:** D&L Feature Waals and Ceilings

ENGINEERING PROJECTS Elizabeth Quay Pedestrian Bridge (Winner)



Overcoming a challenging constrained site, the slender 110m bridge allows for vessels to pass underneath whilst providing a relatively level crossing which allows for continuous movement around the Quay. The 'S' curve path of the bridge deck is counter-balanced by outward leaning arches which support the bridge by cables on only one side, creating a unique bridge form. The stiffness- and strength-to-weight ratios of the steel elements were the key to achieving the slenderness to which our client aspired. The adoption of a structural steel solution enabled work to progress on multiple fronts through the offsite fabrication of the primary structure, freeing up considerable space on the constrained site and improving the site safety.

PROJECT TEAM

Architect: Arup • **Structural Engineer:** Arup • **Head Building Contractor:** CPB Contractors
Distributor/Manufacturer: BlueScope • **Steel Fabricator:** Civmec • **Steel Detailer:** Civmec • **Coatings Supplier:** International Paint
Metal Building Contractor: Phillips Engineering

STEEL CLAD STRUCTURES John Curtin College of the Arts Year 7 Teaching Facility (Winner)



Steel framing was critical to the successful delivery of this development within an extremely modest budget. The efficient steel support structure is seamlessly integrated creating a visual effect achieved using a modularised framing solution designed to be completely bolted together onsite without exposing any connections to view. Steel framing was selected by the design team for flexibility, efficiency and for possible future additions. The large column-free space required for double ballet studios to expand into one large studio were met with large trusses and integrating the rafters and external cantilever supports to the external screening. The details developed for the building allow for the unique and effective shading units to be readily removed should they require maintenance or for future additions.

PROJECT TEAM

Architect: JCY Architects & Urban Designers • **Structural Engineer:** Pritchard Francis • **Head Building Contractor:** EMCO Building
Distributor/Manufacturer: OneSteel • **Steel Fabricator:** ROVLAH Steel Constructions • **Steel Detailer:** Needle Drafting Services
Coatings Supplier: Galv by Fero • **Metal Building Contractor:** Locker Group

JUDGES COMMENDATION

Perth Airport T1 Domestic and International Departures Expansion

Constructed on a busy site, the judges considered the building extension to have been cleverly designed to amalgamate with and connect to an existing building. Core elements designed in structural steel included roof trusses, the pier's 'nose', fixed link bridges and the T1 link bridge. The roof structure was designed using typical standard construction



forms which were well considered to seamlessly integrate to the existing airport envelope. Using steel as the structural element enabled much of the work to be carried out away from the busy site. The judges considered the fit-for-purpose expansion to be an impressive feat of architecture and engineering and a tremendous asset to Perth Airport.

PROJECT TEAM

Architect: Woods Bagot • **Structural Engineer:** Arup
Head Building Contractor: Built Environs • **Steel Fabricator:** Civmec
Steel Detailer: Civmec

Entrants

BUILDINGS – LARGE PROJECT ENTRIES

I3 Consulting (Hitachi Construction Machinery Perth)

TAG Architects and iredale pedersen hook architects (Kununurra Courthouse)

BG&E (Ngoolark Student Services Building)

Arup (Perth Airport T1 Domestic Terminal and International Departures Expansion)

Civmec Construction and Engineering (Perth International Airport)

Pritchard Francis (Walumba Elders Centre)

BUILDINGS – SMALL PROJECT ENTRIES

Alltype Engineering (Elizabeth Quay General Metal Work)

Woods Bagot (Perth Airport Forecourt Canopies)

iredale pedersen hook architects (Perth Modern Gymnasium)

The Buchan Group (Rivers Residence)

WANarn Community and Ngaanyatjarra Lands (Wanarn Clinic)

ENGINEERING PROJECT ENTRIES

Arup (Elizabeth Quay Pedestrian Bridge)

STEEL CLAD STRUCTURE ENTRIES

Pritchard Francis (John Curtin College of the Arts Year 7 Teaching Facility)

The Buchan Group (Rivers Residence)

Rivett Construction (Warwick Stadium Expansion Project)