

Gold Coast stadium dominates design stakes



Metricon Stadium, Carrara

A boutique stadium construction has topped half of the categories in the latest Steel Design Awards for Queensland it was revealed on 3 August at the Brisbane Convention and Exhibition Centre.

The new home of the Gold Coast Suns AFL team won in the Buildings – Large Projects and Engineering – Infrastructure, Resources and Mining categories for its use of lightweight steelwork supporting a membrane canopy and efficient incorporation of standard sized steel sections.

The judges were particularly impressed by the project's scale model wind tunnel testing of the steel roof structure, expert roof membrane design input, and impact assessment of faceted solar arrays to confirm structural soundness.

The structure also takes advantage of the design flexibility enabled with steelwork via bolted connections to allow the structure to readily adapt for hosting higher profile international events as the need arises.

A strikingly angled 4WD retail and showroom building with a 'folded' façade that grabs attention on a busy motor trader strip in Townsville topped the Buildings – Small Projects category. The building's distinctive angular profile was also designed with the region's cyclone-prone climate in mind.

The wholesale embrace of weathering steel as a cladding material to suit a naturalistic setting attracted the win in the Steel Clad Structures category for the Fitzgibbon Community Centre in Brisbane.

Awards convenor, ASI State Manager – QLD, **John Gardner** said the winning projects embodied the design flexibility, environmentally sustainable responsibility and structural integrity achievable with modern steelwork.

Buildings – Large Projects

Metricon Stadium, (Winner)

River Quay, South Bank (Highly Commended)

Buildings – Small Projects

Opposite Lock 4WD Retail and Showroom (Winner)

Steel Clad Structures

Fitzgibbon Community Centre (Winner)

Engineering Projects

Metricon Stadium (Winner)

Undergraduate Engineering Student Awards

Patrick Fletcher (The University of Queensland)

Mitchell Lees (Central Queensland University)

Mitchell Mulvey (Griffith University)

Jarryd Londino (James Cook University)

Scott Smith (University of Southern Queensland)

Dylan Williams (Queensland University of Technology)

Judging Panel

Tim Ekert (Austin Engineering)

Kerry Lindemann (BDS Vircon)

Steve Penman (Apex Building Products)

Brian Steendyk (Steendyk)

John Van De Hoef (NJA Consulting)

Metricon Stadium, Carrara



Buildings – Large Projects

Metricon Stadium, Carrara (Winner)

This 25,000-seat facility is new home for the Gold Coast Suns AFL team and the proposed main stadium for the 2018 Commonwealth Games. The project team met a reasonably tight budget and fast tracked construction program with a precast and steel stadia incorporating a lightweight curved form membrane roof supported via curved CHS members, in turn supported via simple planar CHS trusses on a large 12-14m grid, the structure achieving benchmark steel weights for a roof of this kind of around 40kg/sqm. The stadium bowl and Western Grandstand are entirely steel framed from top of pile cap to tip of roof for constructability and to speed erection. Standard UB, WB, UC, WC and CHS sizes were used throughout for swifter fabrication and site delivery.

PROJECT TEAM

Architect: Populous

Structural Engineer: Arup

Head Building Contractor: Watpac

Steel Fabricator: Beenleigh Steel Fabrications

Steel Detailer: TD Drafting Services

Steel Processing: BSF Metal Centre

Profile Cutting: Pipe Profiling Services

Hot Induction Bending (CHS): Inductabend

Coatings Contractor: Tranzblast Coating Services

Coatings Suppliers: International Protective Coatings, Industrial Galvanizers

Steel Distributors: BlueScope Distribution, OneSteel

ASI Steel Manufacturers: BlueScope Steel, OneSteel



Metricon Stadium, Carrara



Opposite Lock 4WD Retail and Showroom

Buildings – Small Projects

Opposite Lock 4WD Retail and Showroom (Winner)

Steel was the apt choice allowing for off-site prefabrication and slender spans of this distinctive angular structure on a busy motor trader strip in Townsville. The profile of the sheeting and selection of a wide tray also provide the durability and strength required for the rugged north Queensland climate, particularly evident in recent cyclones there. To achieve the angular aesthetic of the building, prefabrication of the steelwork off-site reduced the time required onsite to set out the geometry of the building and also provided the tolerances required. The use of 3D CAD technology to set out the form both in the initial design stages of the project and by the steel fabricators facilitated effective communication of design intentions at the construction stage of the project.

PROJECT TEAM

Architect: Guymer Bailey Architects
Structural Engineer: Northern Consulting Engineers
Head Building Contractor: B & T Constructions
Metal Building Contractor: Colin Braszell Roofing
Steel Fabricator: Thomas Steel Fabrication
Steel Detailer: Thomas Steel Fabrication
Coatings Contractor: Waters Abrasive Blasting
Coatings Supplier: Jotun
Steel Distributors: BlueScope Lysaght, BlueScope Distribution, The Steel Barn
ASI Steel Manufacturers: BlueScope Steel, Orrcon Steel

PROJECT TEAM

Architect: Richard Kirk Architect
Structural Engineer: Cardno
Head Building Contractor: Grindley Construction
Metal Building Contractor: Grindley Construction
Steel Fabricators: Lowline (cladding) /Kyst Engineering (structure)
Steel Detailers: Lowline (cladding) /Kyst Engineering (structure)
Coatings Supplier: International Protective Coatings
Steel Distributors: BlueScope Distribution, OneSteel
ASI Steel Manufacturer: BlueScope Steel (cladding)

Steel Clad Structures

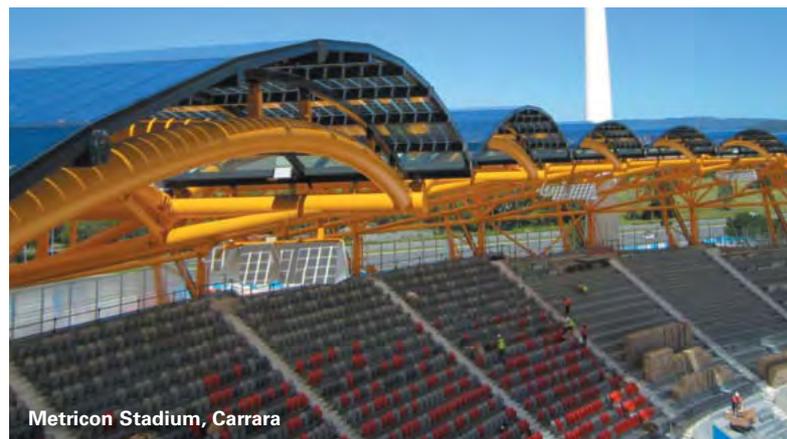
Fitzgibbon Community Centre (Winner)

The building is fringed by sculptural blades of weathering steel as a material visually reminiscent of the corroded car bodies once found onsite. The blades form a rippled screen to the street which reveals glimpses through the building, behind which the building is clad in stained plywood with ample operable glazing to allow natural ventilation and large overhangs to provide natural lighting. All elements of the building were rationalised from the building's structural systems, framing and cladding that provided for ease of construction, economy of materials and limited wastage. The architect's 3D CAD model was utilised to generate all levels of information from photo-realistic visualisations, production of working drawings and review of shop drawings. This level of accuracy was particularly important in coordinating precise detailing with fabricators and detailers.

Engineering – Infrastructure, Resources and Mining

Metricon Stadium, Carrara (Winner)

The venue was designed to accommodate an additional 15,000 patrons for the Commonwealth Games with the lower bowl of precast terraces designed on the northern end to be removable for extending the pitch. A three-coat polysiloxane paint was applied to enhance long-term performance of the steelwork and steel installed below ground or where inaccessible to maintenance was hot-dip galvanized. The stadium was designed to be primarily shop fabricated and bolted together to minimise material use and waste and enhance construction speed. Both Arup and Populous collaborated at all times during documentation and TD Drafting used their 3D model to readily interrogate the structural details enabling quicker resolution of the details.



Metricon Stadium, Carrara



Fitzgibbon Community Centre

Entrants

BUILDINGS – LARGE PROJECTS STEEL DESIGN AWARD

- Arup** (Metricon Stadium)
- Arup** (Princess Alexandra Hospital Helipad, Woolloongabba)
- Arup** (Queensland EcoSciences Precinct, Dutton Park)
- Arup, CASA Engineering, Cox Rayner, Laing O'Rourke** (BCEC on Grey Street, South Brisbane)
- Arup, Cox Rayner, Gay Constructions, Leighton Contractors** (111 Eagle Street, Brisbane)
- Australian Professional Galvanizers** (Redlynch Central Sports Stadium, Cairns)
- Integral Construction** (Matthew Flinders Anglican College, Buderim)
- Opus International Consultants, Arkhefield** (River Quay, South Bank)
- PDT Architects** (Murrumba State Secondary College, Murrumba Downs)

BUILDINGS – SMALL PROJECTS STEEL DESIGN AWARD

- AECOM** (Flinders Street Redevelopment Pavilion, Townsville)
- Architectural Practice Academy, Bligh Tanner Consulting Engineers** (Royal Flying Doctors Service Base, Mt Isa)
- Arup** (BMX Supercross Track, Sleeman Sports Complex)
- Arup, Cox Rayner** (Campus Heart, Griffith University)
- BAC Group Architects, Bonacci Group** (Powerlink Courtyard Redevelopment, Virginia)
- Bark Design Architects** (Noosa Junction Station, Noosa Heads)
- Bickerton Masters Architecture** (Anglican College Library, Springfield)
- Bondor** (InsulLiving Project Display House, Burpengary)
- Commercial and Industrial Property, Costin Roe Consulting** (Sherwood Bus Depot)
- Cox Architects** (Fire Retardant Prototype Project, Stanthorpe)
- Ferrier Baudet Architects** (Holy Family School Multipurpose Hall, Indooroopilly)
- GHD** (Fraser Coast Cultural Centre, Hervey Bay)

- GHD** (Northshore Hamilton CityCat Terminal, Hamilton)
- Guymer Bailey Architects** (Opposite Lock 4WD Retail and Showroom, Townsville)
- PlaceSense** (Montessori International College Library and GLA, Sippy Downs)
- Richard Kirk Architect** (Fitzgibbon Community Centre, Fitzgibbon Chase)
- Suters Architects** (Park Lake State School, Pacific Pines)

STEEL CLAD STRUCTURES STEEL DESIGN AWARD

- Arup, CASA Engineering, Cox Rayner, Laing O'Rourke** (BCEC on Grey Street, South Brisbane)
- Bondor** (InsulLiving Project Display House, Burpengary)
- Commercial and Industrial Property, Costin Roe Consulting** (Sherwood Bus Depot, Sherwood)
- Cox Architects** (Fire Retardant Prototype Project, Stanthorpe)
- GHD** (Northshore Hamilton CityCat Terminal, Hamilton)
- Guymer Bailey Architects** (Opposite Lock 4WD Retail and Showroom, Townsville)
- PlaceSense** (Montessori International College Library and GLA, Sippy Downs)
- Richard Kirk Architect** (Fitzgibbon Community Centre, Fitzgibbon Chase)
- Suters Architects** (Park Lake State School, Pacific Pines)

ENGINEERING – INFRASTRUCTURE, RESOURCES AND MINING STEEL DESIGN AWARD

- Arup** (Metricon Stadium)
- Arup** (Princess Alexandra Hospital Helipad, Woolloongabba)
- Ergon Energy, Glynn Tucker Consulting Engineers, Insideout Architects** (Magnetic Island Solar Park)
- GHD** (Northshore Hamilton CityCat Terminal, Hamilton)
- IDEC Solutions** (Multi-Purpose Steel Structure, Legacy Way Motorway, Toowong)

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