

ASI Western Australia Architectural Steel Design Award

ASI Steel Awards Western Australia - 2005 showcased all sectors of the steel industry on Friday 22 July at the Burswood Convention Centre. Close to 200 people came together to witness the success and vitality of the industry and enjoy the elegant ambience of the evening.

The evening presented an exciting opportunity for networking along with a good night out combined with great food, good wine, live music and dancing.

John Yeudall, ASI State Manager WA, was the master of ceremonies and did a great job, moving the evening along at a good pace. The audience greatly appreciated the cricket score updates throughout the evening. More of John's talents were later revealed when he joined the band on blues harp, much to the surprise of many in the audience.

Terry Goss of Goss Consulting narrated each entry, adding the human touch of a live voice to the proceedings. Terry has his own radio program and received congratulations from the audience for his detailed commentary. The aim was to capture the project team element, acknowledging effort, not only giving recognition to the individual entrant but to the overall value chain, from the developer via the architects, the planners, the engineers, the manufacturers and contractors plus all the factory and site personnel who assemble the components.

The judges were:

- Peter Bruechle, chair of the panel, a well-known structural engineer and founding partner of Bruechle Gilchrest and Evans
- Tony Brand, architect, planner, graded arbitrator and accredited mediator and consultant architect and former partner of four major practices
- David Dartnall, a detailer, proprietor, and production manager and erection supervisor and now a consultant, from the fabrication industry
- John Yeudall, ASI State Manager WA, has a background as a chartered engineer and in the fabrication industry.

The judges undertook a thorough evaluation of the projects, but with such a strong field of entries the judging was considered very difficult. All the entries demonstrated excellent examples of the capability of the steel industry.



In many cases the decision came down to the X factor invoked by the project.

Awards were:

- Architectural Steel Design
- Structural Engineering Steel Design
- Metal Building Product Design
- Steel Construction

The judges selected projects that demonstrated the Best Example with additional Special Recognition Awards to projects and companies. The panel judged against specified criteria and where projects have been entered into several categories, the different elements were evaluated in each individual case.

"Everyone is a winner" was the aim of the evening and each individual entry received a quality framed certificate. For those judged to be the Best Example in their category and for the Special Recognition Awards, trophies and a certificate were awarded. The trophies were custom made of steel supplied by Paul Azzalini of Park Engineers.

Don McDonald thanked the sponsors Smorgon Steel Metals Distribution, OneSteel Steel and Tube, BlueScope Steel, BlueScope Lysaght, Pacific Computing, Orrcon Operations and AGC Industries for their support of the Awards saying that: "Your participation and support are invaluable to the future of the industry. The awards are a celebration of all things great about the steel industry and demonstrate excellence in design and construction."

Don congratulated the steel award entrants for their efforts in showcasing the industry and in bringing out the aesthetic, functional and environmental qualities of steel. He reminded the audience that the steel industry is a vital,

creative and dynamic business. Some comments from the evening were that it was the "best ever."

BEST EXAMPLE AWARDS Architectural Steel Design

Best Example of the Architectural Award was judged against the following criteria: overall architectural merit; innovation in the use of steel; efficient use of steel products, practicality in fabrication and erection; aesthetics and attention to detail; attention to corrosion protection and achievement of the client brief.

BEST EXAMPLE Lotterywest Federation Walkway, Kings Park entered by Donaldson + Warn Architects and Capital House Australasia Consulting Engineers

As a "Celebration of Federation" the project's focus on cultural and social objectives was achieved through the adroit use of materials, its sculptural form and the inclusion of art from various genre. The Walkway is one of Western Australia's most popular tourist destinations with over five million visitors each year. Forming part of the great Kings Park experience, its value to the state is unquestioned.

The walkway provides access and vistas to the botanical gardens, and views across the Swan River previously unavailable. Clearly, the project has involved an unusual and broad range of participants. Seldom does any public or private enterprise touch so many interested and committed parties.

The entire 230 metre long elevated super-structure comprises untreated weather resistant steel, cast ductile iron and cast stainless steel.



The articulated plan alignment presents varied spatial experiences, culminating in an elegant arched, glass-sided bridge.

In addition to satisfying the project objective of using indigenous materials, raw iron and steel also met the desired durability objectives of 100 years life requirement. In keeping with the architectural objectives, the form needed to be quiet with restricted visual complexity. The deck units of the elevated walkway are of the same configuration and dimension as the thin vertical steel blade pylons. The bridge deck extends the 300mm thick deck profile of the elevated sections in a curvilinear fashion. Inclined struts engage with the central raised curve to resolve as an arch.

Carefully erected within preserved gardens and natural bush land, the site was unscathed during construction. This was an important gesture in recognition of the site's significance to the indigenous communities.

Stainless steel patch fittings for glass balustrades have a roughcast surface finish with counter-bored stainless steel machine bolts fixing the assembly to the structure.

The use of traditional cast iron and untreated steel in a rational and simple construction

confirms the possibilities of using such materials for many projects. Lessons learnt and examples provided by the project will hopefully serve future better use of these materials.

The result is a strong but minimal form that sits within the dense flora of the landscape as an uncompromising but functional sculptural element.

Project Team

- Architect:** Donaldson + Warn Architects
- Structural Engineer:** Capital House Australasia Consulting Engineers
- Head Building Contractor:** John Holland
- Steel Distributor:** Smorgon Steel Metals Distribution
- Steel Fabricator:** Jupiter Steel Fabrications
- Steel Detailer:** Appro Drafting
- Coating Supplier:** DRA Industries
- Metal Building Contractor:** On-site Engineering

Structural Engineering Steel Design

Best Example of the Structural Engineering Award was judged against the following criteria: overall structural design concept; detailing for economy; practicality in fabrication and erection; innovation; design efficiency; attention to corrosion protection and achievement of the client brief.

BEST EXAMPLE

Australian Marine Complex On-Shore facility at Jervoise Bay entered by BG&E

The complex is Australia's largest and most modern fabrication and assembly, common user facility servicing the marine, defence, oil,

and gas and resource sectors. The fabrication hall includes 4800 square metres of covered working space. The scale of the structure is hard to imagine and was a major undertaking providing Western Australia with a unique facility to build major marine projects.

The structural design was conceived so the fabrication hall could be relocated on motorised bogies on rails to any one of eight separate locations. The structural frame is stable in both fixed and moving conditions and includes a 200 tonne gantry crane, 60 metre clear span and 30 metres beneath the hook. Electric doors allow the 200 tonne crane to enter and work in the building. A removable western wall enables completed items to be removed from the building to the wharfs. Two 20 tonne overhead travelling cranes are supported by the structure and operate internally.

The client brief required a range of innovative design elements not normally encountered by structural engineers such as the extreme size of the building which is approximately 80 metres x 80 metres x 48 metres high at the ridge. For example this would compare to the Opera House in Sydney measured from the concourse level of the Opera House the complex would be approximately five metres lower than the highest shell of the Opera House.

Careful attention was paid to the corrosion protection to meet the client brief and for economy BG&E had early discussions with regards detailing and fabricating and indicated that triangulated tubular steel trusses were effective for the proposed structure.

This is an outstanding facility with, overall a brilliant engineering solution, which presented unique engineering challenges. The design



had to withstand the extreme environmental conditions of the exposed site and this was considered in the whole concept.

Project Team

Architect: The Buchan Group

Structural Engineer: BG&E

Head Building Contractor: Multiplex Constructions

Distributor and Manufacturer: Orrcon Operations, OneSteel Steel and Tube

Steel Fabricator: Pacific Industrial Company (frame) Vector Lifting & Scenna Constructions (cranes and bogies)

Steel Detailer: 3D Drafting

Coating Supplier: International Protective Coatings Paints and Total Corrosion Control (TCC)

Steel Construction

Best Example of the Steel Construction Award was judged against the following criteria: ingenuity; innovation; special challenge; quality and performance; technology development; and contractual progression.

BEST EXAMPLE

Linda Offshore Gas Platform entered by AGC Industries



The scope of this project was for the design, supply, delivery and commissioning of the Linda Development Off-shore Gas Platform for Apache Energy on behalf of the Harriet Joint Venture. The Linda Platform stands in approximately 40 metres of ocean and is used to extract natural gas off-shore from Varanus Island. The gas is then pumped to shore via a sub-sea pipeline.

The Platform consists of a substructure, or jacket, which provides the base, and a superstructure or topside that sits on top of the jacket and contains all of the process equipment and pumps. The jacket and topside were welded together after installation had taken place. The jacket consists of three main legs supporting a central vertical triangular shaped truss made up of numerous bracings all made of tubular sections. It is pinned to the ocean bed with three large piles, drilled and grouted into position.

The overall height of the jacket is approximately 56 metres, with 16 metres above the water and 40 metres below. The three piles that pin the jacket to the ocean floor are 1.3 metres in diameter and penetrate the ocean floor about 45 metres.

The completed jacket weighed approximately 350 tonnes. The scale of this project and transportation restrictions meant that a carefully planned methodology was developed to build the jacket in transportable subsections to accommodate transport limitations with final assembly at the Australian Marine Complex common user facility.

The helideck was designed with the sides folded down like a dining table to accommodate easier transport. The loads were moved from the workshop to the site via the "high/wide load" corridors round the city, a vision and investment from the Western

Australian government in infrastructure which is delivering benefits to industry.

Project Team

Structural Engineer: WorleyParsons

Distributor and Manufacturer: OneSteel and BlueScope Steel

Steel Fabricator: Ausclad Group of Companies (AGC)

Coating Supplier: Novacoat

The completed jacket was loaded onto three heavy duty platform trailers and moved out to the marine berth in a carefully synchronised manner and transported to Dampier for transfer to a barge. Finally the jacket was picked up using a jack-rig and lowered into the ocean.

The judges noted that as an off-shore project the standard of welding had to be quite exceptional to meet the exacting standards of this industry.

The entire project for the Linda platform was completed in just six months.

Metal Building Product Design

Best Example of the Metal Building Products Design was judged against the following criteria. For using cold formed steel and sheet metal or cladding products on design merit, aesthetics and creativity ingenuity and innovation in the use of metal building products made of Australian steel, as a structural or visual element. Design merit, aesthetics, and creativity, ingenuity, economy, environmental, design in manufacture, transportation and erection, durability and fitness of purpose.

BEST EXAMPLE

The Harmony Primary School entered by Taylor Robinson Architects





The design has provided the community with a healthy and productive learning environment and working place, and has demonstrated to the wider community key elements of sustainable design.

Project Team

Architect: Taylor Robinson Architects

Structural Engineer: Capital House Australasia

Head Building Contractor: Esselemont Geo A & Son

Manufacturer: BlueScope Steel

Steel Fabricator: Metro Lintels

Steel Detailer: Metro Lintels

Coating Supplier: BlueScope Lysaght

Metal Building Contractor: Joondalup City Roofing

First impressions of the judges were that this would be a fun and educational building for young children to spend their learning years. The school was designed to incorporate identified ecologically sustainable design (ESD) initiatives; Harmony Primary School offers the school community the unique opportunity to integrate these principles into everyday school life.

The material used reflects the unique nature of the school, and has been developed to enhance the educational benefits of ESD. The roof shapes have been generated to allow for natural ventilation, and to capture daylight. The internal raked ceilings provide an exciting space for learning.

The meeting of the ESD brief with a low cost construction strategy was impressive. Incorporation of natural ventilation, natural daylight, and passive thermal design plus the use of recyclable material for the roof is a good message for the children. The low embodied energy in the Colorbond® roof and walls was a consideration in the choice of materials.

Even the minimization of maintenance was a factor so the cost was factored into the budget. The use of different elements such as Custom Orb® and LYSAGHT TRIMDEK®, rainwater tanks, solar powered lights and an overall shape, which was interesting but not expensive, contributed. At each main entry to the primary blocks, the galvanised steel structure has been used to emphasize the built form and to identify the primary access points.