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galvanize

December 2015

WATERTIGHT BOAT STACKER TOPS TREATMENT STAKES

The hot dip galvanized (HDG) treatment of the building frame and racking of an innovative dry storage facility for watercraft on a flood prone site at Sydney's Rozelle Bay topped this year's Sorel Awards presented annually by the Galvanizers Association of Australia (GAA).

SOREL AWARD

The largest undercover dry berthing storage facility of its kind in Australia, vessels are all accommodated in HDG steel racks that can carry up to 10 tonnes per cavity space.

GAA Life Members, **Colin Bain** and **Mike Dennett** kindly returned as award judges, between them bringing over 60 years of galvanizing industry related experience and nous to the deliberations.

As only the second multi-company entry in the history of the Sorel Awards, in choosing this entry the judges recognised that extensive consultation and communication was required between all players involved in the project for a successful outcome and welcomed the collaboration between two erstwhile galvanizing industry competitors.

Story continued on page 2

Editorial: Alan Marshall
Prepared by: Galvanizers Association of Australia

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WATERTIGHT BOAT STACKER TOPS TREATMENT STAKES

Continued from page 1

General Manager GALSERV®, **Joshua Nolan** and GALVATECH Sales Manager, **Darren Bagley** accepted the award on behalf of their businesses at GAA's annual conference during October. This is the third Sorel for GALSERV® following on from 1993 and 2014, while for GALVATECH it is its first entry and win in 40 years.

The judges said that overall entries were of a high quality and covered four interesting projects – three involving building structures and one a "public sculpture".

The judges awarded a Special Commendation for the latter entry on the Christchurch-based Project Fanfare submitted by CSP Coatings due to its uniqueness and uplifting impact in a city rebuilding after a devastating earthquake, and also noted it was the first galvanizing entry submitted by a New Zealand galvanizer.

The Managing Director of CSP Coatings Auckland, **Ash Arya** accepted the Award on behalf of CSP Coatings Christchurch.

The project employed HDG treatment to transform what was a discarded hulk from a structure used as a decoration for a one-off New Year's Eve celebration in Sydney years earlier into a lasting landmark across the Tasman.

It proved a herculean task due to the lacklustre condition of the long neglected structure which had no coating and was not originally designed for HDG. Eighty percent of all components required blasting to remove rust and numerous sections required strengthening.

It now holds a commanding positon on the northern entrance to Christchurch City and is regarded as New Zealand's largest public sculpture.

Also shortlisted for the Award were 10 new buildings for the Joint Logistic Command Unit at RAAF Base Amberley near Townsville HDG treated from Industrial Galvanizers, Brisbane and the stunning façade of the new Melbourne School of Design building from Industrial Galvanizers, Melbourne.

The judges had a hard time choosing a winning entry with all projects of a similar nature.

They said a common feature of all four entries was that most or all of the steel galvanized was for the framework supporting façades. Furthermore, in three entries the key challenge facing all involved was the correct sequencing of steel to the location to deal with site constraints and/or project timelines.

Entries were assessed using the methodology first adopted in 2008. This involves allocating points on four important criteria: technical and engineering innovation; economic benefit for the user; environmental and social responsibility; and market development potential for the industry.

The Sorel Award commemorates French civil engineer Stanislaus Sorel who filed a patent in 1837 for a method of protecting iron from rust – the parent of the HDG process. The 2016 Sorel Awards will be open for entries this coming June.

This edition of 'galvanize' is unique as the on-line edition features four extra projects - see page 7 for more details. I hope you find these examples both instructive and inspiring as we head into the New Year.

Peter Golding
Chief Executive Officer
Galvanizers Association of Australia

Further details on each of the award winners are available directly from the GAA at www.gaa.com.au or by phone on **03 9654 1266**.

Also shortlisted for the Award were 10 new buildings for the Joint Logistic Command Unit at RAAF Base Amberley near Townsville HDG treated by Industrial Galvanizers.

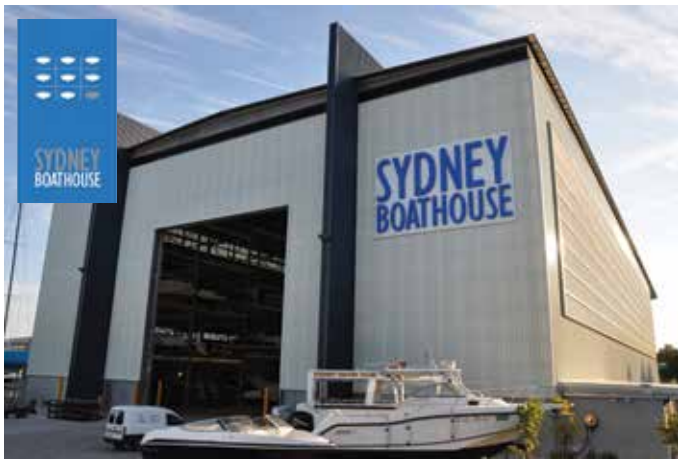
Sydney Boathouse

Melbourne School of Design

Department of Defence

Project Fanfare

KEEPING DRY STORAGE HUB SHIPSHAPE



The hot dip galvanizing of the support structure and racking system of an innovative dry storage facility for watercraft located on a flood prone site at Sydney's Rozelle Bay will optimise the operational life of the facility and also help to reduce water traffic and pollution.

The largest undercover dry berthing storage facility of its kind in Australia, Sydney Boathouse is a purpose built, secure undercover facility with capacity for multi-level dry storage of up to 270 boats from six to 11 metres in length using a standard marina forklift to locate the boats in the cavities.

Besides dry storage, the facility is also equipped to provide mechanical, electrical, shipwright, detailing, fibreglass and Gelcoat repairs, as well as anti-fouling and respraying services.

The vessels are accommodated in HDG steel racks that can carry up to 10 tonnes per cavity space and a different specially designed forklift is used to move the boat from the boat store to the water and back.

The galvanized racking system ensures minimal boat maintenance by cleaning the boats before and after use, which significantly reduces the risk of water pollution. Dry stack storage requires a much smaller in-water footprint and reduces congestion of waterways.

The building itself is 23 metres high, 50 metres wide and 100 metres long occupying 5000m^2 designed to house five tiers for storage. It contains approximately 400 tonnes of HDG structural steel comprising over 2600 individual galvanized structural members, not just externally, but also internally for all hollow sections.

The project was completed over a six month period from March to September of 2014. Due to time constraints on the project HDG was specified as the corrosion protection solution for the steel, as it facilitated shorter lead times when compared to a painted coating system. Galserv® and Galvatech equally shared the load, with galvanizing operations running three shifts, 24 hours a day.

With the building's most discernible design feature being an external translucent fibre-glass skin enveloping it, at night time the silhouette of the structural framework within the boathouse is clearly visible to onlookers from the outside. The natural weathering of HDG and its patina changing over time is a specific and desirable feature that the architect wanted to shine through.

The project was a finalist in the Marina Industries Association award for dry-boat storage of the year 2014-2015.

The largest undercover dry berthing storage facility of its kind in Australia, Sydney Boathouse is a purpose built, secure facility

PROJECT TEAM:

Developer/Owner: Rozelle Bay
Investment Manager: Gerry Hatton AM, MARKHAM
Architect: Micheal Fountain Architects
Project Manager: SJA
Managing Contractor: Richard Crookes Constructions
Steel Fabrication: Cullen Steel Fabrications
Steel Supplier: Southern Steel
Hot Dip Galvanizer: Galserv® Hot Dip Galvanising and Galvatech

TREATMENT CHOSEN WHERE SMART DESIGN TAUGHT

Hot dip galvanizing has supported the incorporation of a stunning façade to a new university building in Melbourne that sets an apt example of a sustainable approach to design students who study there.

The Melbourne School of Design shows the use of a HDG steel framework can form part of a stunning and practical building façade allowing fast erection on a space-constrained site.

Designed as a practical example of design and construction techniques, the building's six levels comprise 15,722m^2 of floor space with offices for 200 staff and capacity for over 2000 students.

Officially opened in late 2014, it incorporates 43 tonnes of perforated zinc sheet façade supported by a 50 tonne hot dip galvanized steel framework wrapping three sides of the building.

It was awarded a 6-Star rating by the Green Building Council of Australia in the category of Education (Design) and has also garnered an array of industry accolades including the 2015 Daryl Jackson Award for Educational Architecture from the Australian Institute of Architects and AZ 2015 Awards for Best Commercial/Institutional Architecture over 1000m^2.

Galvanized steel blended well with the perforated zinc panels and their ability to allow filtered natural light and ventilation unaffected by ultra-violet radiation.

The project faced the challenge of a very limited lay-down area, requiring delivery of load lots in the correct sequence, which was addressed by prefabricated and coated assemblies being delivered to site and quickly installed into position on the exterior walls.

Industrial Galvanizers worked closely with the fabrication team to ensure the frames were delivered to site in the right order, which they made easier by the providing the use of their large outdoor storage facility to re-pack the frames in the correct sequence in response to changing site demands.

The HDG steel will easily achieve the 25 year design life for the building façade with minimal maintenance.

PROJECT TEAM

Asset Owner: Building and Planning, University of Melbourne Faculty of Architecture

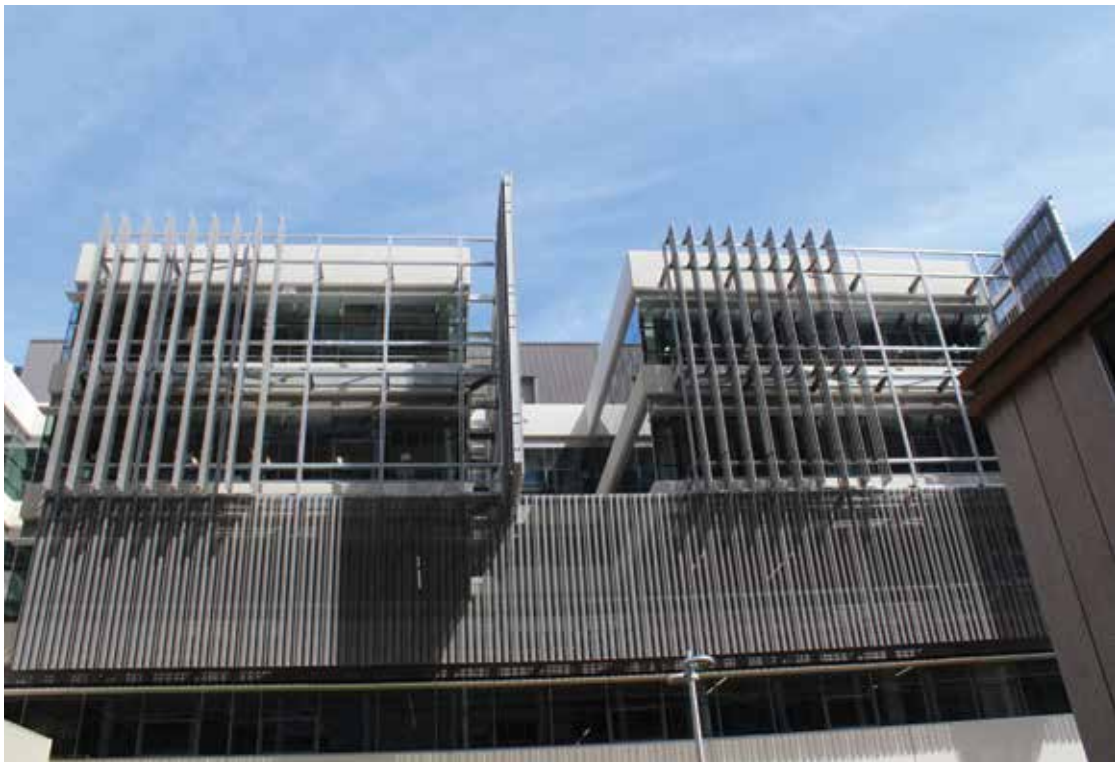
Architecture/Engineering: John Wardle, NADAAA

Principal Contractor: Brookfield Multiplex

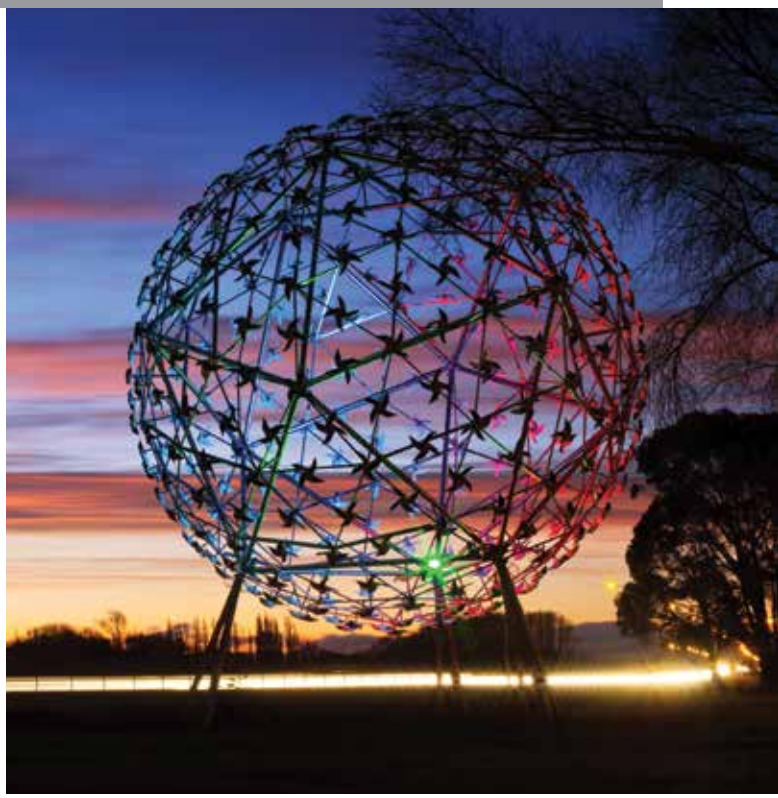
Project Management: Aurecon Australasia

Steel Fabrication and Perforated Zinc Panels: Fabmetal

Hot Dip Galvanizer: Industrial Galvanizers, Melbourne



DECORATION FOR A MOMENT RELIVES AS A LASTING MONUMENT



The design rethink to incorporate hot dip galvanizing treatment has transformed a temporary, albeit huge decoration for a one-off New Year's Eve celebration into a lasting landmark across the Tasman.

Originally designed by sculptor **Neil Dawson** as a short term sculpture, Fanfare was suspended from the Sydney Harbour Bridge to celebrate the 2005 New Year. The six story high sphere covered by 360 x 1.5 metre steel fans was then gifted to the Christchurch City Council by the City of Sydney and laid idle until recently.

When first sighted, dismantled parts of the sculpture were lying rusted in a City Council yard, with some components buckled, bent and, as later discovered, some parts were even missing. The entire infrastructure and legs of Fanfare were HDG treated apart from the 360 fans attached to the sculpture, which were fabricated from stainless steel.

The original structure had no coating so each piece needed to be assessed to determine the best approach to apply a protective finish and the preparatory work required as it had not originally been designed for HDG. Eighty percent of all components required blasting to remove rust and required holes drilled for galvanizing to allow for either hanging points or venting and draining.

RHS sections that had been strengthened with flat bar were stitch welded along the full length and required further restorative fabrication to prevent 'blowouts' and future staining.

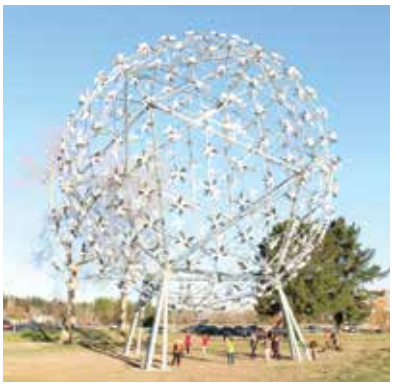
All spigots needed the strengthening gussets drilled and all areas not fully welded required full weld to prevent blowout and staining. Some sections also had heavy rust inside and required 'pickling' overnight.

Originally designed by sculptor, Neil Dawson as a short term sculpture, Fanfare was suspended from the Sydney Harbour Bridge to celebrate the 2005 New Year.

The tripod legs supporting the new sculpture were not part of the original suspended ball so presented design challenges, as they needed to take into account the dimensional requirements plus ensure a consistent finish.

A sample section was used to support the galvanizer's recommendations that fabrication adjustments were required. Consultation during the project proved very fruitful when concluding some design adjustments in the tripod legs to ensure a proper fit into the kettle and therefore significantly reduced the need for onsite remedial work.

Fanfare was officially launched on 10 June. Sited on the northern entrance to Christchurch City, it is now regarded as New Zealand's largest public sculpture. The project has already won the Galvanizing Association of New Zealand award at Metals Week in New Zealand.



PROJECT TEAM

Project Owner: Scape Public Art
Designer: Neil Dawson CMNZ
Consulting Engineers: Ruamoko Solutions, BECA, Holmes Solution
Site Works: Fulton Hogan
Site Assembly and Installation: Leighs Construction
Steel Fabricators: Leighs Construction, John Jones Steel and Christine Products
Sand Blasting: Hunt Blasting
Hot Dip Galvanizer: CSP Coatings

GUARDING THE LIVES OF NEW MILITARY ASSETS

The choice of hot dip galvanizing has helped streamline treatment of 10 new buildings for the **Joint Logistic Command Unit** at RAAF Base Amberley, near Townsville in Queensland, replacing assets of WWII vintage with new structures for a low-maintenance life in excess of 50 years.

The project was part of the five-year $750 million Defence Logistics Transformation Program to consolidate the wholesale logistics network to just seven primary sites supported by nine specialty sites. RAAF Amberley was selected as the base for the Joint Logistics Unit (South Queensland). The national Defence storage and maintenance network has previously operated from outdated infrastructure spread across 201 warehouses in 24 locations.

The new steel framed buildings comprise the headquarters and facilities for land material maintenance, loan and repair pool, weapons storage and repair, hazardous goods storage, general storage and four vehicle shelters utilising over 1500 tonnes of HDG steel.

The service environment includes exposure to aviation gas and other chemical fumes. Natural humidity and hot/cold cycles will also lead to condensation. Under these conditions, HDG steel is recognised as the long lasting, low maintenance protective coating choice.

With only 12 months to complete all onsite works, the use of HDG steel eliminated potential weather delays possible with onsite coating options and eliminated the need for remedial touch-up after erection.

The key challenge on this project was coordination of deliveries to site. With several buildings being erected simultaneously, HDG steel had to be delivered to site in the correct order, on the right day and to the exact unloading point.

The project was part of the five-year $750 million Defence Logistics Transformation Program to consolidate the wholesale logistics network to just seven primary sites supported by nine specialty sites.

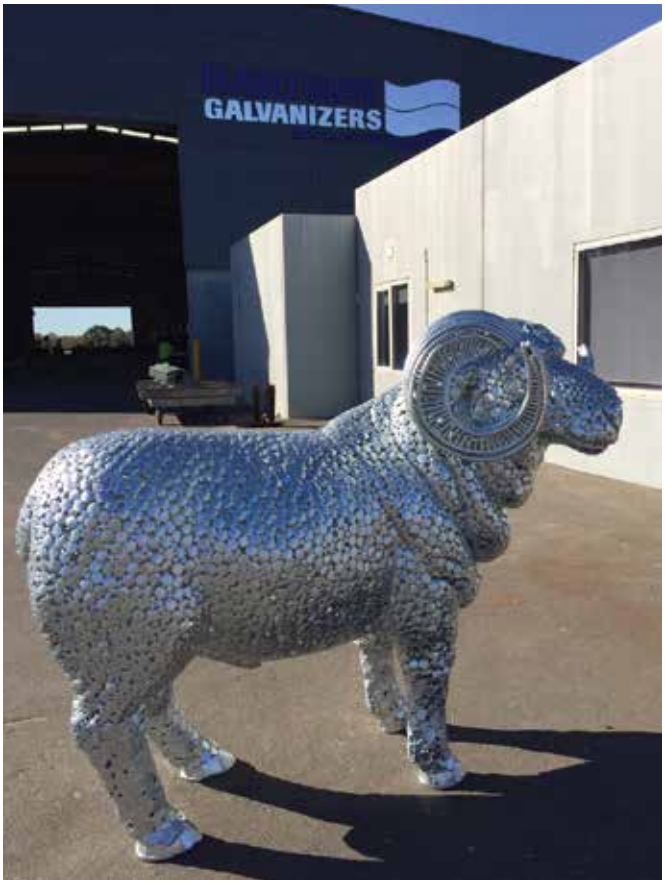
This Defence project shows that not only is local industry capable of delivering large-scale infrastructure projects, but they can be delivered quickly and cost-effectively due to a short and well-coordinated supply chain.

With the same infrastructure to be replicated a further seven times around the country, the successful use of HDG at the Amberley base opens up opportunity for the use of 12,000 tonnes of galvanized steel.

PROJECT TEAM

Asset Owner: Department of Defence
Architects/Engineers: Bornhorst+Ward
Principal Contractor: Leighton Constructions
Steel Supplier: Southern Steel
Drafting: Timeline Drafting
Fabricator: GAY Constructions
Rigging: M&B Rigging
Hot Dip Galvanizer: Industrial Galvanizers, Brisbane

SHEAR ARTISTRY IN TREATED STEEL



Armoured suits may never have been made from steel wool in times gone by, but a stunning ram sculpture of freshly galvanized steel by Fremantle-based artist, **Greg James** is turning heads today for its intricate and shimmering form.

The work comprises 400kg of steel 'punchings' individually welded together by the artist and the finished form hot dip galvanized over four days by GAA member, Hartway Galvanizers Naval Base in Perth.

The artist initially modelled the 2:3 scaled design in 600kg of clay on which he painstakingly overlaid each medallion-sized steel component over four months, firstly MIG welding each in place on the outside and then TIG welding inside edges.

Whilst the artist has spent 25 years mainly specialising in life-size bronze figures, he said he found steel somewhat easier to work with as he didn't have to keep cleaning up the surface as with working in bronze, knowing the steel surface only had to be treated once by the galvanizers.

"With steelwork, you make the piece and when it's done, it's done," Mr James said.

The work has been designed to be lit from within to help get the best out of the galvanized finish on the internal surfaces.

So impressive has the galvanized finish proven that he decided not to go with his initial plan to coat the exterior with a rustic finish, but retain the original HDG appearance.

Works Manager at Hartway Galvanizers Naval Base, **Paul Edmondson** said that the 'sheep dip' in the galvanizing bath went very smoothly even though it was the first time they have worked with the artist.

With steelwork, you make the piece and when it's done, it's done, Mr James said.

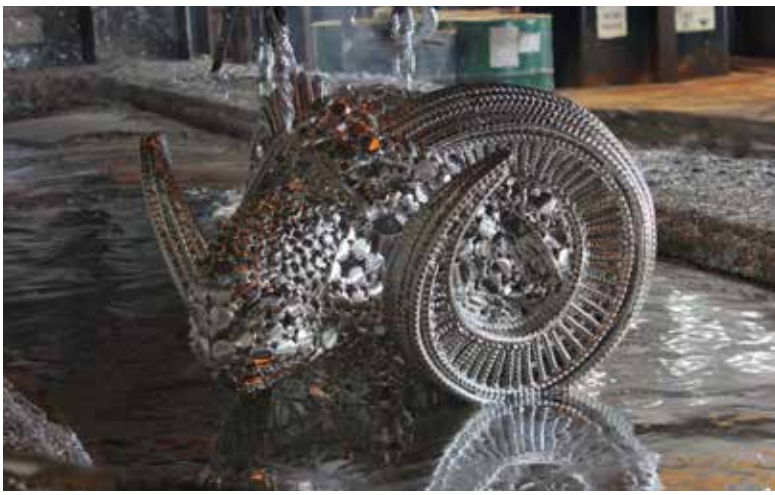
"The sculpture itself is about two-thirds air so its weight did not pose major lifting challenges, although we were careful to use soft straps for most handling of the elegant form and secured it for the dip with two large lifting chains around its belly," he said.

Mr Edmondson said that the artist's fabrication approach was also a boon.

"His decision to weld each piece from both sides also helped maintain the structural integrity of the artwork during treatment and intermittent spaces between each 'medallion' helped to minimise any potential pooling issues."

He added that the work was also environmentally responsible being essentially composed from scrap metal pieces.

His decision to weld each piece from both sides also helped maintain the structural integrity of the artwork during treatment and intermittent spaces between each 'medallion' helped to minimise any potential pooling issues.



RAW GLORY OF TREATED PARTS PUNCTUATE HOME

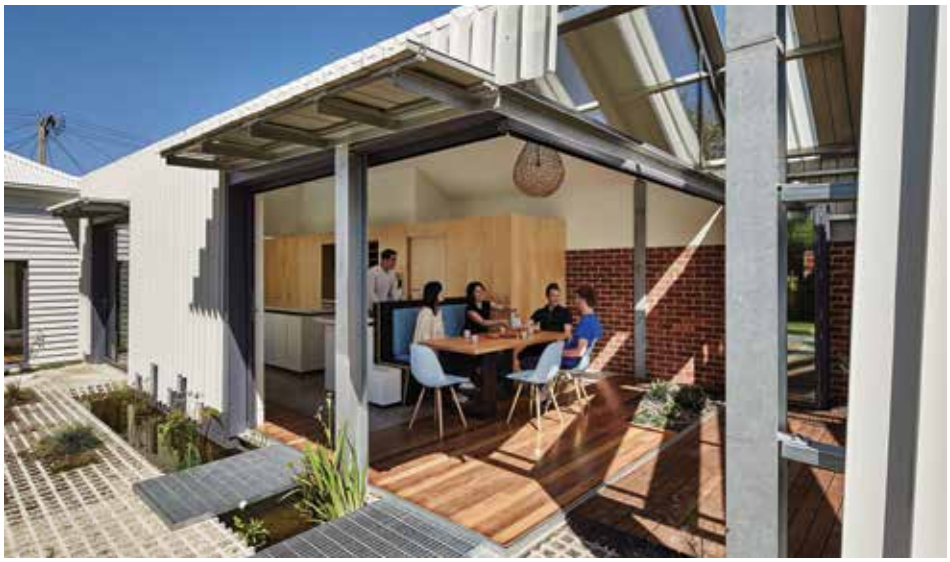
Just like the 'Cut Paw Paw' named parish in which this redeveloped house resides in the outer Melbourne western suburb of Seddon, its structure has been deliberately designed to look incomplete, revealing what resembles a cross section showing off its hot dip galvanized unclad frame in all its raw glory.

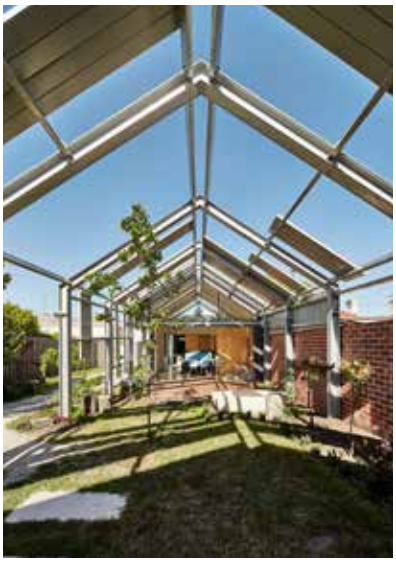
The central space between the dining area and studio was transformed during the renovation and extension of a double fronted weatherboard home that lies within and is surrounded by garden; the design team taking a galvanized steel shed construction, conceptually peeling back layers of sheeting until the frame was exposed.

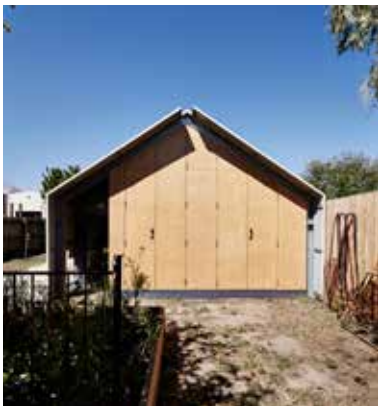
This approach by Andrew Maynard Architects responded to requests by the owners, Derek and Michelle that the redeveloped house be turned "ridiculously inside-out" beyond the use of sliding walls, bi-fold doors and decks.

"When a client tells us they want a strong connection between inside and outside, we take it seriously and push the concept until it is almost impossible to distinguish the line between internal and external spaces," the team explained.

They located the living, kitchen and dining areas on one end of this annex and a music studio on the other. In between, within the unclad structure, a deck lives with the garden, some paving and a bathtub. It was completed in early 2014 and was the winner of the 2015 "Houses" Award (Outdoor Category).







When a client tells us they want a strong connection between inside and outside, we take it seriously and push the concept until it is almost impossible to distinguish the line between internal and external spaces

NEW APARTMENTS FUSE FORM AND FUNCTION

The use of a duplex system built on the resilience of hot dip galvanizing has enabled the use of architecturally exposed structural steelwork (AESS) in a relatively corrosive river land environment.

The design approach by architects, Warren and Mahoney aimed to effectively utilise every part of the building's footprint whilst maintaining a sense of spaciousness and maximising natural light and ventilation.

The Ilico Apartments are located approximately two kilometres from the Tamaki River in Auckland and sit within the C3 macroclimate as defined by AS/NZS2312.2. The microclimate effect of the steel surfaces being sheltered from rain washing increases the corrosion zone to C4.

The development comprises 65 one and two bedroom apartments over five levels for purchasers with a limited budget in the new suburb of Stonefields.

There are two vertical circulation cores servicing boardwalks at each level which in turn provide bridge access to each apartment. The north facing balcony structures and south facing boardwalks are structural steel fabrications with careful consideration given to achieving long term corrosion protection while remaining aesthetically pleasing.

All of the apartments have either a north facing courtyard or balcony with shading and privacy provided by metal screening. The carefully considered composition of the screens with the lightweight balconies and elevated boardwalks break down the building mass and ensure a high degree of articulation along the façades.

As a Design & Build project, Fletcher Construction looked at the process of building very early on with a focus on identifying key risks in the design process. At Fletcher's insistence the architects, coatings specialists and the build team collaborated early to determine the most appropriate coating system.

The use of bolted connections, corrosion protection for the internal walls of the hollow sections and the abrasion resistance all needed to be taken into consideration when designing and specifying the appropriate protective coating system.

The steelwork was HDG in accordance with AS/NZS4680 followed by the application of a two-coat paint system of an epoxy primer and urethane top coat. Quality assurance and control procedures were rigidly applied to ensure the coating system complied with the design specification.

> Fletcher identified early on in the process that the corrosion protection for the external steelwork was a risk item and wanted to finalise a solution as early as possible.

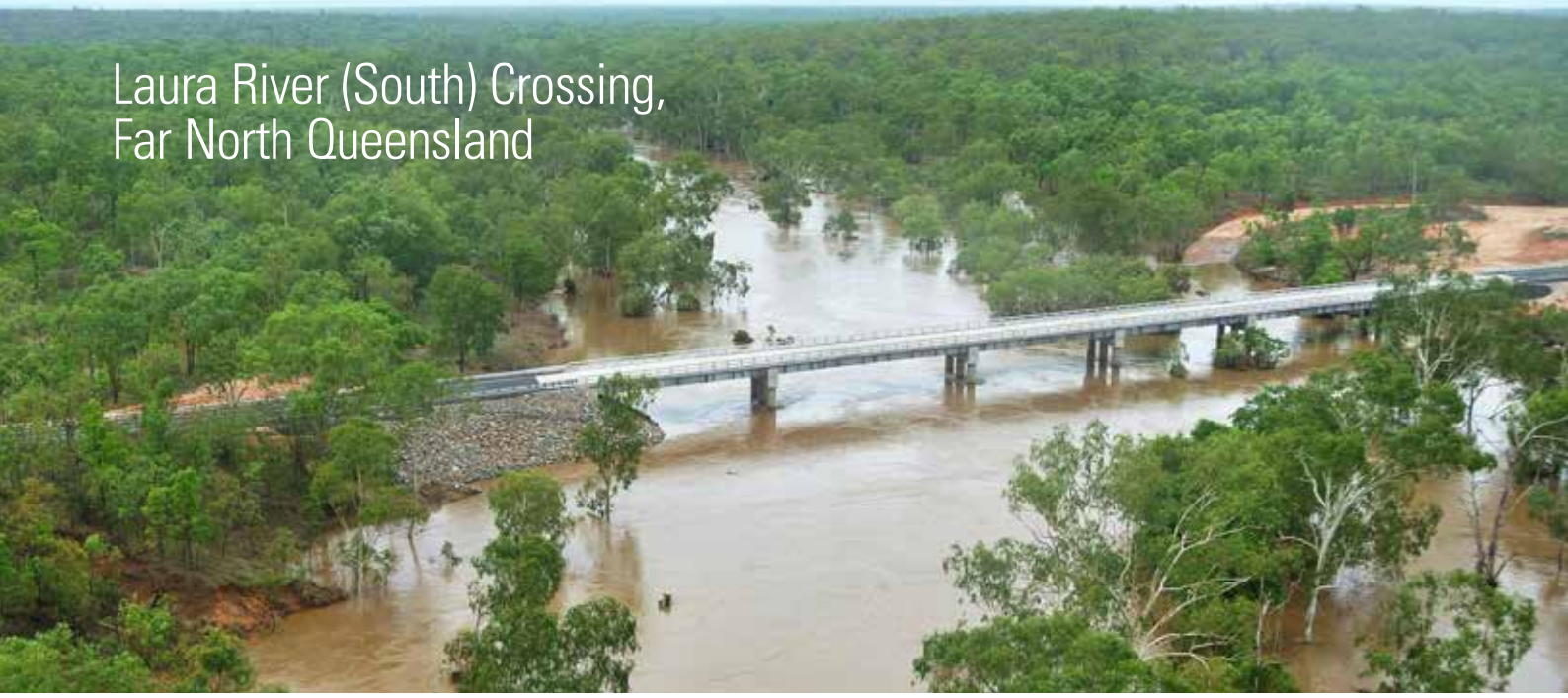
Based on AS/NZS2312.2, the galvanizing will have a life to first maintenance of in excess of 20 to 40 years which will be further increased by the duplex coating.

General Manager of Perry Metal Protection, **Duane Baguley** said that the HDG did most of the 'heavy lifting' with the paint added primarily for appearance whilst also enhancing the corrosion protection of the structure given the synergistic effect of the duplex coating system.

"Fletcher identified early on in the process that the corrosion protection for the external steelwork was a risk item and wanted to finalise a solution as early as possible," he said.

"They proactively engaged with the architect and paint supplier, Resene, to work through the options."

STEELWORK SUPPORTS RESILIENT RIVER CROSSING



Laura River (South) Crossing, Far North Queensland

The ability to supply lighter weight components for a remote location and construct a continuous superstructure to achieve structural efficiency, also lending itself to slimmer design less affected by water flows during extreme floods, prompted the new bridge over the Laura River to be built predominantly in steel.

This final project aimed at satisfying the Federal Government's promise to seal the road from Lakeland to Laura used a steel-intensive approach to provide immunity to peak flood levels encountered over 100 year periods (Q100) as the crossing is highly flood prone during the wet seasons experienced in Queensland's Far North.

The roadworks component of the project involved the realignment and reconstruction of approximately 2.2km of road approaches on the Peninsula Development Road that connects the tip of Cape York, the mining town of Weipa, including local communities and agricultural production, to the remainder of Queensland.

The project required the development and implementation of a detailed Environmental Management Plan to ensure that the complex environmental issues anticipated onsite, including rare flora, were adequately protected.

The new $11.8 million high level bridge is a 180-metre, two-lane structure built in response to prolonged closures due to flooding. The new higher and stronger bridge replaced the existing low-lying structure to minimise disruptions. This was achieved by using steel beam girders with spans up to 30 metres. The substructure design incorporates cast-in-place piles and reinforced concrete pile caps, columns, headstocks and abutments. The superstructure involves six spans of 1200mm galvanized steel beam girders with cross bracing. The girders support a cast-in-situ concrete deck with kerbs and TMR steel bridge rails.

The girders were lifted into position and connected with splice plates and bolted joints. There were typically 118 bolts per joint. The concrete deck is connected to the steel deck with shear studs.

All road and bridge works were designed to Queensland Department of Transport and Main Roads (QTMR) standards with the bridge designed to AS 5100:2004 and live loading at SM 1600 and HLP 400.

The steel plate was specified to Australian Standards with material test certificates reviewed to demonstrate conformance. The specification had a requirement that testing of the steel would be required if the steel plate could not be matched with the relevant test certificate. Sections encompassed 1200 WB 342 and 1200 WB 278 Grade 400, Intermediate Bracing Grade 300, Steel Plates Grade, 350, Bridge Rail SHS and RHS Dual Grade C450. All Fabricated to MRTS78 (Main Roads Technical Standard 78).

The bridge deck level was set to that of the high river bank to provide maximum flood immunity. The bridge was designed for flood loading in accordance with the AS 5100 Bridge Code. The high piers were secured into rock by three 1200mm diameter cast-in-place piles using steel liners.

Deputy Chief Engineer (Structures) Structures of Engineering and Technology at QTMR, **Ross Pritchard** said the factors that worked in steel's favour as the main structural material for the infrastructure included the weight of the steel girders compared to concrete for long distance transport from Cairns, as well as during construction for easier handling, making higher piers possible whilst maintaining the ability to construct a continuous superstructure to achieve structural efficiency.

All connections were bolted so no site welding was required.

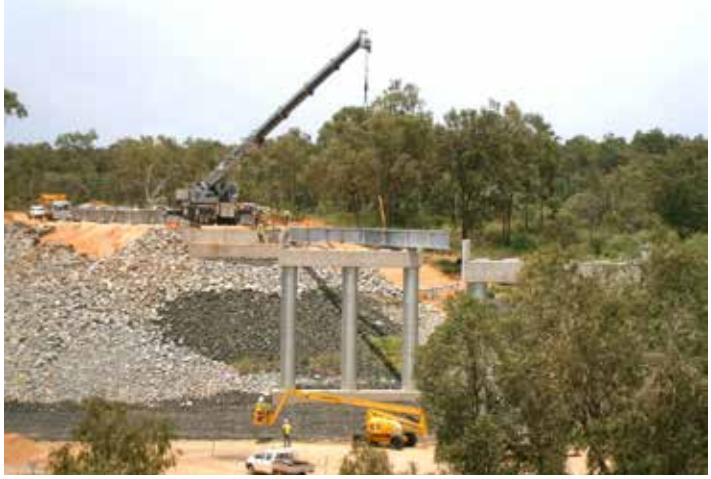
"The bolts were a critical item in the construction," Mr Pritchard said.

"High strength grade 8.8 bolts were used and in addition to the requirements of AS 1252 there was a requirement that the bolt and nut were tested as a complete assembly to ensure that load capacity was achieved.

"The bolt assembly test was undertaken on a batch basis. Tightening of the bolts was considered a critical operation."

The bolt assembly test was undertaken on a batch basis. Tightening of the bolts was considered a critical operation.

Over 6000 bolts with some beams pre-spliced before erection and some mid span splices were conducted in situ



The Manager of the project's contracted steel fabricator Australian Infrastructure Manufacturing (AIM), **Chris Wilson** said all splice joints utilised Tensioned Fasteners (TF) and Load Indicating Washers in conjunction with a torque multiplier to achieve correct tension.

"Over 6000 bolts with some beams pre-spliced before erection and some mid span splices were conducted in situ," he said.

"There was found to be a great variance in the friction coefficient of each bolt due to the galvanized bolts used and the use of just the torque wrench alone was not producing an accurate indication of tension.

"The visual indication of tension achieved through the use of squirter washers was invaluable in the bolting process and found to be very accurate."

He said the steel design offered less risk from severe flood waters than a concrete option as the surface area of the steel structure is significantly less than a concrete option, reducing the drag on flowing water and thus lowering risk of the bridge being washed away.

"The steel bridge also offered larger spans that saved cost from not having another two or three piers that would have been required for the concrete supported option," he said.

"This also meant less transport movements compared to concrete. Four beams were fitted on each truck requiring 18 to 20 loads for the project whereas a concrete option would have meant three times as many trips."

Being a Level 2 TMR Accredited Supplier with an in-house galvanizing facility helped AIM win the work.

All steelwork was hot dip galvanized to AS/NZS 4680 to achieve the design life. Mouse holes were processed in all the bracing plates. Beams were galvanized with the camber down to maintain camber during the galvanizing process. The longest beam was 18 metres, which was a double rollover dip.

AIM developed a close working relationship with McIlwain Civil Site Engineer, **Mark Stone** who Mr Wilson said understood the intricacies of the project enabling a successful installation program. Weekly production meetings were held with McIlwain Civil, Civform and TMR representatives to report progress.

"This worked well to keep everyone informed in relation to any challenges and progress of the job," Mr Wilson said.

Beam cambers were measured three times; once received into store, post-fabrication and post-galvanizing. Each measurement was recorded exactly the same way to ensure the camber was present and retained.

Each beam was stamped with the heat number upon receipt and tracked throughout the fabrication and galvanizing process to ensure complete traceability. Sections were programmed to coincide with crane movements. For instance, particular assemblies had to arrive at predetermined times to allow for assembly of TF splice joints.

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PROJECT TEAM

Client: Queensland Department of Transport & Main Roads
Principal Subcontractor: McIlwain Civil
Steel Fabricator: Australian Infrastructure Manufacturing
Structural Engineer: GHD
Steel Detailer: Australian Infrastructure Manufacturing
Hot Dip Galvanizer: Australian Professional Galvanizing
Steel Distributor: Tonkin Steel
ASI Steel Manufacturers: BlueScope, OneSteel

NEW DIGITAL APP
GALVANIZE

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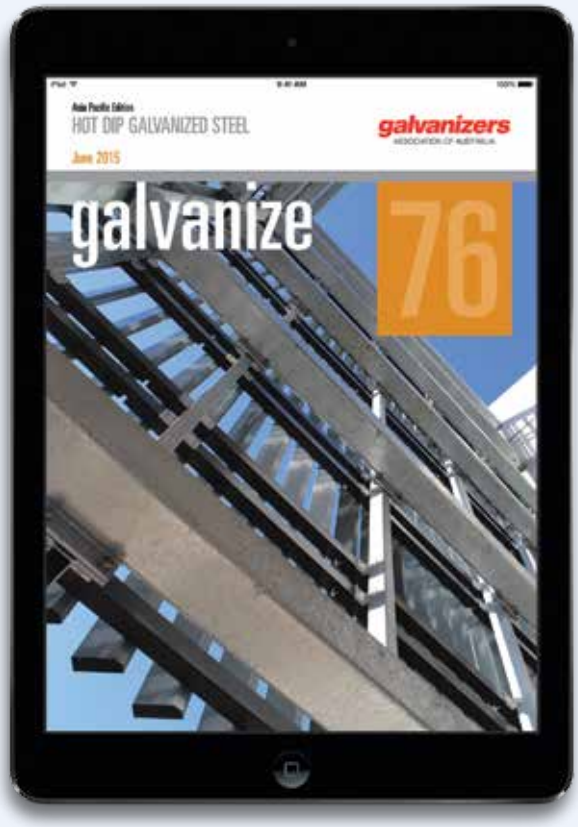

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