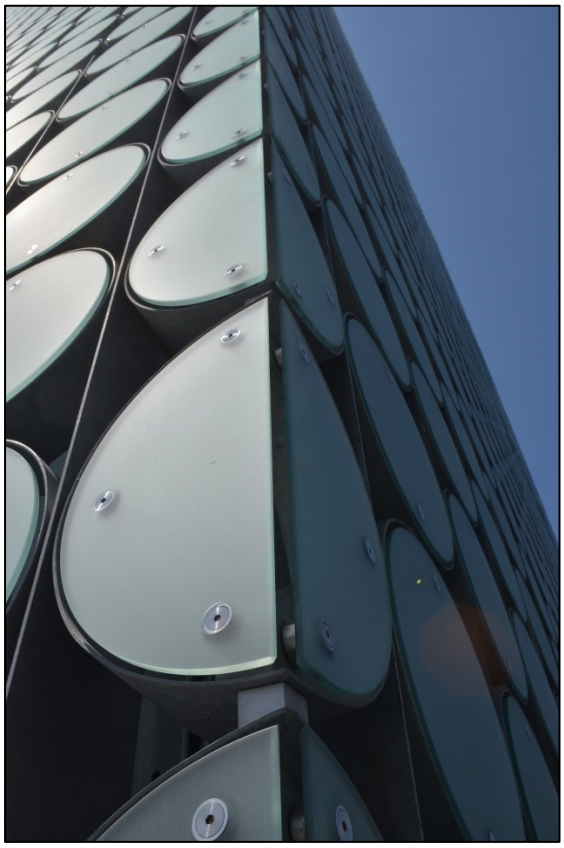
Case Study

Architectural Feature
RMIT Design Hub



Background

Opened by the Federal Minister for Tertiary Education, Senator Chris Evans in November 2012, the RMIT Design Hub is a nine-storey tower of flexible loft-like workshops cloaked by over 17,000 sequin-like 600mm glass discs. More robust than sequins, however, the components resemble steel drums, with each comprising a 130mm-deep galvanized steel hoop in-filled with sandblasted glass.

As a system, the façade comprises a bespoke double-glazed inner skin; set 700mm behind the operable veil. It was preassembled into 1.8 x 4.2m panels, each with 21 discs. Out of these, 12 are operable and nine are fixed, apart from those on the ground floor and plant-room levels, which are all fixed. The operable discs open to 90°, pivoting on horizontal axes on the north and south elevations and vertical axes on the east and west elevations, giving the façade an orientation-specific response. Automated through separate electrically operated actuators, each panel is controlled by a Building Management System, programmed to close to prevent direct sunlight hitting the main curtain wall and to retreat in periods of strong wind.

The RMIT Design Hub has a large number of ESD features and will incorporate strategies of water, waste and recycling management that are the equal of any ESD focused building on the planet. The outer skin of the Hub incorporates automated sun shading that includes photovoltaic cells, evaporative cooling and fresh air intakes that improve the internal air quality and reduce running costs. The cells are designed to be easily replaced as solar energy technology improves and may one day generate enough electricity to run the whole building. Part of the northern façade is actually dedicated to ongoing research into solar cells to be conducted cooperatively by industry and RMIT.

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Hot Dip Galvanizing

The external feature elements of hot dip galvanized steel in the building consist of

- 16,500 fabricated full diameter rings (each 580mm x 130mm x 5mm)
- 260 corner rings
- 320 half rings
- 710 frames (each 4.2m x 1.8m)

In addition, the internal parts of the building contain a number of more common hot dip galvanized features, such as grating and handrails.

The outstanding feature of the building is the striking aesthetic finish of the hot dip galvanized rings, delivering a stunning aspect to an otherwise rectangular building.

The creation of the rings required an extraordinary amount of project management from the galvanizer. The customer requirements included a guarantee for a coating thickness of 85µm ($600g/m^2$), which is more than 20% greater than the standard for 5mm steel thickness, tightly defined allowances for the aesthetic finish (no zinc build up on the inside or outside of the rings, no touch marks) and no transport damage. Dedicated jigs were designed to deliver the finish required by the architect. In addition, the project had to be completed on a very tight schedule.

The outcome is visually striking, adding a contemporary look to the otherwise historic streetscape.

Four Reasons to Choose Hot Dip Galvanizing

1. Aesthetics – the natural good looks of a hot dip galvanized structure, combined with good design practice, means little or no touch-up is required
2. Competitive cost – the life cycle cost of hot dip galvanizing is usually superior to other corrosion protection coating systems
3. Speed of application – a fully protective coating is applied in minutes
4. Durability – a hot dip galvanized coating provides a very long life with reduced maintenance compared to normal paint systems in this environment

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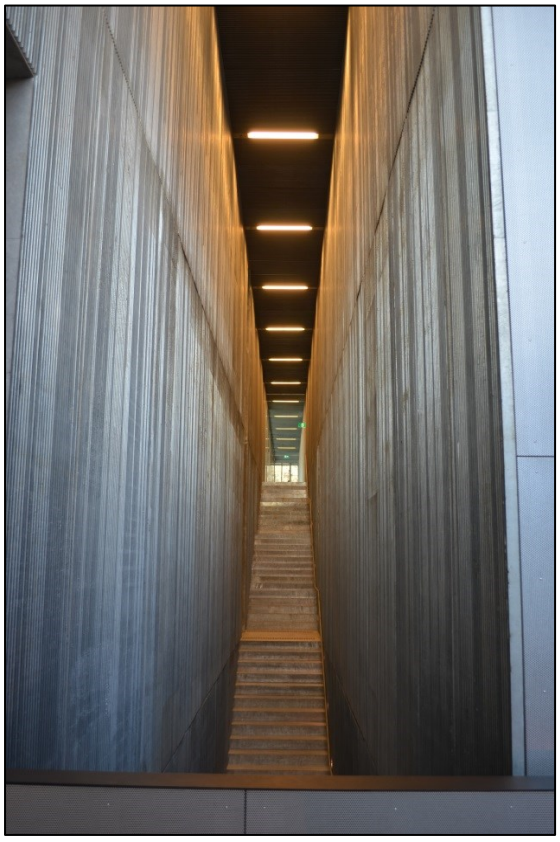
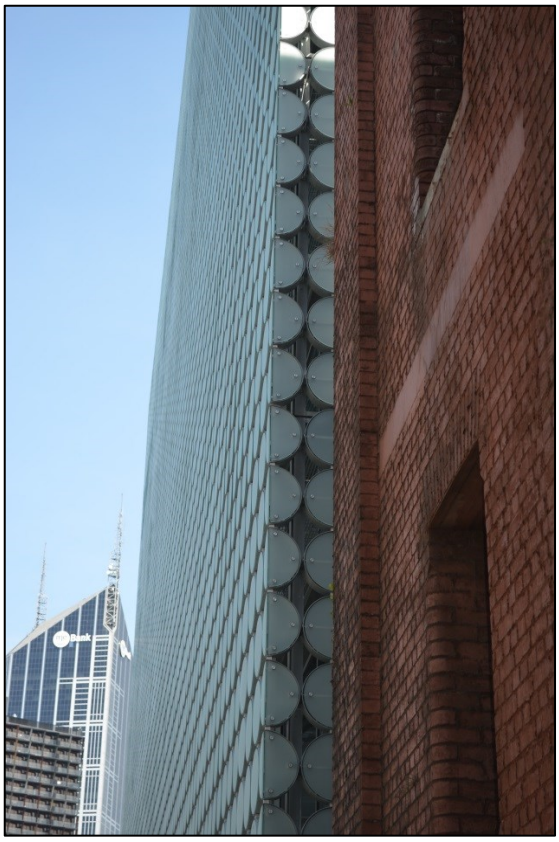
Tried, Trusted and Proven.

A typical hot dip galvanized fabricated structure can be ready to use just minutes after completion of the galvanizing process – there is no curing time required. Protection of the steel is complete for all surfaces, while it is enhanced on corners due to the metallurgical reaction between the zinc and steel.

The long-term durability of galvanized coatings, with a production history of over 175 years, is documented in local and international Standards. This particular galvanized cloak, with a minimum coating thickness of 85 µm, should provide a design life of well over 50 years in Melbourne with only minor maintenance required.





The initial lightness of the coating will turn to a deeper grey as the zinc reacts with the environment, before eventually becoming lighter again after a few years, however hot dip galvanized coatings are not affected by UV, so little maintenance should be required over the life of the building to stop the steel substrate from corroding.

Another recognised advantage of the system is the lower long-term cost of galvanized steel compared to other systems. Galvanized steel is often cheaper up-front than other corrosion protection coatings, and invariably less costly to maintain, providing a life cycle cost for asset owners that keeps them coming back to a system that is *tried, trusted and proven*.

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This project was the Galvanizers Association of Australia **2012 Sorel Award** winner. The Sorel Award takes into account engineering, technical innovation, and market development potential within the galvanizing industry. In addition, the economic benefit for the end user and the environmental and social responsibility exhibited by the project were key facets assessed by the judges. In all these aspects, the project was the outstanding choice for 2012.

Acknowledgements:

Developer/Owner: RMIT University
Architect: Sean Godsell and Peddle Thorp Architects
Project Managers: Philip Flynn (RMIT) and Rob Fisher (Aurecon)
Main Contractor: Watpac
Hot Dip Galvanizer: GB Galvanizing Service Pty Ltd
Photography: GAA Staff

More information regarding the building, additional photographs and a link to a video on the project can be seen at http://architectureau.com/articles/rmit-design-hub/.