

# Case Study

## Craigieburn Train Maintenance Facility



### Background

As part of the Department of Transport's upgrade to rail services in Victoria, HBO+EMTB was commissioned to design the Craigieburn Train Maintenance Facility & Stabling Yard on Melbourne's northern outskirts. The 1.2-hectare facility, longer than the Melbourne Cricket Ground, is the largest of its kind in Australia housing up to 25 trains.

The design challenge was to create a 21<sup>st</sup> century facility spanning 20,000m<sup>2</sup> that honoured its purpose as a highly functional and mechanised space. The project scope included track work, signalling, overhead line design, maintenance roads, bogie pits, train roof access, overhead cranes, tools store, mobile equipment, open yard storage, parking, roads, security, landscaping and staff accommodation.

In addition to an efficient building layout, attention was given to the need for lifting apparatus, environmentally- sustainable design, state-of-the-art railway control systems, and complex structures capable of balancing the work environment and functionality. The design was developed in consultation with numerous end-users

that included unions, train drivers, vehicle maintenance and administration staff.

The striking use of Colorbond steel for the facility's undulating roof was inspired by the sculptural works of South Australian artist Greg Johns. It features an organic design sweeping towards the earth that is complimentary to the site's natural form. The facility takes on distinctly different perspectives as you move around its perimeter and references the rolling hills of Mount Ridley in the distance.

The building was designed for low environmental impact and delivers significant long-term benefits such as the use of recycled water captured off the building's roof to supply a 125,000-litre rainwater tank. This water is used throughout the building and by the train wash facility and amenities. Hydronic in-slab heating has been used in the workshop's floor and cross flow ventilation has been maximised to reduce the need for mechanical cooling. The choice of materials provide for the facility's 50-year life cycle and are heavily insulated against the natural elements.



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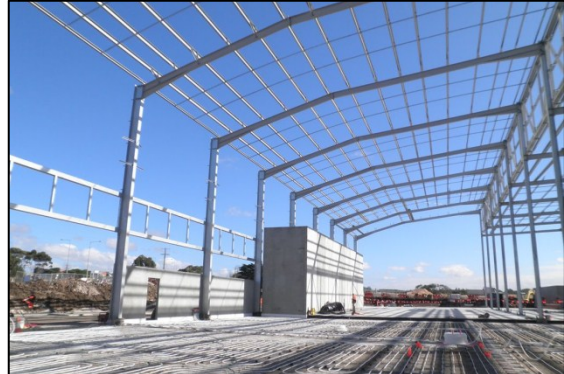
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### Engineering and Fabrication

The facility is an outstanding showcase of the comprehensive ability of Australian design, fabrication and erection of structural and architectural steel work. All the structural steel elements for the 1,400 tonne facility were locally designed and constructed, requiring a strong focus on resource management, logistics, flexibility in scheduling, and a dedication to delivering the highest quality of work.

“Coordination between the engineer, architect and shop detailer was critical due to ongoing design changes,” said Aus Iron Project Manager, Dale Ekers. “The assembly of the 103 facade awning beam frames that wrapped around the perimeter of the structure was a difficult process. The majority of the frames required a different radius and alternating from on face to edge form. We had to ensure that tight tolerances were maintained, as the



frames created a continuous band around the building that was required to be consistent to achieve the desired appearance.”

### Acknowledgements

Developer/Owner: Department of Transport

Architect: HBO + EMTB (Gary Kyriacou)

Design Builder: John Holland Group

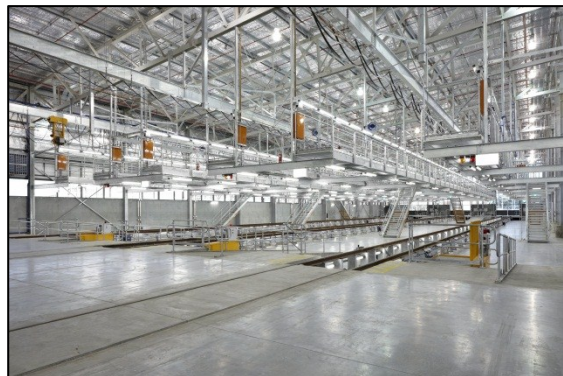
Fabricator: Aus Iron Industries (Dale Ekers)

Structural Engineer: Hyder Consulting

Environmental Engineer: Hyder Consulting

Project Manager: Department of Transport

Hot Dip Galvanizer: GB Galvanizing Service



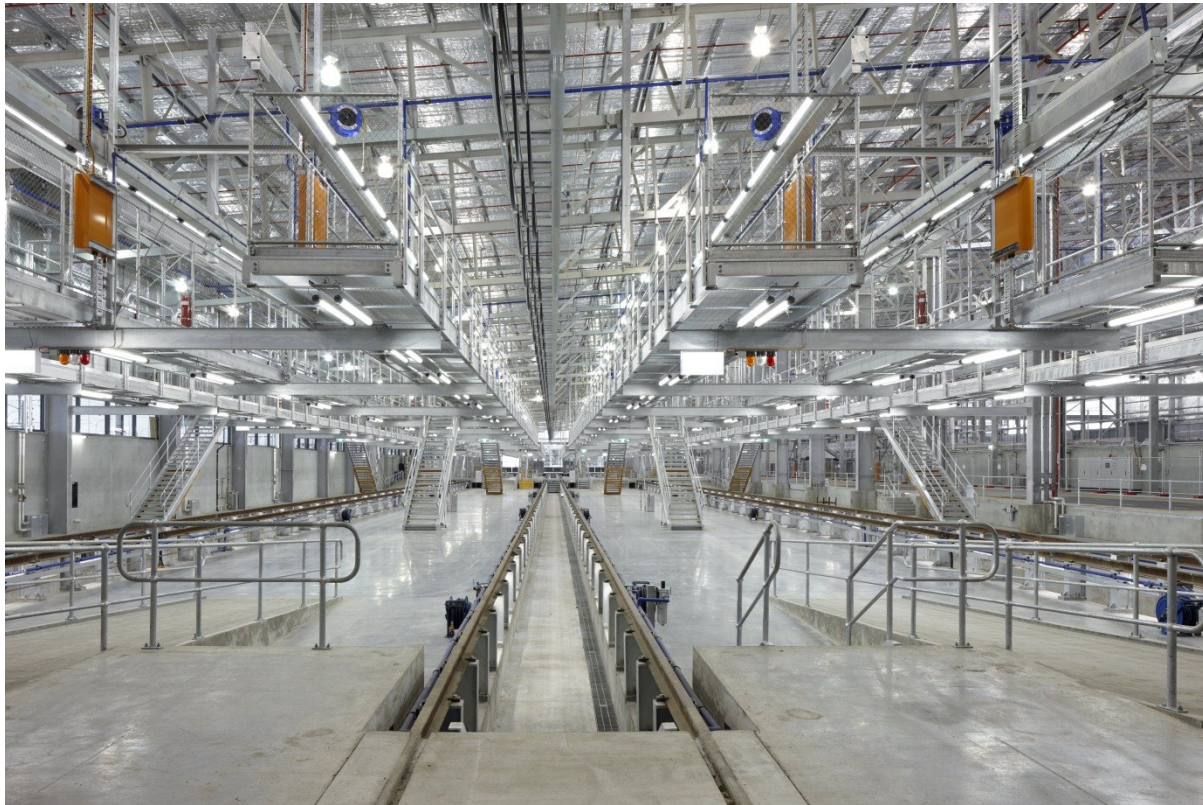
### Eight Reasons to Choose Hot Dip Galvanizing

1. No hold ups due to weather – steel can be galvanized in any weather conditions
2. Speed – modular design compatibility to speed up construction
3. Tough coating system – reduces transport damage & minimises on-site repairs
4. Inbuilt durability – minimises in-service damage in the transport environment
5. Withstands UV – the surface is immune to damage from the Australian sun
6. Superior corrosion protection – provides initial and lifetime cost savings
7. Aesthetics – natural good looks
8. Sustainable – Zinc and steel are 100% recyclable



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