

Case Study

Galvanized finish guards new rail work



Background

The major rail station upgrades and new developments associated with the Adelaide Metro rail electrification project successfully demonstrate that oversize components on large-scale projects, otherwise considered too big for existing plant capacity, can be hot dip galvanized (HDG) to overcome a major limiting factor when considering corrosion protection modes.

These rail stations demonstrate that while it is not always possible to break components down into single dip sections, if all parties embrace the use of double dipping, the long term benefits afforded by HDG can be realised.



The rail electrification project included major redevelopments of both the Elizabeth and Munno Para stations on the northern Gawler line and construction of two major rail stations at Seaford and Seaford Meadows on the southern line as part of a 5.7km dual track extension.

These projects required station work creating safe, attractive and welcoming transport infrastructure that is user friendly and comfortable.

The Project

Across the four rail stations a total of 850 tonnes of structural steelwork was galvanized comprising platform canopies and heavy pedestrian overpasses, lift towers and access stairs as well as ancillary steelwork including sign gantries over the rail tracks, lighting towers, bike sheds and decorative screens.

The high hardness and durability afforded will significantly reduce ongoing maintenance costs by resisting attempts at vandalism, a major concern given they are high traffic amenities which provide idle time while waiting for trains.



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The challenges posed by the design of key components were identified early on with all stakeholders to ensure fabrication detailing for a quality result.

The fully enclosed pedestrian overpasses, lift towers and enclosed stairs for each station required early intervention to ensure they could be broken down efficiently to enable HDG. Segments were up to 3.6 to 3.8 metres high, up to 10 metres long and weighed up to five tonnes, thus comprising large double dips.

Once fabrication commenced, the galvanizer was in constant contact with the fabricators, particularly with respect to the draining and venting of the large rectangular hollow section frame segments for the pedestrian overpasses, lift towers and access stairs. Initial



concerns over the adequacy of shop repair when welding the segments together were allayed with the assistance of the GAA technical note on this topic.

Summary

Given that structures of this size are generally associated with large-scale projects, this has the potential to significantly increase the demand for HDG.

Not only will the likely reduction in vandalism damage contribute to lower maintenance costs and reduced volatiles from paint repair, the reduced risk of a degraded visual amenity going forward should encourage commuters to use the rail network in greater numbers.

With a key requirement of the rail station projects being the provision of attractive and welcoming structures to promote patronage, HDG provides a vital contribution to overall project aesthetics.

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Project Team

Developer/Owner: South Australian Government

Specifier: SA Department of Planning, Transport and Infrastructure

Project Managers: York Civil, Thiess/McConnell Dowell Construction and Bardavcol

Main Contractors: Manuele Engineers and Advanced Steel Fabrications

Hot Dip Galvanizer: Korvest Galvanisers

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 from vandalism & accidental knocks
5. Withstands UV – the surface is immune to damage from the extreme 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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Awards

The station works for a major railway electrification project in South Australia attracted the 2013 Sorel Award for Galvanizers Association of Australia (GAA) member, Korvest Galvanisers primarily for its treatment of impressively large-sized assemblies for a group of railway stations encompassing pedestrian overpasses, lift towers and enclosed stairways. The judges said that the

winning Korvest Galvanisers entry scored highly on its market development potential and technical innovation by demonstrating that a high quality HDG coating can be applied to oversize assemblies without coating blemishes or distortion.



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