

# Bellville Transport Interchange upgrade built in 2002 stands the test of time

Following a meeting early in 2002 with Henry Fagan of Henry Fagan & Partners (engineer for the structure), in association with GAPP Architects & Urban Designers, who were responsible for the concept and ideas of the interchange at the time, I became involved in the project, a rather unusually shaped transport interchange in Bellville, Cape Town.

Due to the limited expected lifespan and the continued maintenance costs of paintwork, hot dip galvanizing was selected by Henry Fagan knowing full well on its own the coating should provide at least 25 years of service free life.

My role was to advise Henry on how to hot dip galvanize the 'upside down spiders'. These were too large for a single immersion in the largest bath in Cape Town and due to a major amount of cutting of the I-Beams, double end dipping may have resulted in unacceptable distortion, so we decided to try something different.

This entailed cutting off two of the 'upside down spider' roofing legs and masking the



ends that were to be welded with "Galvstop". After galvanizing, the ends were cleaned off to achieve a zinc free surface.

The ends were then welded and the welds repaired using a layer of Zincfix neatly applied between two strips of masking tape. We knew then that although Zincfix was a

recommended repair product, the weld area would be the first to show corrosion over time, especially if applied too thinly (sometimes achieved if ones finger is used to spread the product).

Accompanied by Gert Groblar of Henry Fagan and Associates we revisited the taxi *continued on page 18...*



Some silver zinc rich spray paint was used, which is irritatingly highlighted against the stable hot dip galvanized zinc carbonate patina.



The "upside down spiders" on site following delivery. Notice the similarly grey tones of coating repair by "Zincfix".



Varying views of the transport interchange upgrade showing the curved tubular purlins.



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## CORROSION PROTECTION FOR CARBON STEEL

BECAUSE SOMETHING AS TOUGH AS STEEL NEEDS PROTECTION TOO

Transvaal Galvanisers are capable of meeting any and all requirements with regards to hot dip galvanising.

With 30 years experience in the galvanising industry, Transvaal Galvanisers ensure the highest quality product, at the most competitive prices.

Having 5 galvanising plants allows for a combined capacity of 10 000 tons per month.



The "upside down spiders" showing atmospheric surface contamination.



The surface contamination removed and residual coating thickness of 197µm taken on the structure and 187µm on the holding down nut.



The curved hot dip galvanized tubular purlins are in excellent condition with a residual hot dip galvanized coating thickness of 134µm.



rank last week and found the coating was performing as predicted after 12 years of exposure.

**The site**

Marine chlorides seem to be present (see photos). Bellville is considered to be a C3 environment (an environment with a zinc corrosion rate of 2µm or less) in accordance with ISO 9223 or the Association's Information Sheet No 11, Corrosivity of Zinc.



Hot dip galvanized I-Beam tubular purlin support, showing a residual coating thickness of 252µm.



**Our findings**

The hot dip galvanizing is performing to specifications. Judging by the residual coating thickness on the structure as well as the holding down bolts and nuts, we predict the galvanizing will provide a further 30 to 50 years of service-free life.

The areas where the 'upside down spiders' were welded and originally repaired using Zincfix should be cleaned and recoated with either Zincfix or Galpatch as required.



Due to the application thinness of Zincfix (achievable by thinly spreading the product with one's finger) the welded area is showing signs of premature corrosion.



Where Zincfix has been correctly applied there are no signs of premature failure.

A row of pipe bracings which were originally only painted were showing signs of some corrosion and will also require future maintenance over time, or replacement.

**Conclusion**

The hot dip galvanized coating lives up to its predictions of providing a long, service-free life with relatively low maintenance for a cost effective price.



The connection pipe from one roof to the next was for some reason only painted, see condition left, which will in a short period of time have to be re-coated or replaced.



**Original project team:**

- Henry Fagan & Partners (engineer for structures)
- GAPP Architects & Urban Designers (architects)
- Walker Maré (quantity surveyors)
- Ground Force Labour Services (main contractor)
- Stocks Africa (contractor for structures)
- Tenca Engineering (steelworker) 