Hot Dip Galvanized Case Study No. 20
Stratford's Guest House and Conference Centre

The Application

Building of Stratford's House and Conference Centre commenced in November 2000 and was entered and easily won the 2001 Hot Dip Galvanizing Awards. The building is situated within easy walking distance of Vincent Park Mall in East London.
At the time Al Stratford was president of South African Institute of Architects was highly commended by the Association's awards judges on the multiple uses of hot dip galvanizing in combination with other materials. They also commented on "the extensive use and novel design combined with striking features provides an aesthetic advertisement for the use of hot dip galvanizing in architectural applications".
Besides Al's love of hot dip galvanizing for its honest appeal, he also used it for its potential maintenance free life.

**North and south wing run parallel to each other enclosing a cloistered garden terminating in a covered patio centre
The main dining room is on the right with reception offices on the left, with timber banisters used to connect hot dip galvanized steel hand rails *(photo 2001)*.**

Environmental Conditions

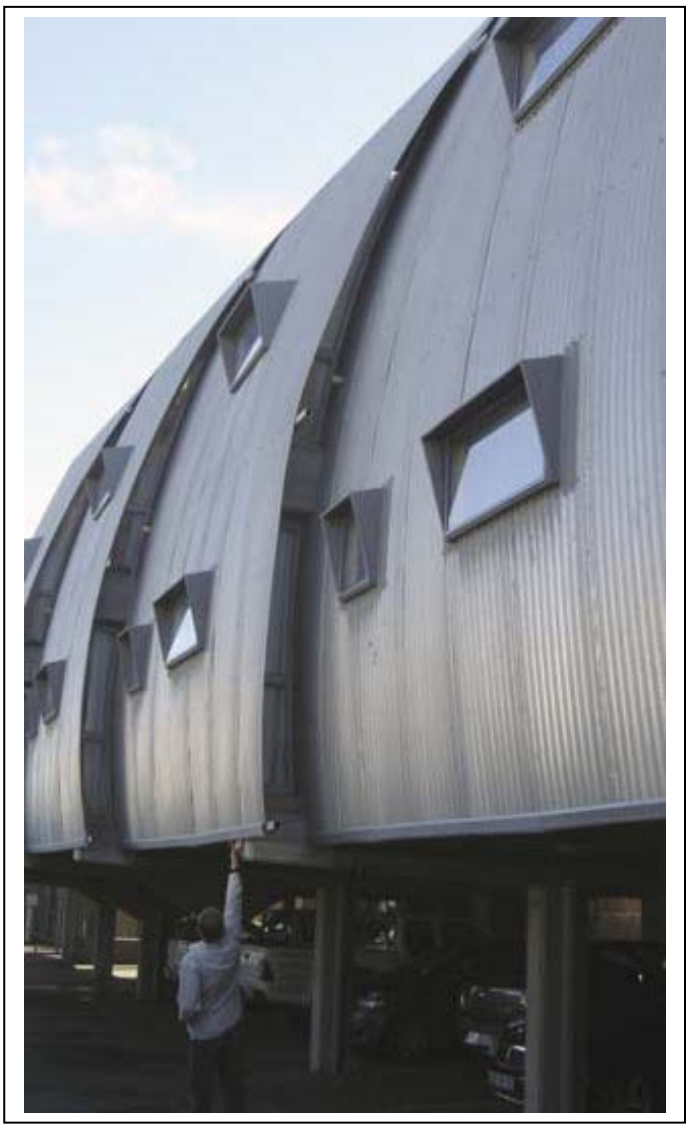
Inspecting the hot dip galvanized coating after 10 years of service the residual zinc coating thickness readings were indicative of a mild marine environment.

In terms of ISO 9223:2012 a mild coastal environment would be categorised as a C3;

"Temperate zone with medium (SO2 5 to ≤ 30pg/m^3) or some effect of chlorides, e.g. urban areas, between one to thirty kilometres (depending on prevailing winds, buildings, vegetation and topography) from the ocean, or within one hundred metres of sheltered coastal areas with low chloride deposits."

In terms of the ISO 9223 specification and the corrosivity category the zinc corrosion rate would range between 0.7 to > 2µm per year.

The Site



"S" rib profiled coating class Z600 (SANS 3575) continuous hot dip galvanized sheeting was used as the material of choice in the stressed skin on the South Façade as well as for the roof sheeting on the North wing

HOT DIP GALVANIZERS ASSOCIATION SOUTHERN AFRICA

Hot Dip Galvanized Case Study No. 20
Strsrfords Guest House and Conference Centre

This lip together with dust, debris and leaf deposits from the closest tree together with the normal rainfall, created the conditions for under deposit corrosion and the gutter over these 10 years corroded through in a few areas

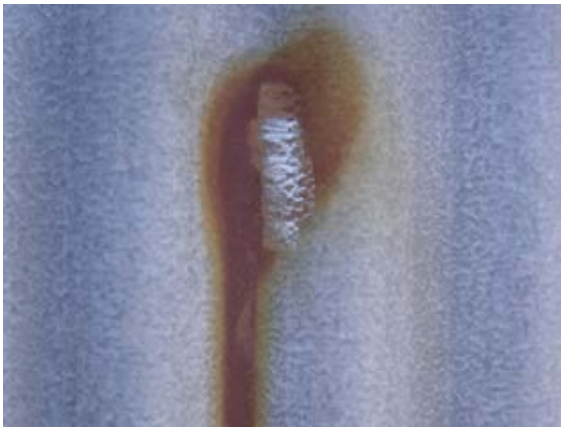
This novel shaped gutter also played the role of a fascia and to added strength a 180° return lip was added on the inside

HOT DIP GALVANIZERS ASSOCIATION SOUTHERN AFRICA

Findings

In this case study, a site visit and inspection of the building was undertaken 10 years after construction. Reporting back our findings, not only in terms of the coatings longevity, but also highlight a few areas on the building that due to construction imperfections and nature requires some premature roof and fascia maintenance.

One particular spot on the roof sheet on the North Wing of the building was concerning, however, we found that the discolouration on the roof sheet was as a result of an inappropriately coated fastener, which had corroded to a point that the corrosion products now dripped onto the roof sheeting and caused staining. The coating at the discoloured area, however, proved to be intact and measured more than 30µm.



A number of the original fasteners, which were unfortunately zinc electroplated, were showing signs of discolouration and rust

The hot dip galvanized coating in general was performing extremely well:
• Hot dip galvanized roofing steelwork and handrails.
• Hot dip galvanized entrance signage.
• Hot dip galvanized visitor's signage – the electroplated shackles were showing signs of rusting.

HOT DIP GALVANIZERS ASSOCIATION SOUTHERN AFRICA

Conclusion

One of the major benefits of using a metallic zinc coating no matter how applied is the ability to estimate service life performance. This is calculated by measuring the mean hot dip galvanized coating thickness and comparing that with the corrosion rate figures given in ISO 9223, EN ISO 14713-1:2009 or even the Associations Information sheet No 8, available from our web site. (www.hdgasa.org.za)

When using a zinc coating system, it is a fundamental that service life is proportional to its thickness. “The thicker the coating the longer the service life”. It follows that the thinner zinc electroplated coatings on the various screws highlighted, should be suitably cleaned and touched up with an appropriate paint, to ensure a longer durable life span.

The hot dip galvanized coating on both the structural steel as well as the roof and side cladding after 10 years of exposure to the atmosphere in East London, is sound and will not require any refurbishment or replacement for many years to come!

The visitor’s sign was also hot dip galvanized as this was the central theme of the establishment