SUSTENTABILIDADE
Longevidade e estética para obras em estruturas metálicas

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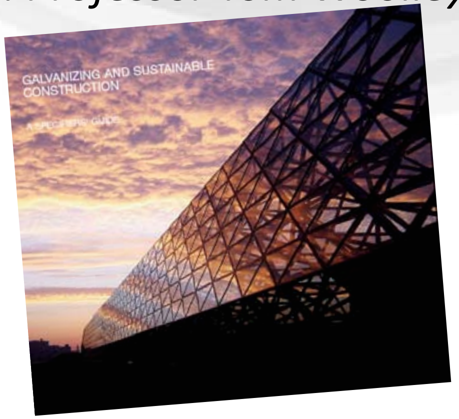
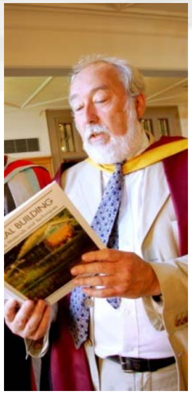
EGGA

"The long-term durability provided by galvanizing is achieved at relatively low environmental burden in terms of energy and other globally relevant impacts, especially when compared to the energy value of the steel it is protecting"

Galvanizing and Sustainable Construction: A Specifiers' Guide (2008)

Editor: Professor Tom Woolley (Architect and 'Green Building' activist)





EU Construction Products Regulation (2011)

<u>7. Sustainable use of natural resources</u>

The construction works must be designed, built and demolished in such a way that the use of natural resources is sustainable and in particular ensure the following:

(a) reuse or recyclability of the construction works, their materials and parts after demolition;

(b) durability of the construction works;

(c) use of environmentally compatible raw and secondary materials in the construction works.

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(c) use of environmentally compatible raw and secondary materials in the construction works.

Durability

- For hot dip galvanizing – long-term durability is a proven fact.
- Accelerated testing and estimations are unnecessary
- 'Case history' projects demonstrate durability in a range of environments

The Importance of Case History Data for Galvanized Structures

- Zinc corrosion performance is predictable
- Extensive database of performance galvanized structures worldwide
- Reliability and confidence for designers and users

Galvanizing Case History

Stainsby Hall Bridge

Cleveland

United Kingdom

EGGA

Location of the Bridge

Semi-industrial environment, near the English industrial town of Middlesbrough

- Stainsby Hall Farm Access Bridge
- Cleveland A19/A174 interchange
- Erected in 1974

Construction Details

- 25 tonnes of structural steel beams
- Longest beam = 20 metres
- Original coating thickness = >150 µm*

*beams of this section thickness will typically exceed the minimum standard requirements (85 µm) in this way.

Detailed Inspection : 1998

- Visual Examination
- Coating Thickness Readings
- Adhesion Testing
- Analysis of Corrosion Products

Inspection conducted by
Scott Wilson Kirkpatrick Engineers
and Steel Protection Consultancy

<u>Web and underside of top flange</u>

- Spangled appearance evident
- Dirt contamination but no zinc salts

End of beam in contact with concrete

- No signs of rusting near contact points

After 24 years – still more coating left than required by the original standard!

Lower face of bottom flange (over road)

- Build-up of zinc salts
- Average zinc coating of 101 µm

Stainsby Hall Bridge

- Predicted corrosion rate when built: 4 µm /year
- Actual average corrosion rate: 2-3 µm/year
- Corrosion rate observed agrees with EN ISO 14713 and site specific data
- Corrosion rate expected to decrease further with lower acidity of environment

Maintenance-free life time of >75 years is expected

Durability & Sustainability

SOCIAL

No congestion from road closures for maintenance

GALVANIZING

75 Years Maintenance-free structure life

ECONOMIC

Reduced life cycle costing for governments

ENVIRONMENTAL

Reduced pollution from congestion

Reduced energy and emissions from maintenance painting