Hot-Dip Galvanizing for Corrosion Protection

An Online Continuing Education Course for Engineers

Course Number: MA-3002

Credit: 3 Hours / 3 PDH / 3 CPD

Hot-Dip Galvanizing for Corrosion Protection (3 hours)

Introduction

Hot-Dip Galvanizing for Corrosion Protection is presented by the American Galvanizers Association (AGA). Founded in 1935, the AGA has remained the first and last source of information for the hot-dip galvanizing industry. One of the AGA's primary missions is to provide information and assistance to the specifying community on topics such as specification interpretation, project applications, design issues, and any technical research or support that may be required.

In addition to this course, you are encouraged to take advantage of the following free resources and services that will make the job of designing and specifying a corrosion protection system much easier:

Specification Hotline

Architects, engineers, fabricators, and specifiers throughout North America can call with any questions pertaining to hot-dip galvanizing after fabrication and speak with an AGA technical representative. Call the AGA toll-free at 1-800-468-7732.

Literature and Library

If our technical representatives are unable to immediately answer your questions, they have access to an extensive library to research various technical topics, as well as different hot-dip galvanizing applications.

Galvanizing on the Web

The AGA website can be found at www.galvanizeit.org. There, you can get instant access to a wealth of technical information on hot-dip galvanizing, download or order the AGA's newest publications, and have access to a listing of member galvanizers, their kettle sizes, locations, phone numbers, etc. The website also has numerous links to members and other affiliated associations.

Galvanizing Insights

The association's specifier newsletter is designed and published specifically for you. Each issue focuses on major subjects pertinent to the industry; past issues have focused on reinforcing steel, painting over hot-dip galvanized steel, turnaround time, and coating appearance, to name a few. Register for a free subscription to *Galvanizing Insights* on the AGA's website, at www.galvanizeit.org/newsletter/.

If you have questions throughout this course, please contact the AGA technical department at aga@galvanizeit.org or call 800-468-7732.

Section 1: Tour of the City

Corrosion is an incessant and costly problem. A recent study funded by the FHWA (Federal Highway Administration), NACE International and CC Technologies determined the total direct cost of corrosion is $279 billion per year, or 3.2 percent of the U.S. gross domestic product (GDP). Indirect costs (to the users/society) such as traffic delays, lost business, wasted energy are estimated to be almost five to ten times the direct cost, meaning the overall cost to society could be as high as 30 percent of the GDP.

The following is a corrosion tour of the city. Here you will see things you cross paths with everyday and, most likely, take for granted as natural, unavoidable, uncontrollable sights.

Pictured here is an obvious lack of maintenance of this corrosion prevention system — leading to ultimate project failure with apparent safety concerns.

This is a very common sight — the complete failure of parking blocks due to unprotected reinforcing steel corroding.

This sign says “IRS Problems,” but it clearly indicates “Corrosion Problems!” This sign shows the common occurrence of corner and edge corrosion, where, with a barrier corrosion protection system such as the one seen here, the paint tends to be thinner.

This painted railing shows severe red-rust clumping. Not only is this unsightly, but it is extremely hazardous because the rusting is so extensive the railing is completely deteriorated in many locations.

This series of photos depicts two different corrosion situations: First, the concrete steps show staining and cracks in different areas. In the third photo, it is apparent the concrete was patched, which is an obvious repair of spalled concrete. Unfortunately, the patched area has stained and cracked again. Second, while it's difficult to see in the photos, the railing going up the steps is painted-over black steel with visible blistering, peeling, and rusting.

Here is d base plate and fastene lvanized pole — it looks

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Last on our ci corroded beam from the famous Williamsburg Bridge — located in New York City and built in 1903. When this photo was taken, the bridge was still in use and traveled daily by over 100,000 vehicles; the lower level also accommodated train traffic. After more than 30 instances of this extensive corrosion were identified, the bridge was closed. The direct cost of the repair soared to over $750 million. The indirect costs are even more expansive: the loss of productivity due to the resultant traffic congestion, the loss of income by the businesses in the affected area, and the environmental impact from blasting are estimated to exceed the bridge repair's direct costs by about ten times or close to $7.5 billion.