HOT-DIP GALVANIZING

Building Bridges That Last

How galvanized steel and smart design delivered 31 rural Missouri bridges — and what it means for your next project

AZZ Galvanizing – St. Louis

Sales Manager | SSSBA / AGA Summer Webinar Series

WEBINAR OVERVIEW

What we'll cover

01 **The corrosion challenge**

Why infrastructure durability is a nationwide budget problem for DOTs.

02 **Galvanizing vs. the alternatives**

How hot-dip galvanizing compares to paint, weathering steel, and concrete.

03 **The impact of steel design**

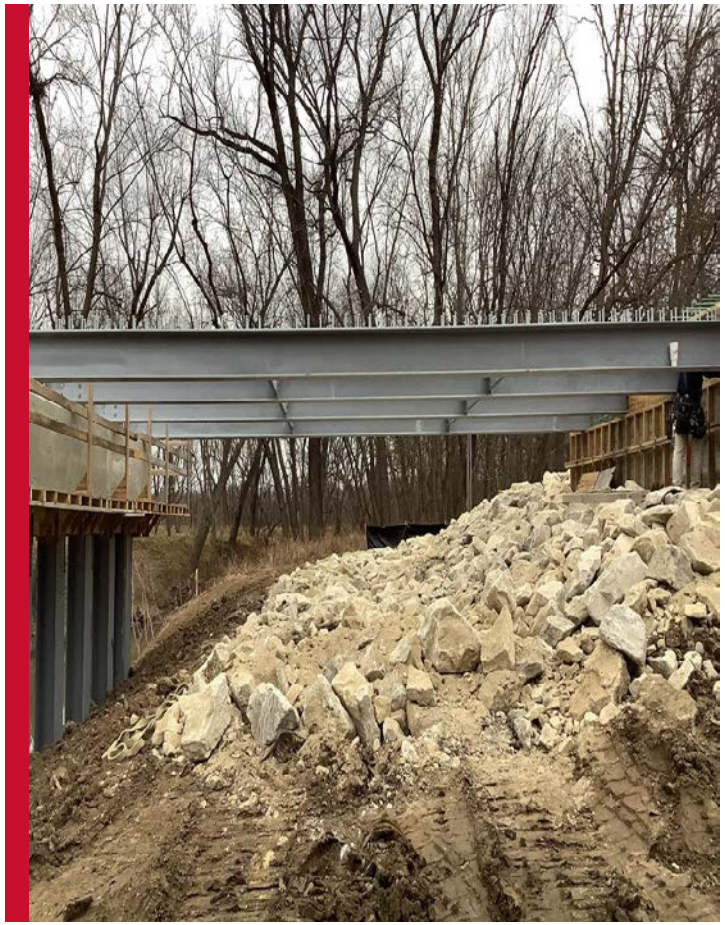
How the SDCL method simplifies fabrication and pairs perfectly with galvanizing.

04 **Up to 94-foot girders**

AZZ's capability to galvanize the largest bridge members.

05 **Case study: the FARM Bridge Program**

31 bridges, 527 tons, one durable solution.



THE CHALLENGE

Corrosion is a persistent, costly threat

State DOTs must stretch limited budgets across aging structures — many weight-restricted, in poor condition, and overdue for replacement. The coating decision made today determines the maintenance burden for the next 75+ years.

$26M

budget target MODOT set to replace dozens of rural county bridges

75+ yrs

maintenance-free service life from hot-dip galvanizing

527 tons

of steel components hot-dip galvanized for durability

The question isn't whether to protect the steel — it's which method delivers the lowest lifetime cost.

WHY GALVANIZING

Hot-dip galvanizing vs. the alternatives

	Galvanizing	Painted steel	Concrete
Corrosion resistance	**Preferred — zinc-iron alloy**	Good, but degrades	Rebar can corrode
Maintenance	**None for decades**	Periodic recoating	Spall / patch repair
Life-cycle cost	**Lowest**	Higher (recoats)	Higher (repairs)
Field damage	**Self-healing zinc**	Chips & rusts	Cracks under load
Install speed	**Ready on delivery**	Cure / touch-up	Long cure times

On the FARM Bridge Program, competing proposals used steel-and-concrete or all-concrete designs. Hot-dip galvanized steel won on durability and lifetime cost.

THE ECONOMIC CASE

Lowest life-cycle cost, lowest disruption

1

No coating maintenance

Galvanized steel requires no repainting over its service life — eliminating recurring crew, traffic-control, and material costs.

2

Decades of protection

The zinc-iron alloy bonds to the steel and resists abrasion and impact, delivering 75+ years of maintenance-free service in rural exposure.

3

Less commuter disruption

Durable structures and faster installation kept traffic moving — MODOT maintained access to half of each bridge during replacement.

4

Predictable budgets

One upfront coating decision removes the unpredictable repair cycles that drive up the true cost of painted or concrete structures.

THE IMPACT OF STEEL DESIGN

Simpler steel, built for galvanizing

The Simple for Dead Load / Continuous for Live Load (SDCL) method uses rolled beams instead of complex plate girders — a design that's faster to fabricate and ideal for hot-dip galvanizing.

- **Rolled beams, not plate girders**

  No flange cutting or flange-to-web welds to complicate the coating.

- **No bolted field splices**

  Cleaner members dip uniformly and install faster.

- **Optimized for a uniform coating**

  Fabricator and galvanizer collaborate on venting, drainage, and masking for field welds.

- **Maximized material efficiency**

  Less steel, lower cost, and enhanced durability — without sacrificing strength.

AZZ CAPABILITY • JOLIET, ILLINOIS

Galvanizing girders up to 94 feet

Bridge members are among the largest steel pieces a galvanizer will ever handle. AZZ's Joliet, Illinois facility has the kettle capacity, crane systems, and progressive-dip expertise to coat full-length girders that many shops simply can't.

94 ft

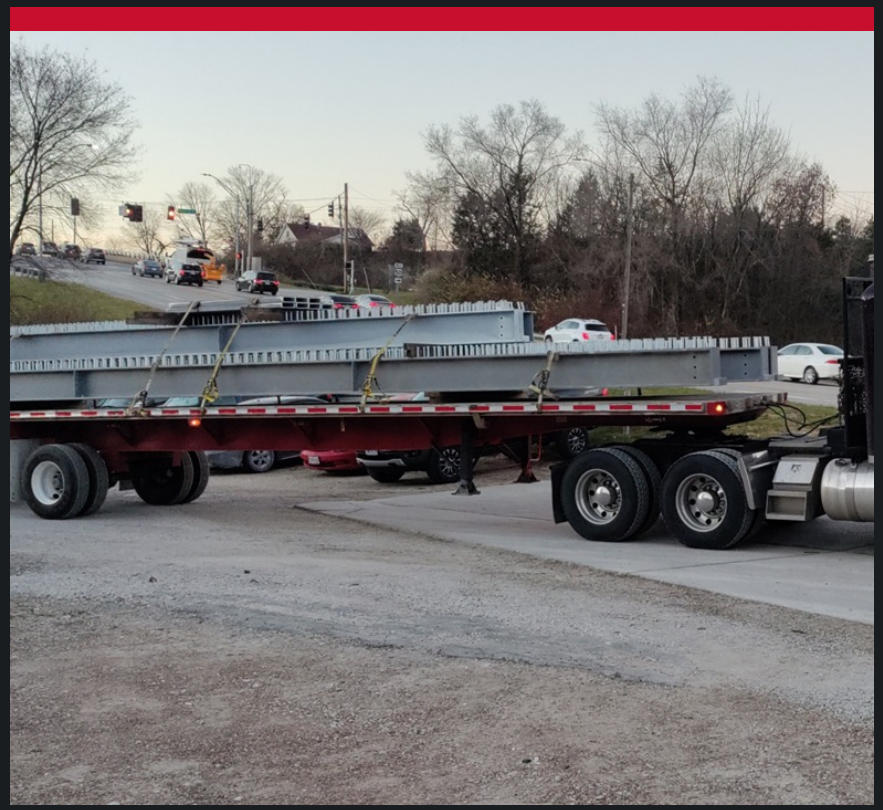
Maximum girder length the Joliet facility can hot-dip galvanize

88 ft

Longest girder Joliet has dipped to date on a bridge project

1 partner

Fabrication-to-coating coordination on venting, drainage & masking



AZZ's St. Louis plant galvanized the FARM Bridge Program; for the longest members, the Joliet, Illinois facility can hot-dip galvanize girders up to 94 feet long.

CASE STUDY

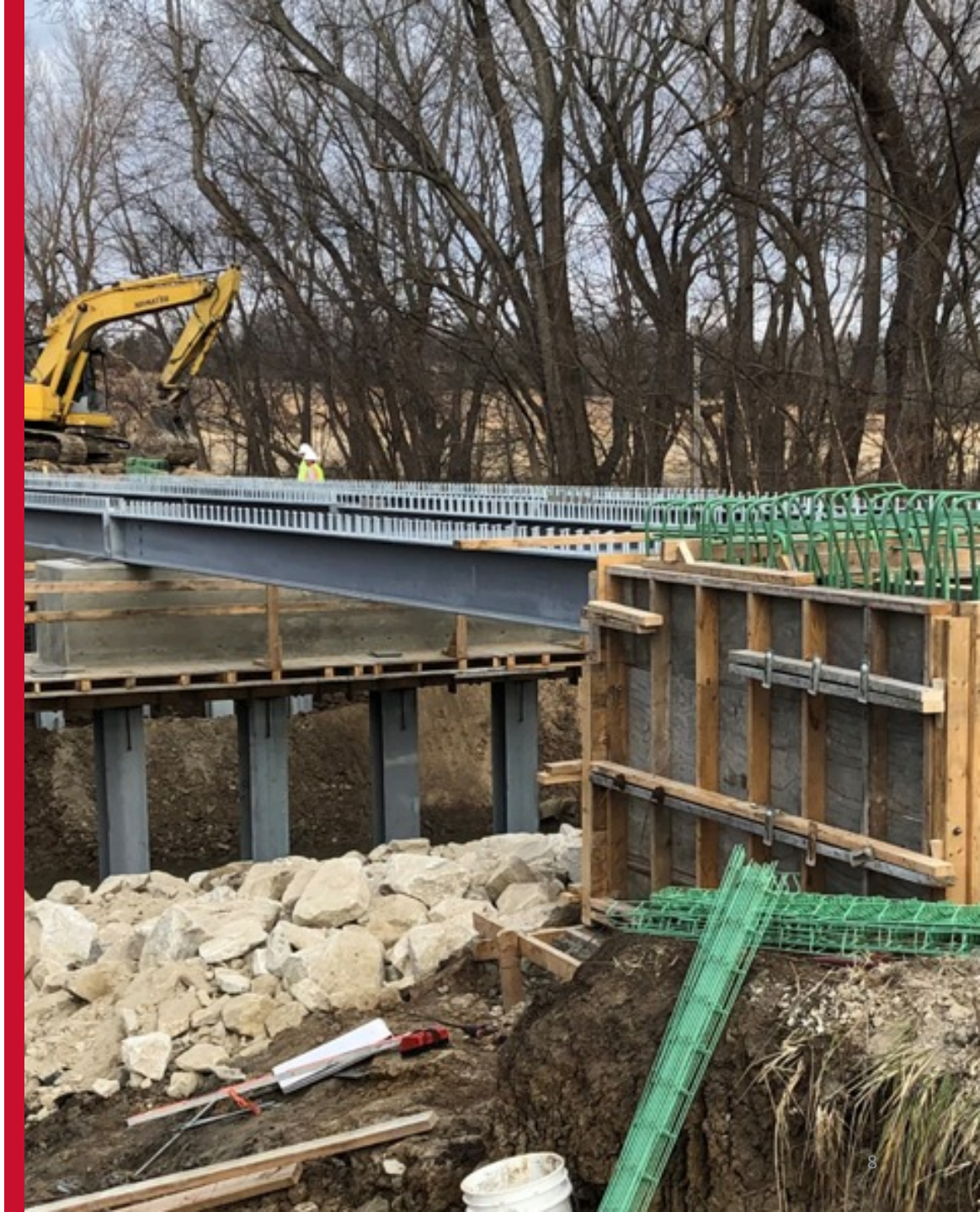
Fixing Access to Rural Missouri

The FARM Bridge Program

MODOT set out to replace dozens of weight-restricted, timber-pile bridges across rural counties — all in poor condition and carrying two-way traffic on a single lane. The solution centered on hot-dip galvanized, steel-supported structures fabricated by DeLong's, Inc.

Galvanizer AZZ Galvanizing – St. Louis

Fabricator DeLong's, Inc.



CASE STUDY • IN DEPTH

Why galvanized steel won the FARM bid

The design decision

DeLong's Vice President of Engineering, Gary Wisch, and his team addressed MODOT's concerns about corrosion protection and durability. Competing proposals mixed steel and concrete or went all-concrete — DeLong's stood out by using only hot-dip galvanized steel, guaranteeing superior corrosion resistance and significantly longer structure life.

Built for galvanizing

- Designs optimized for a uniform zinc coating
- Specific surfaces masked for safe field welding
- Material staged so half of each bridge stayed open

SPOTLIGHT

Hoover Creek Bridge

Macon County • Missouri Route Y

115 ft
bridge length

21 tons
total structure weight

12
main girders

15
channel diaphragms

Located roughly 100 miles north of DeLong's Jefferson City headquarters.

FARM BRIDGE PROGRAM

The results, by the numbers

31

bridges replaced

27

steel-supported structures

527

tons of galvanized steel

115 ft

longest single bridge span

$26M

program budget met

HDG

galvanized throughout

HOW IT CAME TOGETHER

A galvanizer–fabricator partnership

01

Design for galvanizing

DeLong's engineering and AZZ optimized member designs for venting, drainage, and a uniform zinc coating from the earliest planning stages.

02

Mask for field welds

Specific steel surfaces were masked so crews could safely and efficiently field-weld connections without compromising the coating.

03

Stage & deliver

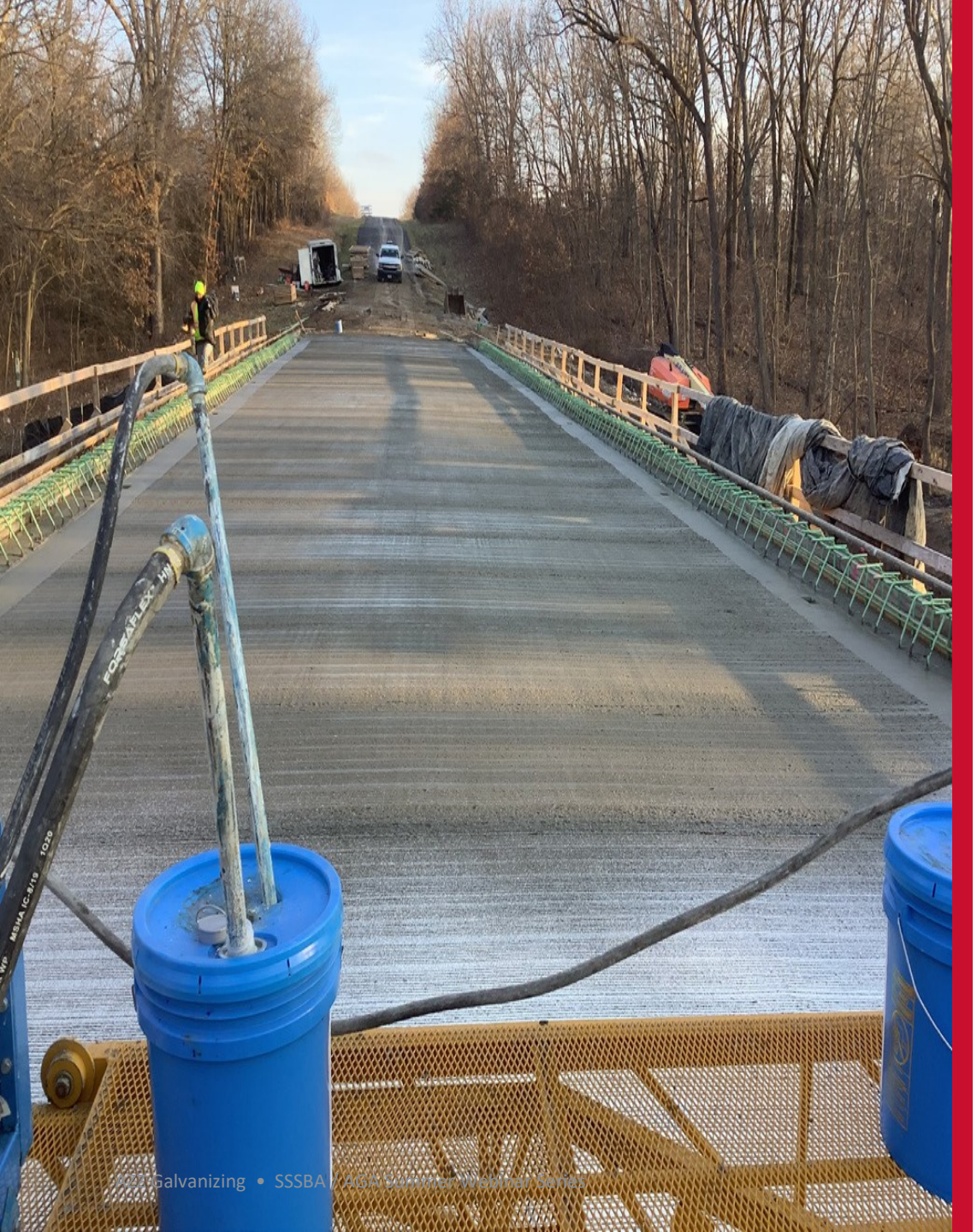
Meticulous material staging let MODOT keep half of each bridge open — minimizing commuter disruption throughout construction.

04

Install & last

Galvanized members arrived ready to erect, meeting tight timelines and setting up 75+ years of maintenance-free service.

Together, the team turned a tight-budget mandate into a model other DOTs now study.



THE TAKEAWAY

A new benchmark for rural infrastructure

- Hot-dip galvanizing delivered superior corrosion resistance and the lowest life-cycle cost.
- SDCL design simplified fabrication and paired perfectly with galvanizing.
- Galvanizing capacity for girders up to 94 ft kept full-length members in steel.
- The project exceeded expectations and is now presented at industry conferences nationwide.

Let's protect your next project

From single spans to 94-foot girders, AZZ Galvanizing delivers the corrosion protection, capacity, and partnership that make galvanized steel the smart long-term choice.

AZZ Galvanizing – St. Louis

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AGA REFERENCE

Hot-dip galvanized steel bridges

This seminar content was developed by the American Galvanizers Association (AGA) to introduce the basics of hot-dip galvanized (HDG) steel bridges.

- **Proven for generations**

  HDG steel has been used in bridge designs for decades as an economical, long-lasting protection system.

- **Life with minimal maintenance**

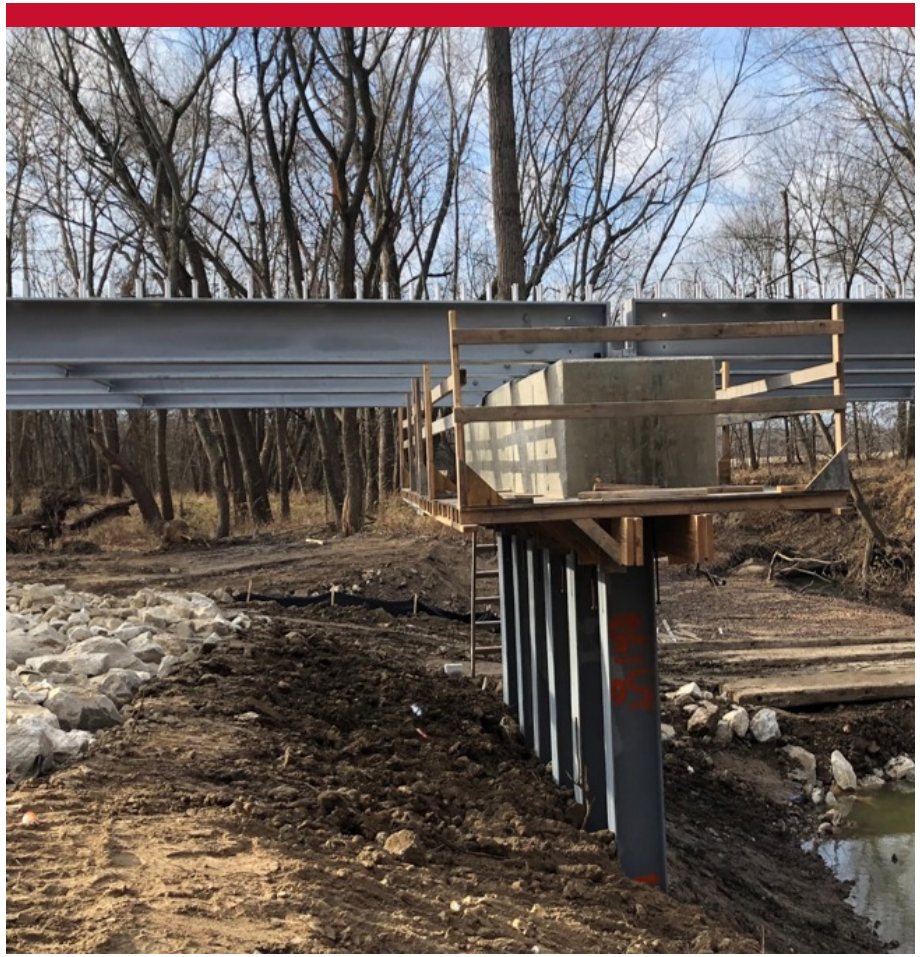
  Galvanizing affords designers the service life and low upkeep they want from a coating system.

- **Best practices matter**

  Design and service-environment best practices ensure the highest-quality, longest-lasting galvanized bridges.

- **Know benefits and limits**

  Understanding both helps engineers evaluate whether HDG is the right solution for a given project.



AGA REFERENCE

About the American Galvanizers Association

The AGA is a non-profit trade association dedicated to serving after-fabrication hot-dip galvanizers, fabricators, architects, engineers, and other specifiers. It provides technical support on innovative applications and state-of-the-art developments in hot-dip galvanizing for corrosion control.

Galvanizers & fabricators

Technical resources for after-fabrication HDG.

Architects & engineers

Design and specification guidance.

Specifiers

Support evaluating HDG for corrosion control.

A registered continuing-education provider supporting architects and engineers nationwide.

AGA REFERENCE

Purpose & learning objectives

Purpose: to educate architects, engineers, and other specifiers on the successful specification, design, and inspection of hot-dip galvanizing on steel bridges.

Upon completion, you will be able to:

1

Understand the process

Know how the hot-dip galvanizing process works.

2

Identify why specifiers choose HDG

Corrosion protection, durability, availability, versatility, longevity, sustainability, and aesthetics.

3

Design for galvanizing

Employ effective bridge design practices that facilitate the use of HDG steel.

4

Inspect & repair

Conduct proper inspection and repair of HDG steel bridges.