Building for the Future: Corrosion Protection Systems for Steel Bridges

International Bridge Conference

July 15, 2025

Pittsburgh, PA

www.shortspansteelbridges.org

Short Span Steel Bridge Alliance

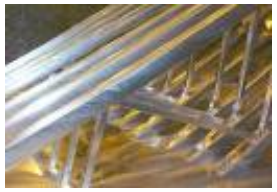
SHORT SPAN STEEL
BRIDGE ALLIANCE™

A group of **bridge** and **buried soil structure** industry leaders who have joined together to provide **educational information** on the design and construction of short span steel bridges in installations up to **140 feet in length**.

Membership

Producers

Fasteners



Coaters

Service Centers

Fabricators

SHORT SPAN STEEL BRIDGE ALLIANCE™

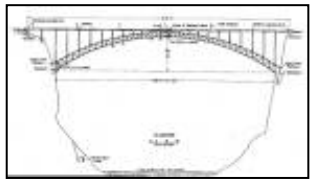
American Galvanizers Association

NCSPA

American Iron and Steel Institute

NSBA

Trade Organizations



Design Firms

Contractors

NACE

Bridge Owners

Universities

Short Span Steel Bridge Solutions

Buried Bridges

Rolled Beam & Plate Girders

Press-Brake-Formed Tub Girders

Truss Bridges

What Do We Provide?

- Education
  - Workshops, Webinars, Newsletter
- Technical Resources
  - Standards, best practices, case studies
  - Coating Solutions
- Simple Design Tools (eSPAN140)
- Project Assistance
- Find a Supplier
- Networking / SSSBA Sem-Annual Meeting

Corrosion Protection Systems Overview

Which protective system is best for a bridge?

Any may be most suitable considering:

- Environmental Conditions
- Life Cycle Performance and Life Span
- Maintenance and Inspection Considerations
- Initial Costs and Life Cycle Costs
- Size of Bridge Components
- Aesthetics

Today's Session

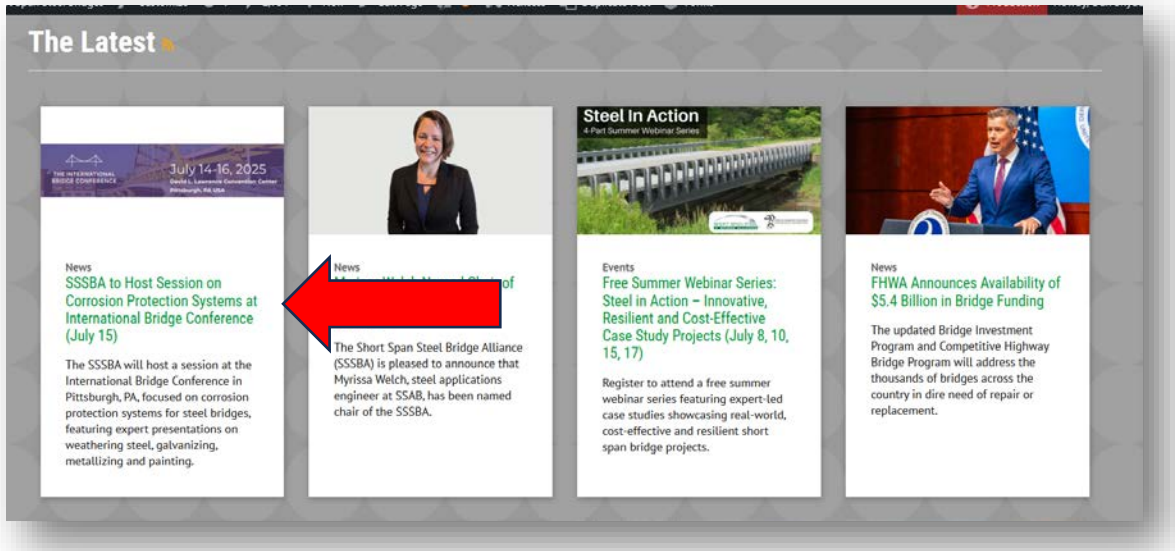
Industry Experts:

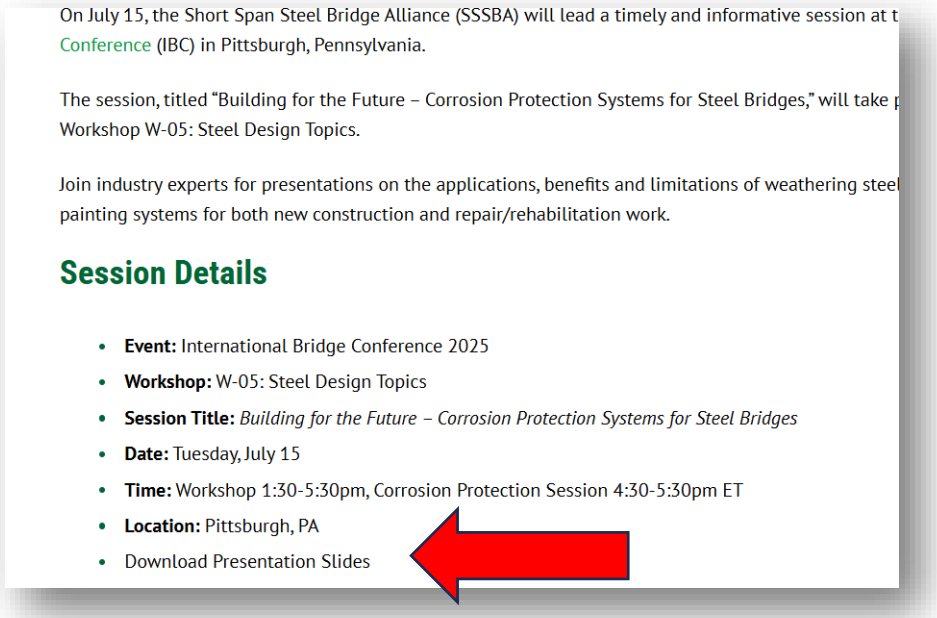
- **Weathering Steel:** Brandon Chavel, National Steel Bridge Alliance
- **Galvanizing:** John Krzywicki, American Galvanizers Association
- **Metalizing:** Ben Bristol, Industrial Steel Construction
- **Painting:** Derrick Castle, Sherwin-Williams

- Advantages / Challenges
- New Construction & Repair/Rehab
- Case Studies & Examples
- Future Trends

Download Slide Deck

Go to: https://www.shortspansteelbridges.org/





https://www.shortspansteelbridges.org/ibc-2025/

Uncoated Weathering Steel

Brandon Chavel, PhD, PE
Vice President - Bridges
American Institute of Steel Construction / National Steel Bridge Alliance
E-mail: chavel@aisc.org
Phone: 312.805.2137

Workshop W-05

Uncoated Weathering Steel Overview

- **What is weathering steel?**
  - **Gr 50W and HPS 70W**
  - **Contain small amounts of copper, phosphorus, chromium, nickel, and silicon to attain their weathering properties.**
  - **Facilitate protective oxide layers called “PATINA”.**
  - **Patina is essentially an oxide film of corrosion by-products about the same thickness as a heavy coat of paint**

Uncoated Weathering Steel Overview

- **What is weathering steel?**
  - **As corrosion continues, a protective barrier layer forms that greatly reduces further access to oxygen, moisture, and contaminants.**
  - **This stable barrier layer greatly resists further corrosion, reducing it to a low value.**
  - **Weathering steel bridges initially look orange-brown in color.**
  - **The color will darken as the patina forms.**

Image credit: Google Maps

Uncoated Weathering Steel Overview

- **Example:**
  - **Exchange Street, Akron, Ohio. This bridge is UWS, built in 1973, and still maintains a superstructure condition rating of 7 (out of 10)!**

Image credit: Google Maps

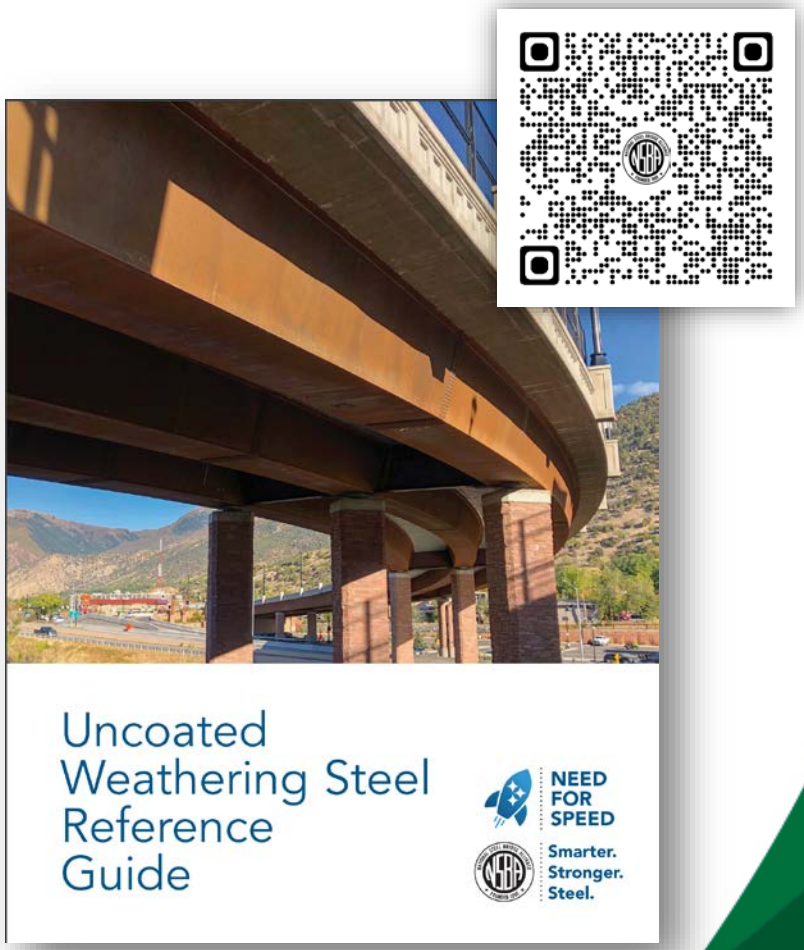
Uncoated Weathering Steel Overview

- **Example:**
  - **96th Street over I-69, Indianapolis. This bridge is UWS, more than 50 years old in rated good condition over interstate traffic.**

Image credit: Google Maps

Uncoated Weathering Steel Reference Guide

- Purpose of the Guide
- Overview of Content
- Benefits of UWS
- When to use UWS
- Detailing for UWS
- Aesthetic guidance



aisc.org/uwsguide

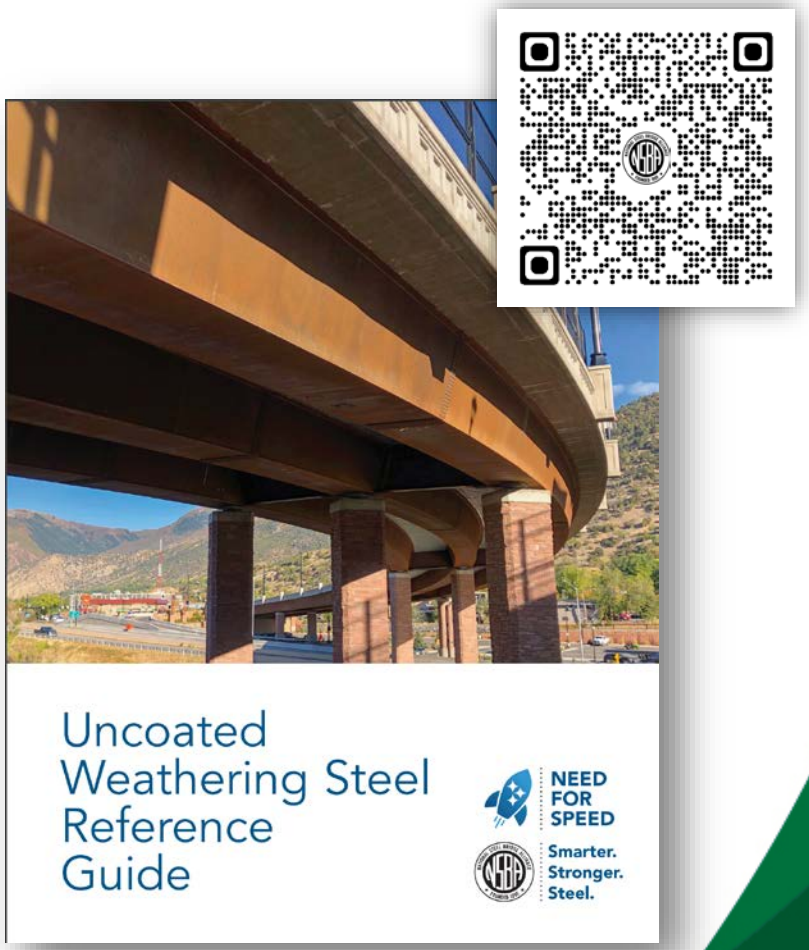
Uncoated Weathering Steel Reference Guide

- **Sponsored by AISC/NSBA**

- **Research team:**

    - **Univ. of Delaware**
        - **Dr. Jennifer McConnell**

    - **Modjeski and Masters**



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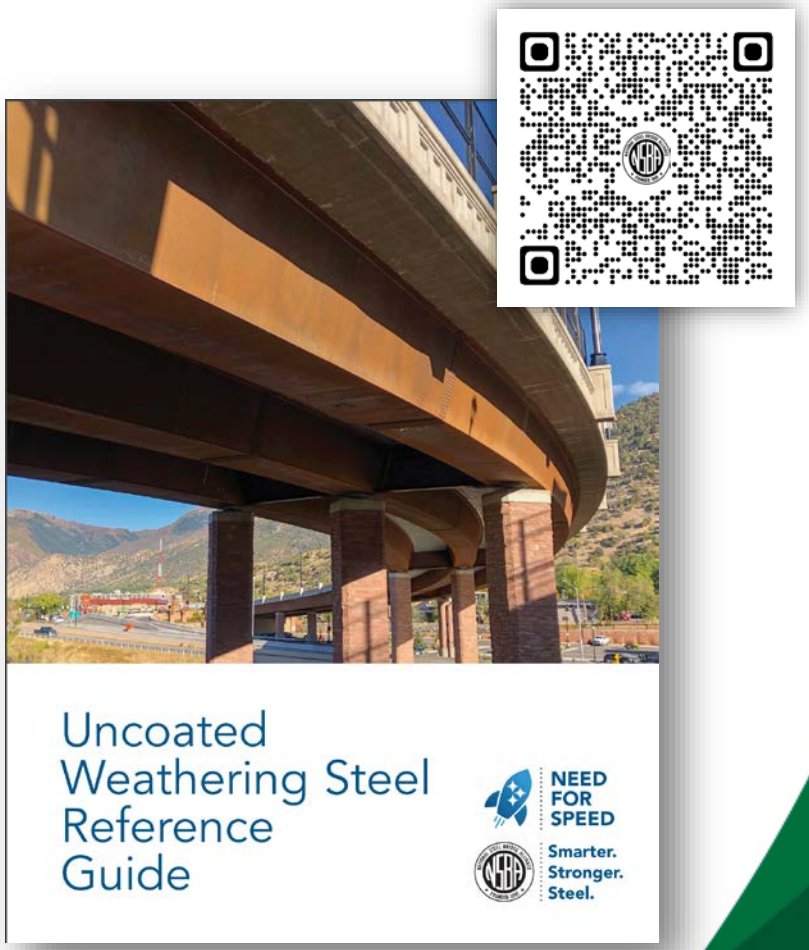
Uncoated Weathering Steel Reference Guide

- **Purpose of the Guide**
  - **Need for broad guidance and collection of best practices**
  - **Little published guidance on when and how to use Uncoated Weathering Steel**
  - **FHWA Technical Advisory (TA) is old (1989)**
  - **Owners and designers need basis for determining when use of UWS is appropriate**
  - **Guide is being turned into an AASHTO/NSBA Steel Bridge Collaboration document that will be used to replace FHWA TA.**

Uncoated Weathering Steel Reference Guide

- Guide Content
  - Chapter 1 – Introduction
  - Chapter 2 – Design Recommendations
  - Chapter 3 – Fabrication and Construction
  - Chapter 4 – In-Service Inspection
  - Chapter 5 – Maintenance
  - Chapter 6 – Repair and Rehabilitation

  - Recommendations given as minimum requirements, and improved performance



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Uncoated Weathering Steel Reference Guide

- Advantages of Uncoated Weathering Steel
  - Cost-effective solution for initial construction
    - No coatings applied in the fabrication shop
  - Reduced future maintenance costs
    - No re-application of coatings in the field
  - Aesthetics
    - Natural appearance
  - Needs to be used in appropriate environment

Uncoated Weathering Steel Reference Guide

- Design Recommendations
  - When to use UWS, and when to proceed cautiously

  - Macro-environment
    - High Time of Wetness environments
    - Coastal environments

  - Micro-environment
    - Deicing salt / tunnel-like situation
    - Low vertical clearance over water
    - Vegetation / shelter

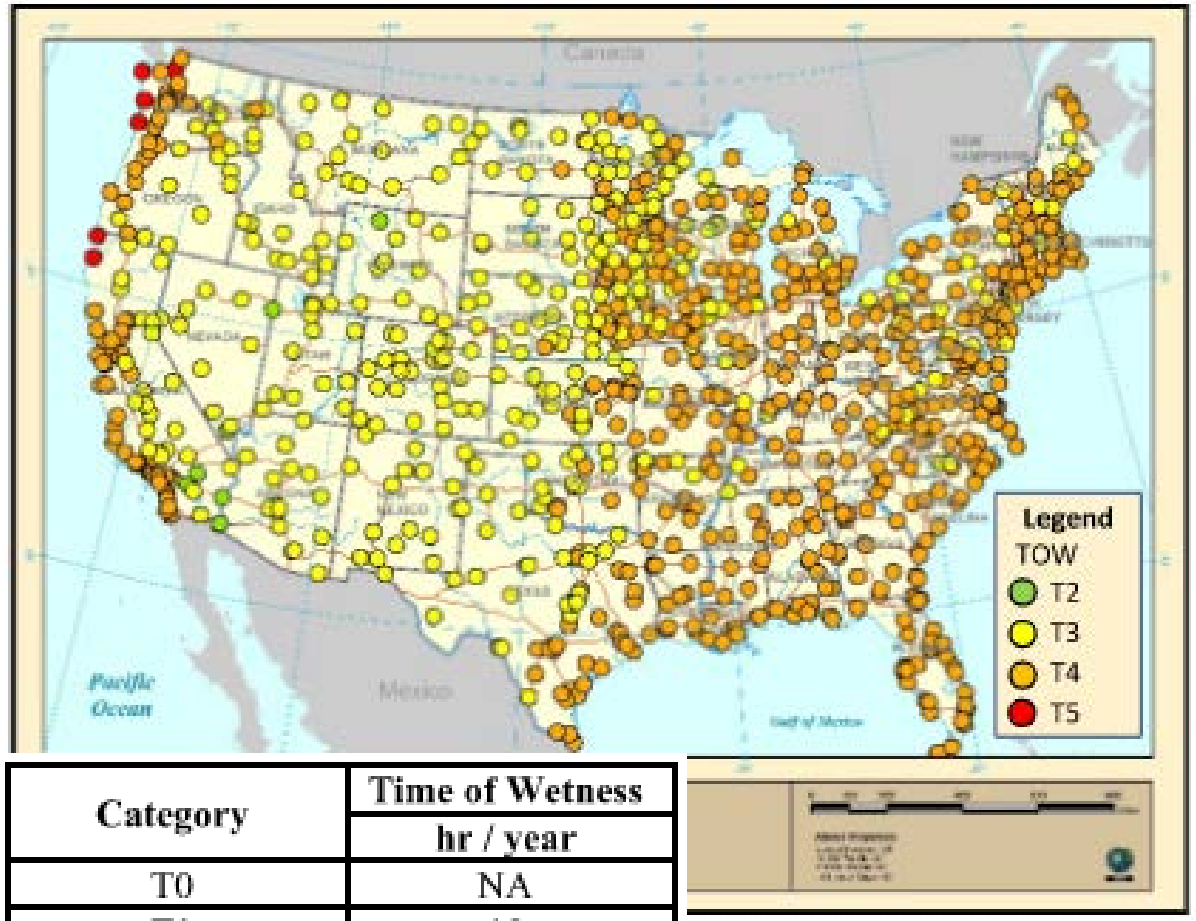
Uncoated Weathering Steel Reference Guide

- **Tables of UWS Use**

Micro-Environment	Macro-Environment		
	All Others	High Time of Wetness	Coastal
All Others	UWS is ideal choice	Use UWS thoughtfully	Use UWS thoughtfully
Highway Crossings with Extreme Salt Use	Use UWS thoughtfully	Use UWS thoughtfully	Use UWS thoughtfully
Water Crossings with Low Vertical Clearance	If minimal vegetation, use UWS thoughtfully; if dense vegetation, UWS not recommended	UWS not recommended	UWS not recommended
Sites with Dense Vegetation or Shelter	UWS is ideal choice, if vegetation can be maintained and, for water crossings, adequate vertical clearance over water provided	UWS not recommended	Depending on severity, UWS not recommended or UWS with sacrificial thickness recommended

Uncoated Weathering Steel Reference Guide

- Time of Wetness
  - Quantitative measure of time where atmospheric conditions are favorable for moisture to form on the surface of a metal or alloy.
  - When relative humidity is greater than 80% and the temperature is above freezing (32°F, hours/year).



Category	Time of Wetness hr / year
T0	NA
T1	10
T2	250
T3	2500
T4	5500
T5	>5500

Uncoated Weathering Steel Reference Guide

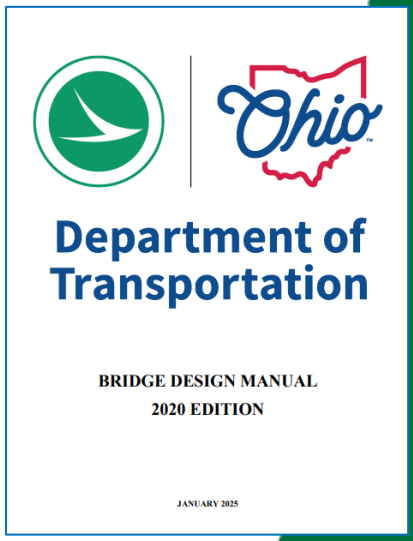
- Mico-environments
  - Low clearance waterways – current guidance thought to be conservative
  - Tunnel-like environments – understanding is evolving*
  - Heavy deicing salts + high traffic counts
  - Dense vegetation around superstructure

Ohio DOT's take on UWS and "tunnel like"

- ODOT BDM 308.2.2.1.d
  - UWS is primary system

  - Use a coating system when ALL of these are met:
    - A. Vertical clearance is 20-ft or less
    - B. ADT is 50,000 or larger
    - C. ADTT is 20% or more

  - Tunnel like, when ALL these are met:
    - A. Vertical clearance is 20-ft or less
    - B. Bridges over interstates or four lane divided highways
    - C. ADTT = 10% or more under the bridge
    - D. Posted speed limit under the bridge is 55 mph or greater



Ohio DOT's take on UWS and "tunnel like"

- **ODOT BDM 308.2.2.1.d**
  - **When "Tunnel like" – coat fascia girder**

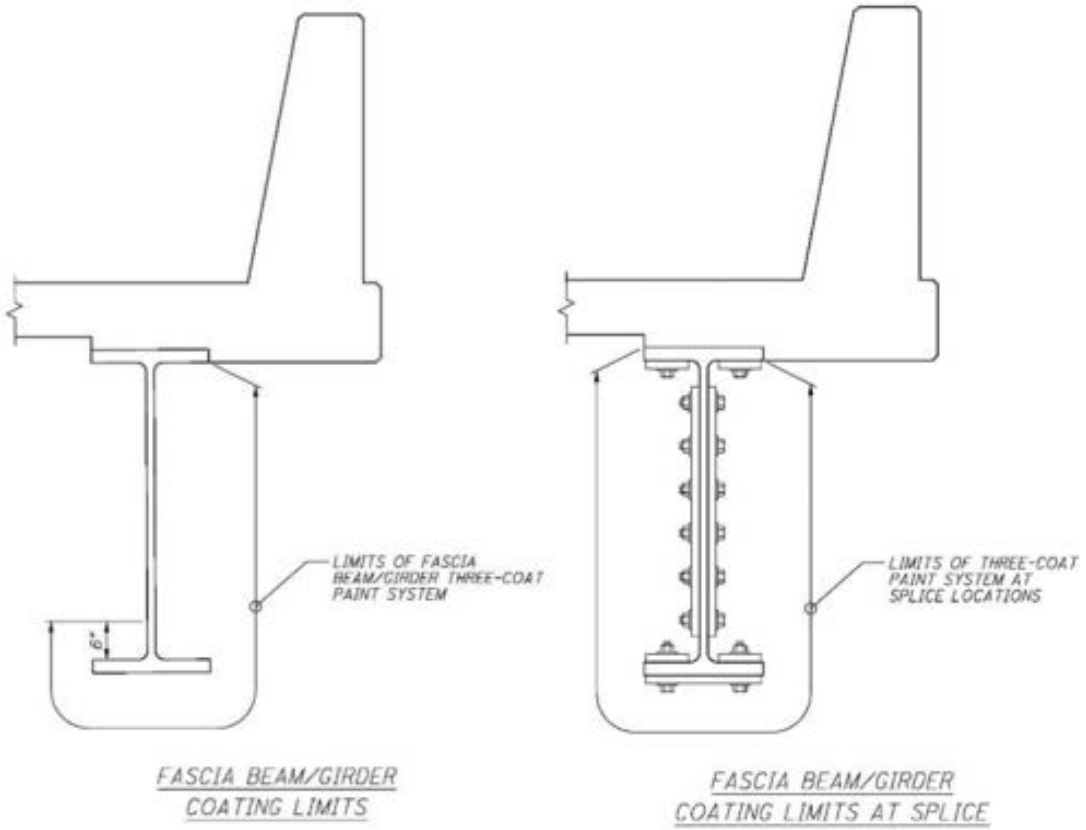
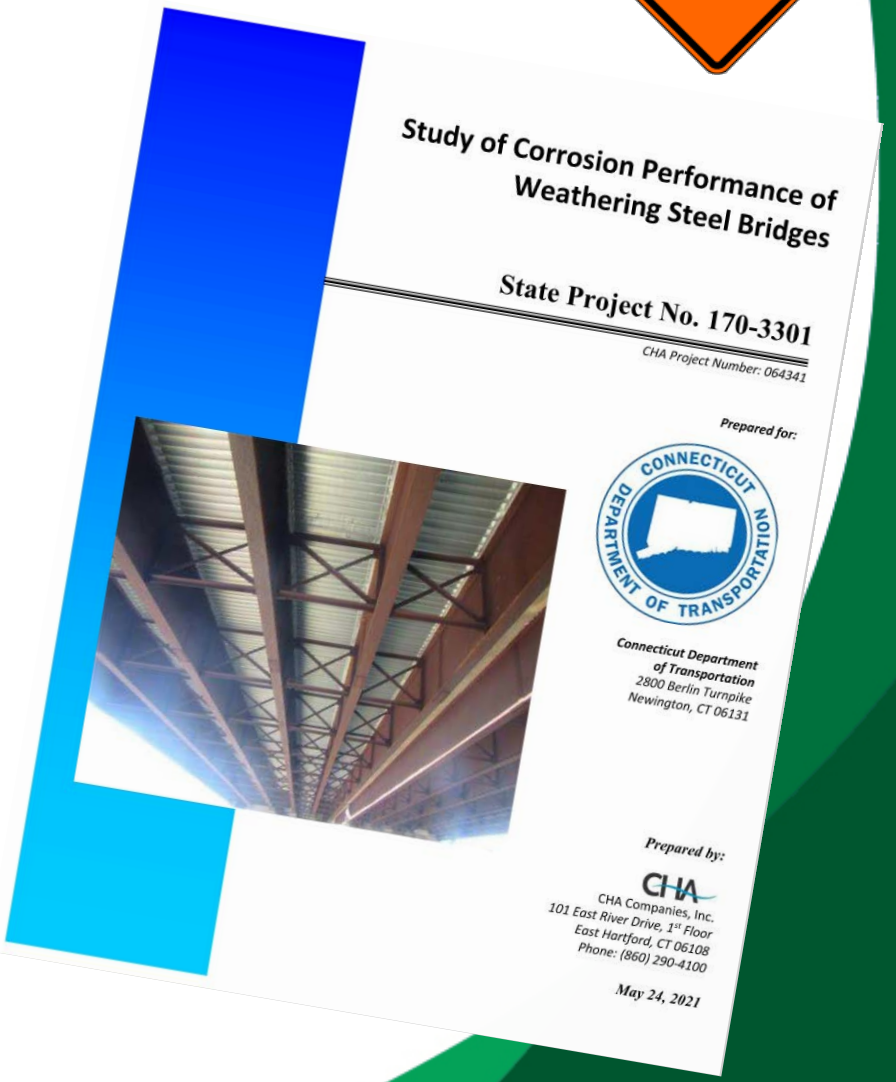


Figure 308-1

Image credit: Google Maps

Connecticut Study

- UWS Study
  - Considered 138 UWS bridges
  - Bridges with older details have some issues
    - Expansion joint leaks
    - Average section loss of 0.093”, or greater
  - Structures with newer details performing well
    - No Expansion Joints
      - Integral Abutments
      - Deck over backwall
    - Girder ends coated
  - General take away:
    - Issues result from leaky expansion joints and not so much salt spray from below


Study of Corrosion Performance of Weathering Steel Bridges

State Project No. 170-3301

CHA Project Number: 064341

Prepared for:

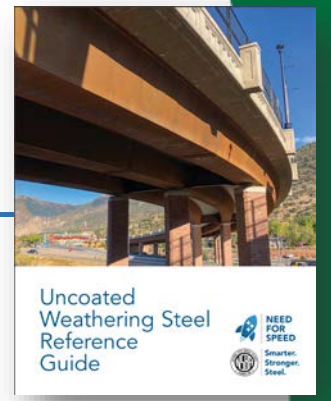
Connecticut Department of Transportation
2800 Berlin Turnpike
Newington, CT 06131

Prepared by:

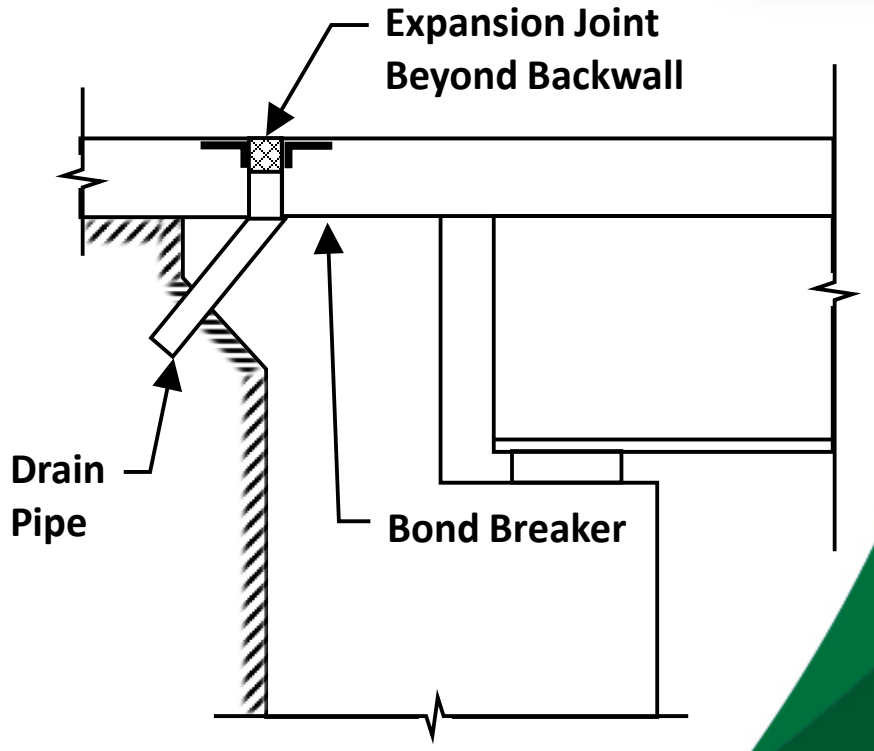
CHA Companies, Inc.
101 East River Drive, 1st Floor
East Hartford, CT 06108
Phone: (860) 290-4100

May 24, 2021

Uncoated Weathering Steel Reference Guide



- **Design Recommendations**
  - **Eliminate joints wherever possible!**
  - **Integral abutment jointless, semi-integral abutments, moving joints behind the back walls, link slabs, etc.**
  - **Attention needs to be paid to the drainage system**
  - **Experience is clear – water directly discharging on steel is bad!**



Uncoated Weathering Steel Reference Guide

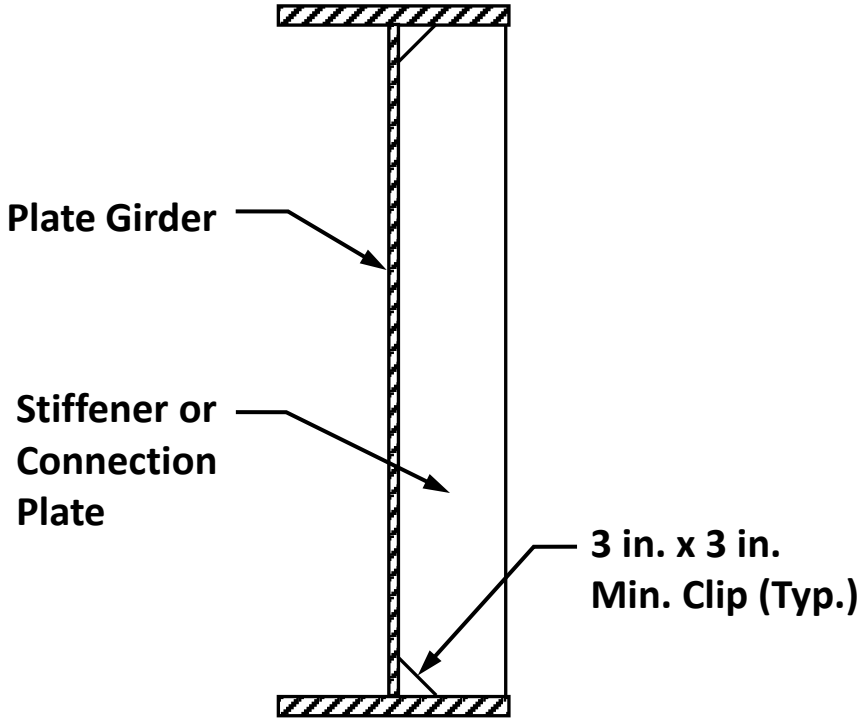
- **Details to Avoid Corrosion**
  - **UWS needs dry cycles to function properly**
  - **Trapped debris retains moisture**
  - **Continuous moisture prevents patina formation**


Image credit: Modjeski & Masters


Image credit: Modjeski & Masters

Uncoated Weathering Steel Reference Guide

- **Stiffener Clips**
  - **The larger the clip, the better for drainage control**
  - **Many states use 2” clips**
  - **3” may better to avoid clogging with debris**



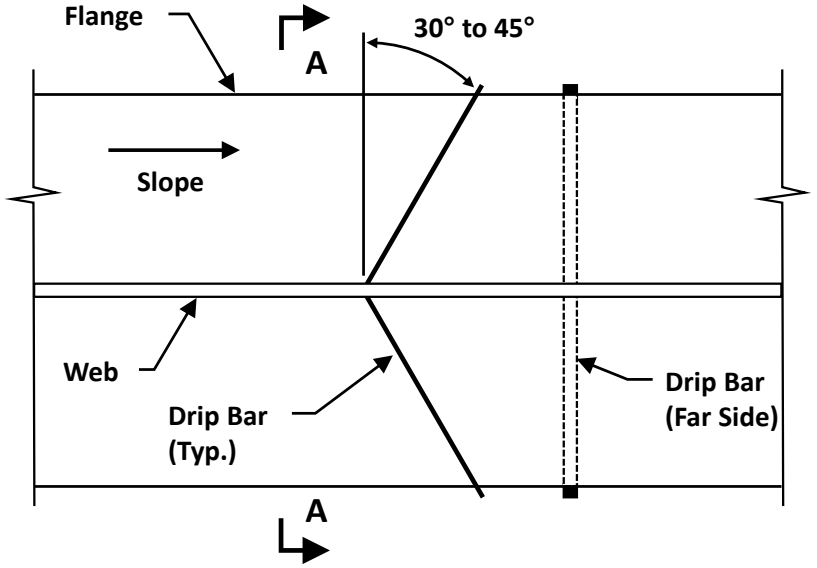
Uncoated Weathering Steel Reference Guide

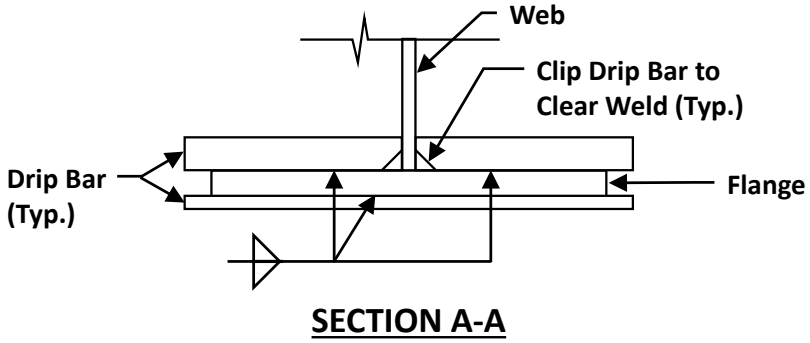
- Tactical Coating
  - Coating beam ends near joints is a common practice that has proven to be successful
  - Coating over interior piers sometimes performed
  - Beam ends encases in concrete should be painted – condensation and capillary action

Image credit: Modjeski & Masters

Uncoated Weathering Steel Reference Guide

- **Drainage Control**
  - **Water flowing down flanges can collect and cause damage, staining**
  - **Drip bars are one way of controlling this drainage**
  - **Welded, or bonded with epoxy**

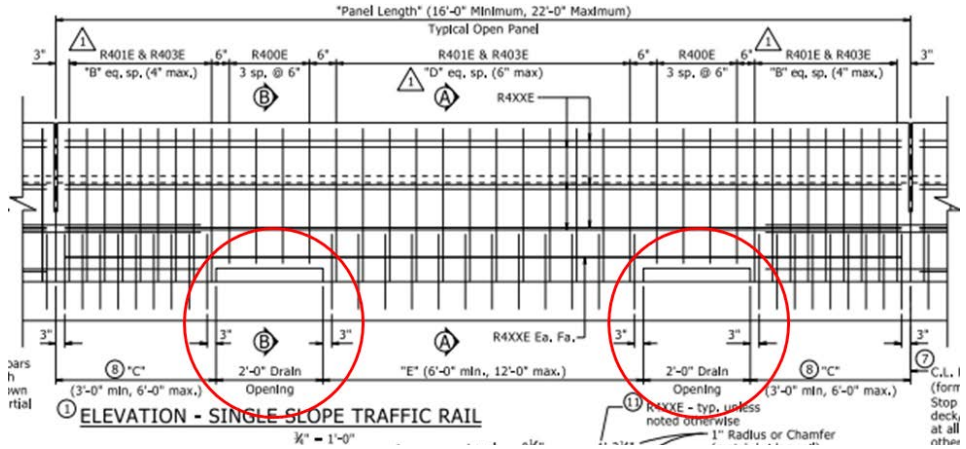




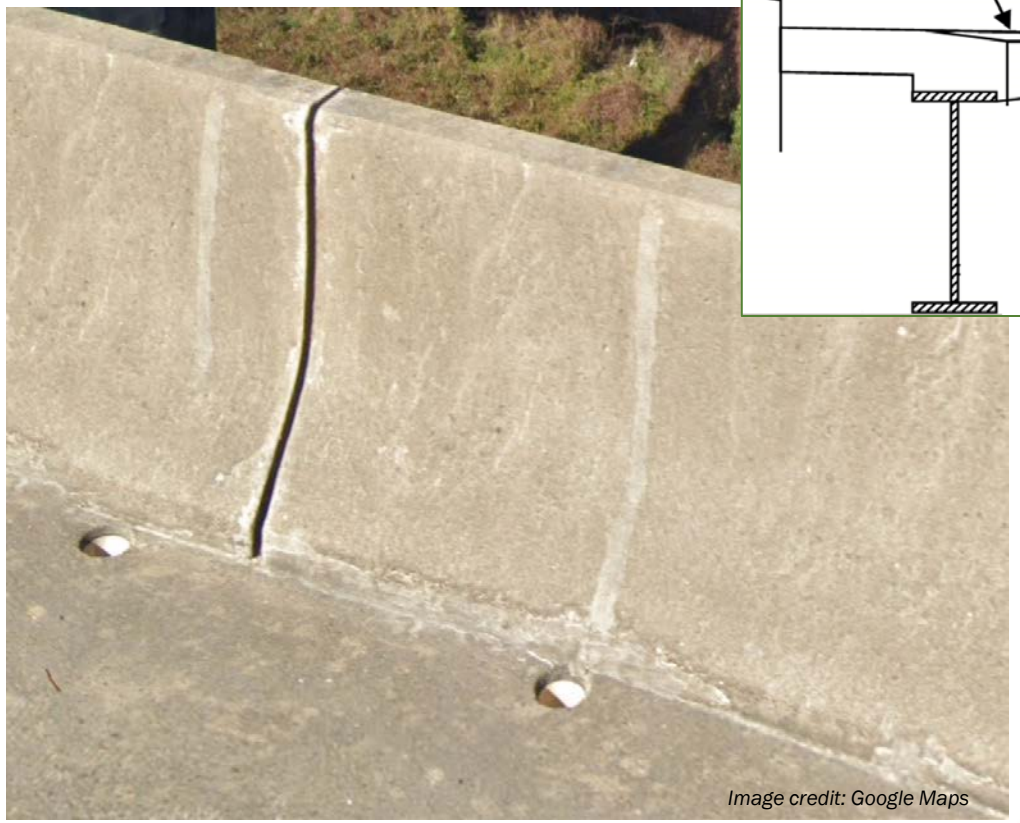
SECTION A-A

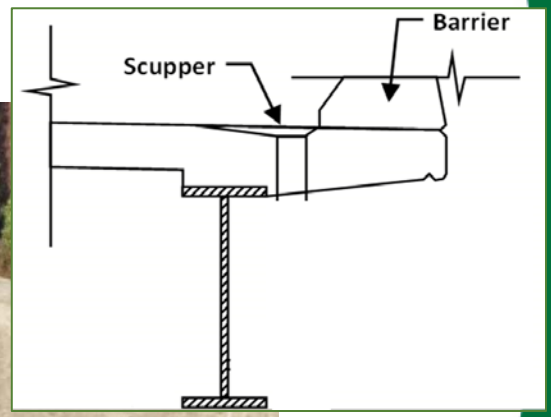
Uncoated Weathering Steel Reference Guide

- **Drainage Details to avoid with UWS**



Drainage through the barrier

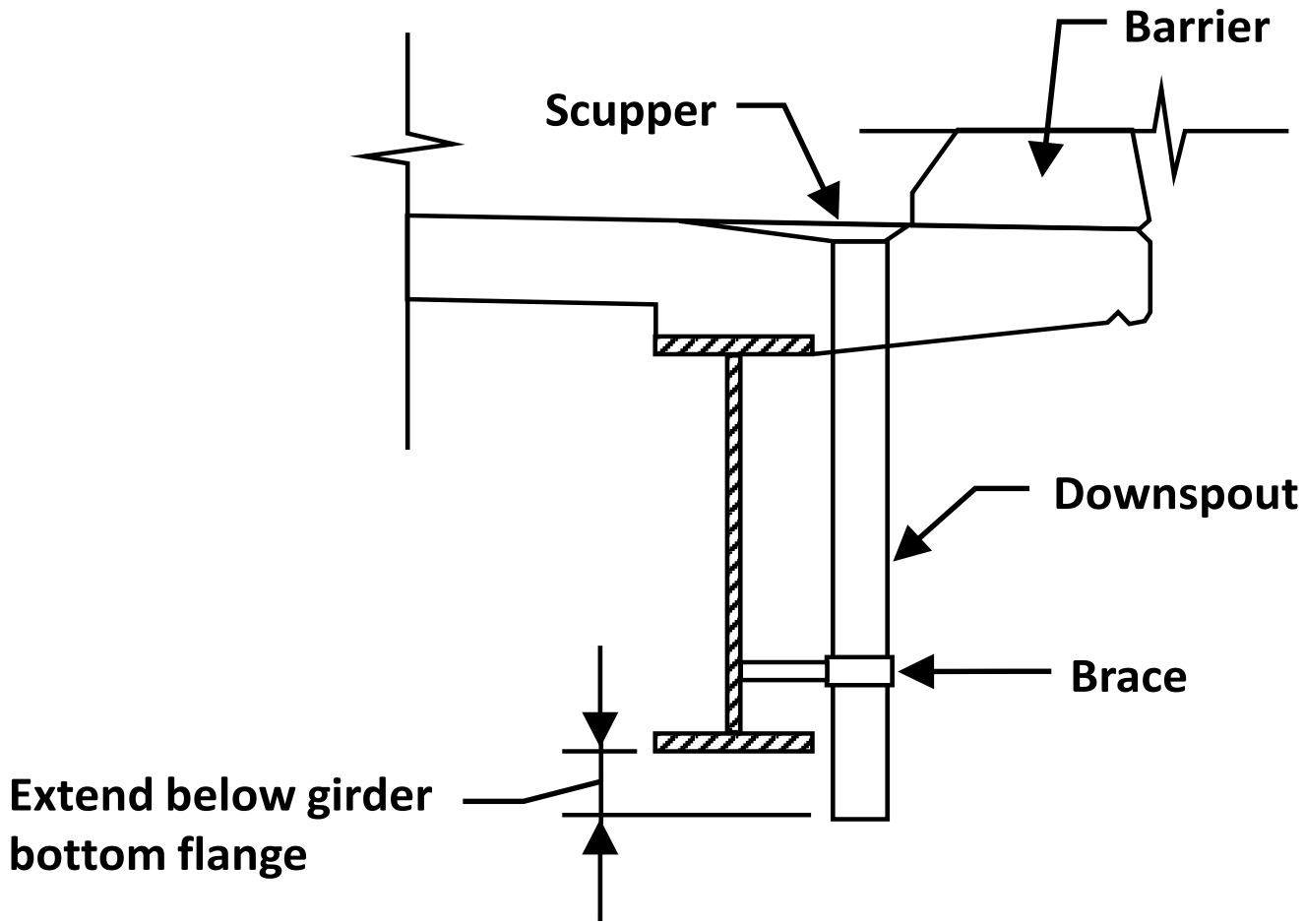




Drainage through the deck only
no downspout

Uncoated Weathering Steel Reference Guide

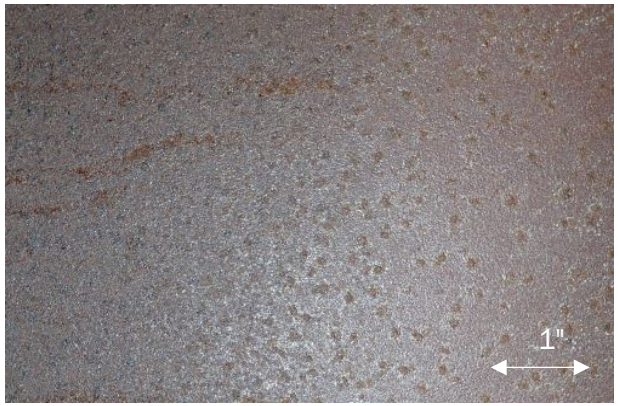
- **Preferred Drainage Details**

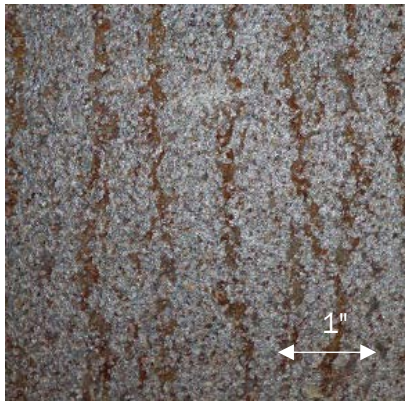


Uncoated Weathering Steel Reference Guide

- **Inspection of Weathering Steel Bridges**
  - **Guidance provided on evaluating the patina on existing bridges**
  - **Examples of good performing patina and poor performance provided**

Good performance





Poor performance

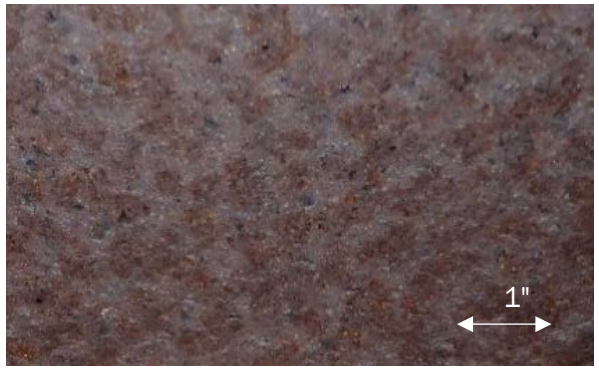


Image credits: Modjeski & Masters

Uncoated Weathering Steel Reference Guide

- **Maintenance Practices**
  - **Joint sealing**
  - **Drainage system clearing**
  - **Girder washing**


Image credit: Modjeski & Masters

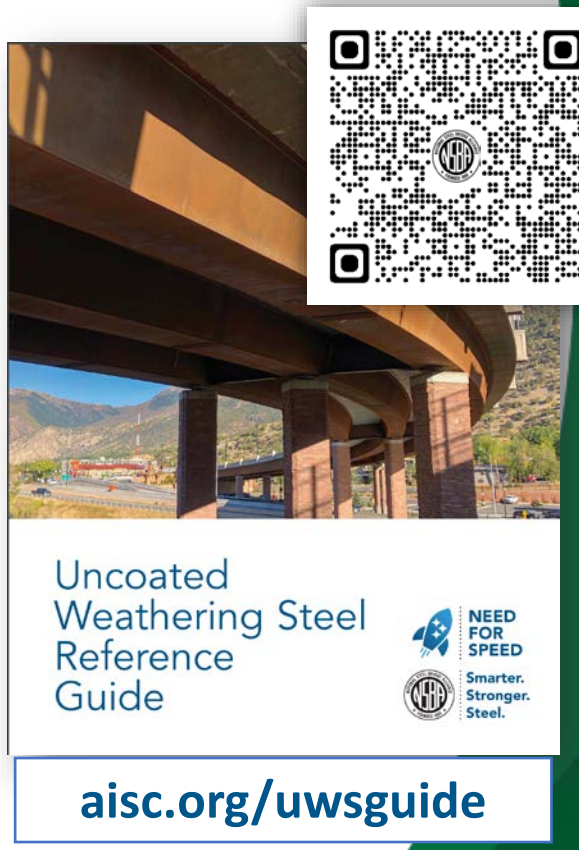

Image credit: Modjeski & Masters


Image credit: Modjeski & Masters

Future Developments

- **AASHTO/NSBA Steel Bridge Collaboration Guideline**
  - **Combine current Guide with FHWA Guidance**
  - **Gain approval from all 50 states**

- **NSBA Coating Performance Studies**
  - **University of Delaware**



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Vice President - Bridges
American Institute of Steel Construction / National Steel Bridge Alliance
E-mail: chavel@aisc.org
Phone: 312.805.2137

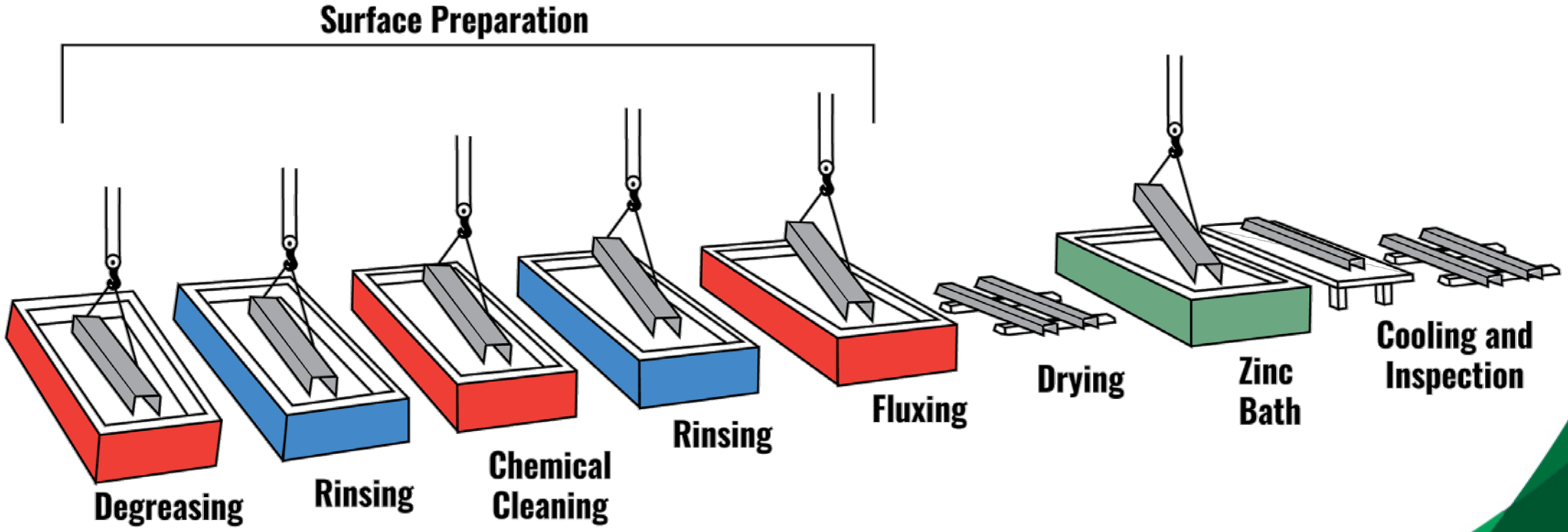
Workshop W-05

Galvanizing

John Krzywicki
Marketing Director
American Galvanizers Association (AGA)
jkrzywicki@galvanizeit.org
720-361-4489

Hot-Dip Galvanizing (HDG) Overview - Process

- Zinc coating used to protect steel for over 170 years
- Steel is immersed in a series of tanks to clean and then galvanize in a molten zinc bath (830 – 850 ^{0}F)



Galvanizing Overview – Inspection & Quality Control

- Steel inspected after galvanizing to verify conformance to specs
- Visual inspection with naked eye
- Coating thickness checked by magnetic thickness gauge
- AGA Resources
  - Inspection of HDG Steel Products Guide (PDF)
  - AGA Online Inspection Course
  - FREE Inspection Mobile App
    - galvanizeit.org/mobile

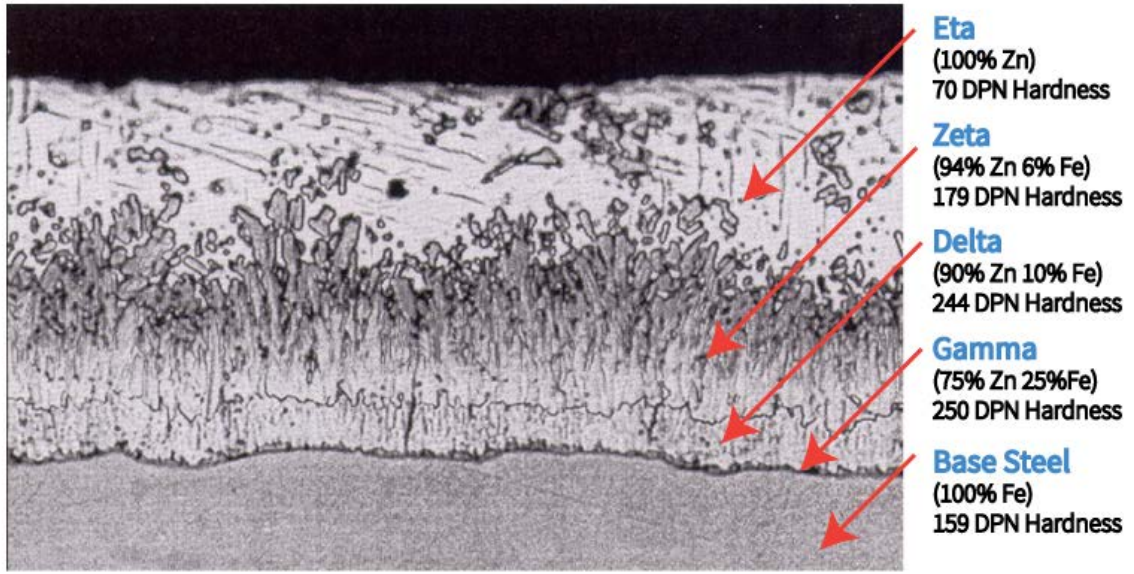
Download on the App Store

GET IT ON Google Play

Galvanizing Advantages: Longevity & Durability

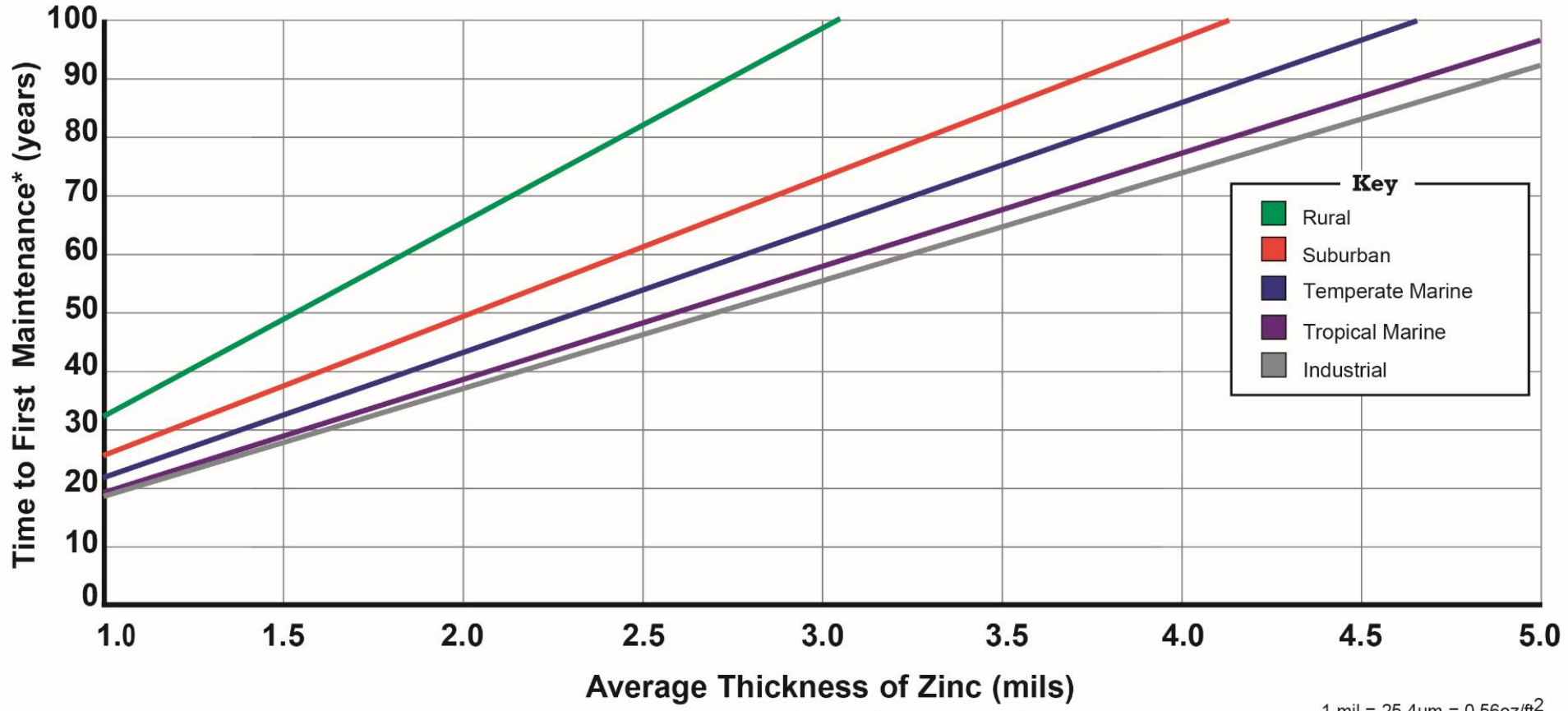
- Zinc coating provides three types of corrosion protection:
  1. Barrier
     - Isolates steel from environment / atmosphere
  2. Cathodic
     - Zinc will sacrificially corrode to protect underlying steel
  3. Zinc Patina
     - Protective layer of corrosion products
     - Develops naturally as HDG steel weathers

- Zinc metallurgically-bonded to steel
  - Bond strength: 3,600 psi
  - Intermetallic (Zn-Fe) layers harder than the base steel
  - Good abrasion & impact resistance



Galvanizing Advantages: Low Maintenance

- Time to First Maintenance Chart: Derived from the Zinc Coating Life Predictor



Galvanizing Advantages: Availability & Versatility

- Galvanizers located throughout North America
  - 150 Plants in the United States
  - Avg kettle size: 40’ L x 5.5’ W x 8’ D
  - Many 50-60’ L
  - Progressive dipping for pieces larger than kettle
  - Galvanizer Locations & Kettle Sizes
- Factory-controlled, quick turnaround
  - No humidity requirements or curing
- Variety of products
  - Intricate pieces, large structural, fasteners and small parts

https://markets.galvanizeit.org/bridges-highways

Galvanizing Challenges: Size & Shape Limitations

- Modular Design to Fit the Kettle
  - Connect after galvanizing
- Progressive Dipping
  - Increases kettle L or D constraints
- Zinc Metallizing + HDG
  - Progressive dip + metallize mid area
  - Metallize oversized parts, galvanize anything that will fit in the kettle
  - Similar appearance
  - No dissimilar metals
- Potential for warpage/distortion of non-symmetrical and/or cambered designs
  - Can be mitigated with design practices (i.e. single-dip, stiffners, etc.)

Progressive Dipping: 63 ft Bridge Girder
Jesup South Bridge
Buchanan County, Iowa | 2013

Galvanizing Challenges: Aesthetics

- Aesthetics: Silver/matte gray finish
- Methods to Maximize Aesthetics
  - Follow ASTM A385
  - Increase and optimize venting & drainage
  - Low-reactivity welding electrodes
  - Provide designated lift points
- Duplex System (Paint over HDG)
  - Synergistic Effect
  - Provide 1.5x – 2x sum of the systems alone
  - Extends maintenance cycle of paint

Panther Creek Bridge, Klamath, CA | 2024

Galvanizing Challenges: Proper Design Practices

- Communication is key
  - Throughout design process between all parties
  - Improves overall quality, turnaround times, and minimizes costs
- Follow best design practices
  - ASTM A385, A384, A143
  - AASHTO/NSBA S8.3
  - AGA Design Guide
  - AGA Online Design Seminar

Galvanizing New Construction and Repair/Rehab

New Construction

- Proper Storage
  - Mitigate wet storage stain
- No special handling
- Stud Welding
  - Before HDG – best corrosion protection
  - After HDG – mask top flange, stud weld in field

Repair/Rehab Construction

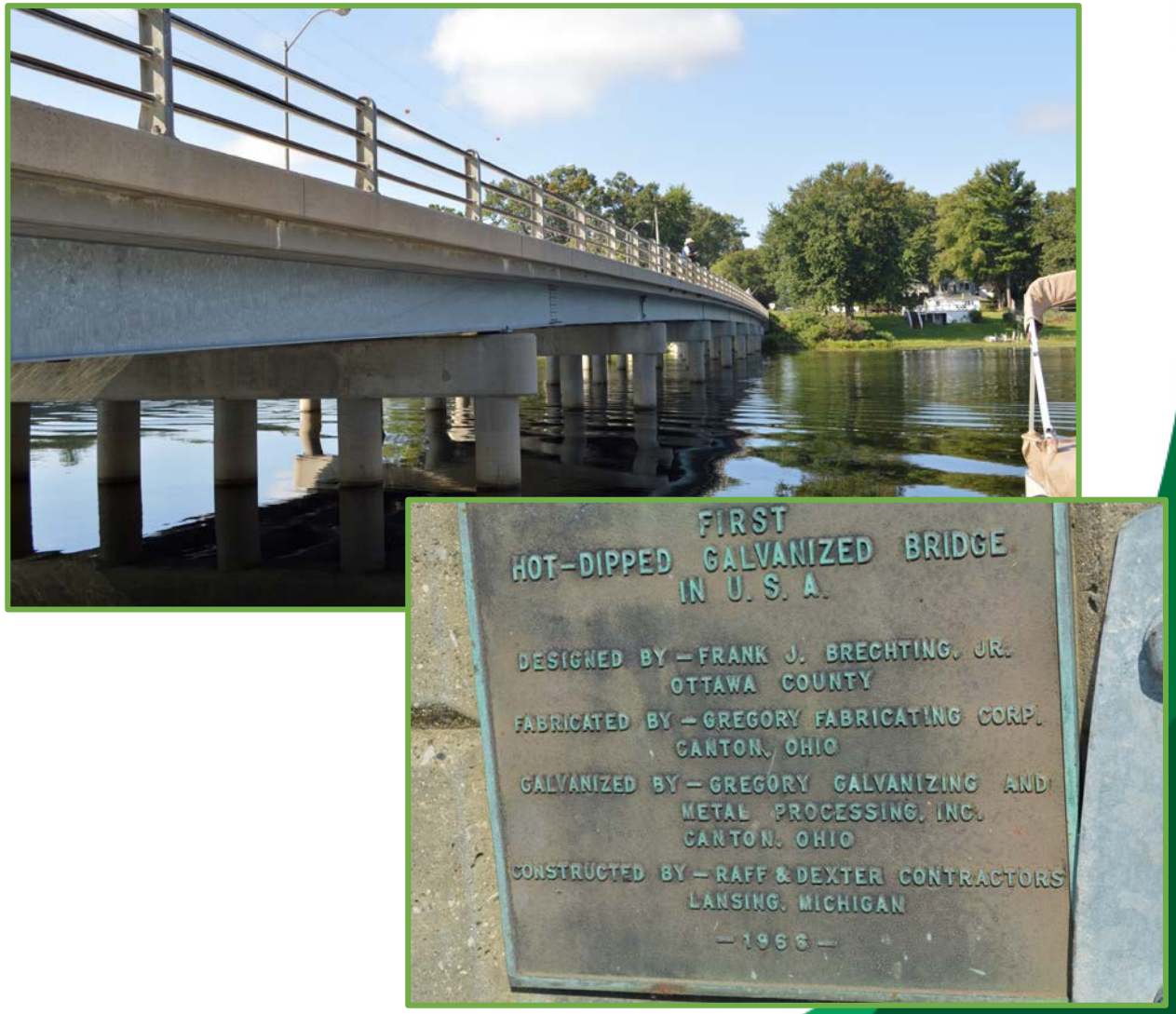
- Thermal Spray Zinc (TSZ) Metallizing
- Zinc-rich Paint
- In some cases, steel can be disassembled, stripped and re-galvanized.

Galvanizing Case Studies: Lizotte Bridge

- The Lizotte Bridge in Quebec, built in 1963, is the world's first fully galvanized bridge.
- After nearly 60 years, the bridge shows no corrosion and still meets new coating specifications.
- Not expected to require any maintenance for at least another 60 years - easily surpassing the 100-year bridge life desired today

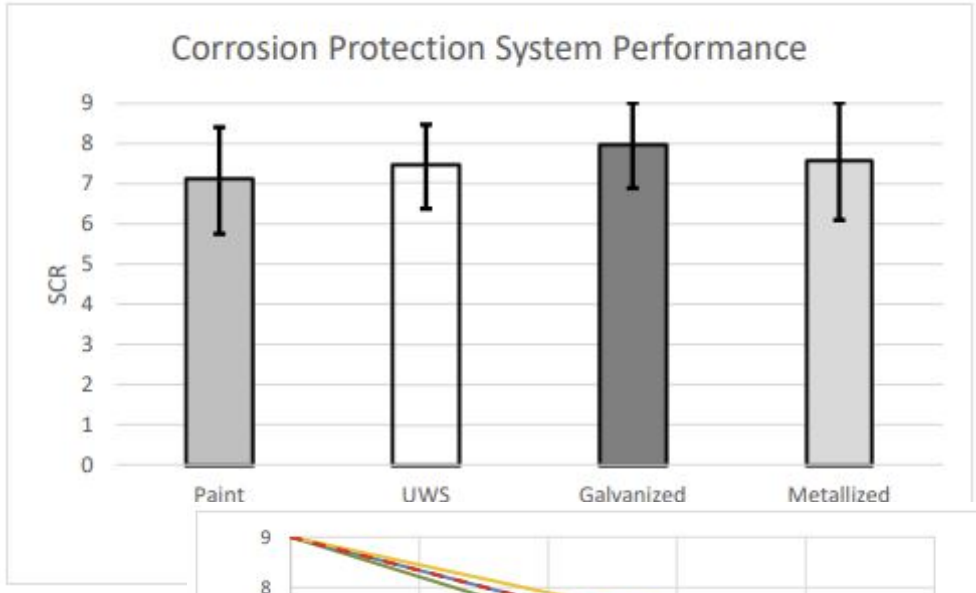
Galvanizing Case Studies: Stearns Bayou Bridge

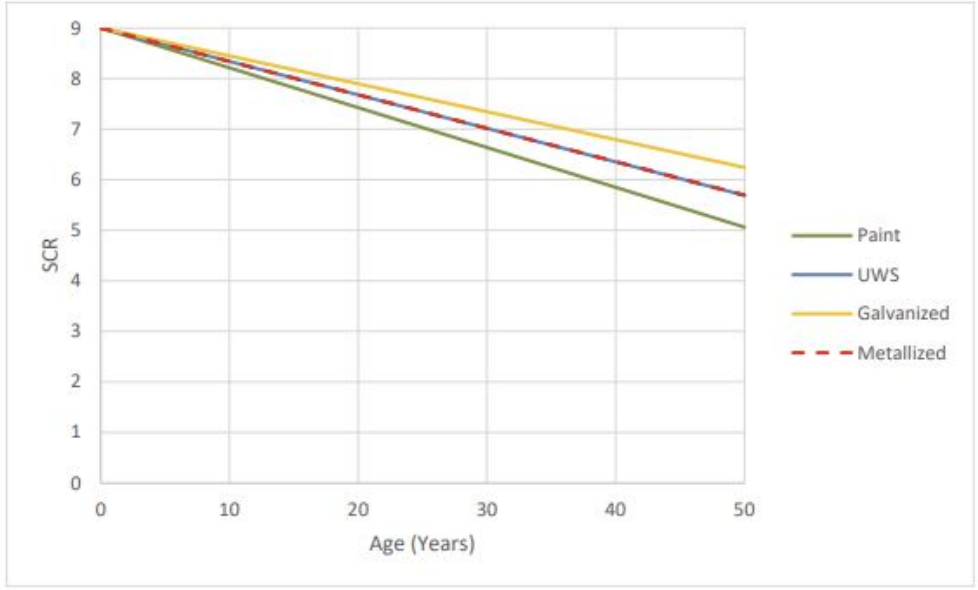
- Built in 1966, Stearns Bayou Bridge in Michigan is the first hot-dip galvanized bridge in the U.S.
- Based on an inspection in 2017, the galvanized steel components on the bridge are not expected to require any maintenance for at least another 70 years - easily surpassing the 100-year bridge life desired today



Steel Bridge Corrosion Protection Systems Study

- Durability of Steel Bridge Corrosion Protection Systems Using Environment-Based Accelerated Corrosion Testing
  - Jennifer McConnell, Ph.D. (University of Delaware)
  - Link to full report
- Two Evaluation Methods
  - Statistical Analysis of Existing Long-Term Performance Data of Corrosion Protection Systems - National Bridge Inventory (NBI)
  - Accelerated Corrosion Testing
- Results
  - Galvanized Bridges - Highest Average SCR in Existing LTPD





Galvanizing Future Trends: AGA Resources

- Technical Assistance/Expertise
  - galvanizeit.org
  - aga@galvanizeit.org; 720.554.0900
- Dr. Galv KnowledgeBase
  - galvanizeit.org/knowledgebase
- AGA Project Gallery
  - galvanizeit.org/project-gallery
- GI News - Monthly Newsletter
  - galvanizeit.org/newsletter
- Galvanized Steel Studies Videos
  - www.youtube.com/c/AGAGalvanizeIt

USACE Fort Wingate Bridge Replacement
Gallup, NM | 2022
52 tons – Press-brake-formed steel tub girder: 8 beams weighing 12,600 lbs. each

Metalizing

Ben Bristol
Director of Railroad Marketing and Customer Support
Industrial Steel Construction
bbristol@iscbridge.com
904-466-5807

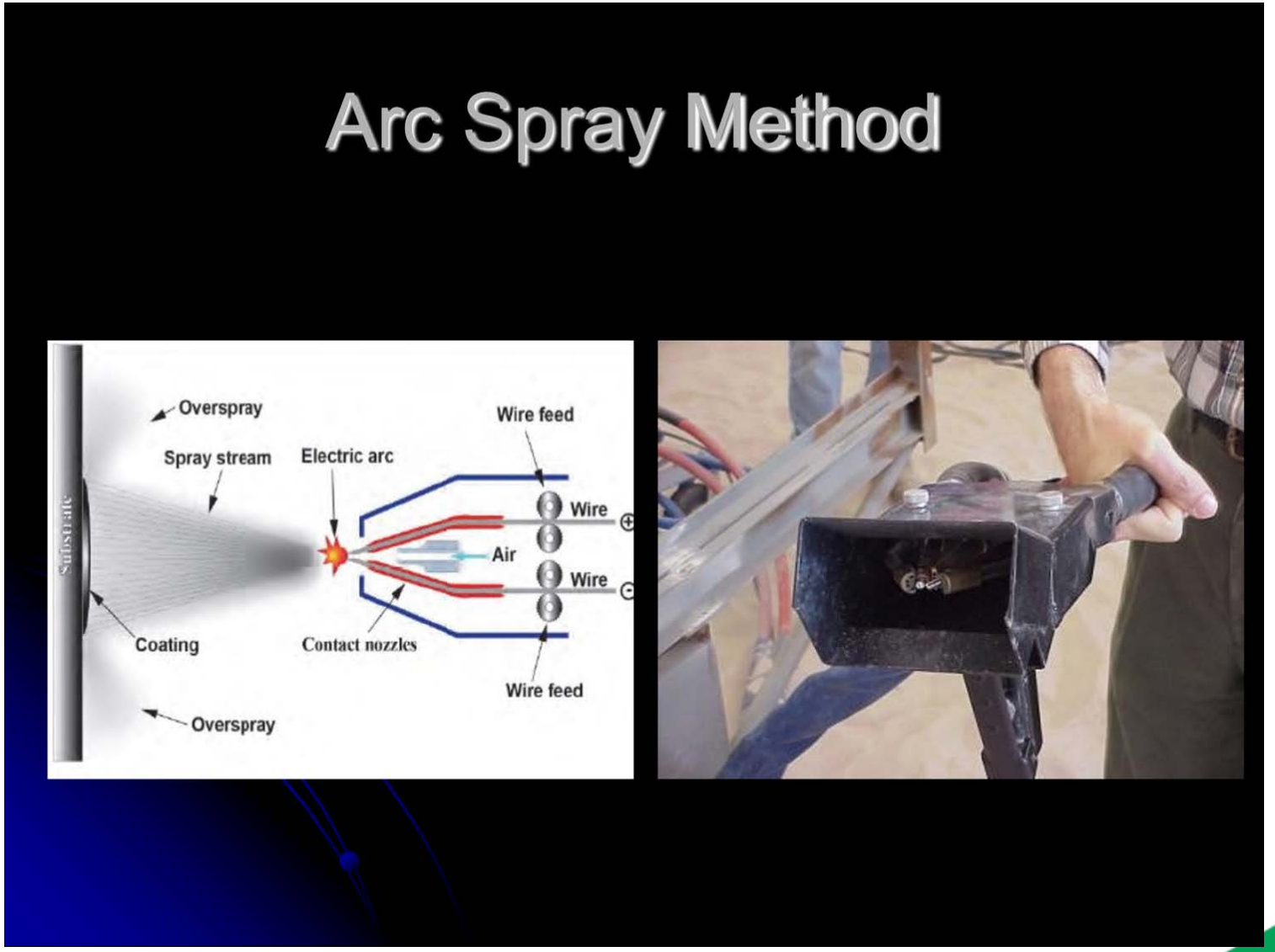
Metalizing Overview

Metallizing is a common term used to describe thermal sprayed metal coatings. For corrosion protection of steel elements, it refers to the thermal spray of molten zinc or aluminum alloys as a direct coating on steel surfaces. This is accomplished by feeding the metal in either wire or powder form to an application gun where it is melted and propelled onto the steel surface to be protected. Upon contact, the zinc “splats” cool instantly, creating a solid barrier that isolates the steel substrate from the environment.

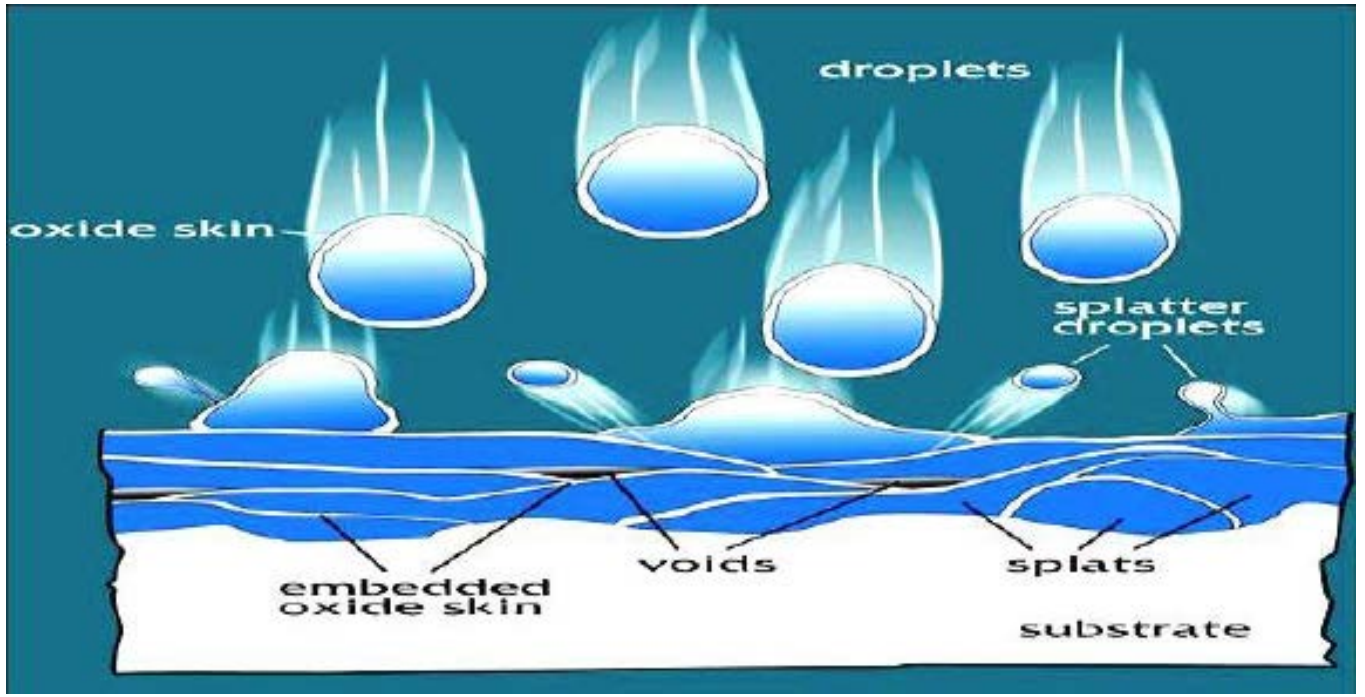
Metalizing Overview

- Feeds two electrically energized wire(s) to a common gun assembly.
- The wires intersect and generate heat which in turn melts the wire.
- The molten metal is atomized by compressed air and propelled to the surface as a high velocity metal spray.

Metalizing Overview

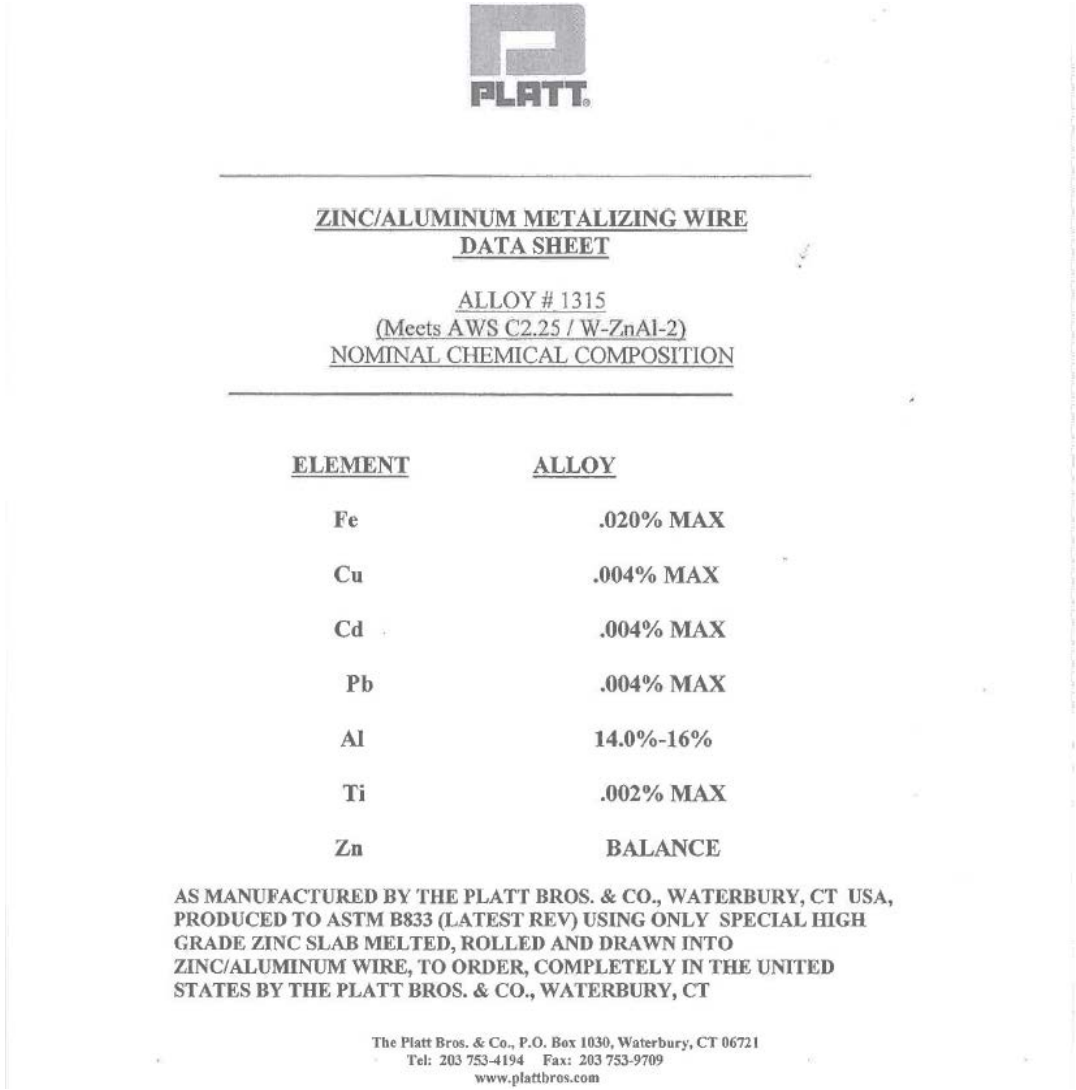


Metalizing Overview



Molten metal particles impact the surface flatten out, solidify and create a layered metallic coating.

Metalizing Overview



PLATT

ZINC/ALUMINUM METALIZING WIRE
DATA SHEET

ALLOY # 1315
(Meets AWS C2.25 / W-ZnAl-2)
NOMINAL CHEMICAL COMPOSITION

ELEMENT	ALLOY
Fe	.020% MAX
Cu	.004% MAX
Cd	.004% MAX
Pb	.004% MAX
Al	14.0%-16%
Ti	.002% MAX
Zn	BALANCE

AS MANUFACTURED BY THE PLATT BROS. & CO., WATERBURY, CT USA, PRODUCED TO ASTM B833 (LATEST REV) USING ONLY SPECIAL HIGH GRADE ZINC SLAB MELTED, ROLLED AND DRAWN INTO ZINC/ALUMINUM WIRE, TO ORDER, COMPLETELY IN THE UNITED STATES BY THE PLATT BROS. & CO., WATERBURY, CT

The Platt Bros. & Co., P.O. Box 1030, Waterbury, CT 06721
Tel: 203 753-4194 Fax: 203 753-9709
www.plattbros.com

Metalizing Overview

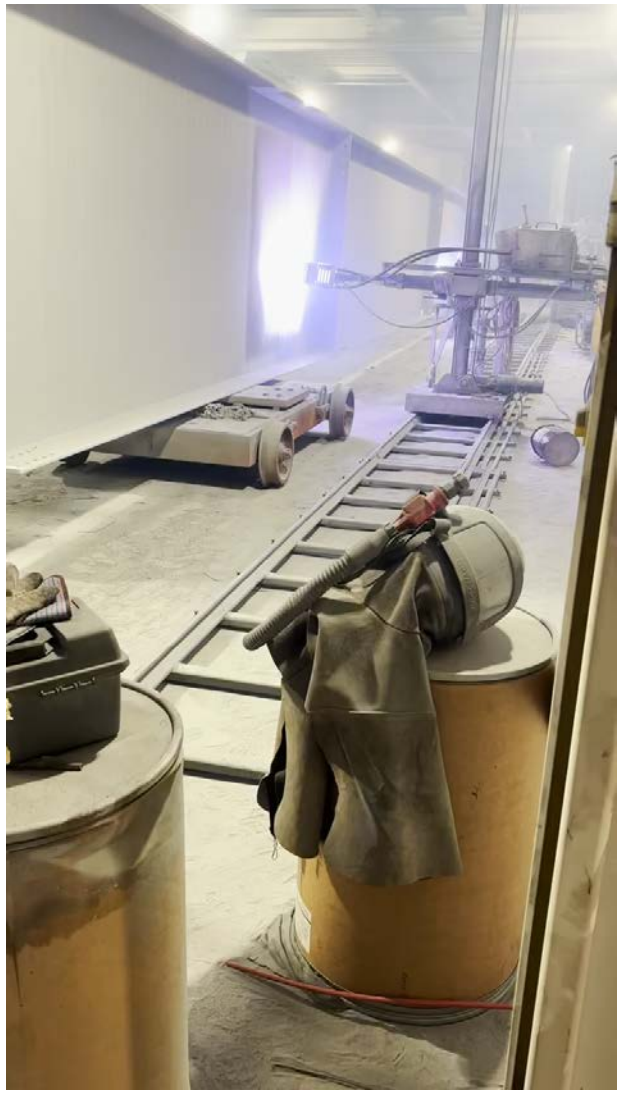
Zinc/ Aluminum Combination

Plattzinc™ 85/15 is an alloyed wire of 85% zinc and 15% aluminum by weight. When thermally sprayed onto steel, the alloy produces a metallic coating incorporating the best characteristics of both metals for optimum corrosion protection.

Dual Phased Coating

Plattzinc™ 85/15 combines the galvanic protection properties of zinc sacrificing itself in preference to the steel. The aluminum provides a passive barrier protection. Together, the zinc and aluminum provide an excellent corrosion resistant, thermal sprayed coating.

Metalizing Overview



Metalizing Advantages

- No “curing time” required
- Abrasion & impact resistant.
- Cold process doesn’t transfer heat to base material.
- Able to spray controlled thickness.
- “Line-of-sight” process
- Applied temperature tolerate
- Easily top-coated
- Barrier coating w/ Galvanic qualities.

Metalizing Advantages

Testing by FHWA of metallized coatings applied to steel have concluded:

- Zn and 85/15 Zn/Al of 6 mils applied over SP-10. provided at least 20 years of maintenance free corrosion protection with expectation of providing **30+ years**.
- No undercutting from intentional coating defects.

Metalizing Advantages

One Application = 15 + Years With No Maintenance

Steel highway bridges throughout North America have been sprayed with Plattzinc™ 85/15. The test of time has shown that the alloy of 85% zinc, 15% aluminum, sealed and unsealed, provides superior protection against sodium chloride or sulfur dioxide environments and the effects of marine exposure.

Thermal spraying with Plattzinc™ 85/15 can be easily applied to a properly blasted surface up to a 20 mil thickness in just one application. Typically, one pass applies approximately 2 to 3 mils. No drying time is needed. The coating is dry on contact allowing sealers and/or topcoats to be applied immediately when specified.

Metalizing Advantages

Plattzinc™ 85/15 Features

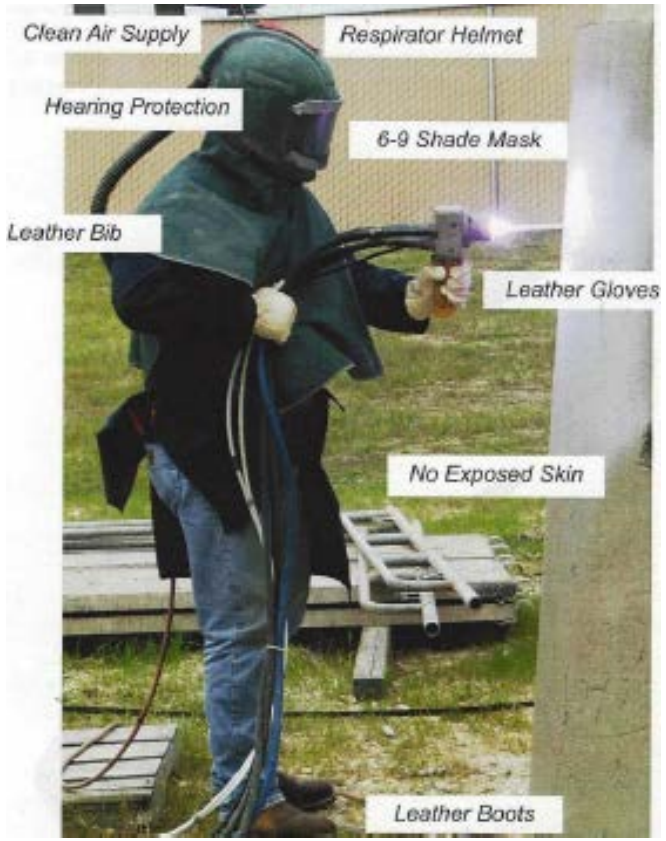
- *Lab tests have yielded bond strengths for Plattzinc™ 85/15 of 3500 psi on properly prepared, grit blasted steel: higher than both pure zinc (1300 psi) and pure aluminum (2800 psi). Adhesion strengths will vary with application and equipment.*
- *Maximum Service Temperature is 600°F (315°C)*
- *Spray deposit density of 95%. Sealers and topcoats will adhere well due to the physical nature of the coating.*
- *Deposition rate efficiency of Plattzinc™ 85/15 is higher than other materials. Coating coverage per pound sprayed is increased, thereby reducing overall spraying time and labor costs. Example: Spraying a thickness of .006". Zinc covers 3.5 sq. ft/lb. 85/15 covers 4.3 sq. ft/lb.*
- *Plattzinc™ 85/15 has excellent machinability, equivilant to aluminum and superior to pure zinc.*

Metalizing Advantages

- No VOCs produced
- Lower life-cycle-cost
- Less rework for defects
- ***Lower maintenance cost***
- ***No size limitations***
- No undercutting of TSC that would lead to corrosion.
- Cost per Square Foot

Metalizing Challenges

- Requires deep angular blast profile
- Equipment requires frequent Preventative Maintenance
- Requires Specific P.P.E. for Operators
- Climate Controlled large area required to perform the Metalizing Process
- Metalizing Operators must be certified



Metalizing New Construction

ISC Job No.	Project Name	Project No.	Structure No.	Location	Scope of Project	Top Coated	Metallizing Start Date	Metallizing Finish Date
F775	Circle Interchange NW Ramp I-90 NB/I-290 WB	60W28	016-1705	Chicago, IL	123 Plate Girders, Splice Plates	No	January 2015	December 2015
F780	SB IL-171 to NB I-55 Ramp E over I-55 (Stevenson Expressway)	60W77	016-1512	Chicago, IL	12 Plate Girders, Splice Plates, Crossframes	No	July 2015	August 2015
F798-F800	I-55 (Stevenson) and US-41 (Lake Shore Drive) Interchange	60L70	Outbound Structures	Chicago, IL	266 Plate Girders, Splice Plates	No	September 2015	March 2016
F805-F807	I-55 (Stevenson) and US-41 (Lake Shore Drive) Interchange	60X07	Inbound Structures	Chicago, IL	236 Plate Girders, Splice Plates	No	April 2016	August 2016
F832	S.R. 80 (Southern Boulevard) over Lake Worth Lagoon Bridge	419013-1-52-01	930559	West Palm Beach, FL	4 Bascule Girders, Floorbeams, CTWT Boxes	Epoxy, Urethane	June 2019	August 2020
F837	Circle Interchange NE Flyover	62B76	016-1710	Chicago, IL	20 Plate Girders, 1 Beam, Splice Plates	No	April 2017	September 2017
F880-F883	Jane Byrne Interchange Ramps	60X93	016-1706,1714,1715,1718	Chicago, IL	234 Plate Girders, 38 Beams, Splice Plates	No	October 2019	September 2020
F884	I-290 EB Ramp to I-90/94 NB	60X79	016-1712	Chicago, IL	40 Plate Girders, Splice Plates	No	April 2020	June 2020
F892	Montrose Avenue over FAI 90/94 and the CTA Blue Line	62F95	016-0852	Chicago, IL	45 Plate Girders, Splice Plates	No	June 2020	December 2020
F893-F894	I-74 over Market Street	70C64	SN 010-0021	Champaign County, IL	112 Plate Girders, Splice Plates	No	October 2020	February 2021
F895	U.S. 150 (Bloomington Road) over I-57	70B98	010-1050	Champaign County, IL	21 Plate Girders, Splice Plates	Sealer, Fascia Epoxy	September 2020	December 2020
F897-F898	I-294 Ramp C Flyover, Dixie Creek Bridge and Ramp F2	I-19-4495	016-2101, 2102	Cook County, IL	279 Plate Girders, Splice Plates	Sealer, Fascia Epoxy & Urethane	January 2021	October 2021
F899	Adams Street and Jackson Boulevard Bridges	60X94	016-1701, 1702	Chicago, IL	128 Plate Girders, Splice Plates	No	March 2021	March 2022
F901	I-74 over Salt Fork Vermilion River	70A92	092-0006, 0007	Vermilion County, IL	84 Plate Girders, Splice Plates	Sealer	May 2021	June 2022
F903	20th Street over US Rte. 20	64A08	101-0188	Winnebago County, IL	14 Plate Girders, Splice Plates	Sealer, Fascia Epoxy	April 2021	June 2021
F909	I-294 SB over I-55	I-20-4519	010-1050	Cook County, IL	24 Plate Girder Ends	Sealer	May 2021	September 2021
F911	I-55 over IL Rte. 59	62M63	099-4666	Joliet, IL	21 Plate Girders, Splice Plates	No	September 2021	November 2021
F913	SB Chavez Dr Ramp J & NB Chavez Dr Ramp I over I-69/I-475 Ramps	204861A	S13 & S14 of 25132	Flint, Genesee Co, MI	13 Plate Girder Ends	Epoxy, Urethane	March 2022	June 2022
F917	Ohare to WB IL Rte. 390 Ramp Q1 at I-490 & IL Rte. 390 Interchange	I-20-4722	Br #1674	DuPage County, IL	12 Plate Girder Ends	Epoxy, Urethane	October 2021	November 2021
F939	CSX CREATE P3 - Flyover Spans- Straddle Bent 16 & 17 Caps	P3-BOCT-TSB-007-Z-Stage II		Cook County, IL	2 Bolted Bent Caps	Epoxy, Urethane	January 2024	
F942	CSX CREATE P3 - Bridge over 69th Street	P3-BOCT-TSB-007-Z-Stage II		Cook County, IL	22 Plate Girders & Floor system	No	March 2024	
F943	CSX CREATE P3 - Bridge over 71st Street	P3-BOCT-TSB-007-Z-Stage II		Cook County, IL	27 Plate Girders & Floor system	No	May 2024	
F961	Black Hawk Bridge over Missippi River Iowa D.O.T.	IA 9 / WI82 OVER MISSISSIPPI RIVER		ALLAMAKEE COUNTY, IOWA	Truss, 5400 Tons	Epoxy, Urethane	October 2024	
F962	IL 2 OVER ROCK RIVER (SB) SECTION 77-1BR	STRUCTURE No 101-0221(SB)		WINNEBAGO COUNTY, ILLINO	65 Girders	No	June 2024	
F966	I-90 at Foster Ave.	Structure No 016-1669		Cook County, IL	65 Girders	No	February 2025	
F967	I-290 at Ashland Ave.	Structure No. 016-0783		Cook County, IL	65 Girders	No	February 2025	

More than 2200 Girders Metalized at ISC since 2015

Metalizing New Construction

STRUCTURE NO. 016-1512 / CONTRACT 60W77
IDOT PROJECT ACNHPP-0373 (029)
SB IL-171 TO NB I-55 RAMP E OVER I-55
COOK COUNTY, IL STA. 215+55.44
ENGINEER: ILLINOIS DEPT OF TRANSPORTATION

Metalizing Future Trends

Increase in number of Bridges on the East Coast and Midwest States

- Illinois D.O.T.
- Illinois Tollway
- Blackhawk Bridge – Iowa D.O.T. Designed as a +100 Year Structure
- Metalizing is a cost-effective coating for Structures with minimal to no maintenance cost of the coating.

Industrial Steel Construction Website
www.iscbridge.com

Painting

Derrick Castle
Market Manager – Bridge and Highway
The Sherwin-Williams Company
Derrick.Castle@sherwin.com
913-481-0612

Painting Overview

- Versatile
  - Shop or field application
  - Single coat or multi-coat systems designed for service environment
- Complimentary
  - Compatible with each technology
  - Used to extend service life and improve aesthetics
- Tested
  - Highly specified product and performance criteria
  - Rigorous test methodologies
  - Required re-testing
  - Project level acceptance testing

Painting Advantages

- Cost effective
  - Single coat, two-coat and three-coat systems
  - Fast cure times promote production throughput
    - Shop or field application
- Long term corrosion protection
  - Many systems based on zinc-rich technologies
  - Proven performance
- Aesthetics
  - Wide range of colors and finishes
- Availability
  - Local stores
  - Direct shipping

Painting Challenges

- Limited painting season
  - Atmospheric conditions
- One size fits all
  - Products
  - Surface preparation
  - Life cycle expectations
- Updating painting specifications
- Maintenance
  - Spot painting
  - Zone painting
  - Full removal and replace

Painting New Construction and Repair/Rehab

- New construction
  - Class B slip critical compliance
  - Improved throughput times
    - Single coat zinc-rich primers
    - Two-coat systems with fast cure/recoat times
- Repair/Rehabilitation
  - Class B slip critical compliance
  - Systems matched to surface preparation and environmental exposures

Painting Case Studies/Examples

- **NSBA Report – Single Coat IOZ**

Painting Future Trends

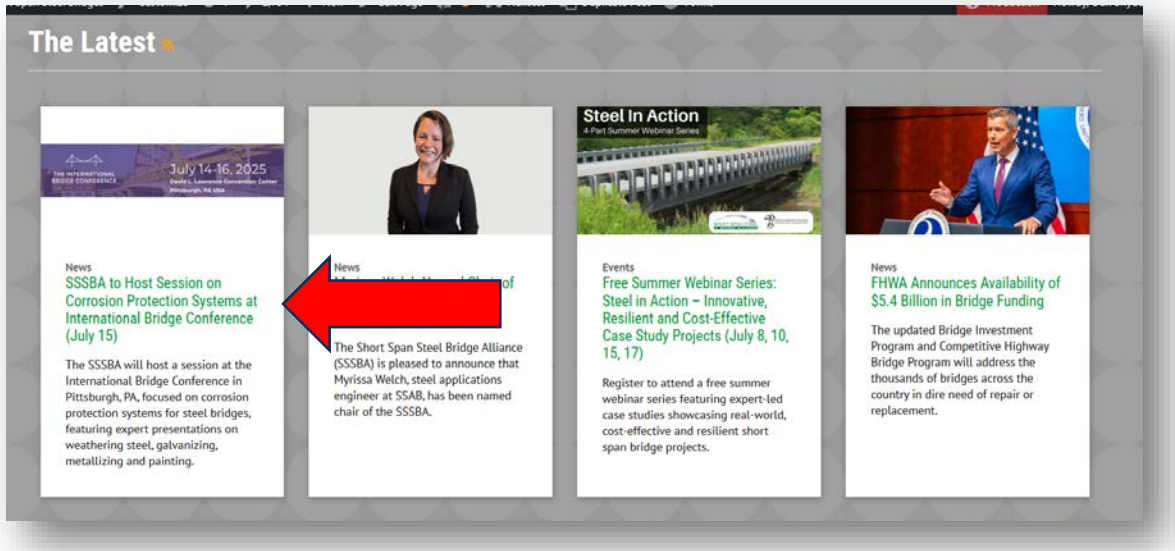
- **Single coat and two-coat systems**
- **Duplex coatings**
- **Textured epoxy coating for rebar**
- **Fireproofing**

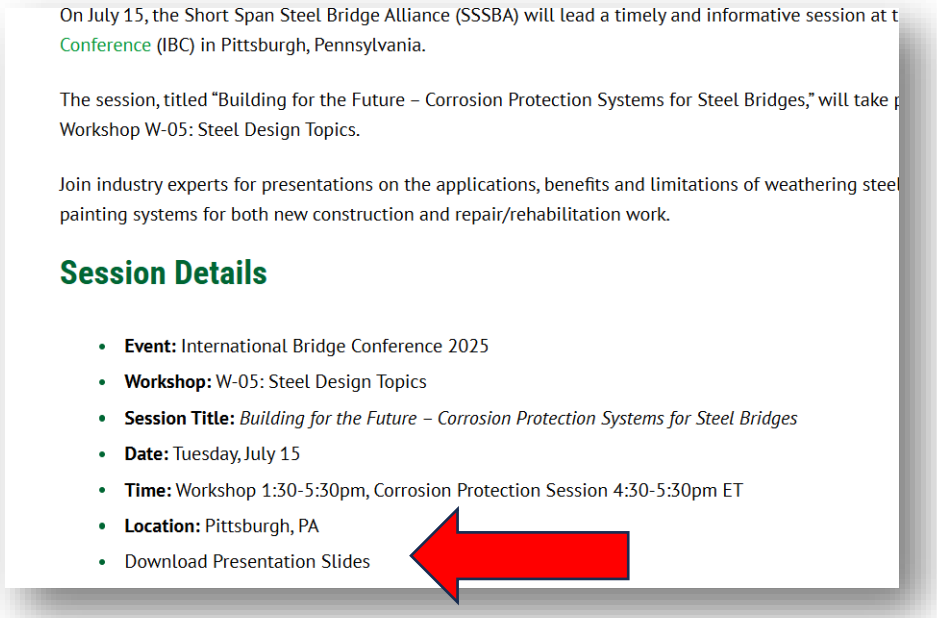
Panel Discussion

- Jeff Blue, Champaign County, Illinois
- Brian Keierleber, Buchanan County, Iowa
- Mark Seri, Previously with Barron County Highway Department, Wisconsin

Download Slide Deck

Go to: https://www.shortspansteelbridges.org/

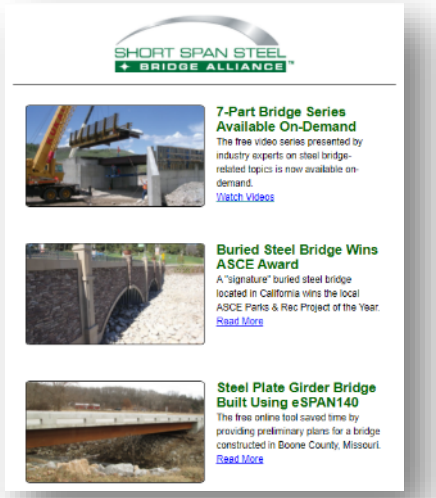




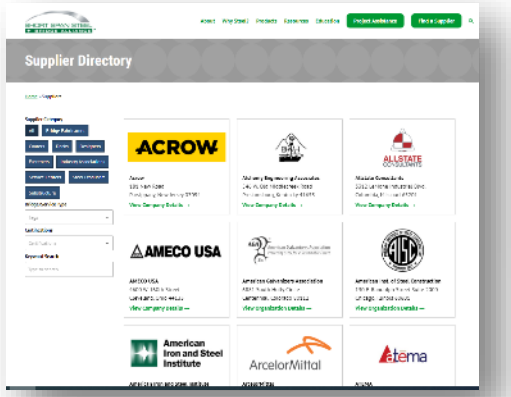
https://www.shortspansteelbridges.org/ibc-2025/

5 Ways to Keep Learning About Steel Bridges

1. Subscribe to the Weekly Newsletter



2. Find a Supplier



3. Design a Bridge in 5-Minutes

eSPAN140™

4. Receive Free Project Assistance

5. Schedule a Workshop/Webinar

www.ShortSpanSteelBridges.org

Questions? Dan Snyder, Director, SSSBA, dsnyder@steel.org, (301) 367-6179

Website: ShortSpanSteelBridges.org
Twitter: @ShortSpanSteel
Facebook: Short Span Steel Bridge Alliance