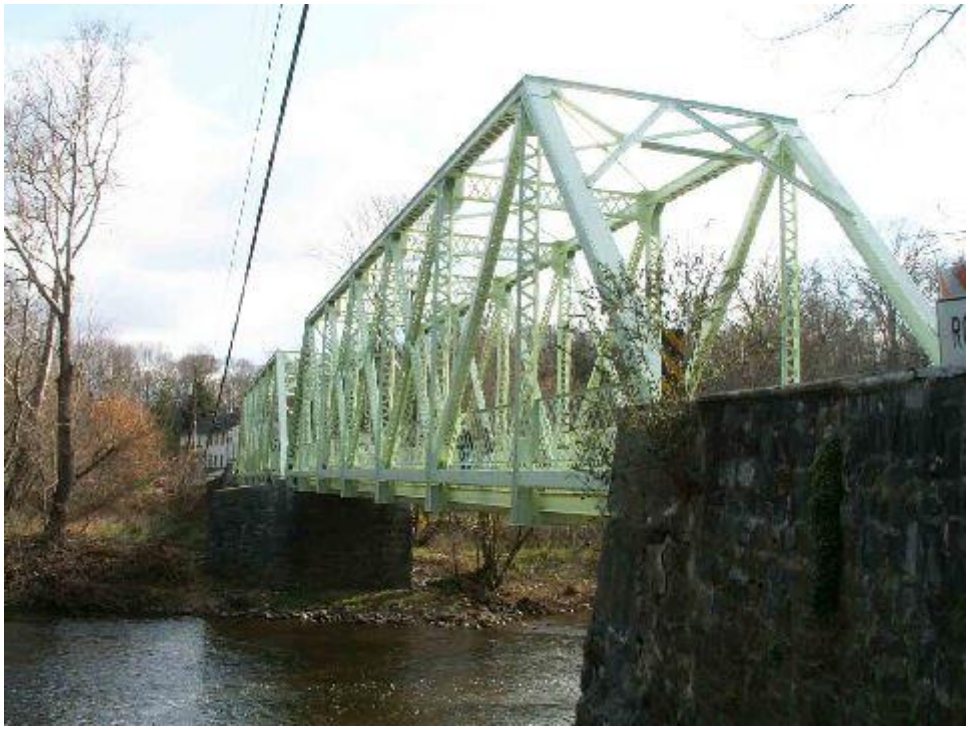
INITIAL REPORT

STOPPING ACTIVE CREVICE CORROSION

On a Lancaster County Pennsylvania Truss Bridge
"Big Conestoga #9" (Rock Hill Road) bridge
By High Pressure (5,000 psi) Water Wash Cleaning (with C*R)
and Overcoating with the Termarust
high ratio co-polymerized calcium sulfonate coating system



For Lancaster County Pennsylvania
Lancaster, Pennsylvania

Cleaning & Coating by
P.S. Bruckel, Inc, Avon, New York

Coating Materials from
Termarust Technologies, Vienna, Virginia

Project Painting Date: October - November, 2008

INITIAL REPORT

By: Craig A. Ballinger, P.E.
Termarust Technologies
Vienna, Virginia, 22180
Phone: 888-279-5497 [then press '4'] Email: cballinger@termarust.com

OVERVIEW

This report provides some information and pictures of the cleaning and Termarust coating work that was done on this bridge in October and November, 2008, for Lancaster County Pennsylvania.

The bridge, which was built in the 1923, was found to have been painted with a lead-based paint system, that had failed and corrosion of the steel members had caused structural problems; especially on the steel members that support the steel grid decking:

- Heavy scale rust had caused loss of section (thickness) of flanges and webs of members
- At the East end of the bridge – the ends of several longitudinal members – there were large holes in the webs of the beams (that were strengthened by welding plates to the webs).
- There was some crevice corrosion and pack rust development in some connections between steel members.

It is important to note:

1. The contract required and specified use of 5,000 psi pressure water wash cleaning and application of the Termarust (or equal) high ratio calcium sulfonate coating system – ***to chemically stop*** further development corrosion; including crevice corrosion.

2. The contract required a joint (Contractor-coating manufacturer) 5-year warranty against coating system failure – with no exclusions; e.g. for inaccessible areas, such as where crevice corrosion has occurred or could occur. *This requirement was primarily based on the 15+ year field-proven history of the Termarust coating system to stop active corrosion – with no warranty claims for similar 5-year warranties –* ***and*** *the successful use of this type of cleaning and coating on the Pennsylvania Turnpike's Hawk Falls Bridge on I476 at MP 88.59 in April, 2008.*

3. **Several factors led to the substantial cost savings** – for using 5,000 psi pressure wash cleaning and application of the Termarust coating system vs. the expected costs for sandblast cleaning and the use of a traditional 3-coat, zinc-based coating system – that does not have the chemistry to chemically stop active corrosion, including:
   - By pressure wash cleaning only loose lead-based paint was removed
   - Labor saving because the Termarust coating system is considered to be a one-coat system.
   - Reduced costs for the type of containment needed for pressure washing and collection of paint debris vs. the negative-air containment and vacuum equipment needed for sandblast cleaning – and even the differential fuel costs to run a gasoline powered pressure washer vs. running large air compressor(s) and vacuum equipment.
   - The reduced amount of, and cost for disposal of hazardous (lead paint) waste materials.

REFERENCES

Consultant to Lancaster County

Rettew Associates, Inc. Lancaster, PA
Contact Person: Quentin Rissler – Phone: 717-394-3721

Painting Contractor

P.S. Bruckel, Inc., Avon, NY – Phone: 585-226-3661
Contact Person: Peter Bruckel

CLEANING AND APPLICATION PROCEDURES

The following standard Termarust procedures were specified and followed:

1. Pressure wash clean the bridge with a 5,000 psi pressure washer (at a 6" standoff distance) with clean water with an additive of Chlor*Rid to remove non-visible salts; e.g. chlorides. (For more information on Chlor*Rid – see www.chlor-rid.com)

2. Blow dry all connections – with dry compressed air.

3. Apply the Termarust TR2200 Penetrant into all connections between steel members; where there is (or could develop) crevice corrosion and pack rust.

4. Apply a caulk (or stripe) coat of Termarust TR2100 Topcoat onto areas where the TR2200 Penetrant had been applied – minimum 10 mils dry film thickness (DFT).

5. Spot prime areas of bare steel and tightly adhered (contaminant free) rust with 5 mils DFT of Termarust TR2100 Topcoat

6. Overcoat the entire area with another 5 mils DFT of TR2100 Topcoat.

It is important to note that steps 3 through 6 may be done immediately after each other; i.e. wet-on-wet; which is why the Termarust system is considered to be a "One Coat" system.

The final result was:

- 5 mils DFT on tight paint,
- 10 mils DFT on bare steel and tight rust, and
- 20 mils DFT over connections.

PICTORIAL OVERVIEW

The following pictures provide a pictorial overview of the project.

Photo 1 – Bridge before cleaning and coating with the Termarust system.

Photo 2 – Upper portion of the truss – showing corrosion and some pack rust.

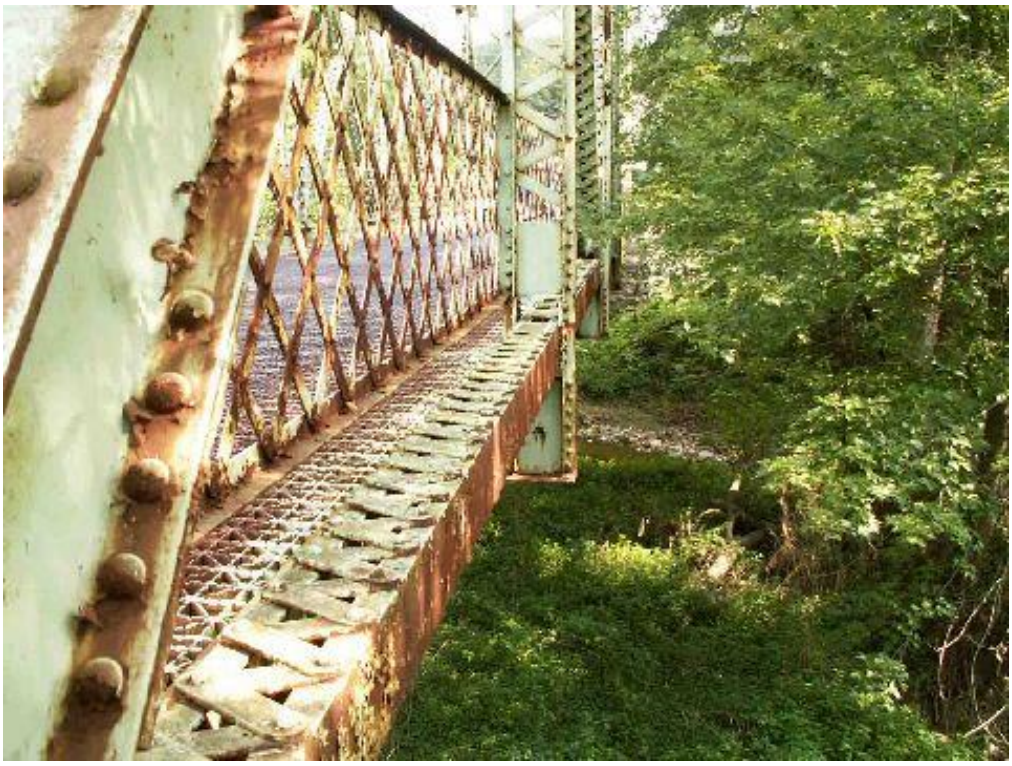


Photo 3 – View of outside of the truss, before cleaning and coating with Termarust

Photo 4 – The underside of one span of the truss, before cleaning and coating with Termarust.

Photo 5 – Underside of the deck, at the pier. The ends of four of the longitudinal beams had corrosion-caused holes in the webs. The webs were strengthened by welding plates to both sides.

Photo 6 – Containment for pressure wash cleaning
and collection of lead paint containing chips of paint and corrosion debris

Photo 7 – After pressure washing – loose paint and loose corrosion debris has been removed.

Photo 8 – Work platform – Containment tarps were removed after pressure washing.

Photo 9 – After pressure washing only tight paint and tight clean rust remains

Photo 10 – After pressure washing – some scale rust remains on some members under the deck, which must be mechanically removed, because there is active corrosion under it.

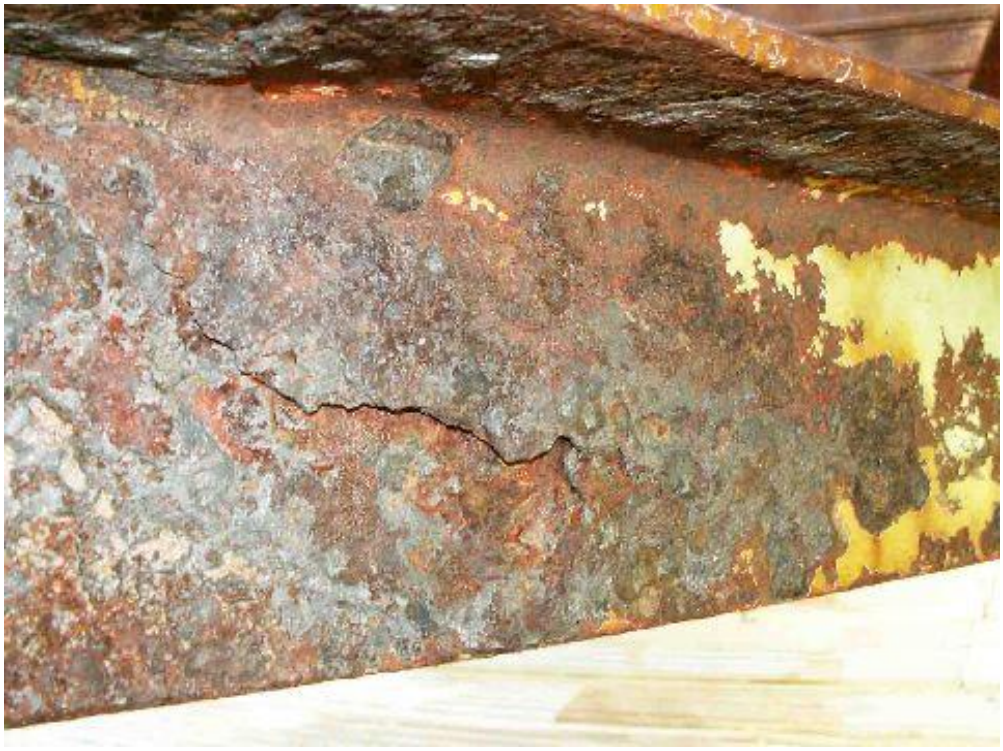


Photo 11 – Example of scale rust that remained after pressure washing; and which was removed.

Photo 12 – Bridge members have been coated with the Termarust system

Photo 13 – Close-up of a complex connection (See Photo 7)

Photo 14 – Coating has been completed (See Photo 2)

Photo 15 – Coating has been completed (See Photos 8 and 9)

Photo 16 – Coating has been completed and corrosion stopped. (See Photos 4, 5 and 10)