

**REPORT September 2007**

**(after 6 years - 3 months of service)**

**Evaluation of the Termarust (High Ratio Co-Polymerized) Calcium Sulfonate Coating System on the Bearings and Anchor Bolts on the Sycamore Street Bridge**



**For Arlington County Virginia Department of Engineering Services**

**Coating Materials From**

**Termarust Technologies, Vienna, Virginia**

**Project Date: June 2001**

**REPORT September 19, 2007**

# **Evaluation of the Termarust (High Ratio Co-Polymerized) Calcium Sulfonate Coating System on the Bearings and Anchor Bolts on the Sycamore Street Bridge in Arlington County, Virginia**

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## **CURRENT STATUS After 6 years and 3 months of service**

On September 19, 2007, the Arlington County Bridge Program Manager and I visited the bridge and inspected the condition of the bearings and the anchor bolts on the Sycamore Street bridge to determine and document the current condition of the Termarust paint system; i.e. has it still stopped corrosion of the anchor bolts and the bearings. The following is a summary of the current condition of the anchor bolts and the bearings:

1. The condition of the Termarust coating system is excellent there are no coating failures on any of the bearings or anchor bolts.
2. On some bearings there is a small amount of rust staining on the top of the lower base plate that has leaked down and onto the top of the base plate. The rust staining is from very light rust on the underside of the upper base plate, above the rocker. Apparently these underside surfaces were not painted adequately. During this inspection some of this rust staining on the surface was actually wiped off. (See photos 15, 16 and 21)
3. On some of the bearings, there is also light rust on the inner vertical surfaces of the slotted holes in the lower base plate but not on this section of the anchor bolts. Although the anchor bolts could be cleaned and painted it was very difficult (if not impossible) to clean and paint the inner surfaces of these slotted holes. (See photo 14)
4. There is some rust staining coming out from under the underside of the lower base plates. This is an inaccessible area that could not be adequately cleaned before painting. During the painting process Termarust TR2200 Penetrant was applied around the bottom of the base plates, with the intent that it might penetrate under the base plates and stop any corrosion.
5. The color of the Termarust coating system is essentially the same as when it was applied; i.e. the coating has not faded, or chalked.

## **OVERVIEW**

This report covers a trial project for evaluation of the single coat Termarust high ratio calcium sulfonate coating system on the bearings and very badly corroded anchor bolts on two (parallel) bridges in Arlington County, Virginia.

As may be seen from the following pictures initially there was severe corrosion and considerable loss of cross sectional area of many of the anchor bolts due to leakage of water (and salt water) through the deck joints.

One of the main differences between the Termarust high ratio co-polymerized calcium sulfonate coating system and other (more traditional) coating systems is **it chemically stops active corrosion**; including in inaccessible locations; e.g. between pieces of the steel bearing assemblies.

The cleaning/preparation method used for this project was sandblasting because the work was done under an existing contract that required sandblasting.

Here it is important to note that the usual method for cleaning and preparing a structure for application of the Termarust system is with a 5,000 psi pressure washer with a zero-degree rotating tip and Chlor\*Rid in the water for removal of soluble salts; e.g. chlorides an excessive amount of which will cause failure of any/all coating systems. [See [www.chlor-rid.com](http://www.chlor-rid.com) for more information on this topic.]

## **REFERENCE Contact Person**

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## **OBJECTIVES**

To evaluate the ability of the Termarust high ratio calcium sulfonate coating system to chemically stop corrosion on the bearings and anchor bolts.

## **CLEANING AND APPLICATION PROCEDURES**

1. The bearings and anchor bolts under the ends of the beams of these twin bridges were sandblasted.
2. Termarust TR2200 Penetrant was applied (with a hand squirt bottle) to all open connections, the faying surfaces of the bearings and around the bottom edges of the bottom base plates.
3. TR2100 Topcoat was immediately applied (wet-on-wet), by hand/brush, as follows:

The final result was:

- } 10 mils DFT on bare steel and tight rust, and
- } 20 mils DFT over the edges of connections, and the anchor bolts and nuts.

## **PICTORIAL OVERVIEW**

The following pictures provide a pictorial overview of the project.



Photo 1 Bridges and the general location.



Photo 2 Underside of one of the bridges.



Photo 3 Existing condition of bearings in July 2001.

(It is not known what the white deposit on the surface of the steel is)



Photo 4 Existing condition of anchor bolt, note corrosion.



Photo 5 Existing condition of anchor bolts severe corrosion  
Corrosion ring/shell has expanded and cracked vertically  
but it has not yet fallen off (as seen in the next photo)



Photo 6 Corrosion ring/shell around anchor bolt has fallen off revealing substantial loss of cross sectional area of the bolt. (**Compare with Photos 11, 14 and 21**)



Photo 7 August 2001 after sandblasting and painting with Termarust.

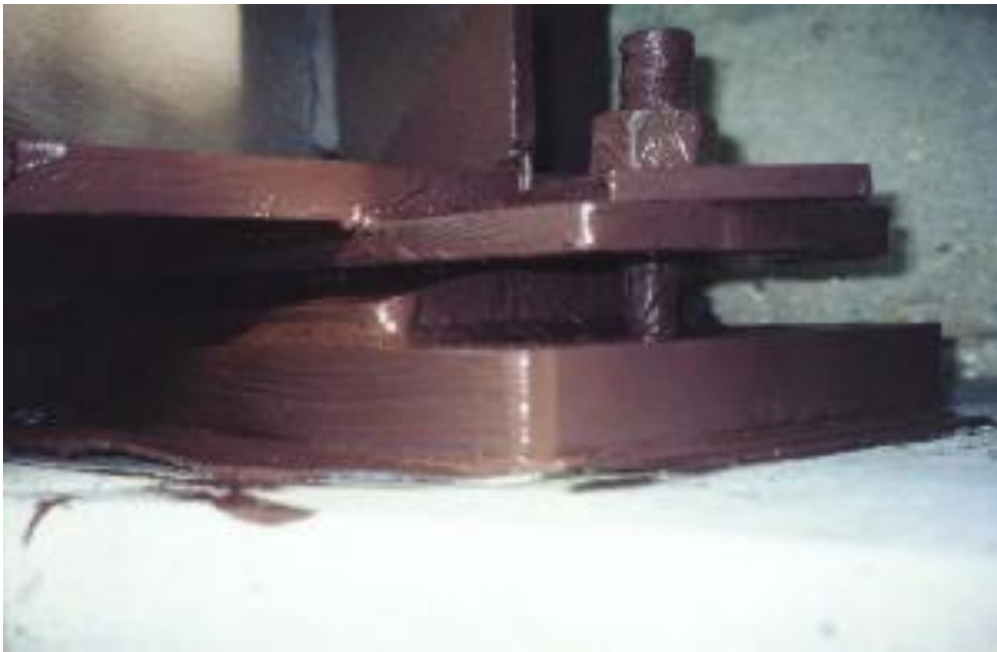


Photo 8 Close-up of painted bearing and anchor bolt, August 2001.



Photo 9 Condition, November 2003

no corrosion, after 27 months.



Photo 10 Condition in November 2003, no corrosion after 27 months.





Photo 11 Condition in November 2003, after 27 months

**(Compare with Photos 6, 14 and 21).**



Photo 12 Condition in November 2003, no corrosion after 27 months.



Photo 13 Condition in May 2005, no corrosion of the bearings or anchor bolts.



Photo 14 Condition in May 2005, no corrosion of the bearings or anchor bolts.

**(Compare with Photos 6, 11 and 21)**



Photo 15 Condition in May 2005, no corrosion of the bearings or anchor bolts.  
(Rust staining is from inside of hole in upper bearing plate)



Photo 16 Condition in May 2005, no corrosion of the bearings or anchor bolts.  
(Rust staining is from the underside of the top bearing plate and inside of holes in plates)



Photo 17 Condition of an exterior bearing in September 2007, after 6 years  
(No corrosion or rust staining)



Photo 18 Condition in September 2007 after 6 years (Rust staining is from the underside of the top bearing plate, inside of holes in plates and under base plate)



Photo 19 Condition in September 2007 after 6 years (Note that rust staining on top of the front corner of the base plate has been washed off paint under it is in excellent condition)



Photo 20 Condition in September 2007 after 6 years (Rust staining is from the underside of the top bearing plate and inside of the holes and rusting of the unpainted A-588 steel beam)



Photo 21 Condition in September 2007 after 6 years (Rust staining is from under underside of plates and inside of holes and the A-588 beam (Compare to Photos 6, 11 and 14))



Photo 22 Condition in September 2007 after 6 years (Rust staining is from unpainted A-588 steel beam)