

# OFFICE MEMORANDUM

August 25, 1969



MICHIGAN  
DEPARTMENT OF STATE HIGHWAYS

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To: R. L. Greenman  
Engineer of Testing & Research

From: L. T. Oehler

**Subject:** Protection of Substructure Concrete from A588 Steel Staining by Use of an Aluminum-Pigmented Coating. Research Project 67 G-158. Research Report No. R-716.

In accordance with a previous agreement, and as confirmed by M. Rothstein's memorandum to you dated April 17, 1969, the aluminum-pigmented coating, as covered by Supplemental Specifications dated 3/3/69 was field test applied on a minor portion of the Eight-Mile Road structure over the John Lodge Freeway on July 30 and 31, 1969.

A. J. Permoda reports that almost 15 gallons of the test coating were applied on areas of the low piers at either end of the structure, as indicated in Figure 1. The coating was applied mostly by roller (Fig. 2) and some by brush where necessary. The test application showed the coating was slightly too viscous and too fast drying for best application, with a tendency to cobweb as a result. This was partially corrected in the field by thinning and can subsequently be corrected in formulation. The coating gave a good appearance after application (Fig. 3). It dried within the specified 1/2 hour and gave a coverage estimated at 250 sq ft per gallon of coating. As a supplementary remark on application; surface voids on the concrete present something of a problem in coating, since a roller will not coat most of them while the shallow ones receive too much paint, which subsequently runs out. A second pass of a semi-dry roller corrected the latter, but the deeper ones were not coated in subject tests and present a freckle appearance on careful observation.

The subject test coating was applied on stained concrete, after wire brushing. Surprisingly, wire-brushing removed almost all of the accumulated staining on this structure that was previously chemically de-stained during construction. It is assumed that power wire-brushing would have been even more effective.

Wayne County Road Commission personnel who performed the work under agreement with District 10 personnel, expressed preference for a brush-off sandblasting method from their experience in removing pornography and other unwanted stainings. This was also tried on some stained concrete and was not overcoated (Figs. 1 and 4). It proved very effective, and probably economical, in removing the stain.

It is now believed that both power wire-brushing and brush-off sandblasting, without overcoating, have potential in dealing with the staining problem.

The coated and uncoated (sandblasted) areas will be observed for performance and reported on subsequently.

This report supplements a previous one, No. R-687, detailing performance of promising coatings in laboratory screening tests.

TESTING AND RESEARCH DIVISION

*L Roy T. Dohler*

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Engineer of Research  
Research Laboratory Section

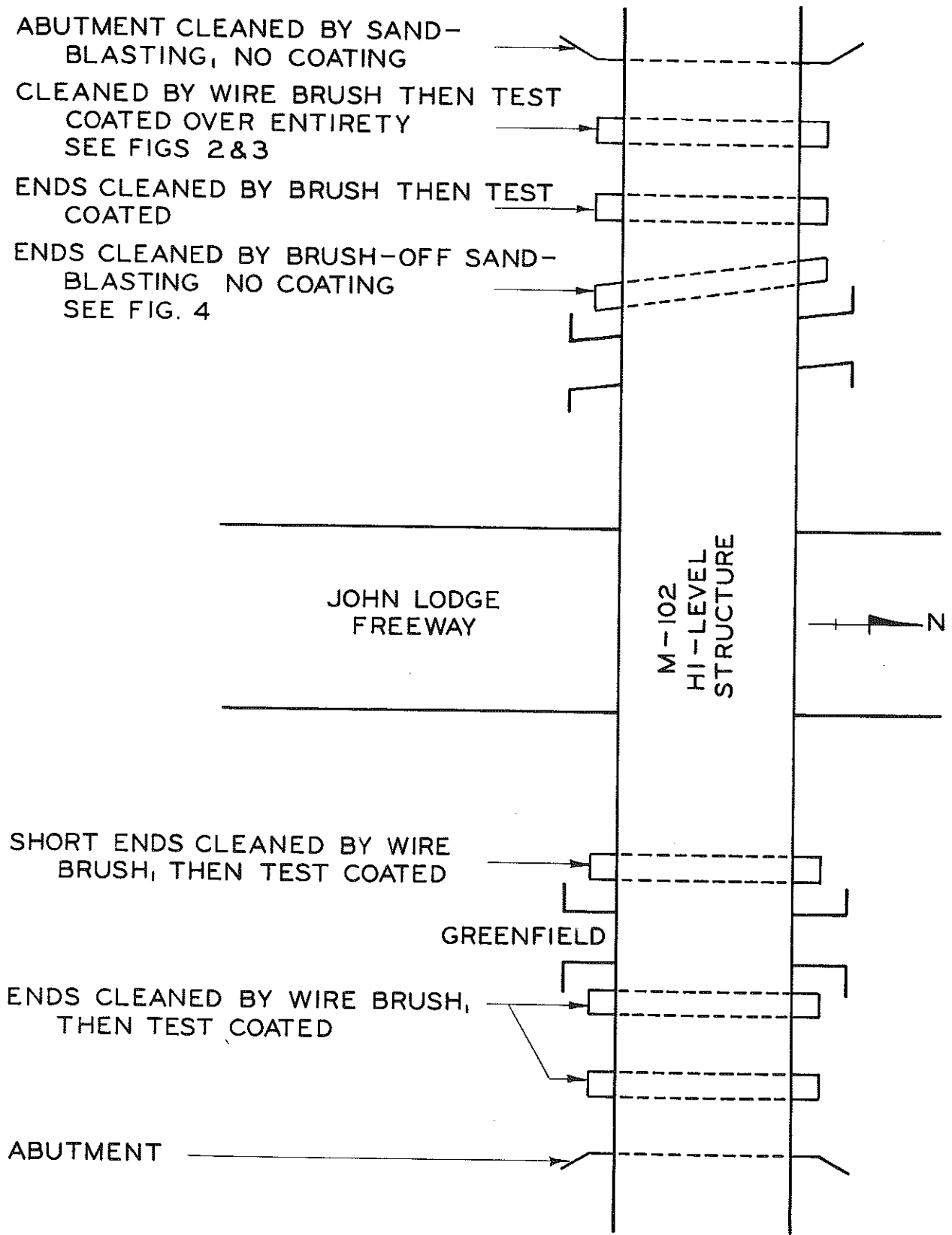
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ABUTMENT CLEANED BY SAND-BLASTING, NO COATING

CLEANED BY WIRE BRUSH THEN TEST COATED OVER ENTIRETY SEE FIGS 2 & 3

ENDS CLEANED BY BRUSH THEN TEST COATED

ENDS CLEANED BY BRUSH-OFF SAND-BLASTING NO COATING SEE FIG. 4



SHORT ENDS CLEANED BY WIRE BRUSH, THEN TEST COATED

GREENFIELD

ENDS CLEANED BY WIRE BRUSH, THEN TEST COATED

ABUTMENT

Figure 1. Showing locations of test aluminum coating and treatments at Detroit bridge site.

Figure 2. Application of the coating by roller after gross staining was removed by wire brush. Application is on S corner of first pier on W end of M 102 structure. Coating was extended over pier cap under fascia since it was previously uncoated.

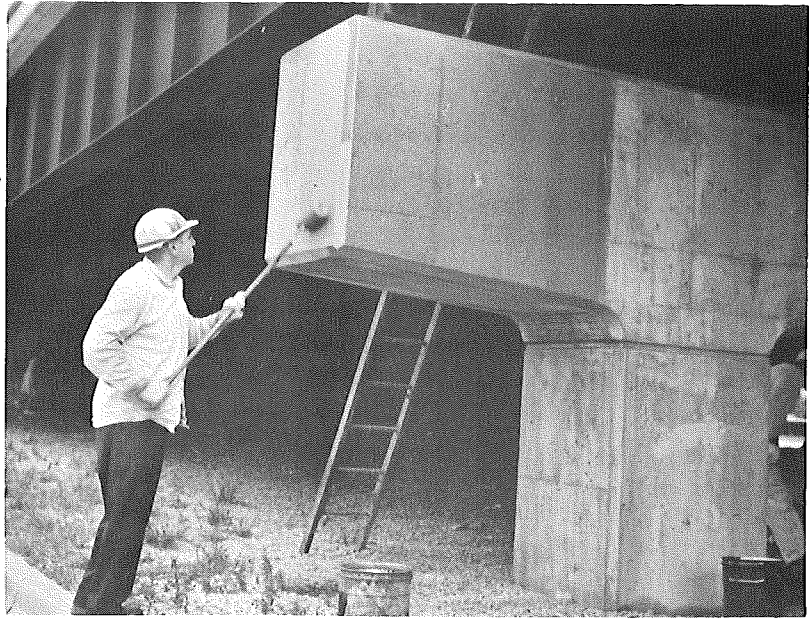


Figure 3. Good appearance of pier concrete after coating application. Left portion coated; right-yet uncoated (same pier as above).

Figure 4. Appearance of pier concrete stain before removal by brush-off sandblasting. This was left uncoated. See Fig. 1 for exact location on W section of structure.

