

MICHIGAN
STATE HIGHWAY DEPARTMENT
Charles M. Ziegler
State Highway Commissioner

SECOND CONDITION SURVEY OF EXPERIMENTAL CONTRACT
RESEALING AND PATCHING PROJECT

US-16 Nunica to Fruitport
Project Mc 70-28, G3

by
L. Allen Fickes

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Cooperative Research Program Between the Maintenance
Division and Testing and Research Division

(A Supplemental Report to Research Laboratory Reports 197, 197A and 197B)

Research Project 53G-68

Research Laboratory
Testing and Research Division
Report No. 225
March 31, 1955

SECOND CONDITION SURVEY OF EXPERIMENTAL CONTRACT
RESEALING AND PATCHING PROJECT

The experimental contract resealing project on US-16 between Nunica and Fruitport was surveyed on March 16, 1955 to determine the condition of the sealed cracks, resealed joints and concrete patches after 1-1/2 years of service. The sealing and patching work had been done between August 11 and September 10, 1953, and the broken concrete patched between September 15 and September 18, 1953. (Report 197, Oct. 9, 1953 and Report 197A, Dec. 4, 1953). A five month condition-survey has been previously reported (Report 197B, Feb. 24, 1954).

In the previous survey it was found that the various maintenance repairs had held up very well except for the transverse joints and open cracks containing Brand A joint sealer. This material was badly cracked and separated from the joint face.

The current survey revealed that the Brand A sealer had continued to deteriorate to the point where in all transverse joints it was at least badly cracked and separated from the joint faces (Figures 1A and 1B). It was interesting to note that in spots where separation from the joint face had not occurred, the adhesion bond was very tight.

Brand B sealer has now also started to deteriorate. In about half of the transverse joints containing this material, failures have occurred in both cohesion and adhesion (Fig. 2A), while in the remainder, the sealer is intact except for a slight surface resinification (Fig. 2B).

Some transverse joints containing Brand C sealer had adhesion failures in which adhesion of the sealer to one joint face was lost (Fig. 3A). Most of the joints containing this material, however, were in good condition except for a shallow checking of the joint seal surface (Fig. 3B).



A. Station 655+50 N. Failures in Both Adhesion and Cohesion.



B. Station 646+45 S. Failure not as Extreme as at Left.

Fig. 1. Transverse Joints Resealed with Brand A Sealer. Typical Appearance on March 16, 1955.



A. Station 645+50 N. Failures in Both Cohesion and Adhesion.

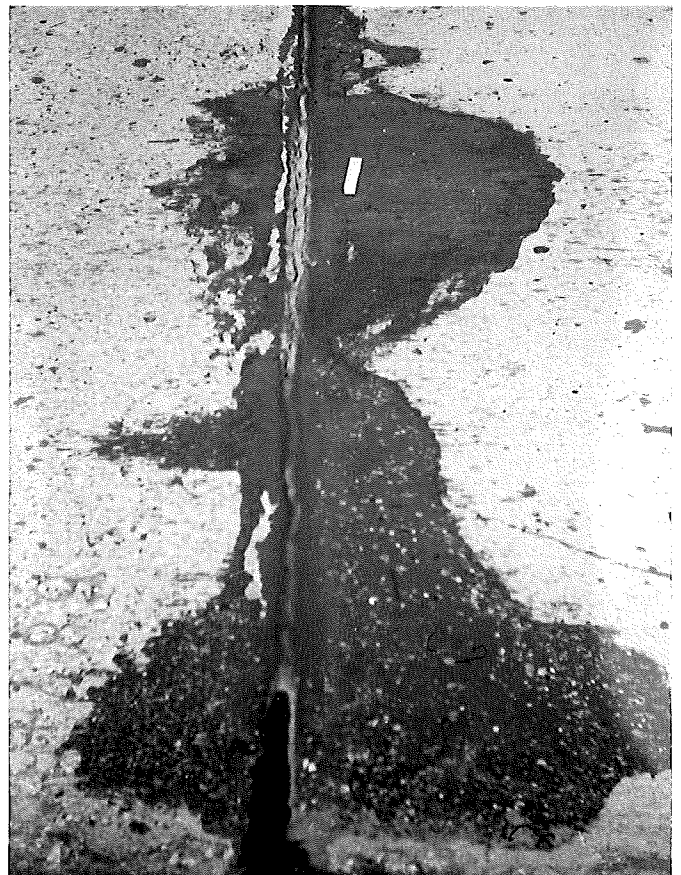


B. Station 646+45 N. Adhesion and Cohesion Good. Slight Resinification of Sealer Surface.

Fig. 2. Transverse Joints Resealed with Brand B Sealer. Typical Appearance on March 16, 1955.



A. Station 514+97 S. Adhesion to One Joint Face Lost.



B. Station 578+52 N. Adhesion and Cohesion Good. Slight Surface Cracking Visible.

Fig. 3. Transverse Joints Sealed with Brand C Sealer. Typical Appearance on March 16, 1955.

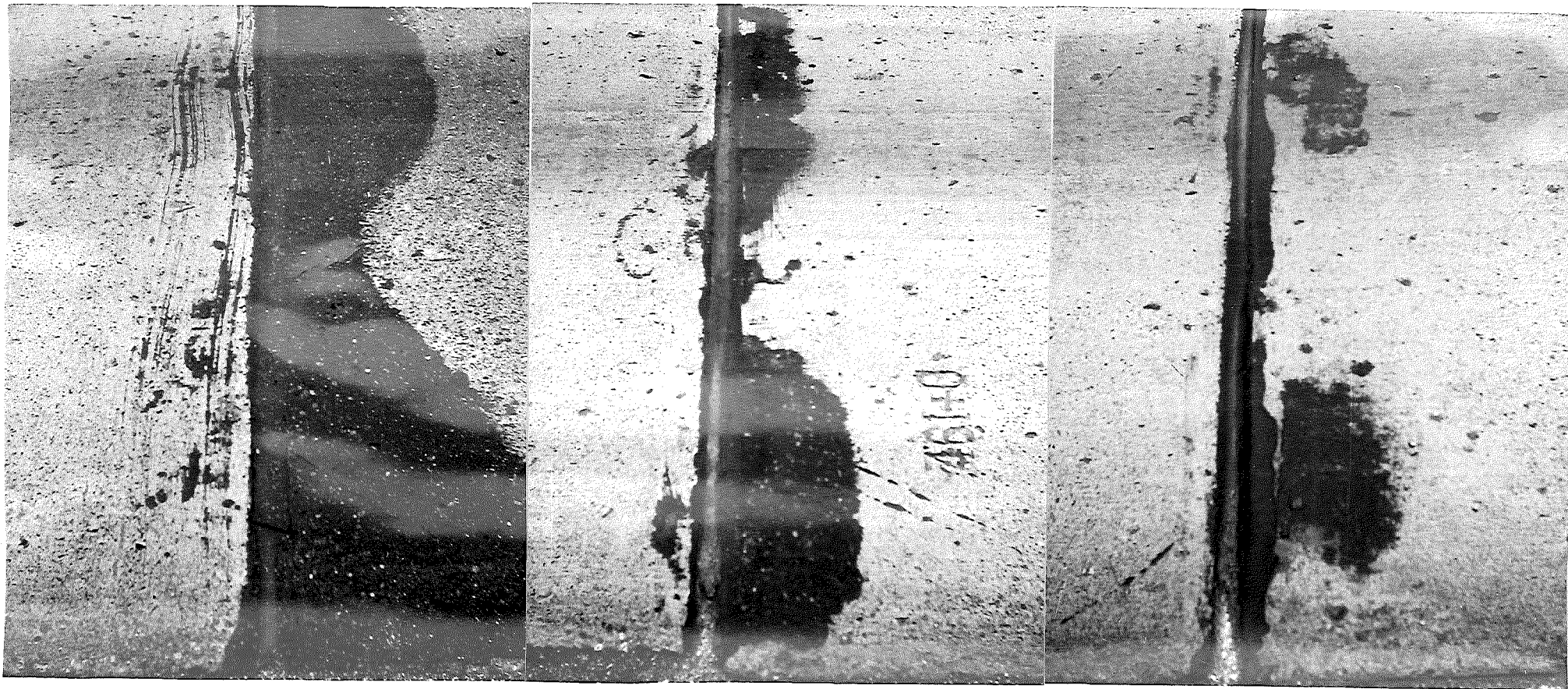
The other three materials in transverse joints were still in very good condition. Brand D sealer showed a slight adhesion failure in a few joints near the pavement edge (Fig. 4A) and a slight surface cracking or checking was apparent in Brand E sealer (Fig. 4B). Brand F sealer was in excellent condition, appearing as good as when it was first applied (Fig. 4C).

Brands A and C sealers failed in cohesion at wide cracks (See Figures 5A and 5B). The other materials were still performing satisfactorily.

All fine cracks and the entire longitudinal joint still appeared to be well sealed and the sealing material in good condition regardless of the brand used. Since their appearance is the same as illustrated in the previous report, Report 197B, no pictures of them are included in this report.

Figure 6 shows the condition of a typical concrete patch. The bond between the patching material and the old concrete is still in excellent condition. As indicated in Report 197B, there was a tendency for the joint seal to come loose from the patching material and this condition is still apparent. Two of the patched areas had been damaged by trucks going through the barricades and passing over the patching material before it was cured. This resulted in immediate cracking of the patching material and these cracks are now somewhat more apparent than during the previous survey.

Although the general condition of this experimental project is not as good as it was at the last survey, it is encouraging to note that three of the six sealing materials used are still holding up very well, especially Brand F, and indicate a relatively long life expectancy. Since extreme care was taken in joint and crack preparation and sealer application, it is becoming apparent that some of our present joint sealers will not give satisfactory service. Our present specifications are not adequate to distinguish such materials from those that will give satisfactory service. In view of this fact, it is obvious that new tests must be developed which will give a more realistic picture of a satisfactory joint-sealing material. The Research Laboratory is giving this matter full consideration.



A. Station 482+50. Brand D in Good Condition Except Slight Adhesion Loss Near Pavement Edge.

B. Station 461+00 N. Brand E in Good Condition. Slight Surface Checking Present.

C. Station 430+20. Brand F in Excellent Condition.

Figure 4. Transverse Joints Resealed with Brands D, E and F. Typical Appearance on March 16, 1955.



A. Station 582+60 S. Sealed with Brand A. Failure in Cohesion.



B. Station 582+60 N. Sealed with Brand C. Failure in Cohesion.

Fig. 5. Typical Appearance of Open Cracks on March 16, 1955.

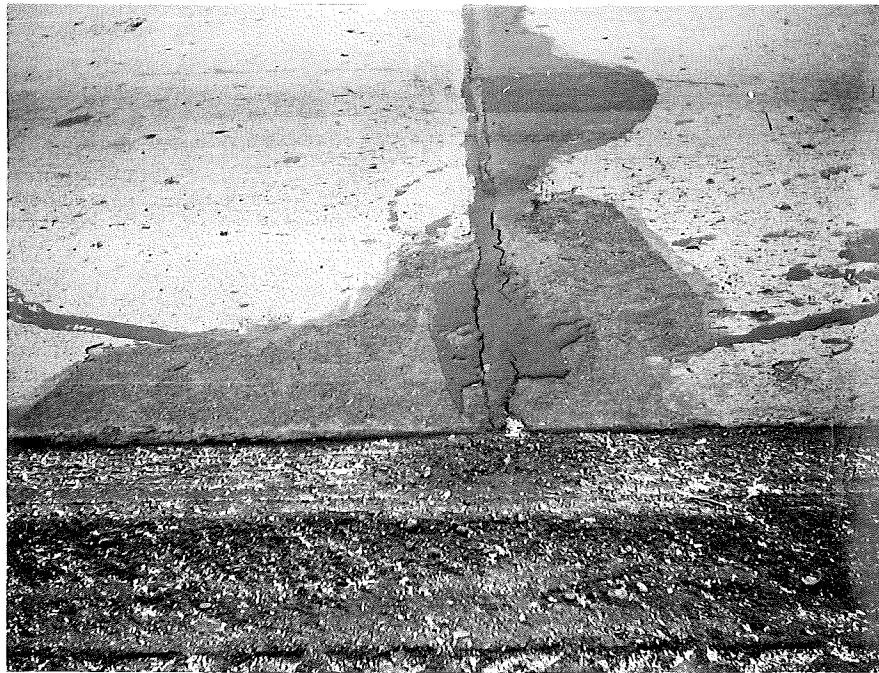


Fig. 6. Typical Appearance of Repaired Corner Breaks
on March 16, 1955.