MICHIGAN
STATE HIGHWAY DEPARTMENT
Charles M. Ziegler
State Highway Commissioner

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FIRST CONDITION SURVEY OF HOT-POURED BITUMINOUS-RUBBER JOINT SEAL INVESTIGATION ON US 16, WEST OF LANSING

E. A. Finney

Research Project 36 G-4 (3) E
in conjunction with
Research Project 36 G-4 (6)

Research Laboratory
Testing and Research Division
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FIRST CONDITION SURVEY OF HOT POURED BITUMINOUS-RUBBER JOINT SEAL

Installation on US 16, West of Lansing

An experimental field installation including various commercial hot-poured bituminous-rubber type seals was installed on US 16 west of Lansing between the dates October 30th and November 9th, 1945. On March 29th, 1946 an examination was made of this experimental project in order to determine the condition of the joints after being in service for one winter. The inspection was made by E. A. Finney and B. W. Pocock.

PARAPLASTIC JOINT SEAL MATERIAL

In general, all joints sealed with Paraplastic material were in very good condition. However, the joints on the south half of the pavement appeared to be better sealed than those on the north half. The joints on the north half of the pavement evidently, for some unknown reason, were not flush with the pavement as compared with those on the south half. No apparent difference could be noticed in the bonding characteristics of the joints which were primed as compared with the joints which were not primed. In other words, the value of priming expansion joints prior to sealing is questionable. The air temperature at the time of inspection was approximately 70°F. The material could be readily dented with the finger. Figure No. 1 is a view showing typical expansion joint sealed with a tar joint seal material. Figures 2, 3 and 4 show typical condition of paraplastic joint seal material.

ASPHALTIC OIL - REVERTEX

This material apparently sealed the joints perfectly except that the material was too soft, having a tendency to run out on the shoulder at the end of the joint. See Figure 5.

ASPHALTIC OIL - ANODE GRS

This material appeared harder than the Asphaltic Oil - Revertex, but was too soft for satisfactory joint seal material. The joint at Station 185+30 was in poor condition due apparently to improper pouring operations. However, the material adheres well to the concrete and provides excellent sealing. See Figure 6.

SOA - ANODE GRS

This material apparently had about the same consistency as the Paraplastic, but had very low wetting properties and did not bond satisfactorily to the concrete. See Figure 7.

SOA - REVERTEX

This material was very similar in every respect to that of SOA - Anode GRS both in wetting properties and in general consistency. The general appearance of all the joints was excellent, yet the material does not seem to bond properly to the concrete. See Figure 8.

CAREYLASTIC

This material sealed the joint in a very excellent manner and the joints appeared to be in very good condition on both sides of the pavement. Careylastic seemed to have the proper consistency and adhered very well to the concrete where the latter was clean when the joint was poured. From the inspection it would appear that Careylastic was giving the best performance to date. See Figure 9.

GENERAL REMARKS

For some unknown reason it was quite evident that all the joints on the north side of the test section had the appearance of not being poured as

carefully as those on the south half. In other words, the joints had the appearance of not being completely filled at the time of pouring and they seemed to have weathered more than the south half. Another thing that was quite obvious during the survey was that the joints must be cleaned completely of all loose material and dirt adhering to the concrete in order that the seal will become 100 percent effective. This is a very important requirement.

Immediately after pouring the joints on the north half of the pavement, Portland Cement was dusted lightly over the hot seal material to prevent pick up by traffic. A portion of the cement dust has evidentally combined with the seal material at the surface to form a very thin crust. This crust has cracked to the extent that the joint seal material has the appearance of having undergone accelerated weathering. The joints on the south half of the test section were not dusted with a Portland Cement. Traffic was detoured until the seal material had hardened sufficiently to resist pick up by the wheels. Results indicate that this method should be used.

With the exception of the joints sealed with Careylastic joint seal compound located at Stations 181+71, 181+13, 180+41 and 179+79, the joints on the North half of the pavement were sealed at a different time than those on the South half. This may to a great extent account for the fact that there is a marked difference in the appearance of the joints with respect to the north and south lanes of pavement.

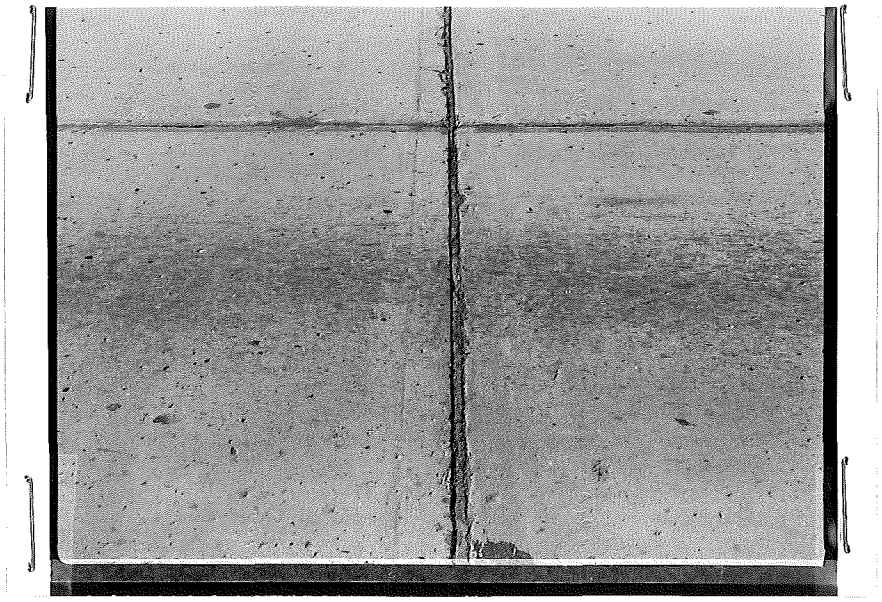

Figure 1. View of joint sealed with tar material. North half Station 188+95.

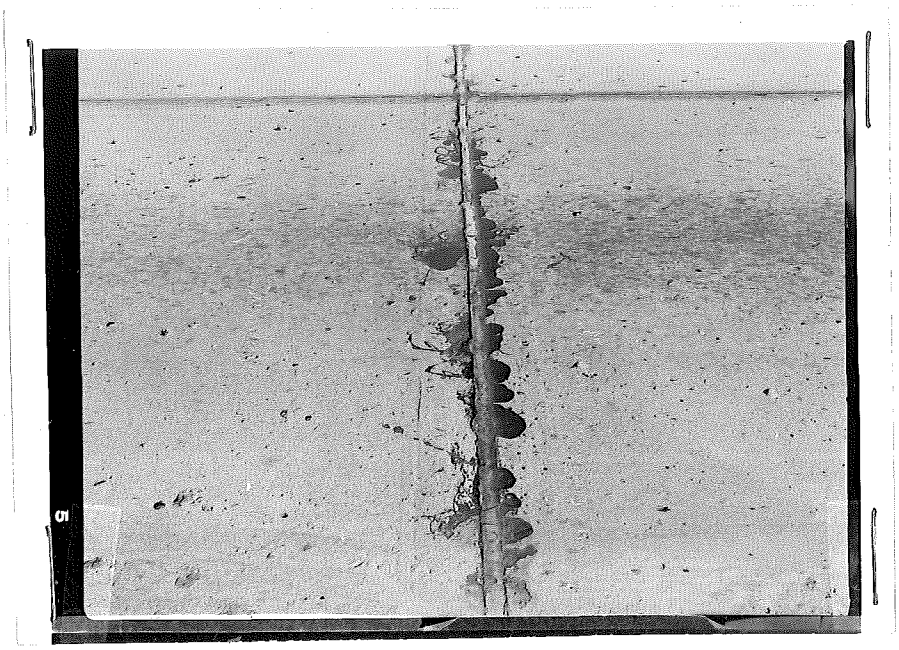

Figure 2. Paraplastic. North half looking south. Station 187+78. Not enough seal material in joint.

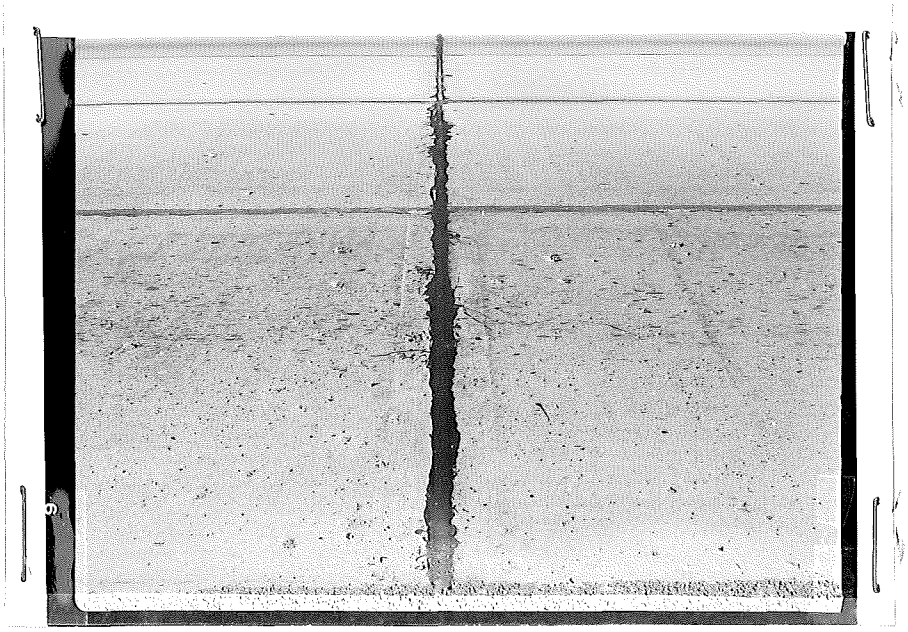

Figure 3. Paraplastic. South half looking north. Station 186+55. Joint properly filled.

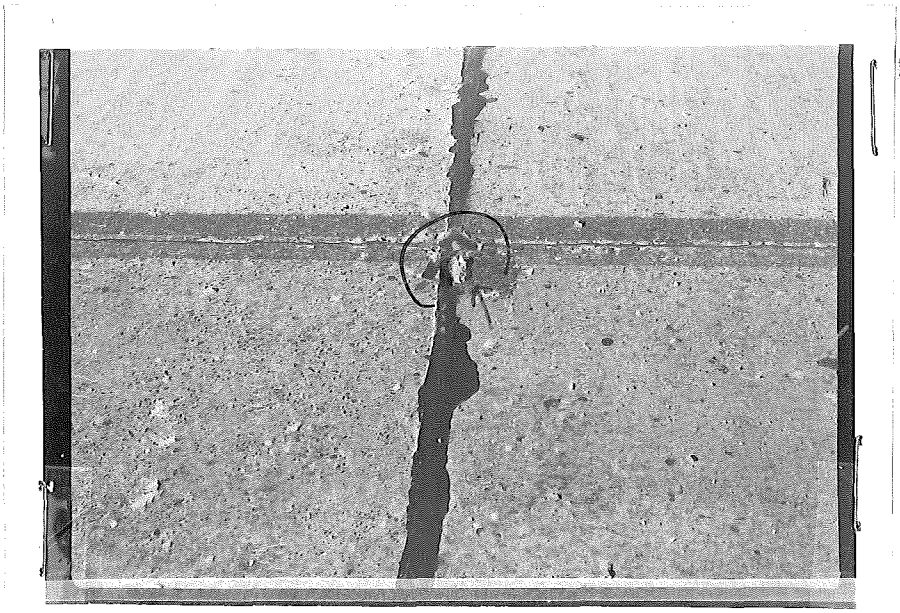

Figure 4. Paraplastic. Station 185+95. Note lack of bond where joint was not cleaned properly.

Figure 5. Oil-Revertex. South half looking north. Station 185+30. Bleeding was noticeable at edge of slab. Material too soft.

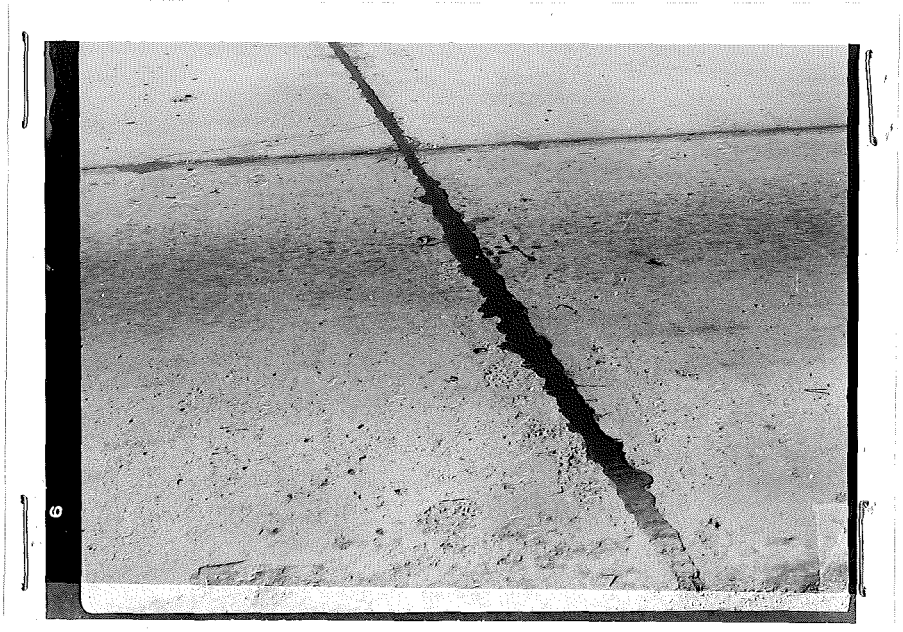

Figure 6. Oil-Anode GRS. North half looking south. Station 184+80. Provides excellent seal, but too soft.

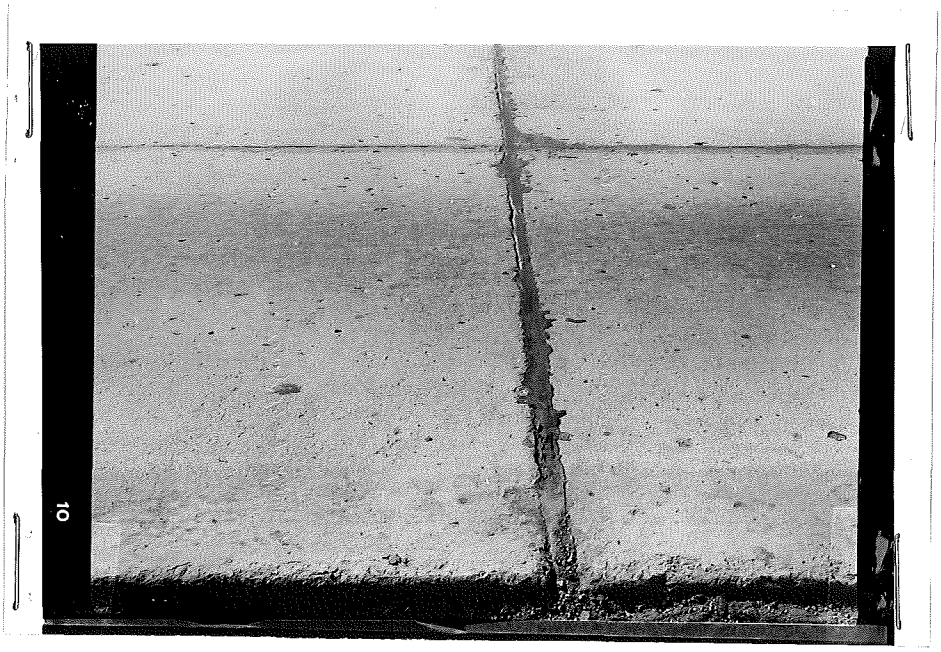

Figure 7. SOA-GRS. North half looking south. Station 183+48. Material does not bond satisfactorily. About same consistency as Hot Poured type.

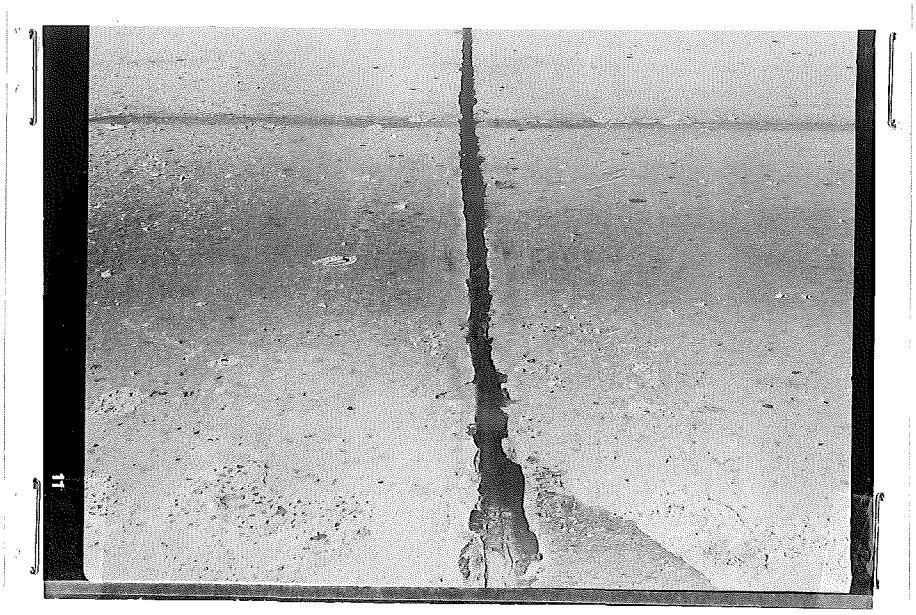

Figure 8. SOA, Revertex. South half looking north. Station 182+91. Good consistency, but poor bond, same as SOA-GRS. General appearance excellent.

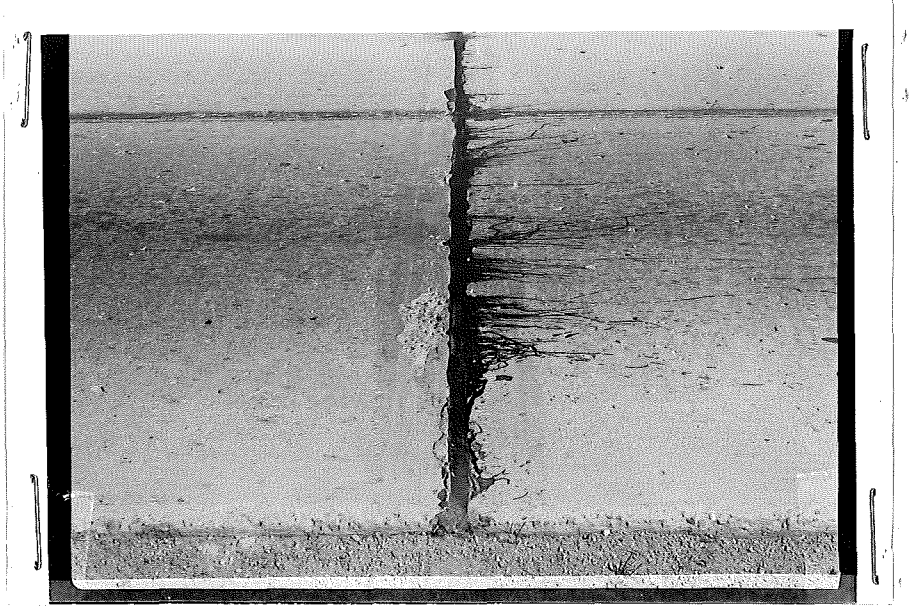

Figure 9. Careylastic. South half looking north. Station 181+13. All joints in good condition. View showing pick up by traffic.