

MICHIGAN
STATE HIGHWAY DEPARTMENT
Charles M. Ziegler
State Highway Commissioner

PARA-PLASTIC JOINT SEALING COMPOUNDS

By

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Research Project 36 G-4 (3)

Research Laboratory
Testing and Research Laboratory
Report No. 53
June 2, 1944

MICHIGAN
STATE HIGHWAY DEPARTMENT
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INTEROFFICE COMMUNICATION

June 2, 1944

TO: W. W. McLaughlin

SUBJECT: Report on Para-Plastic Joint Seal Material
Expansion Joint Seal Study 36-G-4

In June, 1942, the Department purchased from the Servoized Products Corporation of Chicago, 170 lbs. of Para-Plastic joint-sealing compound for experimental purposes. This material was installed on the Michigan Test Road in all expansion joints in Series 9-A, station 162+10 to 181+00 inclusive. A usual survey of this installation was made on May 11, 1944. Another joint seal material called "Asphaltic Oil-Vultex" which was developed by the Department in 1939 was observed at the same time for comparative purposes. The results of the survey are as follows:

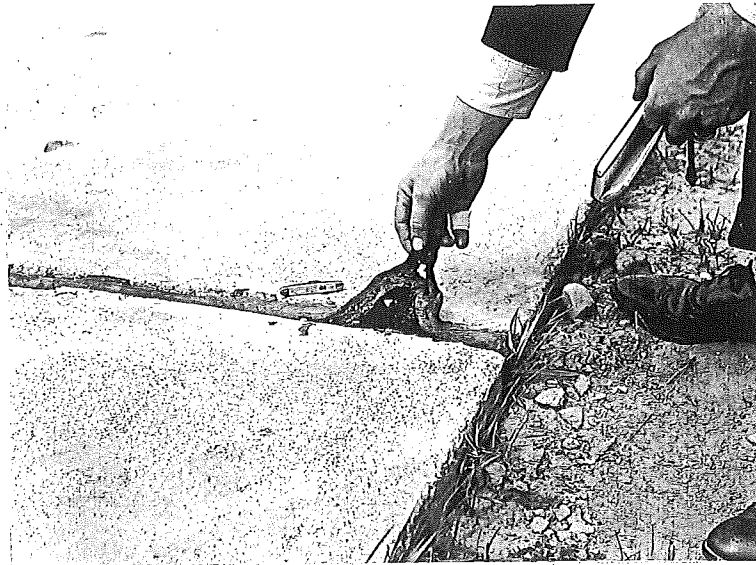
After two years of service the para-plastic material appeared live, plastic, and displayed considerable cohesion as illustrated in Figure 1 and 2. However, its bonding characteristics with the concrete were unusually poor and dirt penetrated into the joint as illustrated in Figures 3 and 4. Why such a condition developed is difficult to state. Although the pavement was 2 years old at the time of application of the Para-Plastic compound, the joints were free of bituminous material since a premolded rubber joint seal was used previously. Also the joints were carefully cleaned and dried before the material was installed. The compound showed a tendency to adhere to the joint filler underneath.

The Asphaltic Oil-Vultex was installed in series 4-6-7-8 and parts B1 and B2 of Series 10 during construction of Michigan Test Road. After 4 years in service the Asphaltic Oil-Vultex material was found to be extremely live and adhered perfectly to the concrete throughout the entire length of the joints as illustrated in Figures 5 and 6. This material has received no subsequent maintenance of any kind since installation.

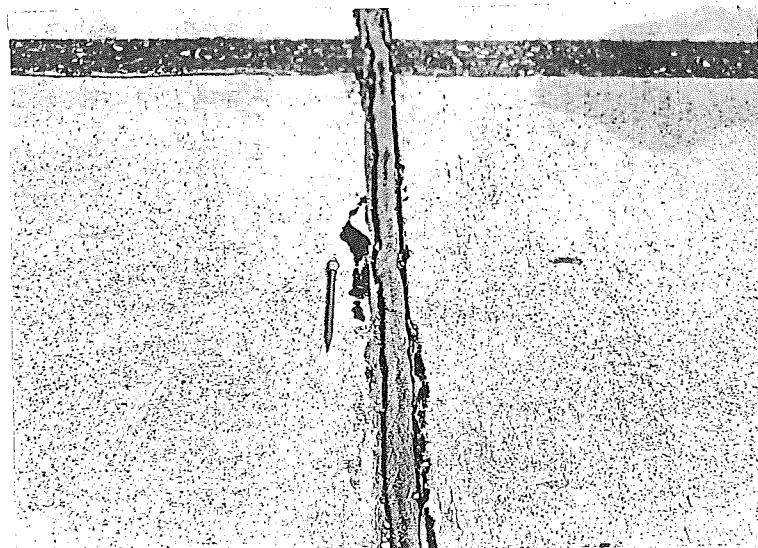
A more complete and detailed survey is planned for this summer, which will cover all types of joint seals included for study on the Test Road Project.

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Engineer in charge of Research

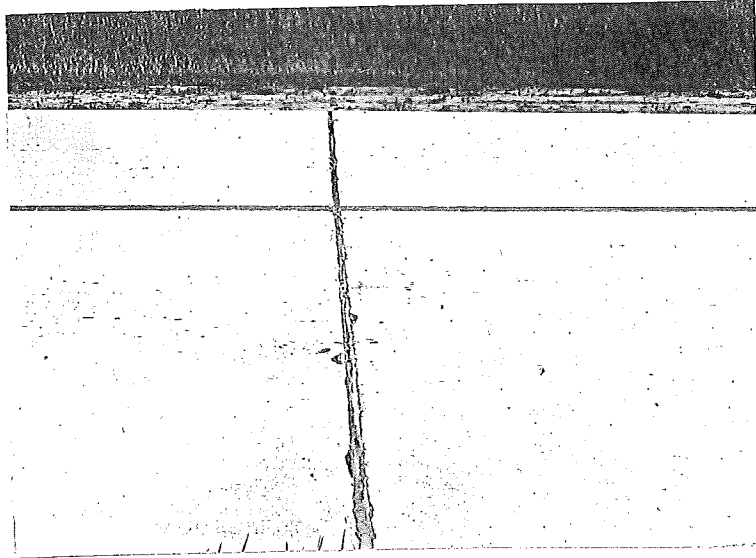
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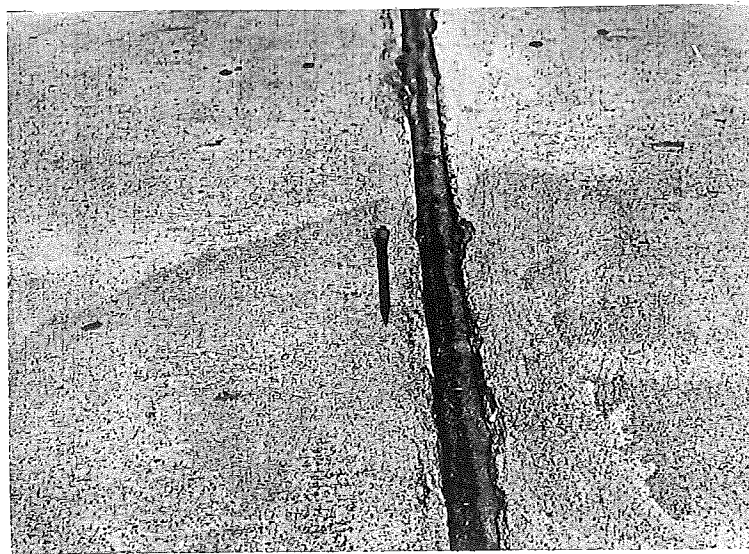
1. 36 G-4(G) Michigan Test Road. Paraplasic joint seal. 5-11-44. Station 166+10. View showing plasticity of material which was installed summer 1942. Material in itself is in a fair state of preservation. Material has high degree of cohesion.



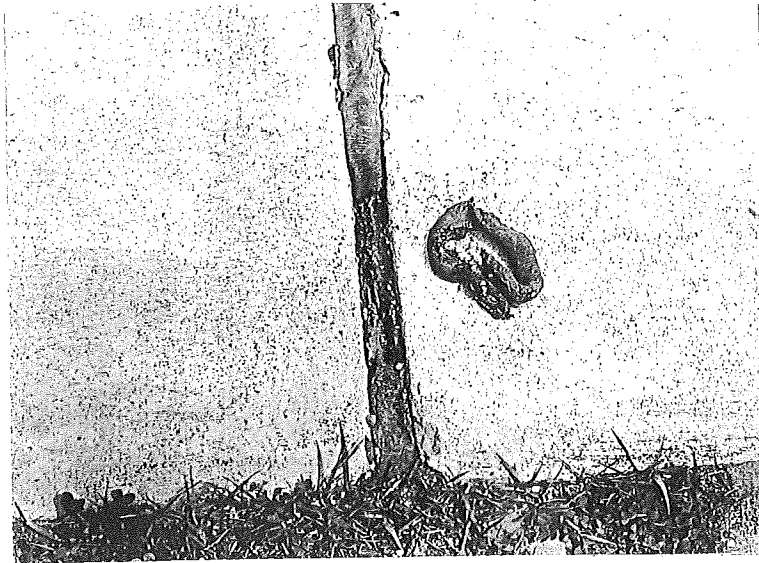
2. 36 G-4(G) Michigan Test Road. Paraplasic joint seal. 5-11-44. Station 166+10. Note lack of bond between cement and material. Note unusual tendency for material to curl away from the cement allowing sand and dirt to enter joint. There is a certain amount of adhesion between joint sealer and joint filler underneath.



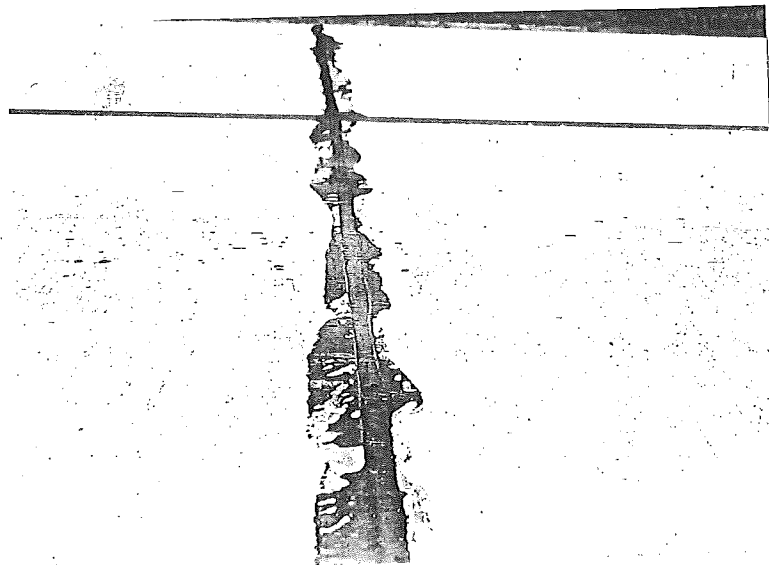
3. 36 G-4(G) Michigan Test Road. 5-11-44. Station 167+10. General view of joint with para-plastic joint seal. E.A.F.



4. 36 G-4(G) Michigan Test Road. 5-11-44. Station 168+10. Typical view of para-plastic joint seal under best conditions. Note lack of bond between material and cement.



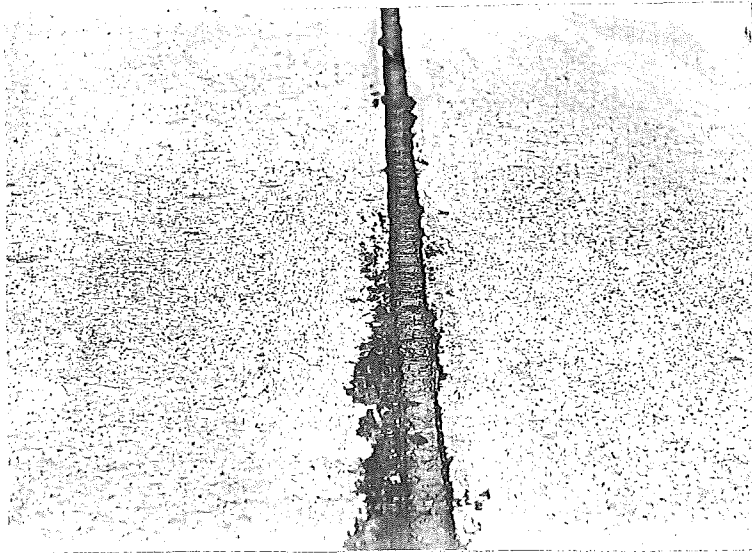
5. 36 G-4(G) Michigan Test Road. 5-11-44. Station 169+10. View showing condition of joint underneath the seal. Note sealing material is live and resilient but lack bonding properties.



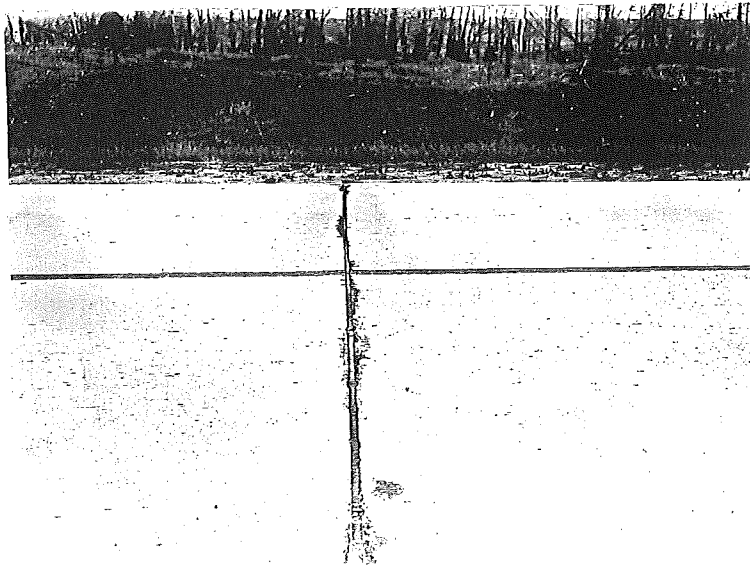
6. 36 G-4(G) Michigan Test Road. Thermoplastic seal. 5-11-44. Station 185+50. General view of thermoplastic seal material after 4 years. 100% perfect bond. No subsequent maintenance after installation. Material had considerable plasticity.

EXPANSION JOINT SEAL STUDY
RESEARCH PROJECT 36 G-4(G)

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7. 36 G-4(G) Michigan Test Road. Oil-Vultex Seal
5-11-44. Station 199+90. After 4 years material is
in excellent condition, 100% bonding, very plastic
and adheres somewhat to finger upon penetration. No
subsequent maintenance after installation.



8. 36 G-4(G) Michigan Test Road. 5-11-44, Sta-
tion 199+90. General view of oil-vultex joint
seal installation.