OFFICE MEMORANDUM

MICHIGAN
STATE HIGHWAY DEPARTMENT
JOHN C. MACKIE, COMMISSIONER

September 11, 1963

To: E. A. Finney, Director
Research Laboratory Division

From: A. J. Permoda

Subject: Evaluation of Preformed Rubber Sealer on M 46 West of Alma (Project F 29-23, C2). Research Project R-36 G-4(3b). Research Report No. R-435.

At your request, five experimental joints on M 46, sealed in November 1936, with a preformed rubber sealer furnished by the B. F. Goodrich Co. have been inspected prior to expected resurfacing of this project. Details of the sealer's installation and early performance were given in Research Laboratory Report OR-29, which stated that installation occurred at Stas. 248+10, 248+70, 249+30, 249+90, and 250+50. These joints were equipped with Translode Base, manufactured by the Highway Steel Products Co. The following report was prepared by D. F. Simmons.

According to A. R. Schaefer, who was present at early inspections, Translode Aircore expansion and contraction joints were placed alternately at 30-ft intervals, and only the so-called "expansion" joints were sealed at the top and sides with Goodrich preformed rubber sealer. The joints were classified at the time of construction as air-type joints. The M 46 pavement was of a 9-7-9-in. cross-section.

In the 1963 inspections, it was estimated that about one-third of the rubber sealer had completely disappeared (where joints had subsequently been resealed with hot-poured material as shown in Fig. 1). Another one-third of the sealer was in place, but ragged and torn, with evidence of some subsequent resealing (Fig. 2). Finally, about one third appeared still to be in position as placed, and had retained approximately its original shape (Fig. 3); this remaining sealer was still quite resilient.

During this inspection portions of preformed sealer were removed (Fig. 3), to determine the amount of infiltration into the joint space. Varying amounts of infiltrated material were found. This could have resulted from a) initial placement of preformed sealer 1/2 to 3/4 in. below the surface as noted in Report OR-29, allowing accumulation of road dirt atop the sealer and its subsequent blow-by, b) lateral spreading from such localized failures in the sealer and at the joint as may be seen in the spalling and corner breaks shown in Figs. 1 and 2, or c) inadequate adhesion of sealer to the joint face.

Conclusions

The 1963 inspection of preformed rubber sealer installed in five joints in 1936, showed performance varying from total displacement or removal to presence in about its original position. Some of the remaining sealer had retained its shape and was still very resilient. Maintenance resealing had been done where preformed sealer had failed or the joint had faulted. Varying amounts of infiltrated material were observed in the joint spaces beneath the remaining sealer.

Since the preformed sealer had 27 years of service with minimal maintenance, it must be rated as having given creditable performance in pavement having 60-ft slabs. It is believed that this type of joint sealer has potential, especially if improvements are made to assure proper depth positioning and gluing during installation, and sealer is designed for modern slab lengths and joint construction practices.

In view of the forthcoming resurfacing of the project, this report may be considered as terminating the research study.

OFFICE OF TESTING AND RESEARCH

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Figure 1. Joint resealed with hot-pour where original preformed sealer had disappeared. Note spall and center-joint break (Sta 249+30).

Figure 2. Test joint showing some resealing with hot-pour where original preformed sealer was torn and ragged (Sta 248+70).