

# OFFICE MEMORANDUM



MICHIGAN  
STATE HIGHWAY DEPARTMENT

August 3, 1966

To: W. W. McLaughlin  
Testing and Research Engineer

From: E. A. Finney

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Subject: Presstite Tape for Protection of New Joints Before Sealing.  
Research Project 66 NM-156. Research Report No. R-594.

Discussion at the May 26, 1966 meeting of the Committee for Investigation of New Materials included Presstite No. 579.15, a 2-1/2 in. wide polyethylene adhesive tape to be placed over concrete joints for short periods after construction. The purpose is twofold: 1) to prevent debris from infiltrating the joint before sealing, and 2) to act as a moisture barrier and thus aid in curing the concrete. It was decided at the time that the Department would have no use for Presstite tape.

Subsequently, however, D. Wickham of the Office of Construction notified the Research Laboratory Division that the tape would be used on Project U 38071A, C1, to protect eight new expansion joints adjacent to a bridge carrying southbound US 127 BR over the New York Central Railroad (X01 of 38071A). For information of the New Materials Committee, Research Laboratory personnel observed the installation of tape and made two follow-up inspections to determine the quality of performance. These observations were summarized as follows by F. Copple.

The tape used was actually designed for ~~2~~1/2 in. contraction joint openings, but since this sample material was available, it was used on these unsealed expansion joints for purposes of observation. On June 1, the tape was placed after the joints had been cleaned with compressed air and the 1-1/4 in. wide openings filled with oakum. Figure 1 shows how the tape was placed and the adhesion effected by hand pressure.

The taped joints were inspected after 2 and 37 days, with traffic on the pavement during this period consisting only of local construction vehicles. After 2 days, several types of failure were found, as shown in Figure 2. Adhesion failures appeared in various locations across the 24-ft width of roadway, including 2-ft failures at three joints, 4-ft failures at four joints, and one joint with a full 24-ft failure. These were traced to dirty contact areas, or the tape's having been forced down into the joint and then pulling loose from the pavement surface. In a few instances, stones which had punctured the tape were found in the joint. Moisture was noticed under the tape even in areas of stone punctures.

After 37 days, the joints were inspected again. Stone punctures had increased slightly, but were still located in only about 3 percent of the tape. The number of small pebbles cradled in the tape had increased significantly (Fig. 3a). In most cases, however, these stones had not punctured the tape, and adhesion to concrete was still good. The number and lengths of adhesion failures had not changed since the first inspection.

In summary, as indicated in Figure 3, it appears that Presstite No. 579.15 tape provides an effective barrier against most debris, adheres well to the concrete when properly installed, and retains moisture in the joint for curing. Its effectiveness, however, might be increased by more careful cleaning of joints immediately before application, and by applying pressure to the tape by some means other than by hand, e.g. a small rubber roller. Finally, if tape of the proper width had been used, as was not the case here, perhaps even better adhesion would have been obtained.

## OFFICE OF TESTING AND RESEARCH



E. A. Finney, Director  
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Figure 1. Tape was applied by two workers (left) and bond to pavement surface effected by hand pressure (right).

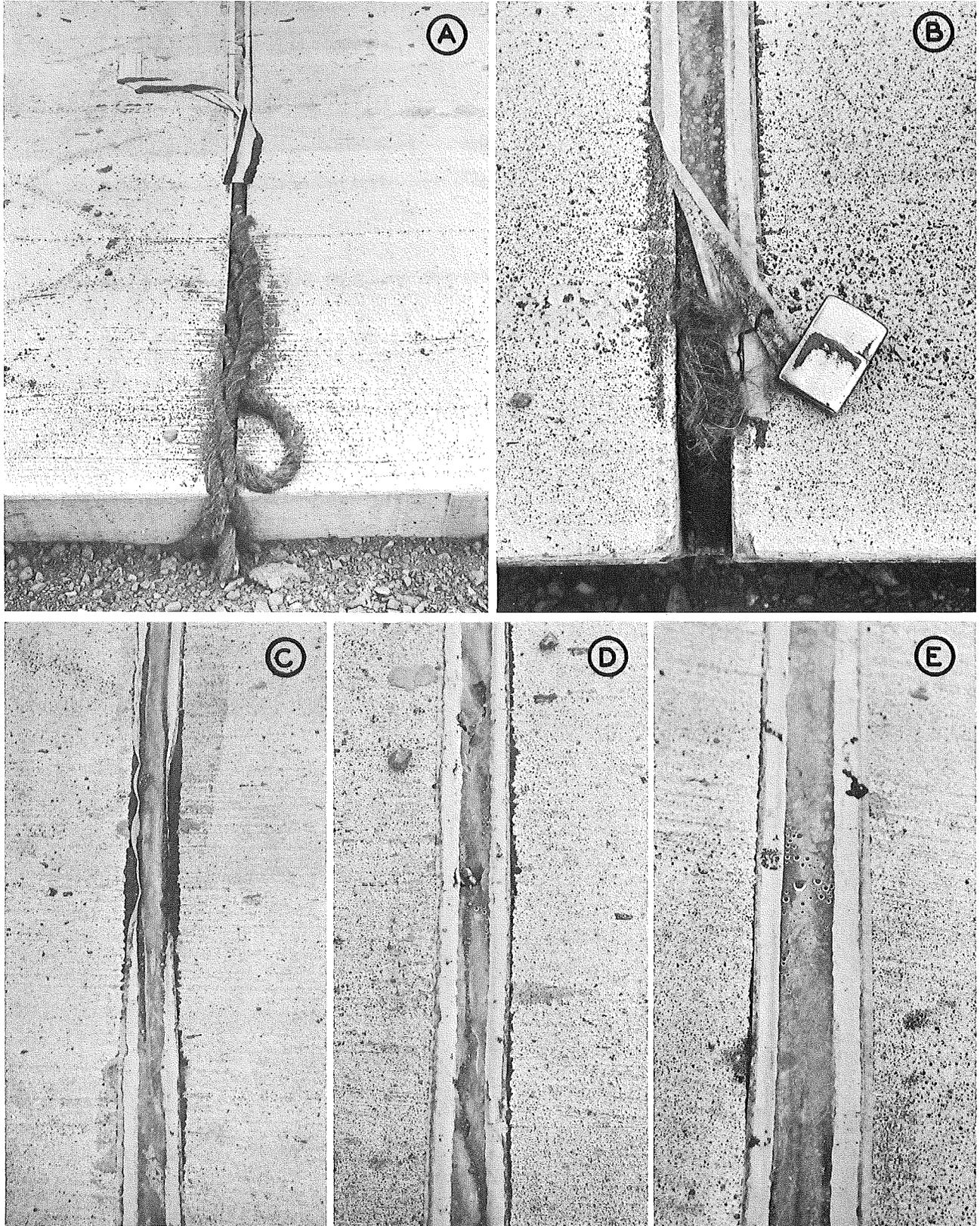


Figure 2. Conditions encountered after two days under local construction traffic included: a) tape pulled off and oakum pulled out of joint, b) dirt infiltration of adhesive, c) tape pulled off at the joint faces, d) punctures in tape caused by stones, and e) moisture trapped under tape.

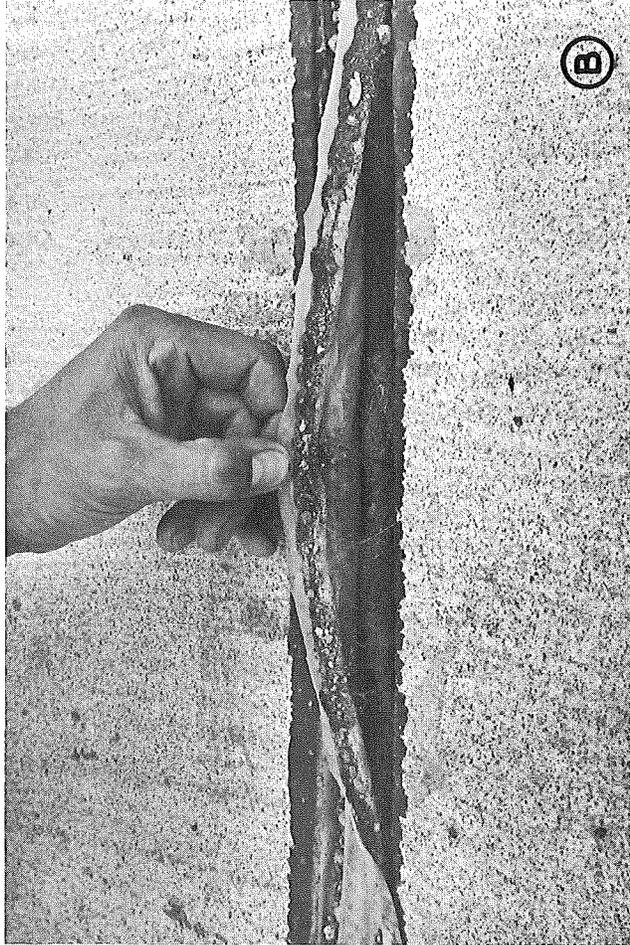
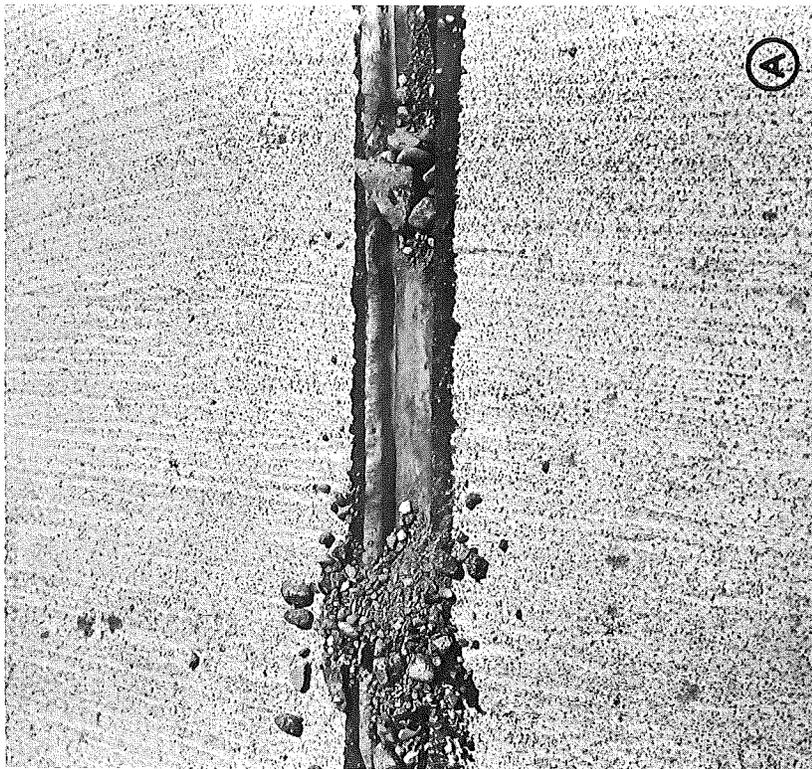


Figure 3. Conditions encountered after 37 days under local construction traffic included: a) good adhesion to joint faces, b) joint openings free from dirt, and c) adhesive holding well in areas where it had not been infiltrated with dirt.