

OFFICE MEMORANDUM



MICHIGAN
STATE HIGHWAY DEPARTMENT

September 27, 1965

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

From: F. Copple

Subject: Joint Blowup, I 94 East of US 127 Bypass, Jackson County.
Research Project 39 F-7(14). Research Report No. R-545.

On August 16, 1965, a concrete pavement joint blowup repair on I 94 in Jackson County was inspected by F. Copple and L. Archer. Although we left for the site immediately after receiving notice from Mr. Scoville of the County Road Commission, the blowup had been repaired just before our arrival. The joint blowup occurred in the passing lane of the eastbound roadway a short distance east of the US 127 bypass east of Jackson. Construction characteristics of the pavement are as follows:

Control Section: 38101
Construction Project: 38-48, C2
Stationing of Blowup: 1033+55 EB
Date of Concrete Pour: August 1949
Pavement Thickness: 9-in. uniform
Pavement Width: 24 ft
Reinforcement: lightweight wire mesh
Spacing of Contraction Joints: 49 ft 6 in.
Load Transfer Bars: 1-in. diam, 15-in. length, 12 in. on center
Cement: Peninsular Vinsol Resin, Consolidated Cement Co. of Cement City,
Michigan
Fine Aggregate: Klumpp Bros.--Richards Pit at Chelsea
Coarse Aggregate: Klumpp Bros.--Richards Pit at Chelsea.

The concrete that had been removed during repair of the joint appeared to be solid with no apparent deterioration. The joint in the traffic lane had been patched with asphalt, probably because of blowing up at some earlier date.

The repair crew supervisor said that no dowel bar misalignment had been noticed. Fig. 1 shows a load transfer bar removed from the joint on August 16, 1965. The cross-section was reduced by corrosion to 9/16-in. diam, a reduction of almost 50 percent of the original size.

Fig. 2 shows the large number of popouts evident in the pavement near the joint blowup. The Klumpp Bros. aggregate used in the concrete contained a large proportion of deleterious material and its poor quality was the subject of Research Project 51 A-11, reported on in Research Report No. R-176.

Almost every joint in Construction Project 38-48, C2 exhibited both interior and exterior corner breaking, with a triangle of crumbling concrete apparent for about 2 ft in each direction from the apex of the corner.

The 10-year survey (in 1959) showed no blowups on the project. However, the 1963 (14-year) survey showed 24 blowups for an average of about 5.6 per mile of roadway.

OFFICE OF TESTING AND RESEARCH



F. Copple, Physical Research Engineer
Soils Unit
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FC:nw

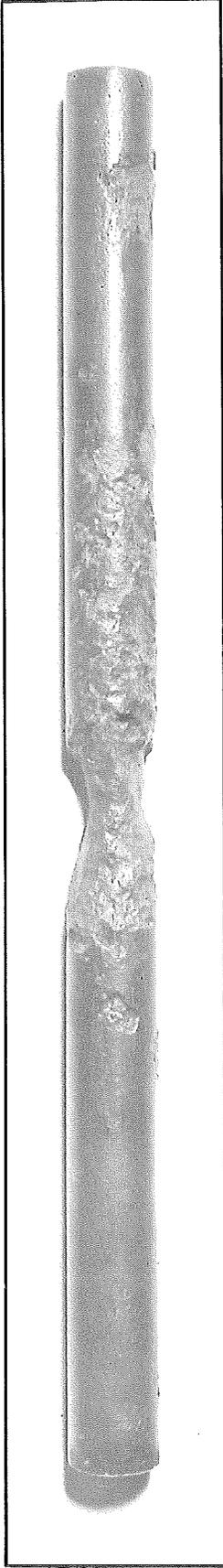


Figure 1. Load transfer bar from I 94, EB, Sta. 1033+55.

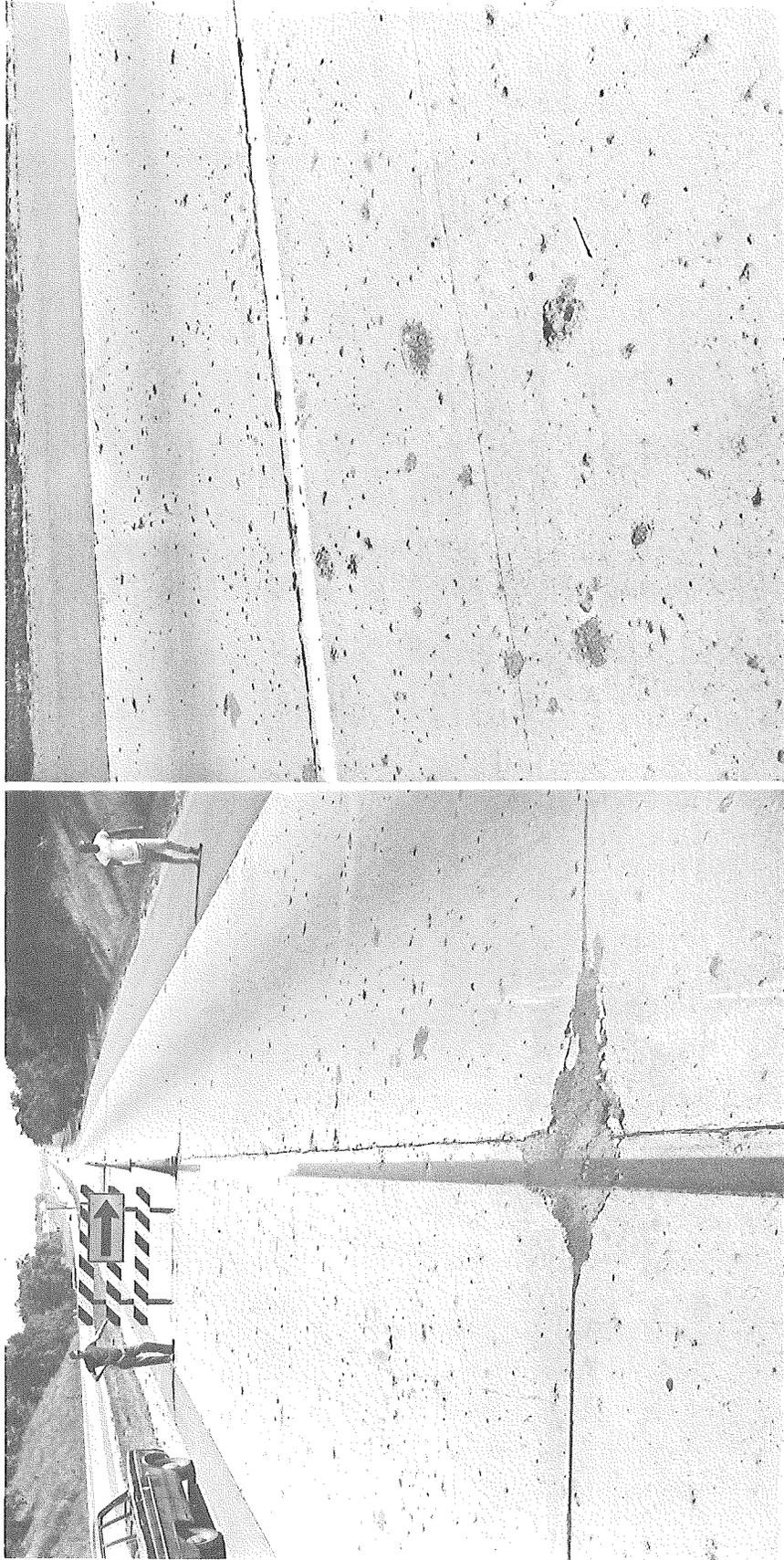


Figure 2. Typical surface condition of Construction Project 34-48, C2.