

MICHIGAN

STATE HIGHWAY DEPARTMENT

April 1, 1966

To: W. D. Bullen, Chairman
Bridge Deck Inspection Committee

From: E. A. Finney

Subject: Special Cores from Deck and Beams of M 21 Structure 3.7 miles west of Ada (X01 of 41043). Research Project 63 B-69. Research Report No. R-575.

The following brief report by M. G. Brown concerns the location and general condition of five special cores drilled in the concrete beams and deck of an M 21 concrete T-beam structure built in 1927, over tracks of the Grand Trunk Western Railroad. These cores were taken in accord with a written request from Mr. Rothstein to W. W. McLaughlin, dated March 9, 1966.

The cores were removed on March 15 and 16 under the direction of W. D. Bullen and R. S. Fulton, with Nos. 1 and 5 drilled from the concrete beams with a portable coring drill in a nearly horizontal direction, and Nos. 2, 3, and 4 drilled vertically from the deck surface into the supporting beams.

The specific locations and general condition of the cores were as follows:

| Core No. | Location | Description |
|----------|--|---|
| 1 | N. side of Beam 2, S. E. corner of Span 3. 1 ft 7-1/2 in. from corner and 6 ft 5 in. from E. backwall. | 4-in. core at 20° angle, about 12-in. long. Vertical cracks along stirrups at 1-1/4, 2-1/2, and 3-1/2 in. from surface. |
| 2 | Through deck into Beam 3, Span 3. 7 ft 2-1/2 in. from S. curb and 14 ft 6 in. from E. end joint. | 6- and 4-in. core. 2-5/8-in. bit. cap, 3-1/8-in. concrete wearing course, 16-in. reinforced concrete. Wearing course and top 5 in. of reinforced concrete badly cracked. |
| 3 | Through deck into Beam 5, N. W. corner of Span 1. 15 ft 10-1/2 in. from N. curb and 14 ft 6 in. from W. end joint. | 6- and 4-in. core, 2-in. bit. cap, 4-in. concrete wearing course, about 12-in. reinforced concrete. All 16 in. of concrete completely disintegrated. |
| 4 | Through deck into Beam 4, N. side of Span 2. 10 ft 10 in. from N. curb and 23 ft 10 in. from Pier 1. | 6-in. core for full length. 1-3/4-in. bit. cap, 3-1/2 in. concrete wearing course, 17-1/2-in. reinforced concrete. Wearing course and top 5 in. of reinforced concrete badly cracked. |

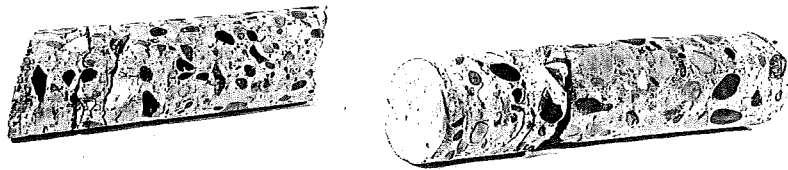


Figure 1. Cores 1 and 5, drilled at a 20° angle from horizontal in sides of concrete beams. Note vertical cracks associated with stirrups, toward left end of each core.

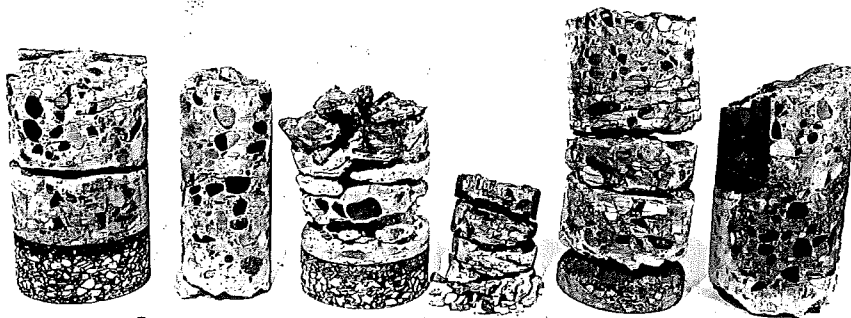


Figure 2. Cores 2, 3, and 4, shown inverted with upper portion at left and lower at right for each pair. Upper portions of Cores 2 and 3 and all of Core 4 are 6-in. diam, lower portions of cores 2 and 3 are 4-in. diam.