

MICHIGAN
STATE HIGHWAY DEPARTMENT
Charles M. Ziegler
State Highway Commissioner

NEOPRENE PREMOLDED JOINT SEAL INSTALLATION
Project F 34-15 - M-66

W. C. Broughton

Highway Research Project 36 G-4(3h)
Progress Report No. 3

Research Laboratory
Testing and Research Division
Report No. 196
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NEOPRENE PREMOLDED JOINT SEAL

Installation - Project F34-15, C4: F-412(4)

At the request of H. C. Coons, Deputy Commissioner and Chief Engineer, and by permission of the Bureau of Public Roads, an installation comprised of 30 Neoprene-sealed contraction joints was made on Project F34-15, C4: F-412(4), Route M-66 through the cooperation of Homer Cash, Acting Construction Engineer, and Road Division personnel. On October 17-19, 1949, the experimental joints were placed between M-43 & US-16 on M-66 at the stations given in Table I.

Progress report No. 1 (Report No. 139) by E. A. Finney, under date of November 15, 1949 gave details of construction features and a table showing the finished condition of these joints right after this pavement was constructed.

Progress report No. 2 (Report No. 161) gave results found in field inspections by B. W. Pocock and W. Martin of the Research Laboratory, the first on August 11, 1950, the second on June 7, 1951.

This report, Progress report No. 3, (Report No. 196) gives the results of a field inspection on August 3, 1953, by W. C. Broughton, as shown by Table No. I and selected pictures taken by T. Holmes.

In this inspection the regular expansion joint at station 90/01, all of the Neoprene joints, and all regular type joints and the regular night joint at station 133/32 were examined for failure and pictures taken of the majority of these joints so as to be able to select average good or bad joints of both regular and Neoprene installations.

Twenty-four of the 30 Neoprene joints have now developed some degree of spalling or disintegration ranging from approximately 9% of the joint length to over 73% of the length of the joint in the real bad joint installations.

Nineteen of the 24 Neoprene joints that are spalled have progressed in spalling and disintegration since the June 7, 1951, inspection.

Of the 14 regular or standard highway joints installed in connection with this test installation only one, an expansion joint at station 102~~7~~32, has developed a fairly bad condition of D cracking at the center of the joint. This is shown by Figure No. 1.

Pictures to illustrate the present condition of typical Neoprene joint installations follow, Figures 2 to 6 inclusive.

It is apparent that a heavy maintenance repair is necessary at this time to salvage the existing value of these joints.

Table No. 1

Comparison of Joint Condition Data as of June 1951 & Aug. 1953

Joint No. in Previous Reports	Stationing of Joints in Relationship to Amount of Spalling as of June 7-1951	Amount of Spalling at Joints as of Aug. 3-1953	Amount of Increased Spalling Lineal Ft.		
6	96/94	0	0.0		
11	107/27	0	0.0		
12	108/26	0	0.0		
17	115/19	0	0.0		
18	116/18	0	0.0		
23	123/33	0	4.0		
25	125/31	0	0.0		
27	128/28	0	5.0		
28	129/27	0	5.0		
30	131/25	0	13.0		
24	124/32	0.2	9.0		
4	94/96	0.5	0.5		
21	120/36	0.5	2.5		
22	121/35	0.5	4.0		
14	111/23	1.0	2.0		
15	112/27	1.0	2.0		
19	117/39	1.0	2.0		
20	119/37	1.5	5.0		
30	132/34	2.0	2.0		
8	103/31	3.0	6.0		
10	105/29	3.0	3.0		
2	91/99	4.0	16.0		
3	92/98	4.0	7.0		
16	109/25	4.0	14.0		
7	101/33	4.5	5.0		
5	95/95	5.0	6.0		
9	104/30	5.0	13.0		
13	109/25	6.0	13.0		
26	127/29	8.0	16.0		
1	91/00	9.0	13.0		
Totals		63.7	168.0	Total Increase	104.3 L. F.

Total lineal ft. of Neoprene joint installed -- 660 ft.

Lineal ft. spalled	1949	---	0	Installed
" "	"	---	63.7'	or 9.7% spalled
" "	"	---	168.0'	or 25.5% spalled



FIGURE 1. D-CRACKING AT A REGULAR EXPANSION JOINT. STATION 102 + 32.

FIGURE 4. NEOPRENE JOINT SPALLING THAT STARTED BEFORE JUNE 7, 1951 AND HAS BEEN CONTINUING TO INCREASE TO THE PRESENT DATE STATION 104 + 30.

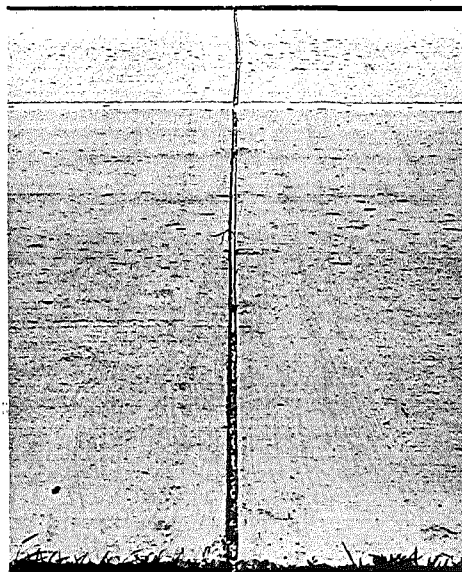
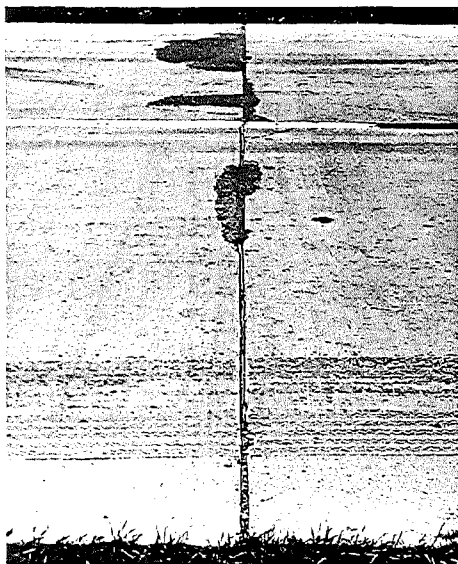


FIGURE 2. NEOPRENE JOINT IN PERFECT CONDITION. STATION 107 + 27.



FIGURE 5. BAD DISINTEGRATION AT NEOPRENE JOINT WHICH DEVELOPED MOSTLY DURING LAST WINTER AND IS CONTINUING AT THE PRESENT TIME. STATION 131 + 29.

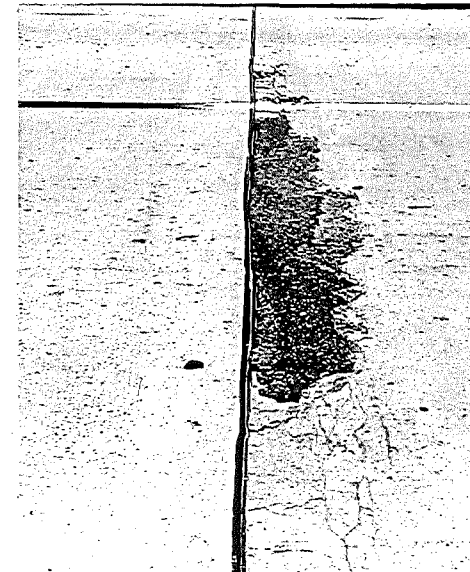


FIGURE 3. NEOPRENE JOINT SHOWING SCALING AND CRACKING WHICH DEVELOPED PROGRESSIVELY.

FIGURE 6. NEOPRENE JOINT SHOWING SPALLING AS OF AUGUST 3, 1953.

