

1962 OBSERVATIONS ON CONDITION OF  
EXPERIMENTAL POZ-O-PAC SHOULDER CONSTRUCTION  
Construction Projects BU 56044, C3UN and C4UN

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This report describes the condition of the Poz-O-Pac shoulder stabilization project on US 10, in Midland County near Midland, during 1962, after two winters of exposure. This information supplements previous progress reports (dated July 17, 1961, and December 4, 1961) in which condition after one winter of exposure was reported.

The project was inspected and cores obtained during February and March of 1962. Figs. 1 through 4 show the general appearance of the surfacing at that time. The asphalt seal was poorly bonded to the Poz-O-Pac base and in many areas had been torn by snowplow blades. The top 2 or 3 in. of Poz-O-Pac was very soft and loose even in areas where the seal had not been damaged. The gravel Poz-O-Pac areas showed the most serious surfacing damage (Fig. 5). The surface of the sand Poz-O-Pac shoulders was generally bad along the inner edge of the median shoulder. The outer shoulder, though soft, had retained most of its seal coat. Fig. 6 shows the damage observed along the edges of each type shoulder later in the spring, when the surface was somewhat drier. There was no indication of any bond between particles in the top 3 in. of the material.

Fig. 7 shows breakup of the two inner shoulders when subjected to traffic at a crossover location; it can be seen that the Poz-O-Pac areas are in poor condition.

In general this project was in the same condition as during the previous spring. The gravel Poz-O-Pac area between Stations 1615 and 1650 continued to be very hard and was generally satisfactory. The worst condition continued to exist between Stations 1655 and 1675. Although this area had hardened during the summer it was again severely damaged by winter weathering and traffic. Fig. 8 shows this general area, with a detail view indicating the lack of bonding of the Poz-O-Pac.

Only a few cores could be obtained during the spring months and these were poor. Compressive strengths for the gravel Poz-O-Pac averaged 111 psi; those for the sand Poz-O-Pac, 56 psi. Summary data for the project, as given in Table 1, show a considerable loss of strength from the previous fall. Densities varied depending on the condition of the areas, but were generally lower than in the preceding fall. Many locations were too poor to yield cores, so that strength and density values do not tell the whole story regarding project condition.

During the summer of 1962, the worst portions of the shoulders were shaped and patched. Although still spotty in appearance, the bases set up considerably during the summer and were again quite firm throughout the job when tested in October 1962. Much better cores were obtained,

TABLE 1  
SUMMARY DATA

Characteristic	As Constructed (Fall 1960)	Performance Survey				
		Spring 1961	Summer 1961	Fall 1961	Spring 1962	Fall 1962
<u>Gravel Poz-O-Pac</u>						
Density, pcf	133-136	128-136	120-135	134.5	122-132	136.5
Field moisture, percent	8-9	10-11	8-11.5	7-10.5	12.3	---
Compressive strength, psi	---	530	---	825	110	1150
<u>Sand Poz-O-Pac</u>						
Density, pcf	114-122	108.5-119	115	116	112-118	119
Field moisture, percent	9	11-16	12	10	14	---
Compressive strength, psi	---	140	---	410	56	400

although there were a few areas where only poor cores could be secured. Average compressive strength in the sand area had increased to 400 psi and in the gravel to 1150 psi. These values compared well with similar values obtained the previous fall, indicating how summer temperatures had set up the Poz-O-Pac. Fig. 9 shows the variation in cores obtained throughout the job. Densities had stabilized during the summer and were approximately the same as the previous fall.

Table 2 shows the roughness of the shoulders at periodic intervals.

TABLE 2  
ROUGHNESS DATA

Survey Date	Roughness, accumulated inches per mile			
	Gravel Poz-O-Pac		Sand Poz-O-Pac	
	Outer	Inner	Outer	Inner
12-5-60	237	265	220	234
8-30-61	239	271	215	233
11-29-61	290	289	286	255
4-20-62	310	330	240	270
9-26-62	292	285	243	237

Due to problems in scheduling the Roughometer and the coring equipment it was not possible to conduct both of these operations on the same date. Roughness values show a general deterioration of the surfacing with poorest performance in the spring. The sand Poz-O-Pac shows less roughness than does the gravel.

### Conclusions

1. Except for one short area of gravel Poz-O-Pac (Stations 1615 to 1650) both the sand and the gravel forms of Poz-O-Pac used in this study have been seriously damaged by winter weathering. Adjacent shoulders constructed in the normal manner, using 22A gravel with a single seal coat, have remained satisfactory under all weather conditions.

2. Although Poz-O-Pac improves during the summer months this gain is lost during the winter.

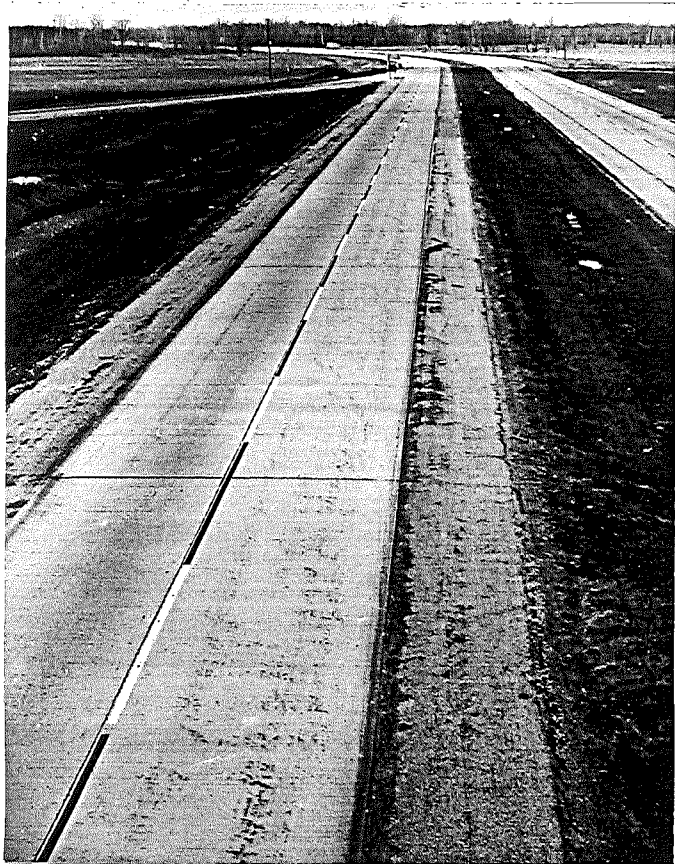
3. Compressive strengths of the sand Poz-O-Pac are lower than those of the better graded gravel Poz-O-Pac. However, the sand areas are smoother and have required less surface maintenance than have the gravel.

4. Bonding of the seal coat to the Poz-O-Pac base continues to be poor. Even in areas where the seal has not been broken, it can be peeled easily from the base.

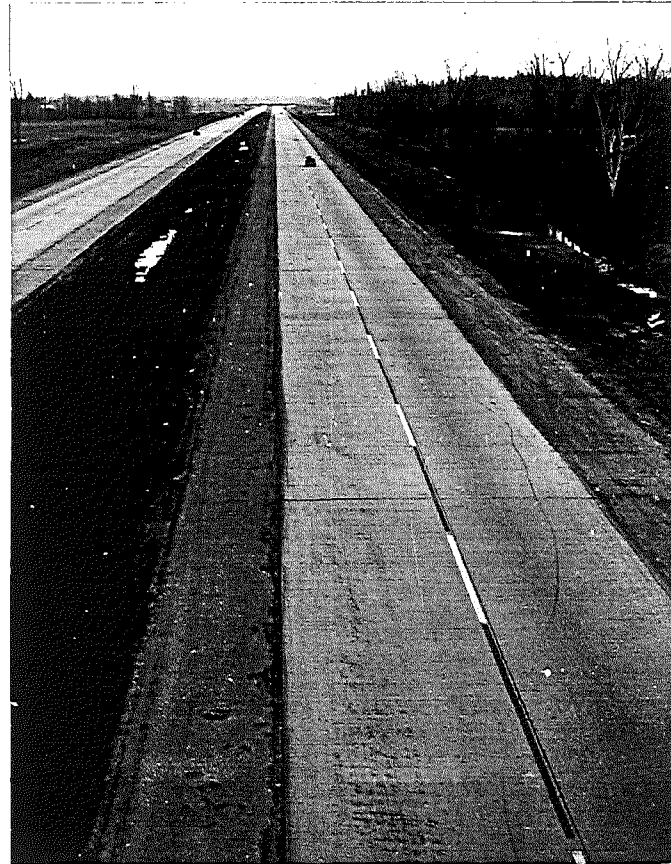
5. Although satisfactory cores can be obtained from most of the Poz-O-Pac areas during the fall, in some areas good cores have not yet been obtained.

6. Based on test results to date there is no reason to believe that Poz-O-Pac should be substituted for the better performing and more economical gravel base construction now in use.

7. Observations will be made of this project during the winter and a detailed condition survey made in the spring of 1963. If the strengths gained during the summer are again lost there would seem to be little hope of ever gaining favorable results from this test project.



Looking west.



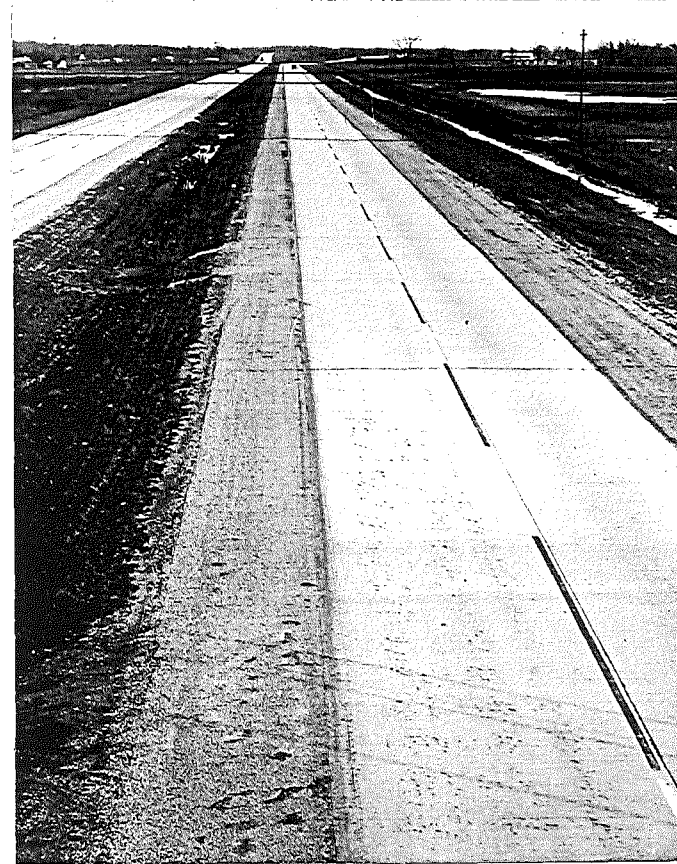
Looking east.

Figure 1. Gravel Poz-O-Pac shoulders from Waldo Road bridge (April 1962).





Looking west.



Looking east.

Figure 3. Gravel Poz-O-Pac shoulders from Ashman Street bridge (April 1962).



Looking west.



Looking east.

Figure 4. Sand Poz-O-Pac shoulders from Ashman Street bridge (April 1962).

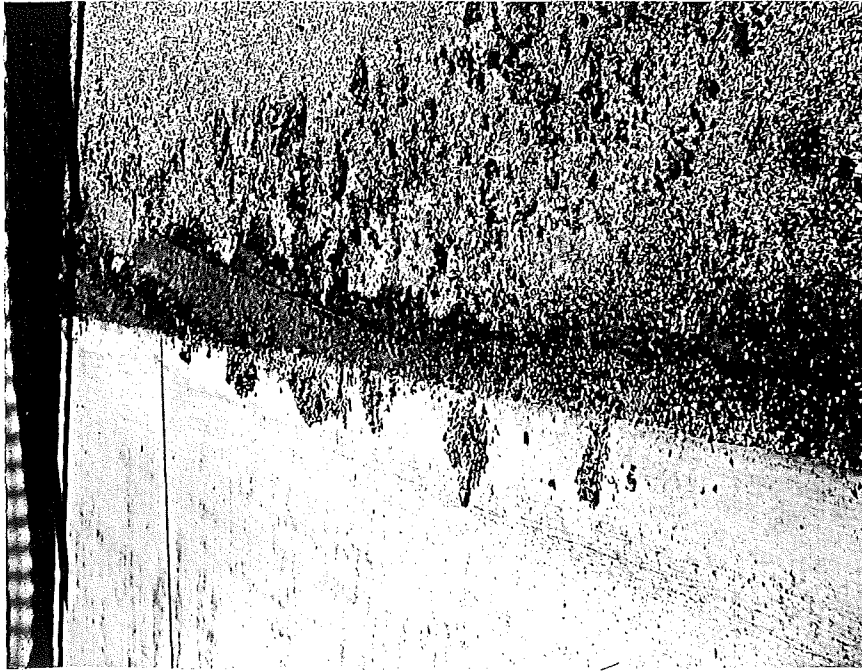


Station 1671+30 -.Inner Shoulder.



Station 1623+00 - Outer Shoulder.

Figure 5. Loose condition of gravel - Poz-O-Pac shoulders (February 1962).



Sand Poz-O-Pac.



Gravel Poz-O-Pac.

Figure 6. Loose Poz-O-Pac at edge of shoulders (April 1962).

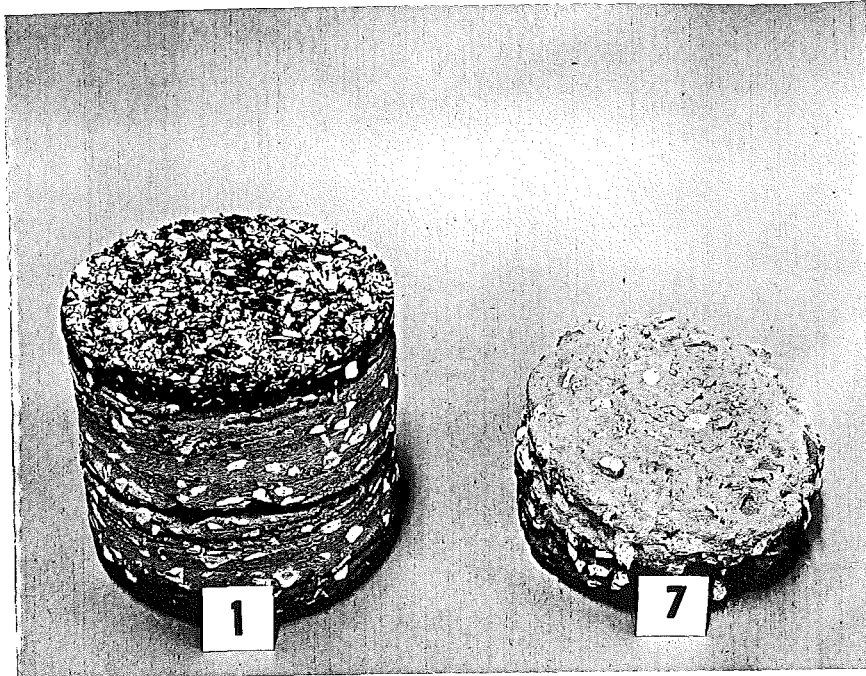


Gravel Poz-O-Pac.

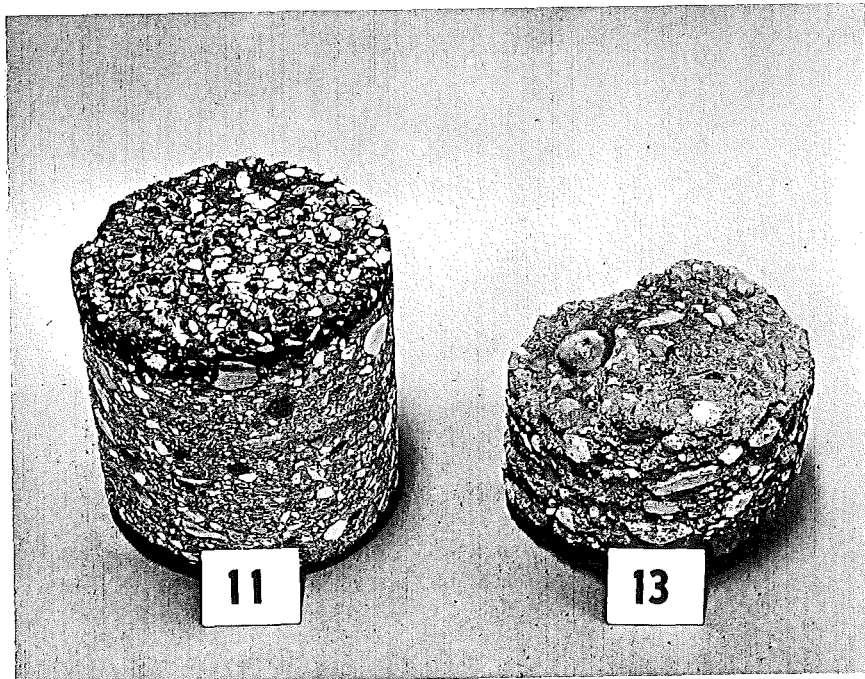


Sand Poz-O-Pac.

Figure 7. Failure of Poz-O-Pac inner shoulders at crossover (April 1962).



Sand Poz-O-Pac cores.



Gravel Poz-Q-Pac cores.

Figure 9. Typical good and poor cores obtained (October 1962).