

OFFICE MEMORANDUM

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MICHIGAN

STATE HIGHWAY DEPARTMENT



July 9, 1965

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

From: R. C. Mainfort

Subject: Experimental Shoulder Stabilization on US 23 North of Alpena (Mn 04032, C6).
Research Project 62 E-25. Research Report No. R-535.

The experimental shoulder stabilization project on US 23 just north of Alpena was inspected and photographed on April 12, 1965. These shoulders were constructed in the Fall of 1962 and have now served through three winter seasons. The locations and dimensions of the different treatments are shown in Fig. 1. Details of construction and previous condition surveys have been reported in Research Report No. R-415R (May 1963) and by memorandum to E. A. Finney dated September 10, 1964.

Figs. 2 through 8 show shoulder conditions at the time of this year's inspection. Generally, there is very little change since the previous survey (August 1964). All treatments appear to be satisfactory with the possible exception of the soil cement sections (Fig. 7), where the surface seals have continued to deteriorate. The 8- and 6-percent treatments are worse than the 4 percent. Except for about 1/2-in. at the surface, however, the soil cement treatment itself is still quite firm.

Fig. 9 shows a plot of roughness values for each section, as obtained periodically since the construction of the project.

In comparing these values it should be remembered that half of the asphalt-treated sections did not have a seal coat, resulting in a naturally rougher surface and that deterioration of the soil cement seals has increased the roughness of these areas. Based on appearance and roughness measurements, the best sections are the untreated (with double seal) and the two salt sections. However, although rougher than the sealed areas, the unsealed asphalt treatments (both asphalt emulsion and slow-cured asphalt) are in excellent shape and appear to be entirely suitable shoulders. The soil cement areas definitely should be re-sealed in the near future.

OFFICE OF TESTING AND RESEARCH

A handwritten signature in cursive script, appearing to read "R. C. Mainfort".

R. C. Mainfort, Supervisor
Soils Unit
Research Laboratory Division

RCM:nl

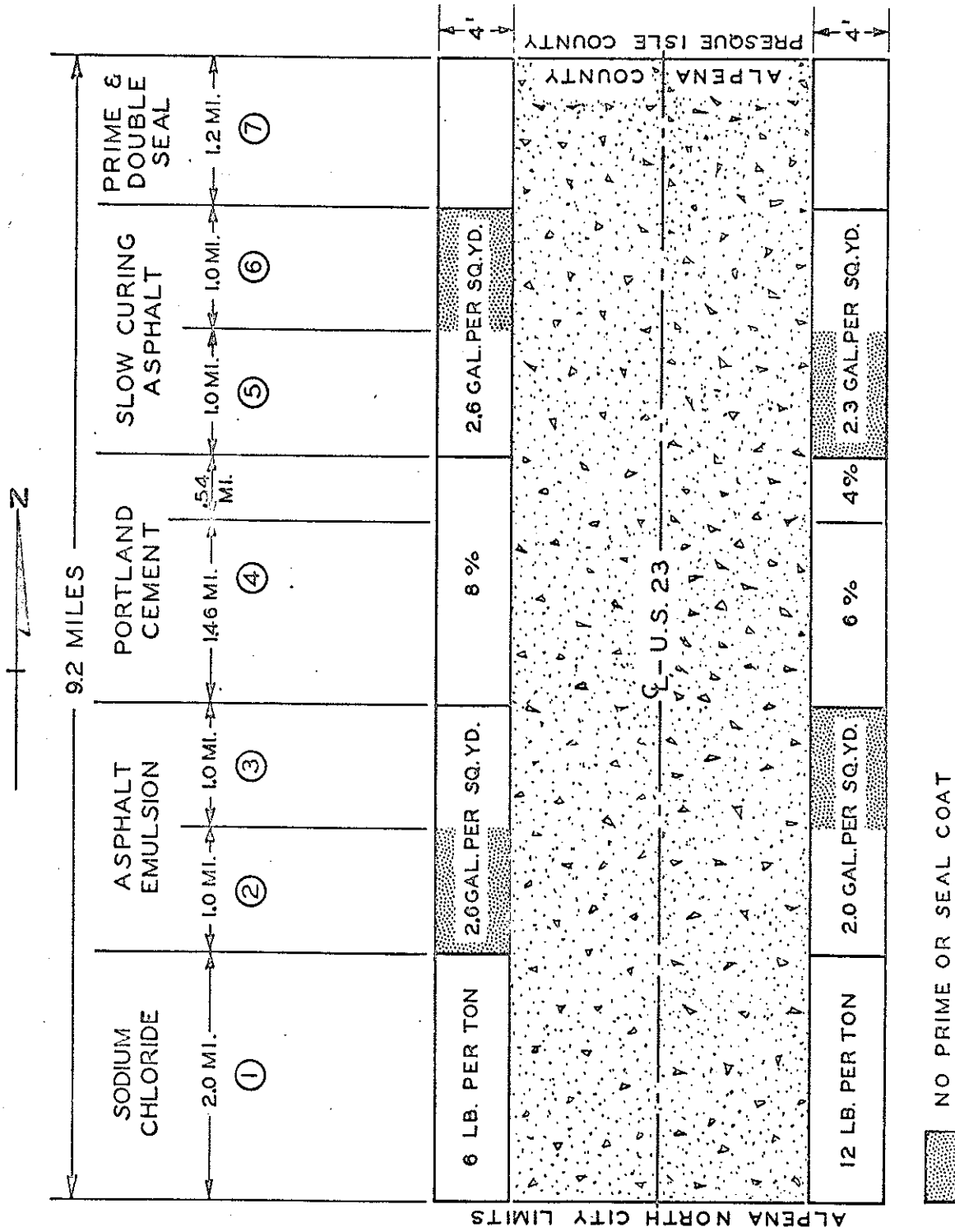
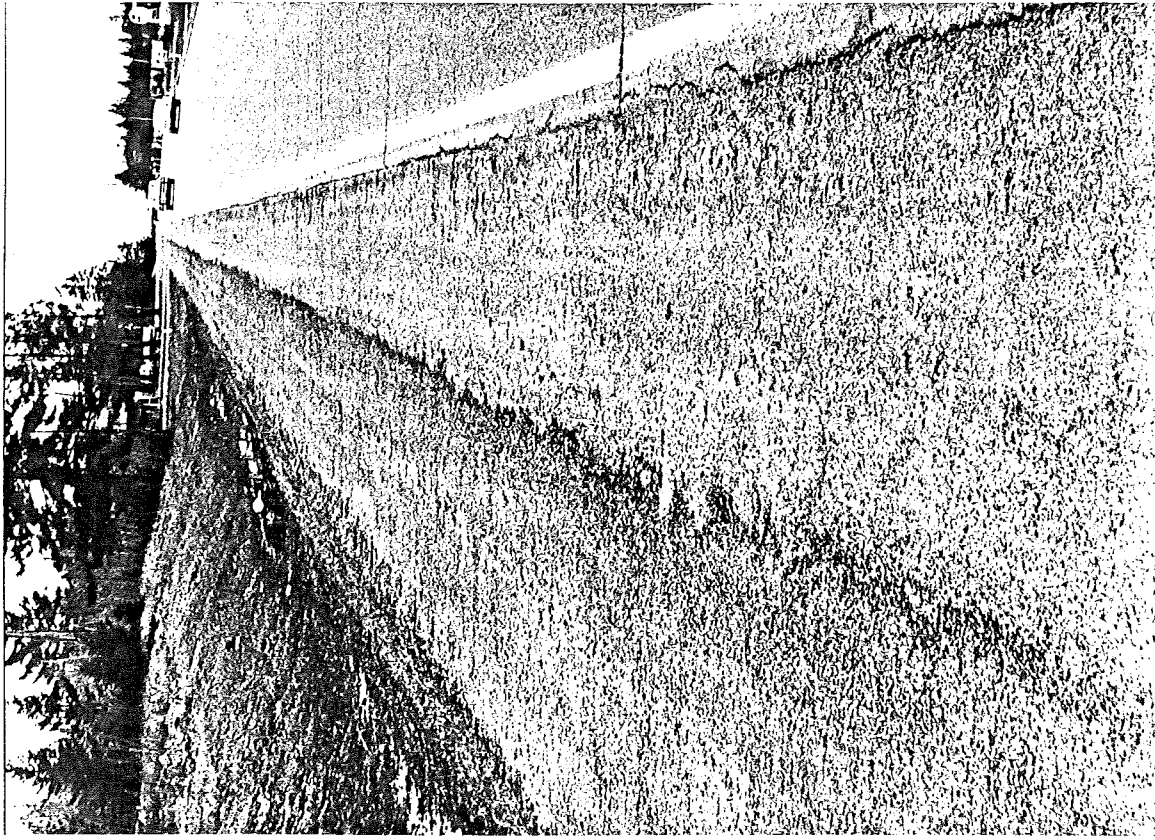
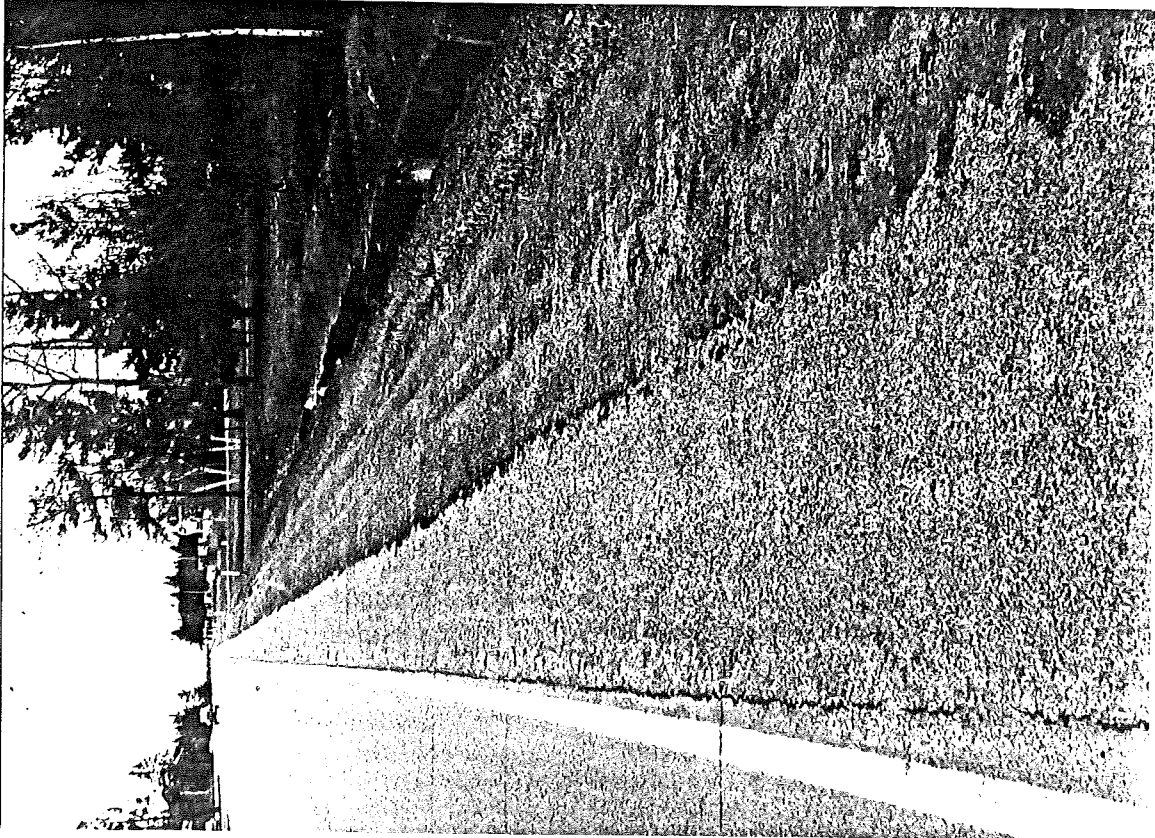


Figure 1. Layout of the shoulder test sections.

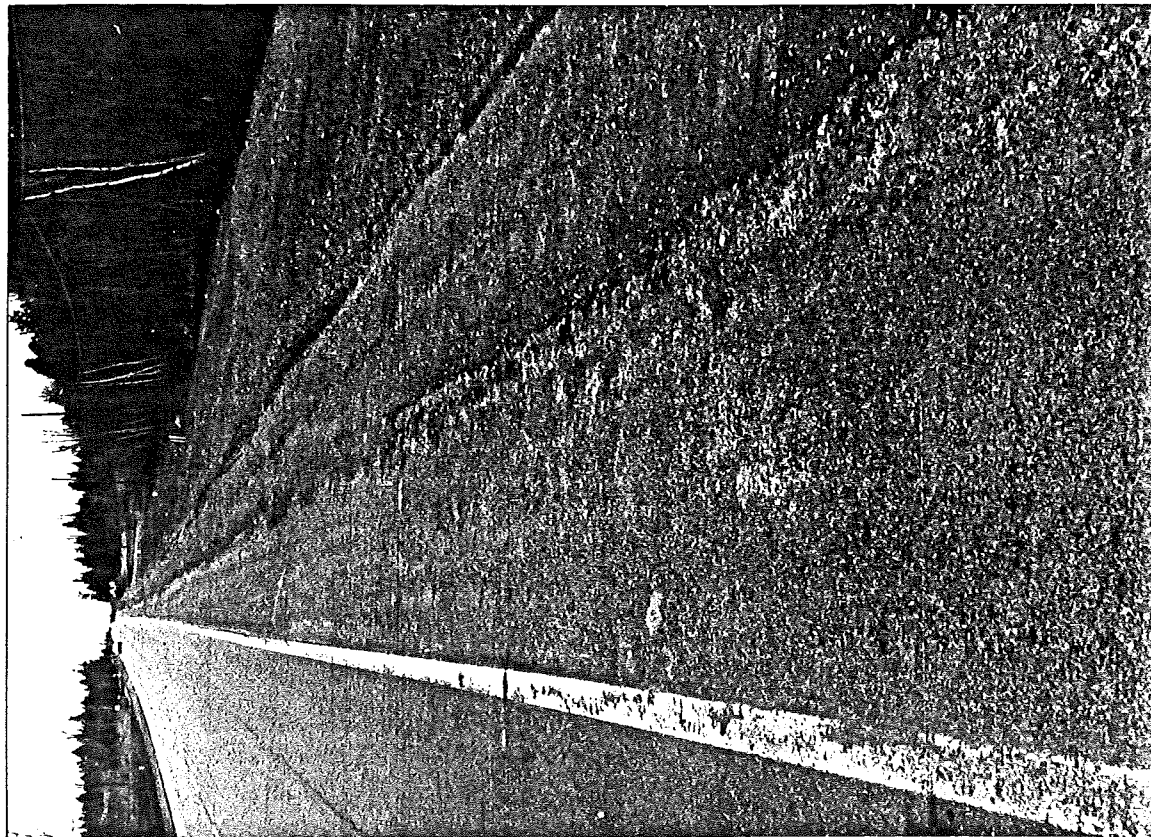


12 lb per ton

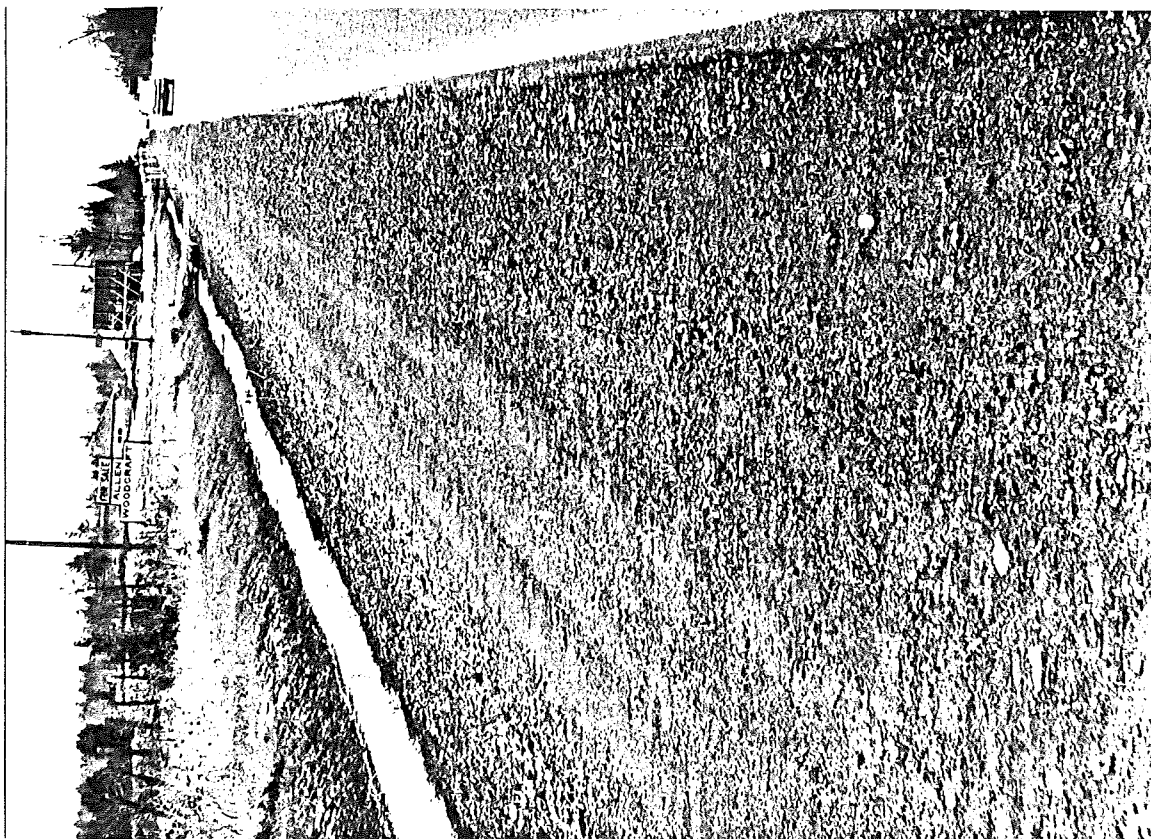


6 lb per ton

Figure 2. Sodium chloride sections with prime and single seal coat.

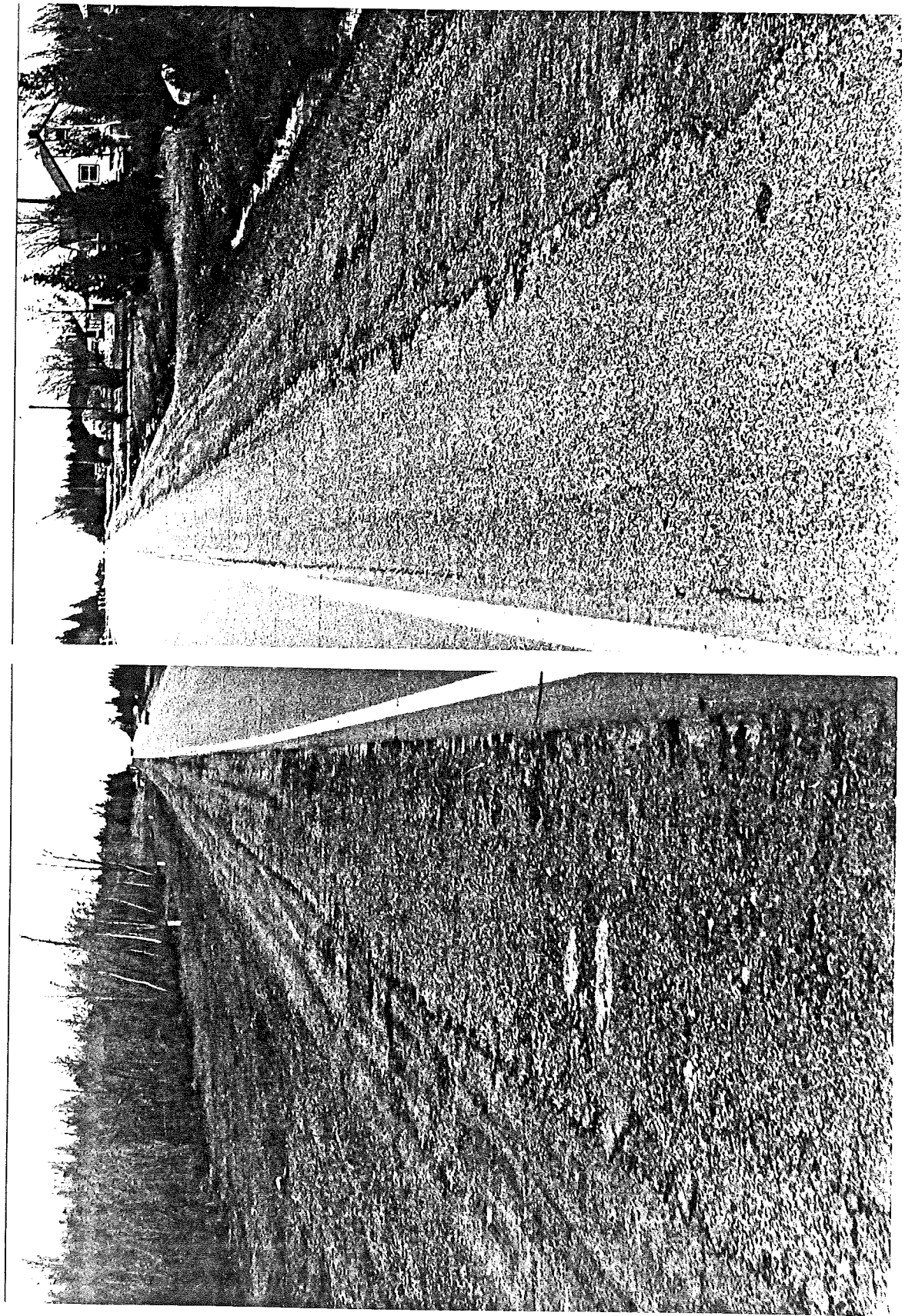


With prime and single seal coat



Without prime or seal coat

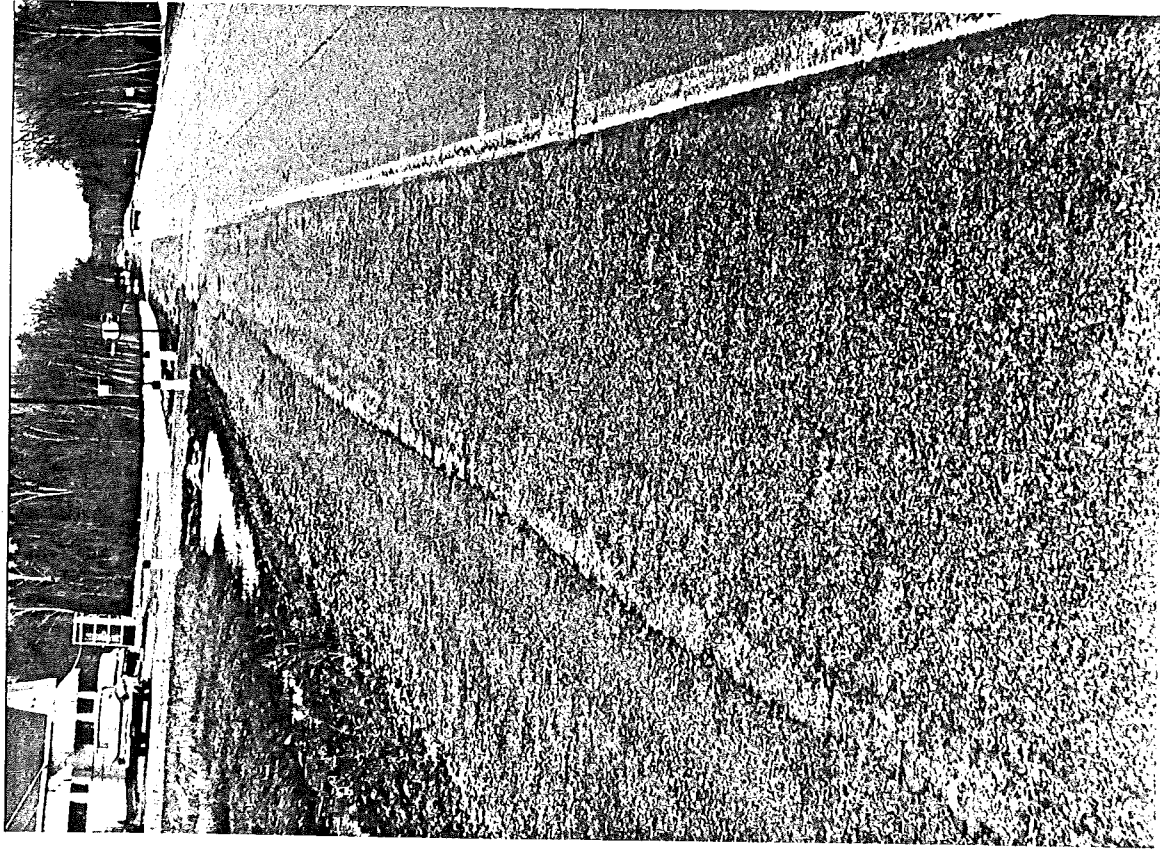
Figure 3. Asphalt emulsion sections (2.0 gal per sq yd).



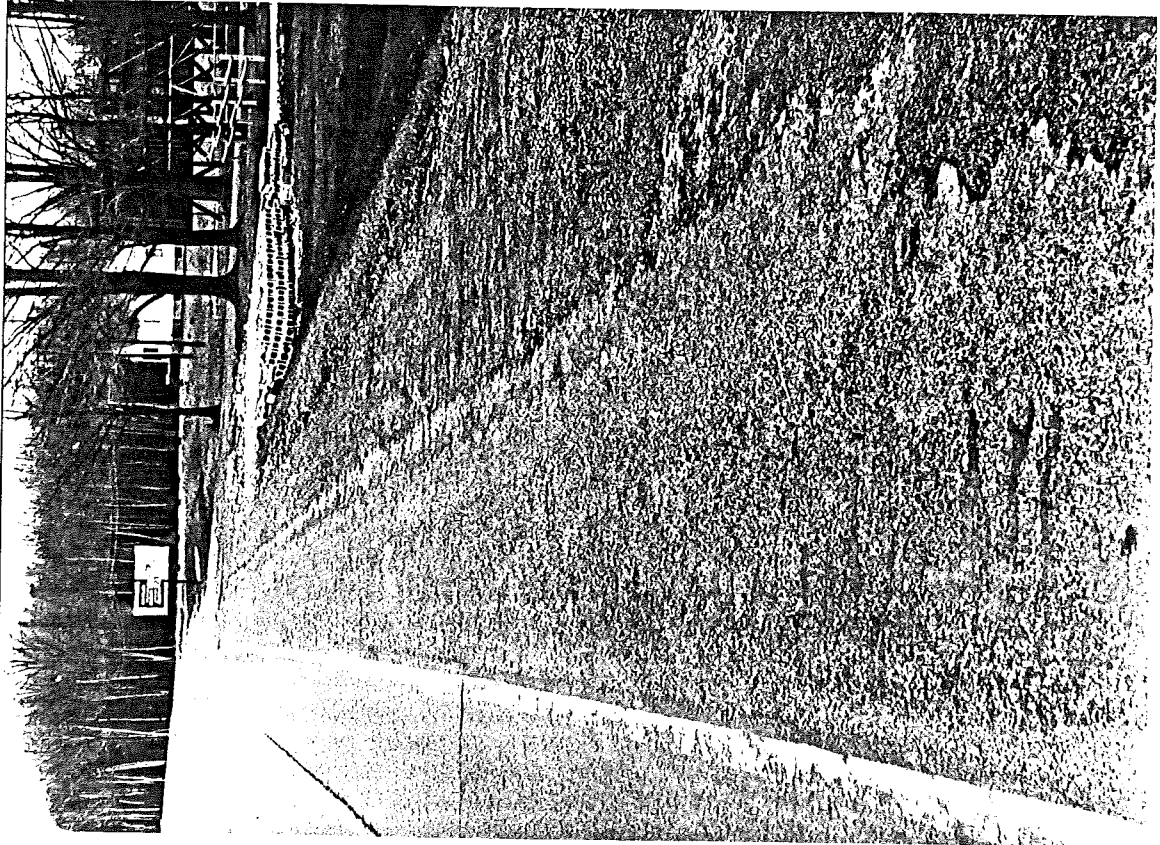
Without prime or seal coat

With prime and single seal coat

Figure 4. Asphalt emulsion sections (2.6 gal per sq yd).

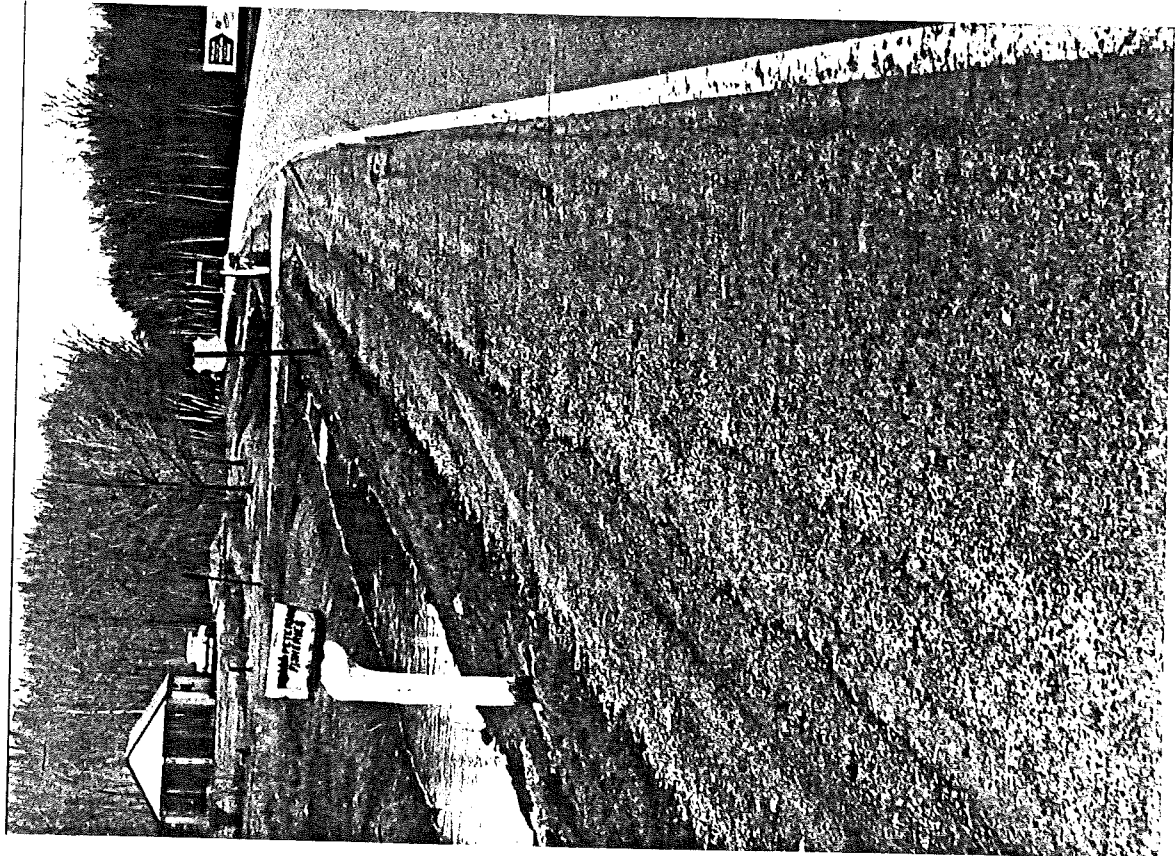


With prime and single seal coat

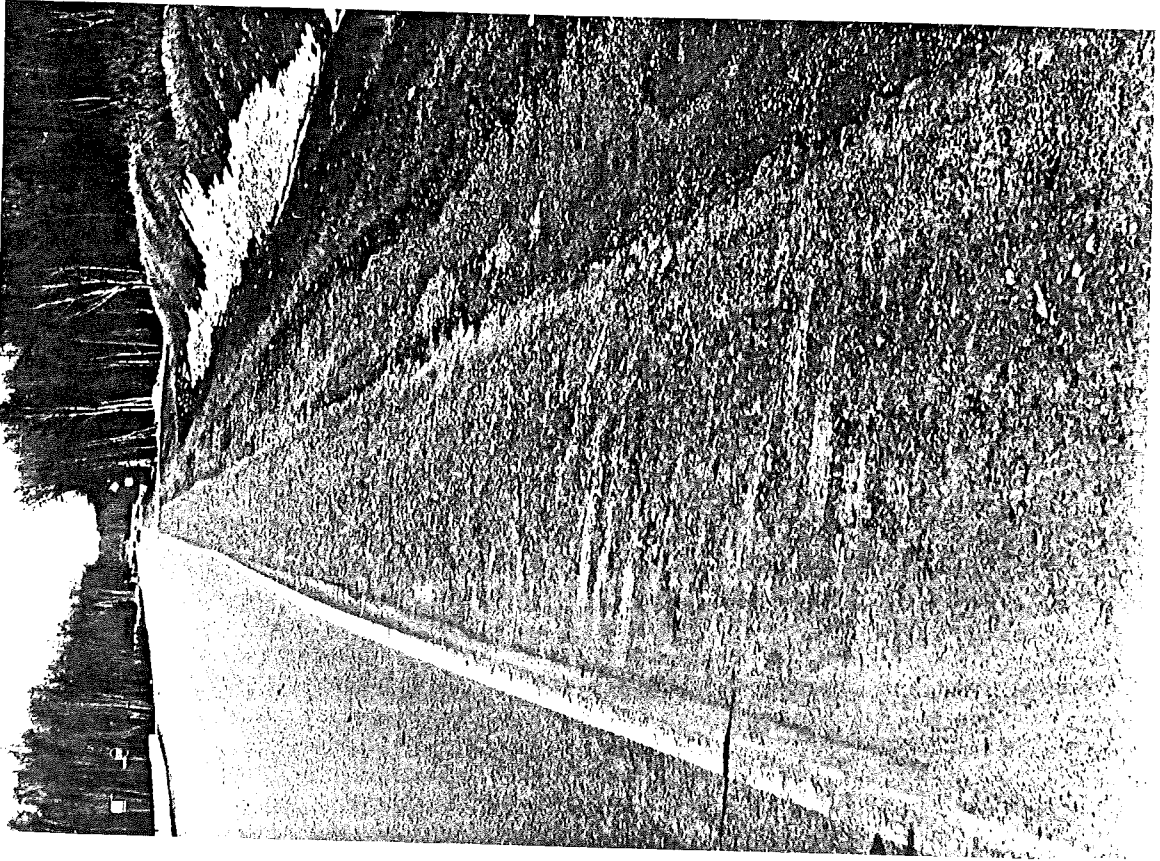


Without prime or seal coat

Figure 5. Slow-curing asphalt sections (2.3 gal per sq yd).

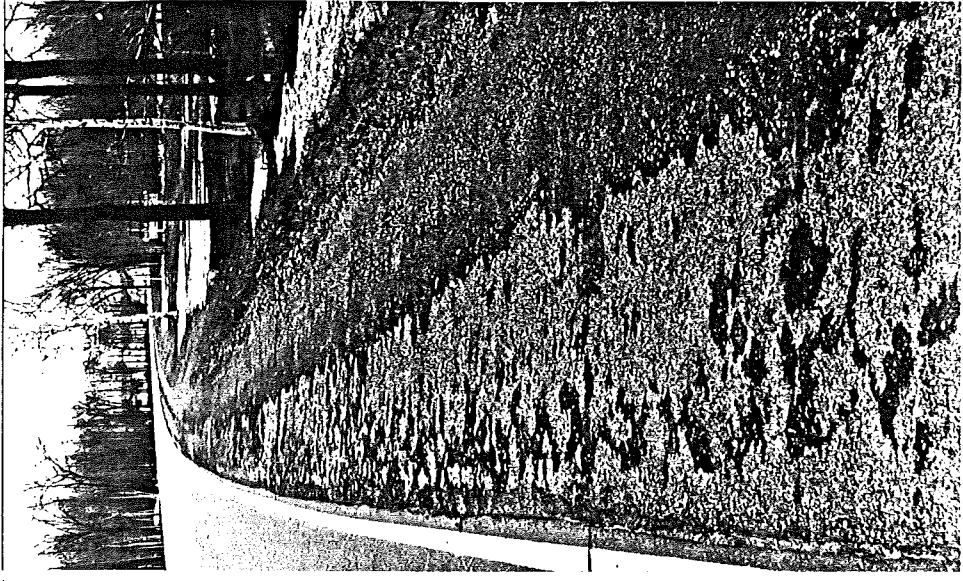


Without prime or seal coat

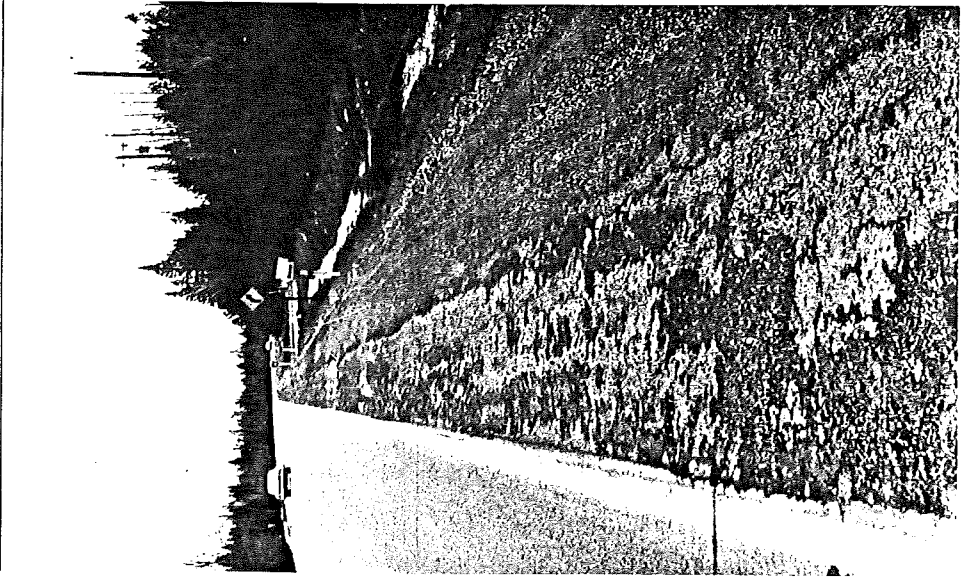


With prime and single seal coat

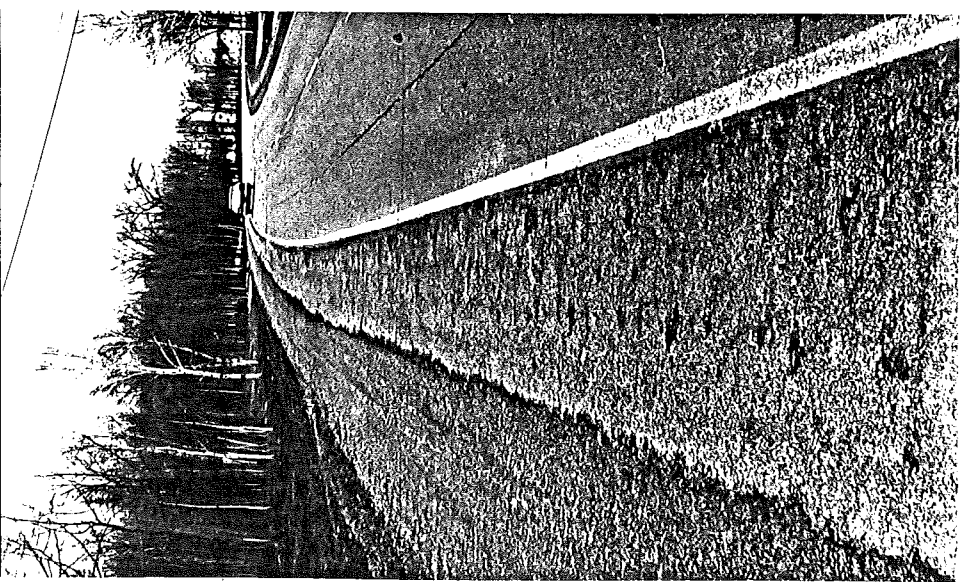
Figure 6. Slow-curing asphalt sections (2.6 gal per sq yd).



8-percent cement



6-percent cement



4-percent cement

Figure 7. Soil cement sections with prime and single seal coat.

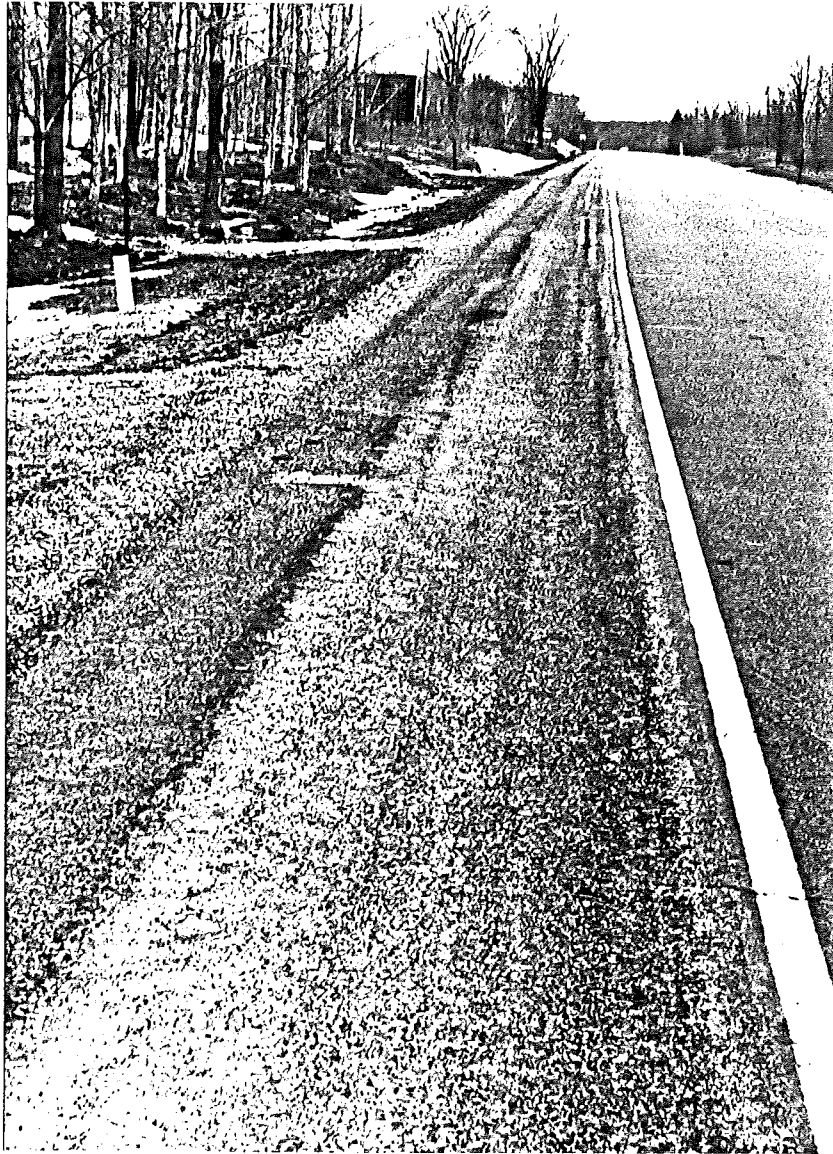


Figure 8. Unstabilized section with prime and double seal.

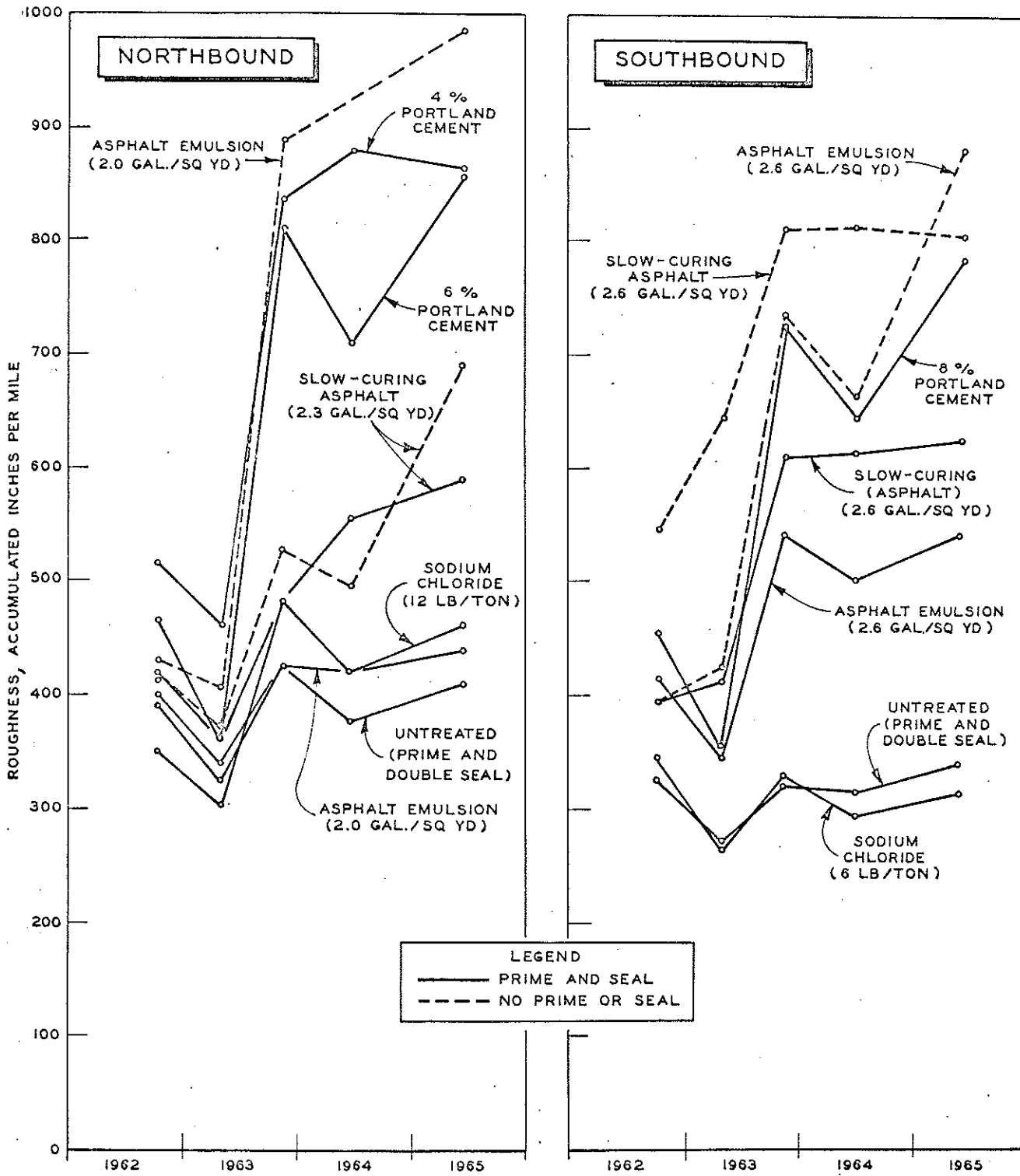


Figure 9. Roughness summary of the test areas, September 7, 1962 to May 5, 1965.