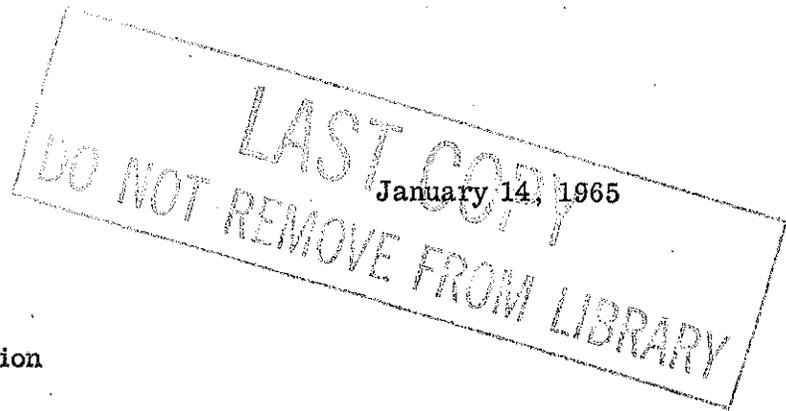


OFFICE MEMORANDUM



MICHIGAN
STATE HIGHWAY DEPARTMENT



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

From: R. C. Mainfort

Subject: Progress Report on Salt Stabilized Sections of M 46 (Howard City to Newaygo): 1964 Surveys and Testing. Research Project R-57 E-15. Research Report No. R-491.

Construction operations and the project objectives for the ten test sections of the experimental salt stabilization project on M 46 between Newaygo and Howard City were described in R. L. Greenman's paper presented at the 1960 convention of the American Road Builders Assn. ("Michigan Experiments with Sodium Chloride Stabilization"). Mr. Greenman reported on performance in 1960-61 in a paper at the 1961 Michigan Highway Conference. In addition, the Research Laboratory has updated the performance record with a brief memorandum dated May 26, 1962, and with Research Report R-439 dated October 9, 1963.

The project is now five years old and continues to be in excellent condition. Figs. 1 through 3 show the yearly variations in certain properties of each test section as recorded since the start of the project. Each point on the graphs represents the average of at least three samples for each condition shown. Roughness values represent the average obtained from four wheel tracks in the section. Density measurements were made with the Rainhart device. The quantity of salt in the aggregate was determined by ASTM Designation D 1411-56 T.

In addition to the regular tests, a study was made this year to determine the magnitude of any rutting that might be taking place in the test sections. A wire was stretched across the pavement surface and measurements made of the maximum depression in each of the four wheel tracks. Such measurements were made every 100 ft along the pavement, and averaged to produce rutting values for each section as plotted in Fig. 4. Although there was some variation in the rutting values for the different sections none of the differences appear to be critical, the range being between 0.15 and 0.30 in.

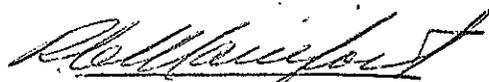
In general, the data obtained during 1964 show no appreciable changes in the properties of the salt stabilized sections. Some variations are to be expected due to seasonal effects at the time of testing and to sampling errors. Density values, in

particular, have varied over a wide range, most likely due to the variation in density itself over the areas and to the difficulty of obtaining Rainhart measurements through the cored asphalt surface. Density values in two of the 12-percent fines sections (with 6- and 12-lb salt treatments) were noticeably lower this year and these sections will be studied carefully for any future signs of deterioration.

The following conclusions can be made, based on the present condition of the test project:

1. Densities remain high in all sections, although a drop was noted in 1964 tests of the 12-percent fines sections.
2. Salt content has decreased with time in all sections but most notably in the low fines area.
3. Moisture content has remained fairly constant, probably reflecting only seasonal variations. The low fines area has a lower moisture content than do the 9- and 12-percent fines areas.
4. Surface roughness has increased very slightly with time, but there are no signs of base course deterioration.
5. Rutting tests show slightly deeper depressions in the 12-percent fines area. The difference is only 0.15-in. maximum, however, which is not enough to be considered critical.
6. The appearance and riding quality of the test sections continues to be excellent.

OFFICE OF TESTING AND RESEARCH



R. C. Mainfort, Supervisor
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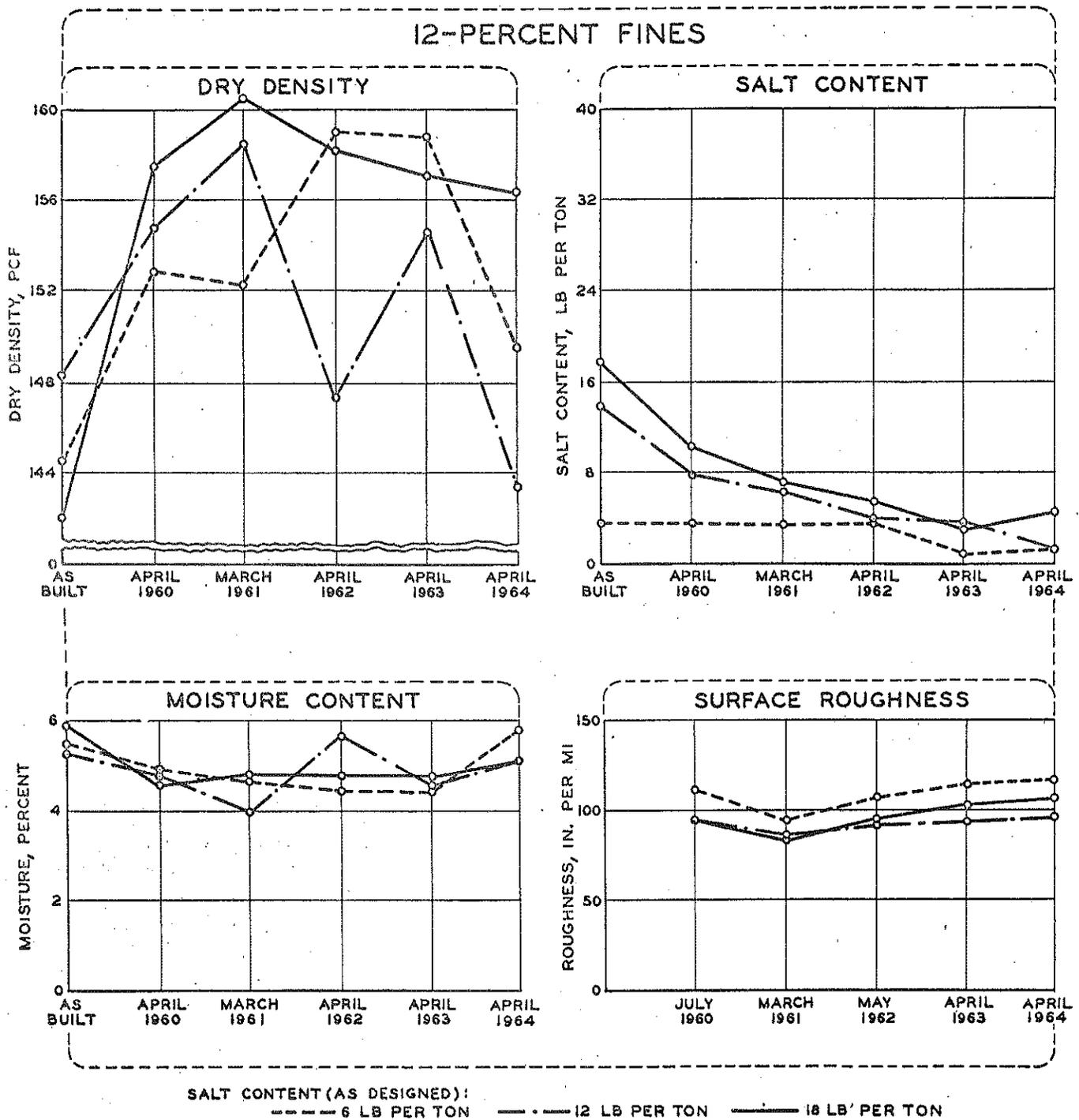


Figure 1. Yearly variation in base and surface properties.
(Sections 1-2-3)

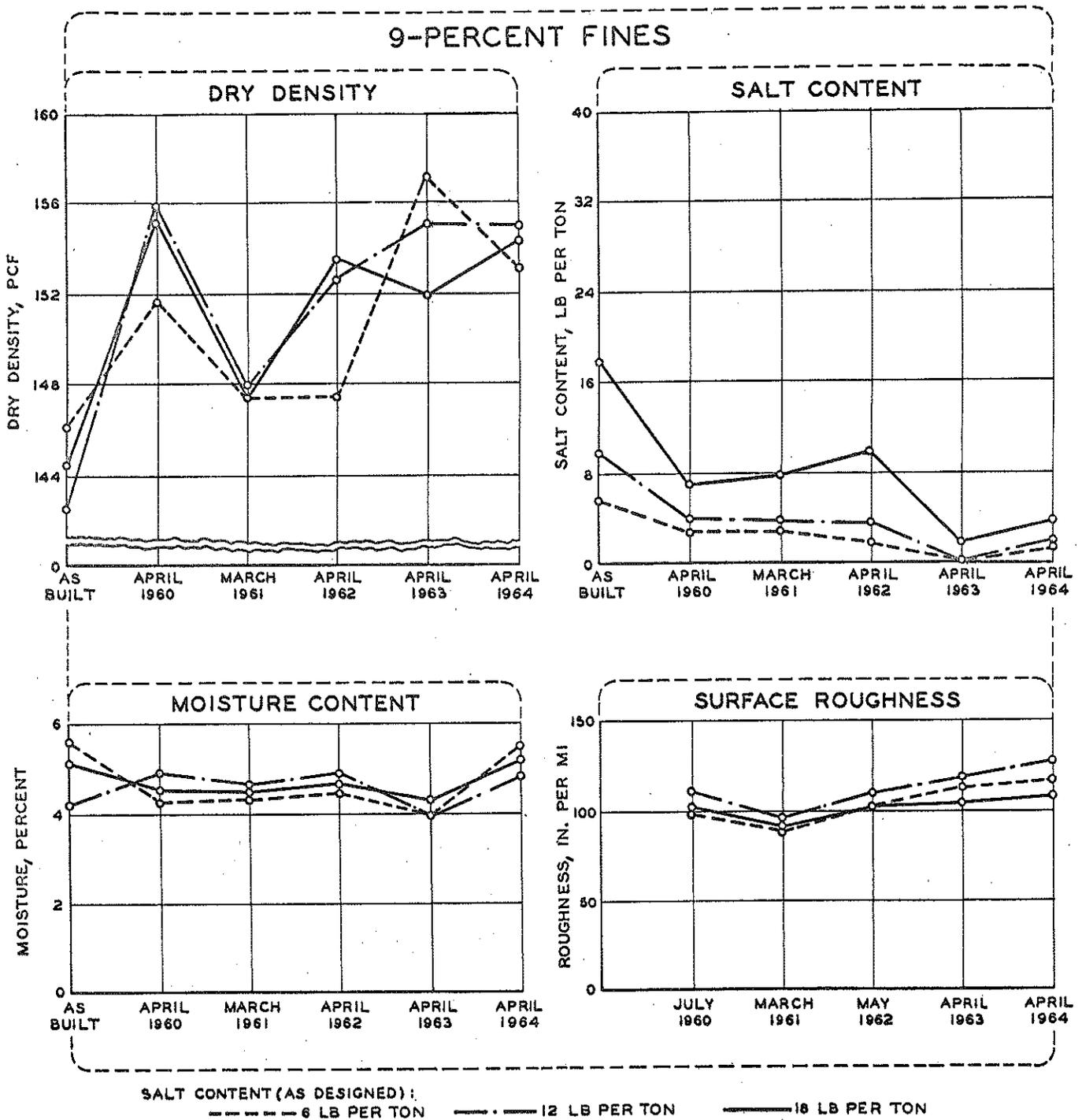


Figure 2. Yearly variation in base and surface properties.
(Sections 4-5-6)

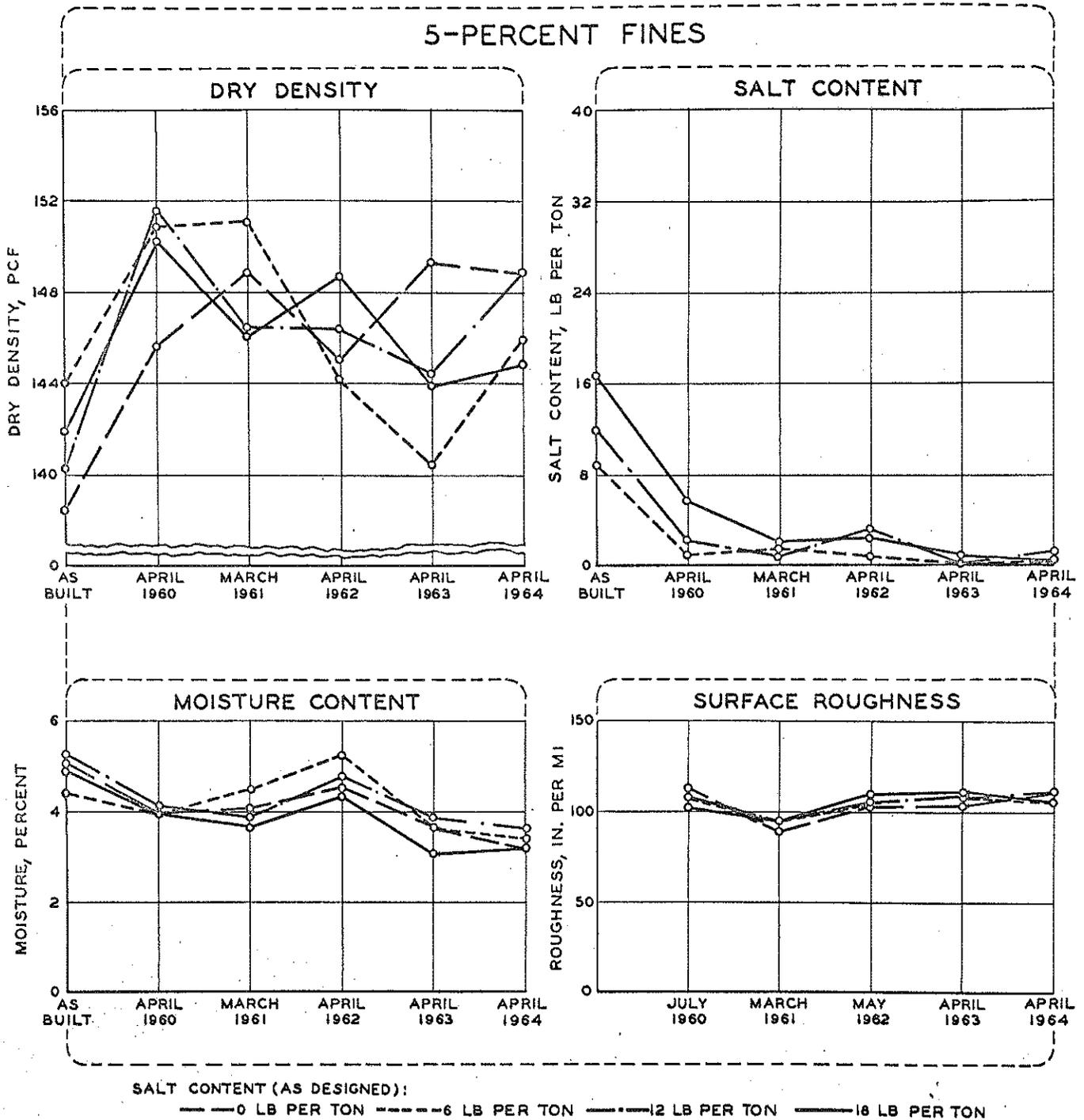


Figure 3. Yearly variation in base and surface properties.
 (Sections 9-10-11-12)

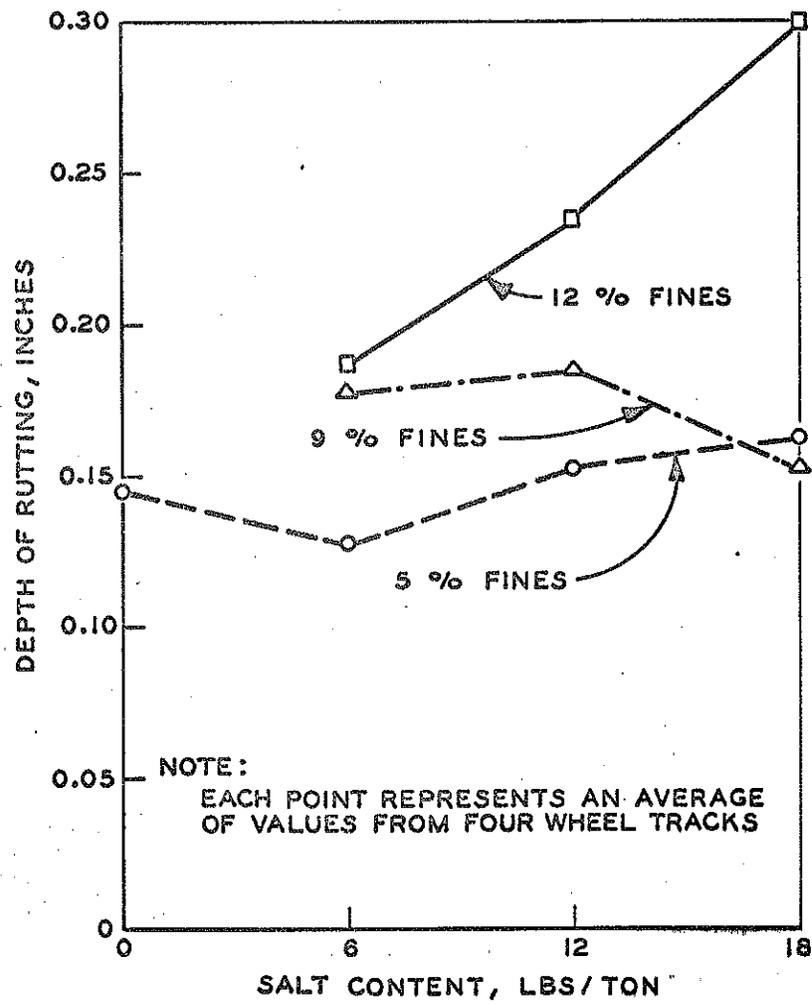


Figure 4. Amount of rutting in the different sections.