

Report on Experimental Project in California

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● The California project to investigate the effect of joint spacing in concrete pavement follows the scope outlined by E. F. Kelley, Chief of the Division of Physical Research, Public Roads Administration. (1) A previous report was made on this project in 1945 by T. E. Stanton, Materials and Research Engineer, California Division of Highways. (2) The following report brings up to date the traffic count, joint movement, rainfall and other data shown in the tables.

Location and General Description

This project is located in the Santa Clara River Valley, Ventura County, about 20 miles from the Pacific Ocean. The pavement was constructed in October 1941, and consists of seven different arrangements of the joint intervals. All experimental sections were constructed in duplicate. The entire 5.65 miles of pavement under the contract was designed as a test section.

The primary purpose of this experiment was to study a series of various expansion and contraction joint spacings.

Details of construction and installation of all of the various test devices are to be found in Mr. Stanton's report.

Tables and Figures

The following tables and figures carry the same titles and numbers as those in the 1945 report. Table No. 10, "Average Change in Joint Widths, Permanent" and Figure No. 18, "Traffic Trend" have been added.

Attention is called to the fact that from 1948, only the August joint readings were made.

Joint Movement

Early in the life of the project, it was observed that certain joints gave somewhat erratic readings for no obvious reason. It was also noted that contraction joints nearest to an expansion joint displayed the least tendency to follow the characteristic daily or seasonal pattern. Therefore, it was decided early to list the movements of expansion joints as one group. The joints next to the expansion joints are listed separately in Table No. 10 under the heading "Adjacent Joints" while the third group covers all the intermediate joints not included in the first two categories. As was to be expected, the greatest movement occurred at the expansion joints. Those sections with 120 foot expansion joint spacing averaged about 0.10 inch less than the longer spacings.

It may also be noted that during the entire ten year period the only evidence of progressive movement or displacement has occurred at the expansion joints which is not surprising in view of the fact that there is no mechanism for forcing the pavement back to its original position.

Seasonal joint movement in both the adjacent joints and the intermediate group was limited to an average of about 0.05 inches. The magnitude of daily joint movement depended upon the daily temperature range at the time the readings were taken.

General Condition Survey

As was reported in 1945, there is little evidence of any type of surface failure. There is no evidence of crushing or spalling due to the daily movement of the concrete slabs. There is no evidence of "Step-off" or of "Pumping" at any of the joints. The riding quality of the entire job is excellent.

The general condition survey is, at this time, essentially the same as in 1945.

Avg. Compressive Strength, PSI

	<u>Cylinders</u>	<u>Cores</u>
4 days	1,210	
10 "	2,050	
28 "	3,610	4,240
3 months	5,210	
6 "	6,010	
1 year	6,570	
2 years		7,135
4 y "		7,555
10 "		7,690

NOTE: Investigational Concrete Pavement in California by Thomas E. Stanton
Materials and Research Engineer, California Division of Highways.

AVERAGE COMPRESSIVE AND FLEXURAL STRENGTHS OF CYLINDERS, CORES, AND BEAMS
VII-Ven, LA-79-G, A Constructed 1941 Cont. 27XC7-P

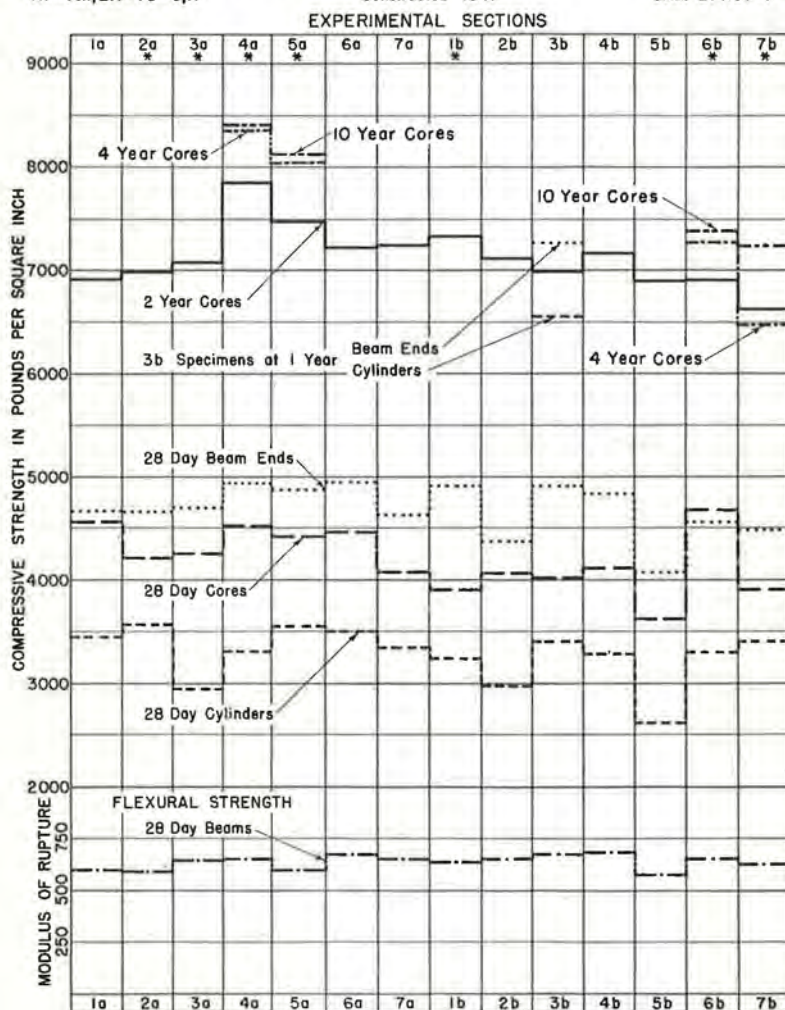
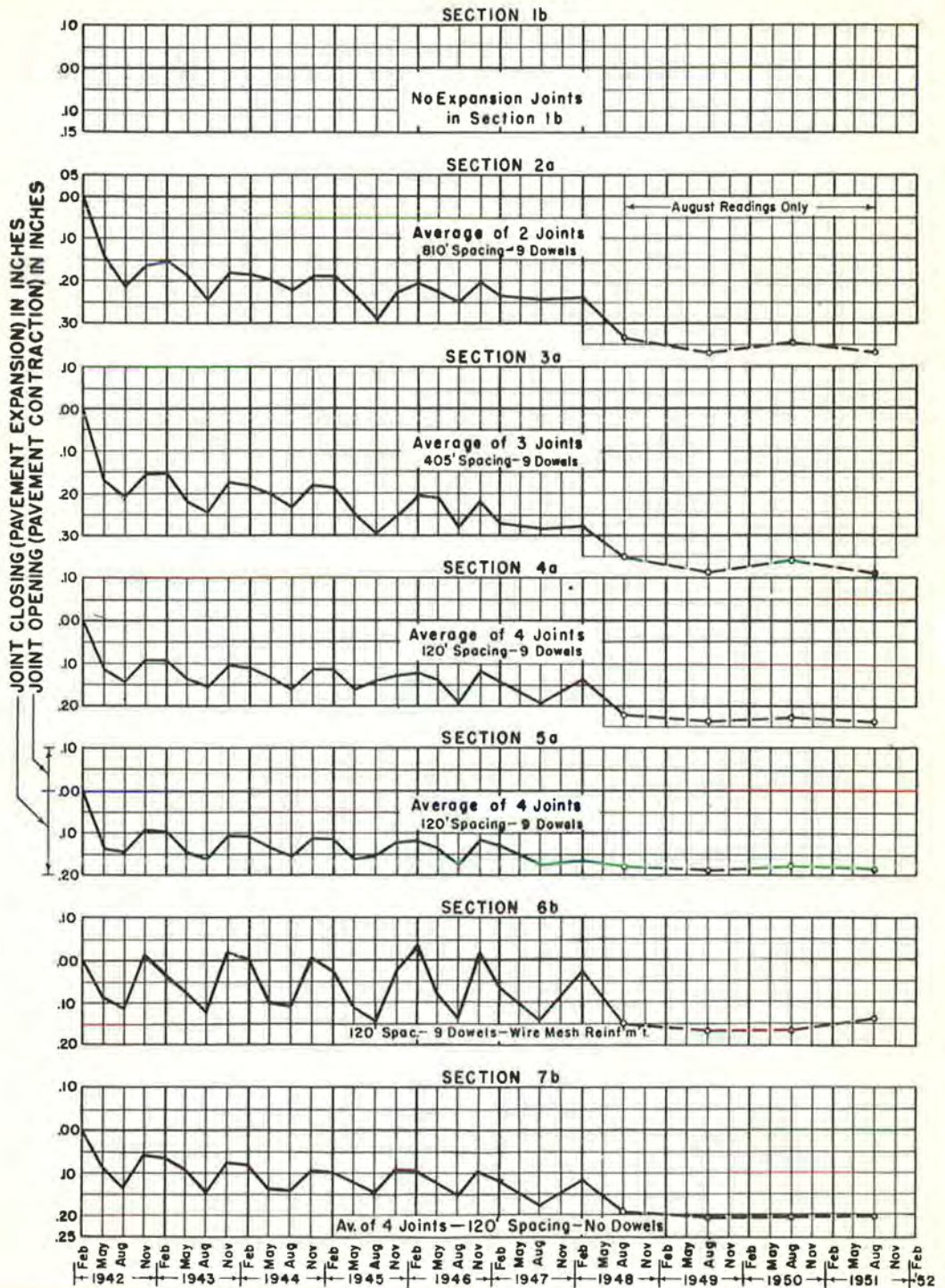


Figure 4.

Average Change in Joint Widths * SEASONAL

Expansion Joints



* NOTE: Co-operative Research Project on Joint Spacing-Ventura County, California.

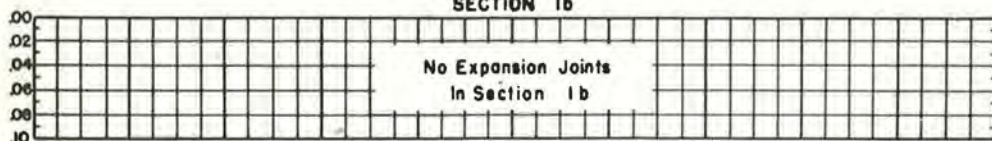
Figure 7.

Average Change in Joint Widths**

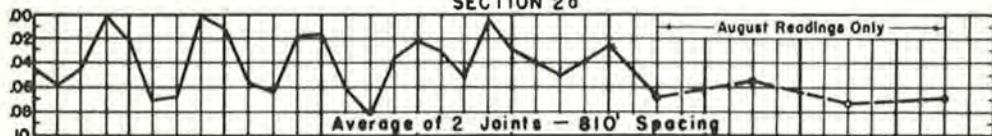
DAILY

Expansion Joints

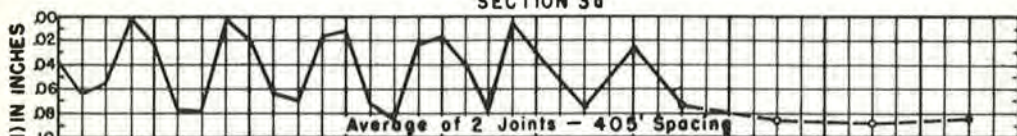
SECTION 1b



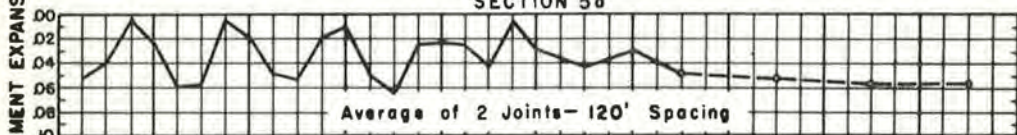
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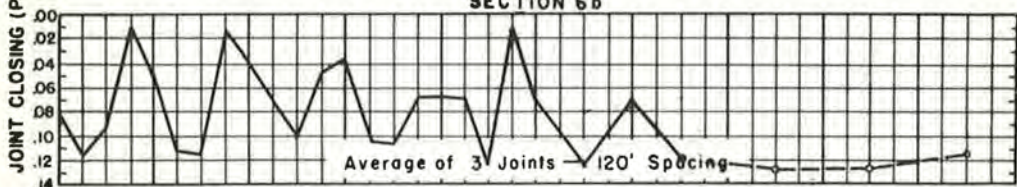
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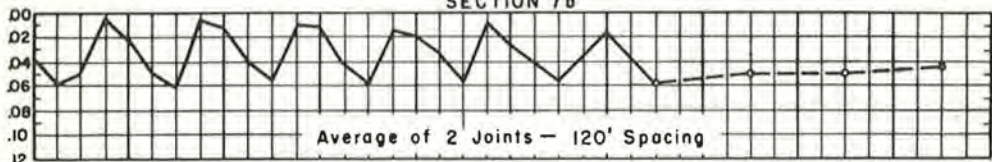
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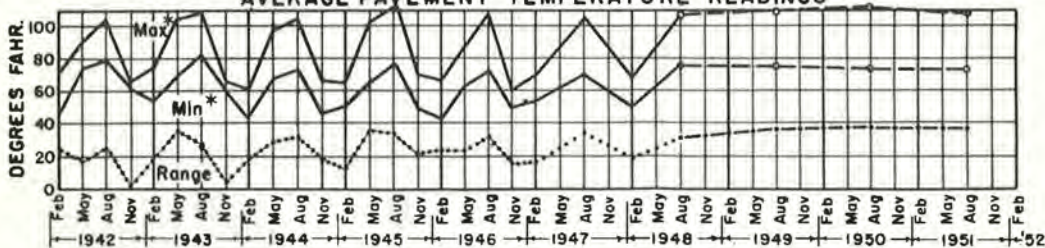
SECTION 6b



SECTION 7b



AVERAGE PAVEMENT TEMPERATURE READINGS



* Maximum and minimum temperature recordings are for the day measurements were made and are not the maximum and minimum of the month.

** Co-operative Research Project on Joint Spacing - Ventura County, California.

Figure 8.

Ventura County Experimental Concrete Pavement
CHANGES IN ELEVATION

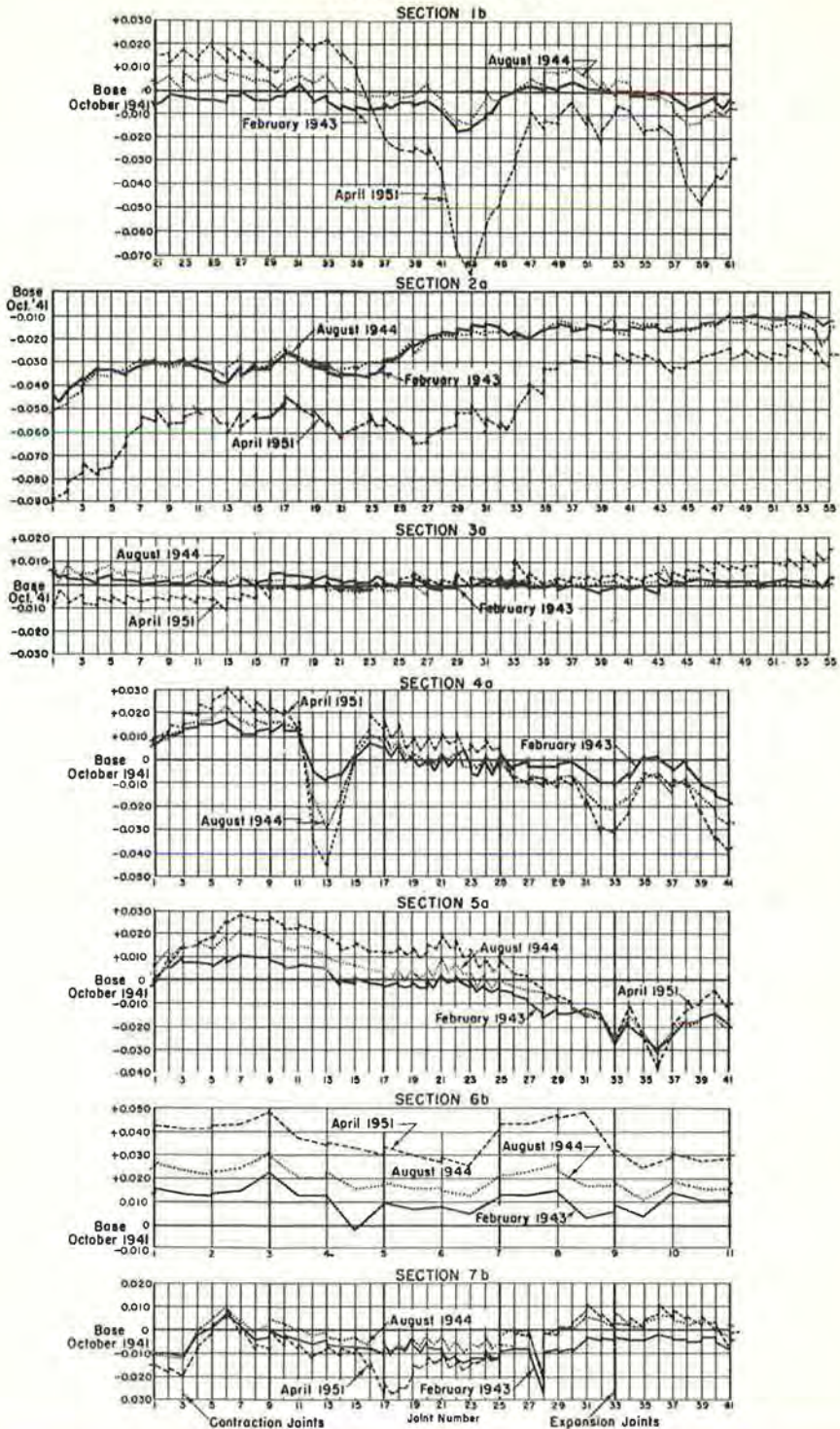


Figure 9.

Ventura County Experimental Concrete Pavement
COMPARATIVE PROFILOGRAPH RECORDS

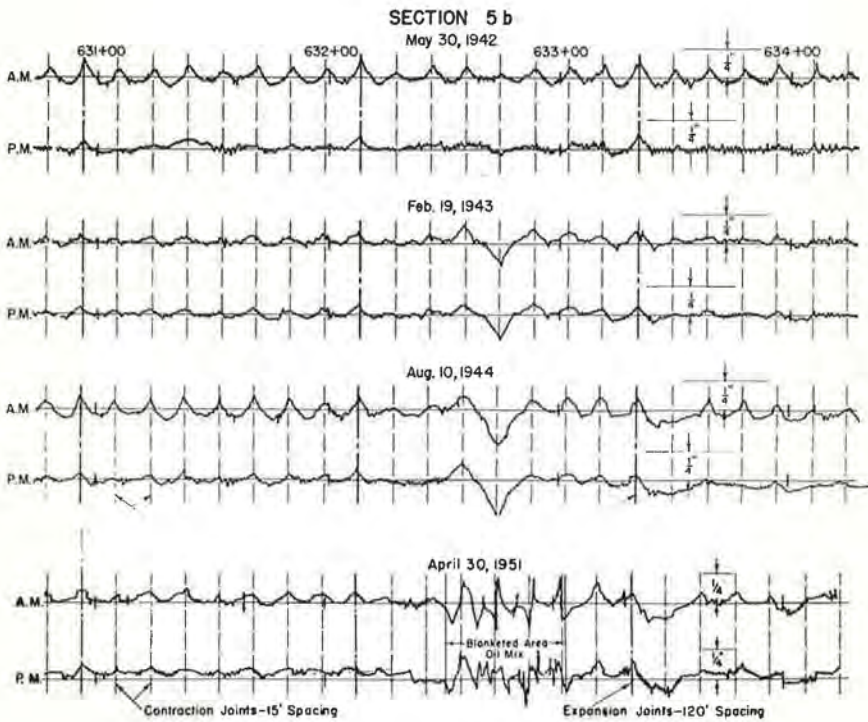
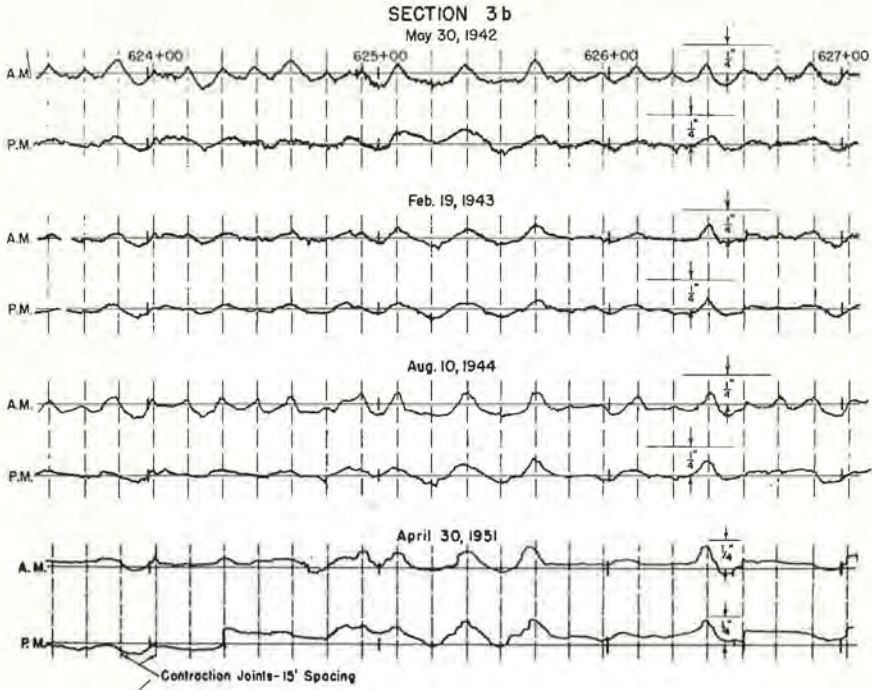


Figure 16.

Ventura County Experimental Concrete Pavement
COMPARATIVE PROFILOGRAPH RECORDS

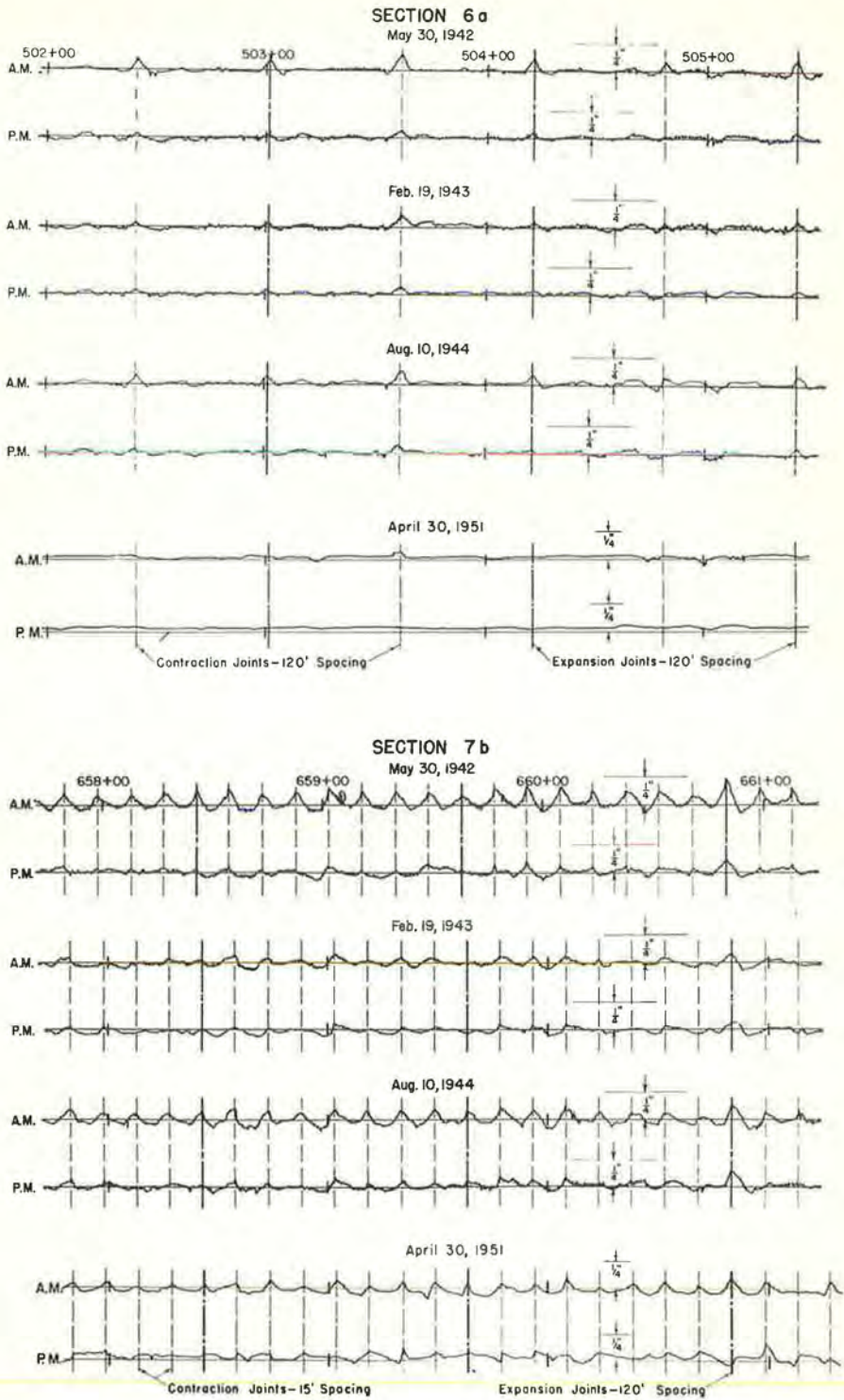


Figure 17.

NUMBER OF VEHICLES PER 16 HOUR COUNT (THOUSANDS)

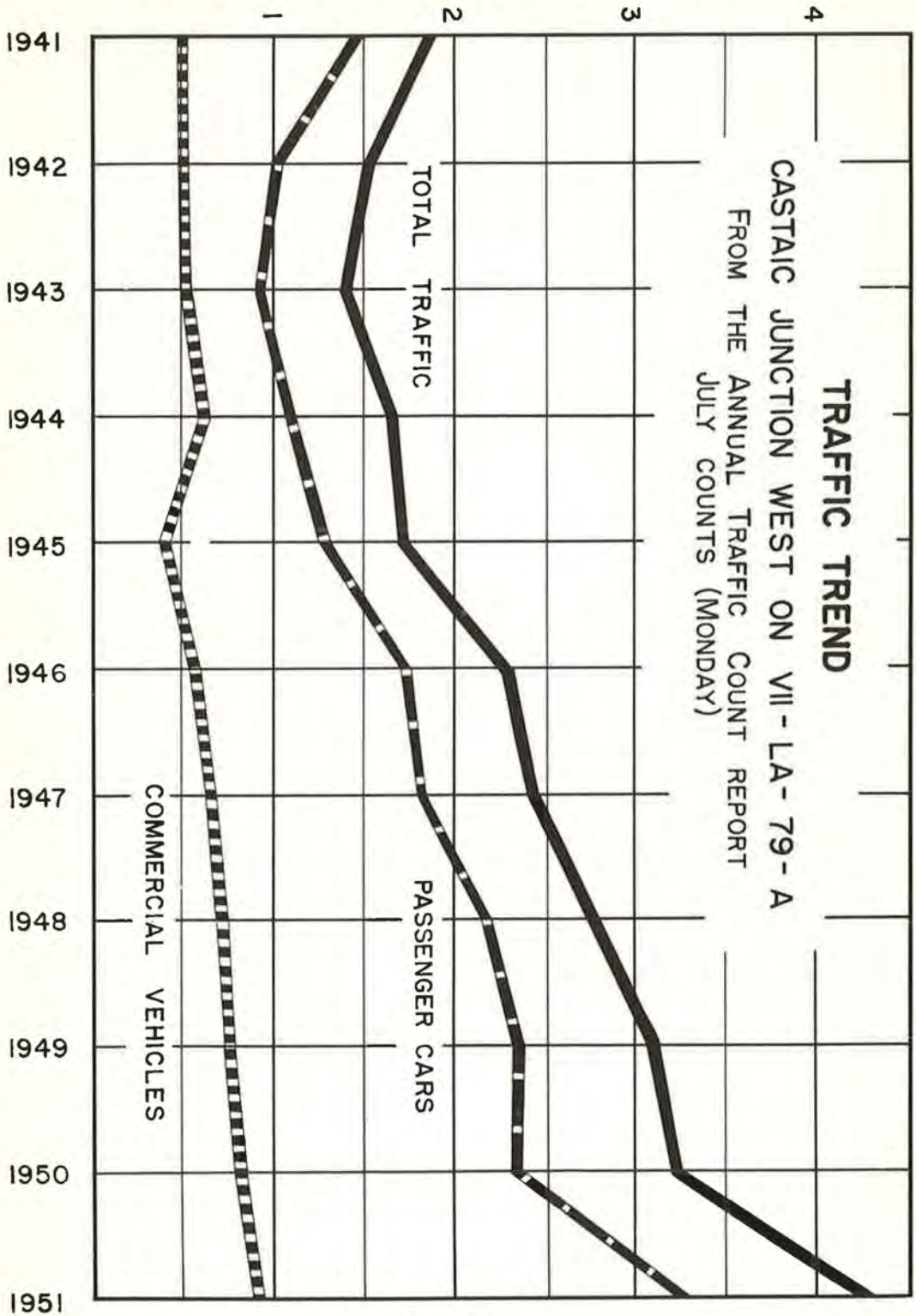


Figure 18.

References

1. "History and Scope of Cooperative Studies of Joint Spacing in Concrete Pavements," Proceedings, Highway Research Board Vol. 20, page 333 (1940).
2. "Investigational Concrete Pavement in California," Highway Research Board Research Reports No. 3B, page 1 (1945).