To:  W. W. McLaughlin
      Testing and Research Engineer

From:  E. A. Finney

Rigidity Tests on Union Steel Products Co.
Dowel Bar Joint Assembly (Type L). Report No. 289
which supplements Report No. 200, 237, 259 and 276.
Research Project 79 F-1(3).

The Union Steel Products Company has made certain modifications in their
dowel bar joint assembly. As a result the new assembly (Sample No. 58 111-44) was submitted to the Research laboratory for testing and evaluation.

Vertical and lateral rigidity tests were conducted in accordance with the procedure used previously on other dowel bar joint assemblies and described completely in Report No. 200. The test results indicate that this assembly is 3.5 times as stiff vertically and 2.5 times as stiff laterally as the Bethlehem assembly which has been considered as a standard of acceptibility.

Figure 1, shows a dimensional cross-section, while Figure 2 shows a detailed and an overall view of the subject assembly. Figure 3 illustrates the vertical and horizontal load-deflection relationships for the Union Steel Products Company (Type L) contraction joint assembly compared to the Bethlehem (Type C) contraction joint assembly.

On the sample submitted for testing two improvements were suggested to Mr. Bill Federhart of Union Steel Products Company. These suggested improvements were as follows:

1. The end wires should be extended beyond the last dowel a minimum of 4½ inches. Their print called for a 3½ inch extension. This suggestion was made in order to provide more or less automatic lateral positioning of the assembly in the pavement lane.

2. The assembly as received had no provision for the proper positioning of the base plate beneath a contraction joint assembly. After discussing this with Mr. Federhart, he said this would be remedied by the use of three guide wires to position the base plate. These guide bars would be placed on the assembly in the field.

In order to illustrate the way the Union Steel Products Company has modified the sample to incorporate the two previous suggestions a revised blueprint is attached. This assembly as modified appears satisfactory, for the changes which were made would not affect the rigidity of the assembly.

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cc:  G. E. Laird
      G. A. Weber
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Encl.
"A" = "0" GA. (3085 DIA.). All other wire to be "3" GA. (243 DIA.).

UNION STEEL PRODUCTS COMPANY CONTRACTION JOINT ASSEMBLY
SAMPLE 58 MR-44
FIGURE 1
Figure 2
Overall and close up view.
VERTICAL DEFLECTION

CENTER LOAD IN POUNDS

CENTER DEFLECTION IN INCHES

HORIZONTAL DEFLECTION

CENTER LOAD IN POUNDS

CENTER DEFLECTION IN INCHES

FIGURE 3