DATE: June 16, 1983

TO: BRIDGE DESIGN PERSONNEL

FROM: Veral Pinkerton, Bridge Engineer

SUBJECT: Butt-Welded Splices

Research at the University of Texas has shown that a lower slope in thickness transition at welded butt splices will increase the fatigue life of welded plate girders. See print of page from Report 247-3, "Evaluation of Fatigue Performance of Butt-Welded Splices." On all future projects it will be our policy to use a 5:1 slope transition at changes in plate thickness.

It will also be our policy to use a 5:1 transition for changes in plate width.

FMH:bw

I M P L E M E N T A T I O N

The results of the analytical study of the fatigue performance of butt welded joints indicate that the use of a lower slope in thickness transition butt welds than the 2-1/2 to 1 slope in the AASHTO Specification can greatly increase fatigue performance. The 5 to 1 slope (measured slope) employed on the bridge studied increases the fatigue life by a factor of 2 over the steeper 2-1/2 to 1 slope. The present Texas Standard Specification for Construction of Highways, streets, and Bridges in Sec. 448.4 states that the slope of such a transition should be no greater than a 1 in 4 slope. This is s good requirement. The gradual slope found on the bridge, 1 in 5, in conjunction with the radiographic inspection and low measured stresses, alleviated fatigue cracking as a cause for concern in the butt welds in the bridge.