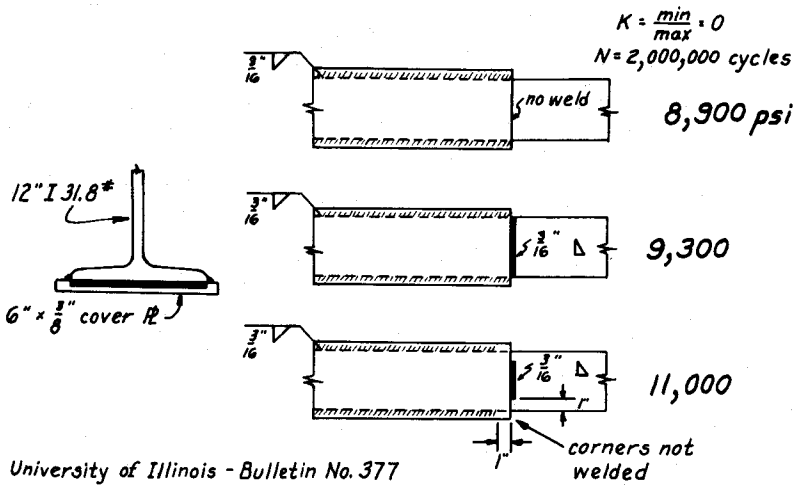

FIG. 16 Cover plates extending beyond width of beam flange.

Early fatigue testing at the University of Illinois* rolled beams with cover plates indicated that:

1. In general, continuous fillet welds were better than intermittent fillet welds for joining cover plates to the beam flange.

2. On cover plates extending beyond the width of the beam flange and connected with longitudinal $\frac{3}{16}$″ continuous fillet welds, adding a $\frac{3}{16}$″ fillet weld across the end of the cover plate produced a slight increase in fatigue strength (from 8900 psi to 9300 psi at 2 million cycles). Omitting the welds for a distance at each corner of the cover plate increased this value up to 11,000 psi; see Figure 16.

The intersection of the longitudinal and transverse fillet welds could present a point of weakness if not properly made. This "cross-over" usually results in a very shallow concave weld. By eliminating this weld for 1″ back from each corner, the fatigue strength is increased. This does not apply if the cover plate lies within the beam flange, since the weld does not have to "crossover."

* Bull. No. 377, Jan. 1948.