UPPER DECK
FALL PROTECTION

Pitched Roof, Fall Protection Anchorage Testing Overview

The testing program included two tests of the Chicago Clamp, Upper Deck Fall Protection Anchorage System. The system consists of two 4"x 2" HSS sections (nominal wall thickness of 1/8") arranged to support a safety harness tie-off, with clamps that attach to the top chord of an open-web joist.

For this testing program the Upper Deck Anchorage System was mounted on support fixtures that simulate the top chord of a truss with a 4:12 pitch plus a 15 degree fall angle (see Fig. 1). Applying a vertical load to the 4x2 system set at approximately 33 degrees (15 + 18 = 33) is equivalent to applying the load 15 degrees from vertical to a joist on a 4:12 pitch. Note the test frame was designed to apply upward loads to the test specimens. Therefore, the specimens and top chord joist simulators were mounted upside-down.

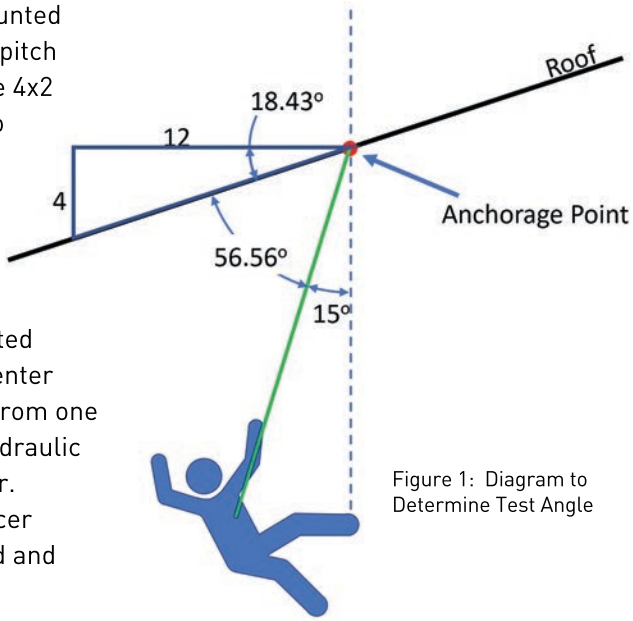

Figure 1: Diagram to Determine Test Angle

The test specimens had a span of 8' from center-to-center of simulated joist-supports. For Specimen 1 (Fig. 2) the load was applied at the center of the 8' span, and for Specimen 2 (Fig. 3) the load was applied 6' 6" from one end and 1' 6" from the other end. Loading was applied by a single hydraulic actuator. Force was measured by a load cell mounted in the actuator. Vertical displacements were measured with a displacement transducer mounted in the actuator. The load and displacement were monitored and recorded at 1-second intervals. Each test lasted over 10 minutes.

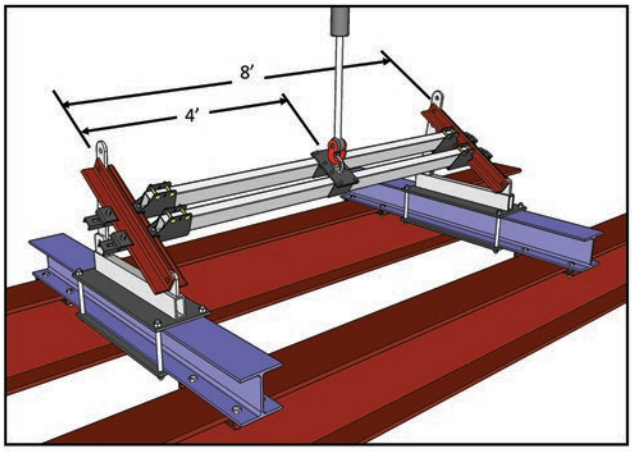

Figure 2: Test Specimen 1, Loading at Center Span

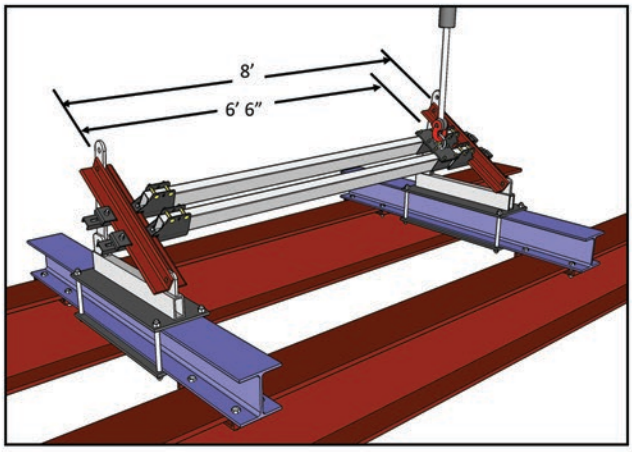

Figure 3: Test Specimen 2, Side Loading

Results

For both tests the specimens were loaded to approximately 300 lb, then unloaded to zero, and then loaded to 7000 lb. In both cases the Chicago Clamp Upper Deck Fall Protection Anchorage System sustained the full 7000 lb load with no obvious distress or damage. There was minimal shifting (approximately ½") of the clamps on the supporting joists. However, the shifting did not appear to compromise the stability or load-carrying ability of the specimens.

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