

SUMMARY OF A REMEDIATION METHOD FOR TRADE DAMAGE TO A ONE-HOUR STEEL-FRAME WALL

This document summarizes the fire-resistance and hose-stream testing of a non-load-bearing wall assembly. The tested assembly consisted of a steel frame and a single layer of 5/8-inch-thick Type X gypsum panels on each side of the wall. Single, separate fire endurance and hose-stream tests were performed for this assembly.

The wall was intentionally constructed with a 1/8-inch wide joint gap along the entire length of a vertical joint **on a metal stud**. Other defects (“trade damage”) were also intentionally created in the assembly as follows:

- A hole created by the removal of a Type S screw in the field of a panel (i.e., did not occur on a stud).
- A tear, approximately 3/4-inches tall by 2-inches wide, in the face paper in the field of a panel.
- A gouge, approximately 1/4-inch deep and 1/2-inch tall by 1 1/2-inches wide, in the field of the face side of a panel.
- An abrasion, approximately 6-inches wide by 1 3/4-inches tall, in the field of the back face of a panel.

The Tested Assembly

The assembly consisted of 3 5/8-inch-deep steel C-shape metal studs, spaced 24-inches on-center in an upper and lower track. One layer of a 5/8-inch-thick Type X gypsum panel was fastened to the studs on each side of the assembly with 1 1/4-inch long Type S screws spaced 8-inches on-center on panel edges and 12-inches on-center in the field of the panels. Fasteners were installed 3/8-inch from vertical joint edges. Panels were applied vertically with paper-bound edges on framing members. Vertical joints were alternated by one stud cavity between sides of the assembly.

All joints – including the 1/8-inch wide joint gap – were covered with one layer of 2-inch-wide joint tape and joint compound, and a second layer of joint compound. All fasteners were covered with two coats of joint compound. All trade damage was covered with two coats of joint compound.

In accordance with requirements contained in the ASTM E119 test standard, *Standard Test Methods for Fire Tests of Building Construction and Materials*, the test assembly was constructed symmetrically, and the joint gap and trade damage defects appeared on both sides of the specimens. Two identical specimens were created: one specimen for the 1-hour fire endurance test and a second specimen for the required hose-stream test.

The Results of the Test

According to the test report prepared by Western Fire Center, Inc. of Kelso, WA:

“The non-load-bearing wall assembly with defects as detailed above met all the necessary requirements for the 1-hr fire endurance test, according to ASTM E119 test, *Standard Test Methods for Fire Tests of Building Construction and Materials*. The assembly did not allow flames to pass through the wall assembly for the 63 min test, and the assembly lasted 62 min before superseding an average temperature threshold (139°C + ambient) and single-point threshold (181°C + ambient), rounding to the nearest integral minute. In addition, a separate wall assembly was subjected to a hose-stream following a 30-min fire resistance test for 1 min and did not develop an opening that permits the projection of water from the hose stream beyond the unexposed surface.”