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Fire Performance of ASTM E119 Evaluation of a Non-Load-Bearing Wall Assembly

Conducted For:
WCC
5726 Sonoma Dr
Pleasanton, CA 94566

IAS ACCREDITED Testing Laboratory TL-180

WFCi Summary Report #19066s

Test Dates: September 13, 2019 - Report Issued: September 26, 2019

This report summarizes the fire resistance and hose-stream testing of a non-load-bearing wall assembly for WCC of Pleasanton, CA. The wall assembly tested consisted of a steel frame and double-layer Type X gypsum board on each side of the frame with a prescribed ¼" gap defect in the base layer gypsum. One fire endurance test and one hose-stream retest were performed for this assembly, performed on September 13, 2019, and were conducted in accordance with ASTM E119, *Standard Test Methods for Fire Tests of Building Construction and Materials*. This assembly was intended to pass the fire resistance criteria for a two-hour duration. A full report has been provided to the client (WFCi 19066).

SAMPLE DESCRIPTION

Two 10'×10' assemblies were constructed at WFCi. Each steel frame assembly (Figure 1) consisted of two layers of ⅝" Type X gypsum board on each side of the 3⅝" deep steel studs. Specific details of each component of the assembly are found below.

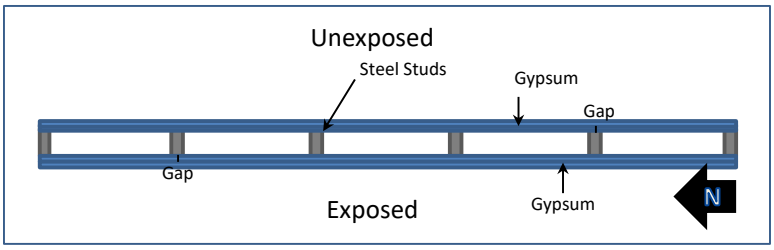

Figure 1. General schematics of assembly.

Steel Frame

The 10'×10' assembly was framed 24" on center (cavity-centered) with 3⅝" deep steel C-studs with both an upper and lower track with ⅜" float on each stud end.

Gypsum Layers

Two layers of ⅝" Type X gypsum board was fastened on each side of the steel frame. The assembly had vertically-applied panels with alternating joints by one cavity (24") from exposed to unexposed, and from face to base layers. The base layer panels were fastened with Type S (1¼") screws at 16" on center on edge and in the field with a ⅜" distance from vertical joint

edge. The face layer panels were fastened with Type S (1⅝") screws at 12" on center on edge and in the field with a ⅜" distance from vertical joint edge. The joints and fastener heads on the face layer only were coated with 2 layers of joint compound, including 2" paper tape on the joints.

A gap defect was purposefully introduced to the gypsum base layer with a single ¼" vertical joint gap. Base layer screws were angled slightly to be able to fasten to the stud flange. No joint compound was placed in the ¼" joint gap.

TEST CONCLUSION

The non-load-bearing wall assembly with gap defects as detailed above met all the necessary requirements for the 2-hr fire endurance test, according to ASTM E119 test, *Standard Test Methods for Fire Tests of Building Construction and Materials*. The fire resistance assembly had a finish rating of 48 min, rounding to the nearest integral minute. The assembly did not allow flames to pass through the wall assembly for the 123 min test, and the assembly did not surpass the average temperature threshold (139°C + ambient) or single-point threshold (181°C + ambient) during the 123 min test. In addition, a separate wall assembly was subjected to a hose-stream following a 60-min fire resistance test for 2½ min, and did not develop an opening that permits the projection of water from the hose stream beyond the unexposed surface.

SIGNATURES

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