INTRODUCTION:
In March of 2015 the Wall & Ceiling Conference (WCC) contracted with Intertek laboratories to determine how typical field conditions impact a 1-hour fire rated gypsum board assembly. The assembly was built and tested per ASTM E119, Standard Methods for Fire Test of Building Materials, and included a missed fastener that was removed and covered with joint compound in gypsum board assembly. The intent of this test was to determine how the rating of an approved 1-hour wall assembly might be impacted by this condition.

TEST SAMPLE:
Framing Members
3 5/8 inch deep, 25EQ (25 GA equivalent) steel studs spaced 24 inches o.c. The top and bottom track were also 25EQ.

Interior and Exterior Cladding
One layer of 4 foot x 10 foot x 5/8 inch ASTM C1396 equivalent type X gypsum board oriented vertically secured using 1 1/4 inch self-drilling fasteners spaced 8 inches o.c. around the perimeter and 12 inches o.c. in the field. Exposed seams were covered with joint tape, and the tape and fasteners received 2 layers of joint compound.

The missed fastener was removed and covered with joint compound, this was applied to both the exposed and unexposed surfaces to accommodate a symmetrical test result.

TEST AND EVALUATION METHODS:
The missed fastener removed and covered with joint compound was instrumented by a 24 GA, Type K, fiberglass jacketed thermocouple. The output of the thermocouple and furnace probes was monitored by a 100-channel Yokogawa, Inc., Darwin Data Acquisition Unit. The computer was programmed to scan and record data every 30 seconds. The ambient temperature at the time of the test was 56°F and the humidity was 81% R.H.

The individual temperature rise criteria as listed in the table below was based on the ASTM E119 requirements of 325°F above the initial temperature. 56°F at the start of the test for a maximum allowable temperature rise of 381°F.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>MAX TEMP REACHED (°F)</th>
<th>MAX ALLOWED (°F)</th>
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<tbody>
<tr>
<td>Missed Fastener</td>
<td>250</td>
<td>381</td>
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CONCLUSION:
If a missed fastener occurs, the fastener shall be removed and the area is to be treated with joint compound to a minimum of a level 2 gypsum board finish as tested. There was no evidence of reduced fire resistance due to the addition of the missed fastener removed and covered with joint compound within the tested assembly.

For a full copy of the test report, please visit www.tsib.org, click on the library tab under the technical documents tab and select the fire test. For further details and or clarification please do not hesitate to contact TSIB.