



March 26, 2016

Ryan Senatore  
Ryan Senatore Architecture  
565 Congress Street, Suite 304  
Portland, Maine 04101

Reference:  
One Hour Horizontal Barrier  
107 India St.  
Portland, ME  
S.I., Inc. Job Number: 15-0242

Dear Ryan,

As requested, we have reviewed the fire rating regarding the continuity of the 1-hour gypsum ceiling. This assembly is interrupted by top plates of the walls, both bearing and nonbearing.

The continuity of the gypsum ceiling is broken by a continuous wood 2x top plate at the head of the wall. The 2009 IBC Section 720.1 requires that, *“Where materials that change the capacity for heat dissipation are incorporated into a fire-resistance-rated assembly, fire test results or other substantiating data shall be made available to the building official to show that the required fire-resistance-rating time period is not reduced.”* In order to fulfill this requirement, we have evaluated the fire rating potential of the continuous 2x top plate to provide the same resistance rating as the missing gypsum.

Per IBC table 721.2.1.4(2) 5/8” type X gypsum sheathing provides a 40 min rating and based on the Technical Report #10 by the American Wood Council titled, *“Calculating the Fire Resistance of Exposed Wood Members,”* the nominal char rating ( $\beta_n$ ) per section 3.1.1 for sawn lumber is 1.5 in/hour based on a 1 hour exposure.

Therefore, the 2x plate (1.5” actually) has a theoretical 60 min rating, which is greater than the gypsum sheathing it replaces. The required fire resistance rating time period is not reduced and therefore our 2x top plate in lieu of cont. 5/8” type X gypsum is in compliance with 720.1 of IBC and should be accepted by the building official as such.

Let me know if you have any further questions or comments.

Sincerely,

A handwritten signature in green ink that reads "Aaron C. Jones".

Aaron C. Jones, P.E., SECB, LEED AP  
President

