STATE BUILDING CODE INTERPRETATION I-08-07

April 4, 2007

The following is offered in response to your letter to me dated January 26, 2007 received in this office on March 7, 2007, in which you seek an interpretation of the provisions of both the BOCA National Building Code/1996 portion of the1999 State Building Code (99 SBC) and the 2003 International Building Code portion of the 2005 State Building Code (05 SBC) with respect to the code's requirements for fire-resistance ratings of structural elements in the exterior walls of an unprotected wood frame building whose exterior walls are not required to be fire-resistance rated based on fire separation distance.

Question 1: A three story, fully sprinklered, Type 5B (VB) building has a one-hour fire-resistance rated separation between the first and second floors. Does the exterior bearing wall supporting the rated floor/ceiling assembly have to be rated from both the interior and the exterior?

Answer 1: No. A previous formal interpretation (I-14-04) answered a question similar to this in the affirmative based on the requirements of Chapter 6 of the 99 SBC. Further investigation into the provisions of Chapter 7 of both codes indicate that it is appropriate to revise that interpretation. Sections 705.2 in the 99 SBC and 704.5 in the 05 SBC state, in part, that for exterior walls required to be rated based on fire separation distance, the fire-resistance rating of exterior walls with a fire separation distance of 5 feet or less shall be rated for exposure to fire from both sides. This means that when the fire separation distance exceeds 5 feet, one need only rate the exterior wall from the interior, which is presumed to be the fire side. While there is no code path evident in either the 99 SBC or the 05 SBC from the code section requiring supporting construction to have the same rating as the construction supported, it stands to reason that if the threat of fire from the exterior is removed from exterior walls by virtue of a fire separation distance in excess of 5 feet, such threat is also removed from supporting elements that happen to be exterior bearing walls.

Question 2: If there are steel or wood columns or beams embedded within the exterior walls supporting rated construction above, are such members required to be rated from the exterior when the fire separation distance exceeds 5 feet?

Answer 2: That would depend on the applicable requirements of Section 716.2 of the 99 SBC and Section 714.2.1 of the 05 SBC. If the structural element in question qualified for membrane protection, the exterior surface would not be required to have a rating. If, however, the structural member is specifically required to be individually protected <u>on all sides</u> based on what is being supported, the exterior surface would not be exempt from the rating requirement.

Question 3a: In a circumstance where the fire separation distance exceeds 5 feet and a supporting member is permitted to be membrane protected in accordance with 716.2 and 714.2.1 as referenced above, could a one-hour fire-resistance rating be achieved by installing 2 layers of 5/8 inch fire-rated gypsum board across the entire interior face of the exterior wall?

Answer 3a: In order to make that determination, one would have to find a tested, listed asymmetrical wall design offering a finish rating of one-hour on the fire side (presumed to be the inside) or design an asymmetrical wall that offers equivalent protection utilizing Section 720 or 721 of the 05 SBC.

Question 3b: Under the same circumstances as 3a above, could membrane protection consisting of 2 layers of 5/8 inch fire-rated gypsum board be installed in a U shape covering the interior surface and both sides of the structural element leaving only the exterior surface unprotected?

Answer 3b: In a circumstance where individual encasement is not required, a U shaped covering would effectively protect the member from fire originating on the interior of the building assuming the rating of the covering were ascertained in accordance with Answer 3a above.