

### 506.3 Automatic sprinkler system increase.

Where a building is equipped throughout with an *approved automatic sprinkler system* in accordance with Section 903.3.1.1, the *building area* limitation in Table 503 is permitted to be increased by an additional 200 percent ( $I_s = 2$ ) for buildings with more than one *story above grade plane* and an additional 300 percent ( $I_s = 3$ ) for buildings with no more than one *story above grade plane*. These increases are permitted in addition to the height and *story* increases in accordance with Section 504.2.

**Exception:** The use of an *automatic sprinkler system* to increase the building area limitation shall not be permitted for the following conditions:

1. Buildings classified as Group H-1 occupancy.
2. Buildings, or portions of buildings, classified as either a Group H-2 or H-3 occupancy. For buildings containing such occupancies, the allowable area shall be determined in accordance with Section 508.4.2, with the sprinkler system increase applicable only to the portions of the building not classified as Group H-2 or H-3.
3. Buildings where an *automatic sprinkler system* is substituted for fire-resistance rated construction in accordance with Table 601, Noted.

**Q:** We are reviewing a proposed four-story building, which would have a Group A-2 restaurant on the first story and Group R-2 apartments on the upper three stories. The designer is proposing to use a 300 percent sprinkler increase for the A-2 portion of the building because the Group A-2 occupancy is only a single story. Is this a bad reading of the code?

**A:** Yes, this is a bad reading of the code. The sprinkler increase provisions of Section 506.3 must be viewed for the entire building, not for each occupancy separately. As this is a four-story building, a 200 percent increase for sprinkler protection is allowed on each floor for the occupancies on that floor. [5-13]

**Q:** How is the maximum allowable area determined for individual floors of a multistory building that contains an automatic sprinkler system?

**A:** Assuming area increase is not being included for open frontage, the following examples illustrate the allowed increase for sprinklers in Section 506.3. Assume the following:

Construction Type – VB

Occupancy Category – B

The tabular area for Group B in a Type VB building is 9,000 square feet (Table 503).

1. For a one-story building a 300 percent increase in allowed area is permitted. For our example, a one-story building would be based on Equation 5-1:  
Allowable Area = Tabular Area + (3 x Tabular Area)  
Allowable Area = 9,000 + (3 x 9,000 )  
Allowable Area = 36,000 square feet for a one-story sprinkle red Group B building.
2. For multistory buildings the sprinklers only result in a 200 percent increase in the allowable area for each story. Therefore, using Equation 5-1:  
Allowable Area = Tabular Area + (2 x Tabular Area)  
Allowable Area per story = 9,000 + (2 x 9,000)  
Allowable Area per story = 27,000 square feet

The second step for a multistory building is Section 506.4, which limits the total area of a single occupancy building. The maximum allowed area of the building is based on the allowable area determined under Section 506.1. Thus, using our 27,000 square foot allowed floor size, the following are the maximum allowed building areas:

Two stories - 27,000 x 2 = 54,000 square feet  
Three stories - 27,000 x 3 = 81,000 square feet  
Four stories - 27,000 x 3 = 81,000 square feet

For a building of three or more stories the multistory factor is always 3. In a building of three or more stories, any story can be 27,000 square feet in area; however, the total building cannot exceed 81,000 square feet. [5-14]