

IBC 2012

303.4 Assembly Group A-3, Places of religious worship

TABLE 503 - ALLOWABLE BUILDING HEIGHTS AND AREAS

TYPE VB = 6,000 s.f. single story

506.1 General. The building areas limited by Table 503 shall be permitted to be increased due to frontage (I_f) and automatic sprinkler system protection (I_s) in accordance with Equation 5-1:

$$A_a = [A_t + (A_t \times I_f) + (A_t \times I_s)]$$

A_a = Allowable building area per story (square feet).

A_t = Tabular building area per story in accordance with Table 503 (square feet).

I_f = Area increase factor due to frontage as calculated in accordance with Section 506.2.

I_s = Area increase factor due to sprinkler protection as calculated in accordance with Section 506.3.

506.2 Frontage increase. Every building shall adjoin or have access to a public way to receive a building area increase for frontage. Where a building has more than 25 percent of its perimeter on a public way or open space having a width of not less than 20 feet (6096 mm), the frontage increase shall be determined in accordance with Equation 5-2: $I_f = (F/P - 0.25) \times W/30$

I_f = Area increase due to frontage.

F = Building perimeter that fronts on a public way or open space having 20 feet (6096 mm) open minimum width (feet).

$$F = 409.34'$$

P = Perimeter of entire building (feet).

$$P = 409.34'$$

W = Width of public way or open space (feet) in accordance with Section 506.2.1.

506.2.1 Width limits. To apply this section the value of W shall be not less than 20 feet (6096 mm). Where the value of W varies along the perimeter of the building, the calculation performed in accordance with Equation 5-2 shall be based on the weighted average calculated in accordance with Equation 5-3 for portions of the exterior perimeter walls where the value of W is greater than or equal to 20 feet (6096 mm). Where the value of W is greater than 30 feet (9144 mm), a value of 30 feet (9144 mm) shall be used in calculating the weighted average, regardless of the actual width of the open space. W shall be measured perpendicular from the face of the building to the closest interior lot line. Where the building fronts on a public way, the entire width of the public way shall be used. Where two or more buildings are on the same lot, W shall be measured from the exterior face of each building to the opposing exterior face of each adjacent building, as applicable. Weighted average $W = ((L_1 \times w_1) + (L_2 \times w_2) + (L_3 \times w_3) \dots) / F$

L_n = Length of a portion of the exterior perimeter wall.

w_n = Width of open space associated with that portion of the exterior perimeter wall.

F = Building perimeter that fronts on a public way or open space having a width of 20 feet (6096 mm) or more.

Exception: Where the building meets the requirements of Section 507, as applicable, except for compliance with the 60-foot (18 288 mm) public way or yard requirement, and the value of W is greater than 30 feet (9144 mm), the value of W divided by 30 shall be limited to a maximum of 2.

$$W = ((136.67' \times 48.73') + (68.0' \times 214.73') + (136.67' \times 48.9') + (68.0' \times 27.18')) / (68' + 68' + 136.67' + 136.67')$$

$$W = 72.78' \text{ therefore } W = 30'$$

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. See Exceptions in Code.

$$A_t = 6,000 \text{ s.f.}$$

$$I_f = (F/P - 0.25) \times W/30$$

$$F=409.34\text{ft}; P=409.34\text{ft}; W=30\text{ft}$$

$$I_f = ((409.34/409.34) - 0.25) \times (30/30)$$

$$I_f = 0.75$$

$$A_a = [A_t + (A_t \times I_f) + (A_t \times I_s)]$$

$$A_a = [6,000 + (6,000 \times 0.75)]$$

$$A_a = 10,500 \text{ s.f.}$$