NFPA 92B

Standard for Smoke Management Systems in Malls, Atria, and Large Spaces

2005 Edition

Reference: 6.1.2.1, 6.1.2.2, and A.6.3
Errata No.: 92B-05-01 and 92B-05-02

The Committee on Smoke Control notes the following error in the 2005 Edition of NFPA 92B, Standard for Smoke Management Systems in Malls, Atria, and Large Spaces.

1. Revise 6.1.2.1 as follows:

**6.1.2.1** Steady Fires. Where all of the following conditions occur, the height of the first indication of smoke above the fire surface, $z$, shall be calculated using Equation 6.1.2.1 or 6.1.2.1a:

1. Uniform cross-sectional areas with respect to height
2. $A/H^2$ ratios in the range from 0.9 to 14
3. $z/H > 0.2$
4. Steady fires
5. No smoke exhaust operating

2. Revise 6.1.2.2 as follows:

**6.1.2.2** Unsteady Fires. Where all of the following conditions occur, the descent of the height of the initial indication of smoke shall be calculated for $t$-squared fires using Equation 6.1.2.2 or 6.1.2.2a:

1. Uniform cross-sectional areas with respect to height
2. $A/H^2$ ratios in the range from 0.9 to 23
3. $z/H > 0.2$
4. Unsteady fires
5. No smoke exhaust operating

3. Revise Equation 6.2.3.2a changing “0.068” to “0.68”.

$$ m = \left[ 0.68 \left( A_H z_a \right)^{\frac{1}{3}} \left( z_a + a \right)^{\frac{1}{3}} \right] + 1.59 A_H z_a $$

4. Revise A.6.3 to read as follows:

A.6.3 The sizing and spacing of exhaust fan intakes should balance the following concerns:
The exhaust intakes need to be sufficiently close to one another to prevent the smoke from cooling to the point that it loses buoyancy as it travels along the underside of the ceiling to an intake and descends from the ceiling. This is particularly important for spaces where the length is greater than the height, such as shopping malls.

The exhaust intakes need to be sized and distributed in the space to minimize the likelihood of air beneath the smoke layer from being drawn through the layer. This phenomenon is called plugholing.

The objective of distributing fan inlets is therefore to establish a gentle and generally uniform rate over the entire smoke layer. To accomplish this, the velocity of the exhaust inlet should not exceed the value determined from Equation 6.3.3.

5. Revise Equation B.6.3.1b adding an “α” in the parenthesis.

\[ 1 < 0.6 \left( t_e^* \alpha \right)^{1/2} \]

6. Revise Equation B.6.3.2a changing all “B”s to minus signs, “–”.

\[ T_{\text{nearhood}} - T_e < 0.1 \left( T_{\text{nearhood}} - T_o \right) = 0.1 \left( T_{eq} - T_o \right) \]

7. Revise Equation B.6.3.2b changing “10” to an “α”.

\[ l > 2 \left( t_e^* \alpha \right)^{1/2} \]

8. Revise Equation B.6.3.2c changing “B/4” to “\( \pi/4 \)” and “\((T_{eq} B T_o)\)” to “\((T_{eq} - T_o)\)”.

\[ t_e^* = \left( \frac{\pi}{4} \right) kpc \left( \frac{T_{eq} - T_o}{q_e^*} \right)^{1/2} \]

9. Revise Equation B.6.5 changing \( q^* \) to \( (\dot{q}^*)^2 \).

\[ V = \frac{(\dot{q}^*)^2 L}{kpc \left( T_{eq} - T_e \right)^2} \]

10. Revise Equation H.2c changing “1300” to “1210” and “\( H^{5/3} \)” to “\( H^{-5/3} \)”.

\[ \Delta T_e = 1210 Q^{3/3} H^{-5/3} \]

11. Revise Equation H.2d changing “\( \Delta T_o^{3/5} \)” to “\( \Delta T_o^{-3/5} \)”.

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