



Coffee Break Training - Fire Protection Series

Access and Water Supplies: Fire Flow Formulas: Part 8: Insurance Services Office Needed Fire Flow Formula: Effective Area Exemptions

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Learning Objective: The student will be able to list areas exempt from the “effective area” variable in the Insurance Services Office (ISO) “construction factor” subformula that is included in the Needed Fire Flow (NFF) formula.

The effective area, A_i , in the ISO construction factor formula, $C_i = 18F\sqrt{A_i}$, is subject to adjustment by fire-resistive “division walls,” but there also are spaces that ISO specifically exempts from inclusion as part of the effective area variable.

When calculating a building’s effective area, the ISO NFF allows the following spaces to be omitted:

- Mezzanines that are less than 25 percent of the square footage (meters squared) of the floor immediately below.
- Courts without roofs.
- Roof structures, sheds or similar constructions.
- In breweries, malt mills and similar occupancies, slatted operating decks and walkways that have no storage.
- In nonsprinklered buildings (or buildings that do not meet the ISO criteria to qualify as “sprinklered”), floors that are protected by approved sprinklers or automatic fire suppression systems with no high fire hazard occupancies on the floor.
- Basements or subbasements that are vacant, are used only for building maintenance, or have noncombustible or limited combustible contents.



The two small rooftop structures on this building are exempt from the Insurance Services Office “effective area” definition.

These exemptions and the division wall separation options discussed in last week’s Coffee Break Training can limit the size of the effective area variable that has to be inserted in the construction factor formula.

Next week’s Coffee Break Training items will provide a sample calculation to explain how to compute the effective area variable. The ISO “Guide for Determination of Needed Fire Flow” can be downloaded from www.iso.com.

For additional information and training on calculating water supply requirements for fire protection, visit the National Fire Academy online at <http://1.usa.gov/12JypCa>, and register for the free classes “Alternative Water Supply: Planning and Implementing Programs” (Q0217) and “Testing and Evaluation of Water Supplies for Fire Protection” (Q0218).



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