Coffee Break Training - Fire Protection Series

Access and Water Supplies: Fire Flow Factors: Part 2

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Learning Objective: *The student will be able to list six factors that influence fire flow calculations.*

Fire flow estimates are not derived from a precise science but are based on historical observations on what works during various situations.

When a fire protection engineer, inspector, Incident Commander, insurance representative or contractor discusses fire flow, six significant features must be considered. Taken together, these elements are evaluated to establish how much water is needed to control and suppress a fire.

Fire flow calculations — including those from static sources — must consider factors such as building use, construction type and exposures.

Building Construction Type

Do the building materials used in construction contribute to the fuel load? Wood, plastics and other combustible materials provide fuel. Steel, concrete and gypsum wallboard do not increase the fuel load of a structure.

Occupancy Type

A structure's use or occupancy is a major factor in evaluating water supply requirements. A mercantile occupancy likely has a heavier fuel load than an office; a rack storage warehouse generally has more potential fuel than a dwelling.

Building Size

Generally, the larger the building, the more water will be needed to control a fire in it. A 100,000-foot squared (9,290-meter squared) building, for example, will require a higher flow rate than a 28,000-foot squared (2,600-meter squared) building because the larger building can contain more fuel. Likewise, a tall or multiple-story building may include more fuel, so the structure's volume may be a consideration.

Exposures

An important part of fire strategy is to prevent fire from spreading from the burning building to adjacent structures or exposures. Master streams or handlines often are used to protect exposures, and an adequate water supply must be calculated for them.

Percentage of Involvement

Part of an effective size-up includes determining how much of a building is burning. If the fire has gained headway when the fire suppression forces arrive, it will take a greater amount of water to control and suppress the fire.

Automatic Fire Protection

If installed and operating properly, automatic sprinklers will confine a fire and keep water demands low. Effective sprinkler protection also minimizes the water needs for handlines.