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From Experience

Fired Up: Basic Elements of Exterior Fire Protection

Smoke alarms and sprinklers are often the most recognizable components of a fire suppression system for commercial and industrial facilities. However, these items, located in a facility's interior, must be designed in conjunction with a variety of critical components necessary on a facility's exterior to have a fully functioning fire protection system. Some basic elements of exterior fire protection include:

- **Fire Department Connection (FDC).** The FDC is a point where fire departments can hook up to pump additional water into a building's fire suppression system. Either freestanding or attached to an exterior wall of a structure, FDCs are typically in conspicuous locations, have signage, and are required to be in a location that is within a maximum distance of a hydrant. When in operation by fire fighters, a pumper truck will locate between a hydrant and an FDC. The suction line from the pumper truck will be attached to the hydrant and the discharge end will attach to the FDC.
- **Post Indicator Valve (PIV).** PIVs are used to isolate sections of a fire suppression system. The indicators easily show fire fighters the current state of the valve (either opened or closed).

- **Fire Hydrants.** Hydrants provide points of water access for fighting a fire, and should be located in a conspicuous area, typically along an access road. Fire departments usually require all parts of a built facility to be within the radius of at least one hydrant. (See "Experience in Brief").
- **Pipe.** Ductile Iron Pipe (DIP) has traditionally been the go-to material for conveying fire water; however Plastic C900 with DIP fittings are now allowed by code as well. Because fire water lines are normally

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EXPERIENCE IN BRIEF

All elements of an exterior fire protection system are dictated not only by the NFPA, but local fire regulations as well. These requirements will be based on a number of factors, including building size and building type. For example, for one beverage production facility located in the Southwestern U.S., the local fire authority required that all parts of the building be within 500 feet of a hydrant. This dictated the number of hydrants that had to be placed around the site.

stagnant, and lack of flow increases the chances of freezing, pipes should be located below frost depth and be deeper than standard domestic water service piping.

- **Back Flow Prevention.** This is required by the water department to prevent an onsite fire booster pump, and/or a fire department pumper truck pressurizing the system from causing water to flow backward into the municipal water distribution network. These are typically located in convenient spots for maintenance: In many climates, they are located in an inground concrete vault. Warmer climates (e.g., Florida, New Mexico) can place backflow preventers above ground since the risk of freezing is minimal.
- **Fire Access Lane.** The National Fire Protection Association (NFPA) requires access roads serving firefighting equipment to typically accommodate a minimum width of 20'; 13.5' minimum vertical clearance; 50' maximum distance from exterior door; and 5% maximum grade. These requirements are at times superseded by more restrictive requirements of the local fire authority.

Knowing the basics of an exterior fire suppression system can help facility owners and managers better understand an existing facility's system, and know what to expect when considering expansions or new builds. Want to learn more? Contact Hixson today!

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