Water-based Kitchen Hood Fire Protection

Background
The Minnesota State Fire Code (MSFC) Section 904.12 allows water-based fire protection systems for the protection of kitchen hood installations. NFPA 13 (2016 edition) Section 7.9 contains specific installation criteria for sprinkler protection in commercial kitchen cooking systems. Typically, under-hood appliance protection can be accomplished with a few sprinklers plus plenum and duct protection. There are also pre-engineered hood systems protected with integral fire sprinklers.

Design of water-based systems in pre-engineered hood systems
Sprinkler protection in pre-engineered hood systems shall be a minimum design density for ordinary hazard-group 1 (0.15 gpm/sq. ft.). The design area shall include the sprinkler in the duct collar and up to 10 sprinklers or 50 percent of the total number of surface/filter sprinklers, whichever is greater. Sprinklers in the ductwork need not be included. If the hood is in the hydraulically most remote area of a sprinklered building, the hood demand must be added to the sprinkler demand of the overall design area.

All fire sprinkler appliances must be listed for the application or approved by the authority having jurisdiction (AHJ) and designed with an adequate water supply.

Obstruction criteria for ceiling-mounted sprinklers
In a sprinkler-protected building with a kitchen hood that has an approved fire suppression system covering all cooking equipment, the hood is not considered an obstruction to ceiling sprinklers (see NFPA 96 – Section 10.7.1). If a kitchen hood is not equipped with an approved fire suppression system, the hood should be considered an obstruction for the purpose of locating ceiling sprinklers.

Other considerations
Where water-based fire protection systems are installed in kitchen hoods, the following criteria shall also be incorporated:

- The test connection for the water flow indicator may terminate in a hose bib to which a hose may be attached and routed to a floor drain for testing.
- Sprinklers must be installed throughout the exhaust ductwork as-per NFPA 13.
- The exhaust fan must be designed to operate or continue to operate upon activation of the fire suppression system protecting the hood.
- Water-based fire protection systems shall be inspected and tested per the MSFC.

EA-1 Protectospray sprinkler nozzles for deep fat fryers are approved by the State Fire Marshal when installed in accordance with Tyco data sheet TD725.

Questions
Contact the SFMD 651-201-7221 or by email at fire.code@state.mn.us.

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