SHIELDING HEAT-ACTUATED DEVICES

INTRODUCTION

Closed head sprinklers, heat detectors and other heat-actuated devices (HADs) are sometimes located where they can overhead water discharge, thus increasing the potential to delay response. In-rack sprinklers discharging at higher levels can discharge water on lower level in-rack sprinklers. As in the same, sprinklers under gratings, water spray nozzles protecting specific hazards and heat detectors can be discharged upon by overhead protection. Outdoors, HADs can be introduced to the "wetting" effect similar to overhead discharge from hose streams, water cannons, rain, sleet and snow.

To prevent the overhead water discharge or "wetting" effect of sprinklers installing small metal canopies, called water shields or weather hoods is recommended. Listed intermediate level sprinklers are not required to follow the recommendation for shield sizing.

POSITION

Install shields over all HADs subject to overhead water discharge:

Use shields of substantial metal construction with a minimum dimension of not less than four times the vertical distance between the bottom of the fusible element and the shield. This normally translates into a shield at least 6 in. (15 cm) square or 6 in. (15 cm) in diameter.

Sprinklers with integral shields listed by UL as "Intermediate Level" sprinklers or by FM Approvals as "Racked Storage" sprinklers are acceptable indoors where shields would be required over ordinary sprinklers. Listed intermediate level sprinklers are not required to follow the recommendation for shield sizing.

DISCUSSION

Per NFPA 13, sprinklers under open gratings shall be of the intermediate level/rack storage type of otherwise shielded from the discharge of overhead sprinklers. Shields over automatic sprinklers should not be less, in least dimension, than four times the distance between the shield and fusible element, except special sprinklers incorporating a build-in shield need not comply with his recommendation if listed for the particular application.

Sprinklers in locations not addressed by NFPA 13 and other types of HADs could also require protection from wetting.

The integral shields on listed sprinklers will not protect the fusible element from rain, sleet or snow. Sprinklers with larger, separate shields should be used for outdoor installations.

Water shields are not heat collectors, and they do not improve detector response time. Although a shield may initially delay the flow of hot gases past a detector, most of the rising gases establish a path around the obstruction offered by the shield. Larger metal canopies, up to 18 in. by 18 in. by 3 in. deep (46 cm by 46 cm by 8 cm deep), are marketed for use with outside rate-of-rise type HADs and are more effective for trapping updrafts of heated air. However, these canopies are not generally used for sprinklers or thermostats.

Cold soldering and skipping of sprinklers are not the same as wetting. These problems are addressed in PRC.12.1.1.0.