

210000-H: SUPPLEMENTAL FIRE PROTECTION

Related Sections

Basis Guideline: [210000](#) – “Fire Protection”

[283100-H](#) – “Supplemental Fire Detection and Alarm”

[5.13](#) – “UMHHC - Healthcare Procedure Room Infection Control Types and Requirements”

For an explanation of the use of these guidelines, see “[Design Guidelines for UMHHC Facilities](#)”

Included as part of this UMHHC guideline section are the details described within the following UM Master Specification sections:

[211313](#) – Wet Pipe Sprinkler Systems

[213113](#) – Fire Pumps

The UM Master Specifications may be used as a reference and/or basis, but the A/E is completely responsible for contract specifications (meeting the intent of the UMHHC Guidelines and Preferred Manufacturers List) that are used in UMHHC projects.

General

All fire detection or sprinkler flow detection devices shall be wired into the UMHHC Fire Command Center (FCC), giving alarm, trouble and supervisory alarms.

All water sprinkler valves shall have “tamper” switches; UL rated, for monitoring by FCC.

Water sprinkler systems shall have flow devices with built-in adjustable delays. Output contacts shall be UL rated for monitoring by FCC.

Alarm, trouble and supervisory devices to be compatible with the fire alarm system being installed or being extended

A single fire pump shall be capable of supporting the entire facility; designs utilizing multiple fire pumps are prohibited. If the existing fire pump is inadequate, replace it with a new, larger fire pump and associated controls, piping and accessories, in accordance with NEC 695.

See section 283100-H – “Fire Detection and Alarm” for all smoke detector and fire alarm system work. In general, all smoke detectors should be provided by the fire alarm contractor (and not supplied as part of packaged equipment, i.e. RTU's/ AHU's).

Piping Material Requirements

For wet sprinkler piping A/E shall specify schedule 40 black steel, ASTM A53 with screwed fittings for size 2” and under, rolled grooves for sizes 2-1/2” & greater.

For dry and pre-action system piping, A/E shall specify schedule 40 black steel pipe, ASTM A53 with screwed fittings for size 2” and under, rolled grooves for sizes 2-1/2” & greater. Schedule 10 piping is not allowed under any circumstances on dry pipe systems, including pre-action systems.

In Outpatient Facilities, renovations and associated modifications to the sprinkler systems are less frequent and resultant failures are not seen with the use of schedule 10 pipe. Schedule 10 pipe is allowed for use in Outpatient Facilities.

All sprinkler drain piping (main drain and inspector's test drain) shall be schedule 40 hot dipped galvanized steel pipe.

All drain valves and piping should be extended to discharge to a drain outlet adequately sized to contain the drain discharge (floor drain, floor sink, janitor's sink).

When grooved piping systems are utilized, all components (couplings, fittings, & accessories) shall be supplied by a single manufacturer and shall be UL listed and FM Global approved.

Fees

A/E shall specify that fire protection contractor shall pay for all fees associated with this section of the contract and as required by the City of Ann Arbor, other municipalities, Bureau of Fire Safety (BFS) and University of Michigan Health System.

Fire Suppression Type

Wet Pipe:

Wet pipe sprinkler systems should normally be specified in heated spaces throughout except in areas stated below.

Pre-action:

MM prefers the use of nitrogen charged (ie via a nitrogen generator) preaction fire protection systems. The following room types should be served by a double interlock pre-action sprinkler system:

- Data Centers/ Machine Rooms

New pre-action panels should be sized for a minimum 20% future spare capacity. Panels at a minimum shall communicate and/or have dry contact outputs for the following points to the Fire Alarm System:

- Supervisory
- Alarm
- Trouble
- Low Air
- Tamper Valve

Dry Pipe:

MM prefers the use of nitrogen charged (ie via a nitrogen generator) dry pipe fire protection systems. Specify dry-type sprinkler systems where piping is subject to freezing, including the following room types:

- Emergency Generator Rooms
- Truck Docks
- Vehicular drive-under
- High traffic entrance vestibules (i.e. ED, main patient drop-off, etc.)

Glycol:

Glycol suppression systems are not allowed in BFS regulated facilities and are generally discouraged for use in UMHHC facilities.

Chemical:

AE shall explore the use of chemical based systems (i.e. "Inergen", etc) for specialized IT equipment like tape storage systems to limit the damaging effect from a suppression discharge.

Wet chemical extinguishing systems should be used in all kitchen and cooking locations where grease and oil are used.

Sprinkler Heads

Use fully-recessed (concealed) sprinkler heads in all rooms with a drop ceiling where clinical care is administered (ie OR's, treatment rooms, patient rooms, exam rooms, etc.). Semi-recessed sprinkler heads can be used in business-use spaces like offices, conference rooms, etc. Upright pendent-type sprinkler heads shall be used in rooms without drop ceilings, providing protective cages where appropriate.

All rooms with anti-ligature concerns (psychiatric patient room, patient bathroom, seclusion room and any other room a psychiatric patient might be alone in) shall utilize fully-recessed, tamper-resistant sprinkler heads specially designed for mental health facilities (Tyco "Raven" sprinkler head). See "Design Guide for the Built Environment of Behavioral Health Facilities" whitepaper.

UMH facilities utilize a mix of standard response and quick response sprinkler heads. UMH prefers the use of quick-response sprinkler heads. Note that in renovation work, code requires that the use of each type of sprinkler head shall remain consistent within a given compartment (i.e. do not mix quick-response and standard response heads within a single room, as defined by NFPA 13).

The A/E shall clearly indicate sprinkler head type on the project documents.

To allow for ease of maintenance as well as ease of future ceiling modifications without having to modify the sprinkler system, the A/E shall specify two-piece escutcheon plates around all sprinkler heads for all new and renovation work (similar to Tyco Style 60 Two Piece Escutcheon).

When installed in electrical rooms, telecommunication rooms and data centers/ machine rooms, route sprinklers over aisles, not directly over electrical or IT equipment.

State Submission

The State of Michigan Bureau of Fire Services (BFS) has jurisdiction over numerous MM facilities. See FPD Policy "MBFS HFES Plan Review Guidelines" on the FPD website for BFS submittal requirements: [memo_25Mar20.pdf \(umich.edu\)](#)

Where BFS submission is required, the A/E shall be responsible for submitting the BFS "Application for Fire Safety Plan Examination" and the associated submission fee, as well as responding to the BFS-12 "Plan Review Report". A/E shall copy the UM Project Manager on all submissions and comment responses.