210000-H: SUPPLEMENTAL FIRE PROTECTION (15300-H)

Related Sections

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 existing fire pump is inadequate, replace 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 sized 2” and under, rolled grooved for sizes 2-1/2” & greater. |

| For dry and pre-action system piping, A/E shall specify schedule 40 galvanized steel pipe, ASTM A53 with screwed fittings for sized 2” and under, rolled grooved for sizes 2-1/2” & greater. |

In Inpatient Facilities, the use of schedule 10 piping for 2-1/2” and larger sprinkler piping has been limited due to the frequent modifications to the sprinkler system (i.e. frequent draining and refilling of the sprinkler system has resulted in rust, deterioration and failures in schedule 10 pipe). The use of schedule 10 piping is acceptable for 2-1/2” & larger piping only where a means of isolation is provided, thereby limiting the need for draining and re-filling.
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 system should normally be specified throughout except in areas of hazardous or high risk occupancies; (i.e. flammable liquid storage, surgically invasive patient care areas (Infection Control Room Types 1 thru 3), imaging treatment rooms, etc.) or where subject to freezing (truck dock and associated areas surrounding the dock, drive-unders, high-traffic entrance vestibules, etc.).

**Pre-action:**

The following room types should be served by a double interlock pre-action sprinkler system:

- Infection Control Room Types 1, 2 & 3 (see SBA-K-H) in Inpatient Facilities. Operating room and procedure rooms in Ambulatory Surgery Centers are not required to be served by a preaction system and can instead be served by the standard facility wet pipe sprinkler system.
- MRI Rooms
- CT Scan Rooms
- Linear Accelerator Rooms
- Data Centers/ Machine Rooms

Preaction riser zoning shall serve like spaces. However do not serve all equipment spaces in a given department from a single zone (i.e. one zone can serve multiple linear accelerator rooms, but all the linear accelerator rooms in a given department [i.e. Rad Oncology] should not be served by a single zone). Multiple Type 1, 2 & 3 Operating/ Procedure Rooms (see SBA-K) can be served by a single preaction zone, maximum of 4 rooms per zone. Discuss zoning and risk with UMHHC FPD. Provide each Type 1, 2 or 3 room with a pull station located outside the room served.

New preaction 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:**

Specify dry-type sprinkler systems where piping is subject to freezing:

- Truck Docks
- Vehicular drive-unders
- High traffic entrance vestibules (ie 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

165°F sprinkler heads should be installed in all locations where appropriate. Generally, use semi- or fully recessed type in patient rooms, treatment, corridors, isolation, all clinical areas, offices, etc.

212°F sprinkler heads are to be specified for electrical rooms, computer rooms, communication rooms and invasive procedure rooms. All sprinkler heads should match existing model and type.

All sterile spaces (i.e. OR’s, Procedure Rooms, Sub-Sterile Rooms, Sterile Supply, etc. shall utilize fully-recessed heads to facilitate cleaning.

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).

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 and IT machine rooms, route sprinklers over aisles, not directly over electrical or IT equipment.

State Submission

All new fire protection work located in an I-2 or R-3 occupancy, in mixed-use occupancies where the fire protection system in question also serves I-2 areas, or in a licensed freestanding surgical outpatient facility that is not a 1 for 1 replacement or routine maintenance at UMHC facilities falls under the jurisdiction for the State of Michigan Bureau of Fire Services (BFS). See design guideline “CODES AND REGULATORY AGENCIES” for a listing of UMHC I-2 facilities. 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.

All other UMHHC facilities do not require BFS submission, review and permitting.