SECTION 2
DIVISION 21
FIRE SUPPRESSION

(SEE SECTION 02-28 FOR FIRE ALARM STANDARDS)
DIVISION 21 - FIRE SUPPRESSION

(NOTE: SEE SECTION 02-28 FOR FIRE ALARM STANDARDS)

Note: This is a guide for Designers only. Contents shall not be used in lieu of specifications as part of the Designer’s contract documents.

SECTION 21 0510 - MECHANICAL GENERAL – FIRE SUPPRESSION

PART 1 - GENERAL

1.1 GENERAL DESIGN CRITERIA

A. Fire suppression systems are life safety systems and therefore are not subject to the energy conservation criteria applicable to other mechanical/plumbing systems.

B. The fire suppression systems do not require a Life Cycle Cost Analysis.

C. All fire suppression systems shall comply with the requirements of the applicable NFPA standards.

1. All fire suppression systems shall comply with the applicable DOI/State Fire Marshal’s Office requirements. See the following website for the latest documentation:

1.2 STANDARDS


B. Standpipe and hose valve systems shall comply with NFPA 14 – Installation of Standpipes and Hose Systems.

C. Fire pump systems shall comply with NFPA 20 – Installation of Centrifugal Fire Pumps.

D. Fire water storage tanks shall comply with NFPA 22 – Water Tanks for Private Fire Protection.

E. Site fire water systems shall comply with NFPA 24 – Installation of Private Fire Mains and Their Appurtenances.

F. Automatic suppression systems for data rooms and server locations shall comply with NFPA 2001 and all appropriate NFPA standards.

G. Laboratory suppression systems shall comply with NFPA 45 and all appropriate NFPA standards.

H. All fire suppression systems shall comply with the North Carolina Department of Insurance, Office of State Fire Marshal document titles FIRE SPRINKLER AND SUPPRESSION SYSTEMS, latest edition.

1.3 DESIGN SUMMARY

A. Fire protection systems shall be designed in accordance with the requirements of NFPA.

B. Fire protection systems for State-owned facilities (facilities other than the Community Colleges) shall be submitted to the North Carolina Department of Insurance, State Property Fire Fund Division, 410 North Boylan Ave., Raleigh, NC 27603-1212 (919)733-3901 for review and approval at each phase of design.
C. Designer shall solicit input from local fire officials when developing fire protection plans for State-owned facilities.

D. Sprinkler system design shall be shown on fire protection plans, and not included on floor plans of other trades.

E. Provide a summary sheet with, at the minimum, the following information for each fire sprinkler zone: hazard classification, water application density, available water flow and pressure (static and residual data) as determined by a recent (within one year) water flow test, and test hydrant locations.

F. Indicate the size and location of any fire pumps required.

G. Indicate the location of all standpipes, tamper switches and flow switches. Provide a riser diagram for multistory (more than one floor) buildings.

H. Capacities of equipment shall be described on drawings by the way of equipment schedules. Pump rooms shall be shown large scale plans (1/4” = 1'-0” minimum) with piping larger than 2 inches in diameter drawn double line. All valves and appurtenances (tamper and flow switches) shall be properly indicated. Backflow prevention and flow control devices shall also be shown.

I. Ensure that “normally closed” type sprinkler valves are used when installed valve is designed to be normally shut/closed.

PART 2 - PRODUCTS

2.1 SYSTEM

   A. As required by NFPA 13 and 24, the sprinkler system shall typically include the following:
      1. An alarm check valve with outside water motor gong.
      2. A post indicator valve located 40 feet from building walls.
      3. A fire department connection on the system side of the water supply check valve.
      4. Fire department connections shall be on the street side of buildings and shall be located and arranged so that hose lines can be readily and conveniently attached to the inlets.
      5. All sprinkler flow and tamper switches shall be furnished and installed under Division 13, and wired under Division 26.
      6. Valves shall comply with the requirements listed in the appropriate NFPA standards and the OSFM documents. All valves shall be fitted with polished brass tags with the stamp-engraved system abbreviation and sequenced valve number. Valve tags shall be attached with brass chains or “S” hooks.
      7. Piping shall comply with the requirements listed in the appropriate NFPA standards and the OSFM documents.
      8. Dry valve gasket kits from valve manufacturer to be supplied at installation.
      9. Manufacturer supplied replacement packing gland kits be provided with each fire pump installed.
     10. CPVC (Blazemaster-Plastic Piping) shall not be used in campus sprinkler installation.

PART 3 - EXECUTION

3.1 INSTALLATION

   A. Specify that sprinkler heads be centered in ceiling tiles unless specific locations make this impossible.

   B. All associated valves for Fire Department Connections and/or Test Header Connections are to be located in Fire Pump Room or Fire Sprinkle Riser Room, no underground valves of these types are permitted.
C. Pipe all fire sprinkler drain lines to the exterior of buildings. All exterior drain openings shall be directed towards a solid surface.