Note: The design professional shall modify the template specification below where applicable for each project.

1 General
1.1 Provide all material, labor, engineering and operations for the installation of complete and operable fire suppression systems as shown in the job scope and as specified herein.
1.2 Provide all equipment and materials including pipes, valves, fittings, sprinkler heads, fire department connections, backflow preventer, pipe supports, specialties and accessories necessary for a complete and approved fire suppression system.
1.3 Provide a fire service main from the water main into the building, valves, hydrants and components as described in the job scope and/or shown on the Drawings. Make all connections to utilities as required to serve the fire suppression system. Flush the fire service main before connecting to the fire suppression system.
1.4 This Contractor shall be completely responsible for the design, layout, submittals, installation, testing, certification and acceptance of the fire suppression system by the IDHS Division of Fire and Building Safety.
1.5 This Contractor shall be responsible for any damage to the work of others, to the building and to property of others caused by leaks in the fire suppression system. This Contractor shall pay for necessary replacement of work or damaged property during installation and testing period.
1.6 Apply and pay for all permits and fees required for work under this section.

2 Related Requirements
2.1 Section 28 46 00 Fire Detection and Alarm
2.2 Basic Mechanical Requirements
2.3 Basic Materials and Methods

3 Wiring
All wiring will be provided under the Fire Detection and Alarm Division, unless otherwise indicated. The Fire Detection and Alarm Division will provide all wiring from waterflow switches, supervisory switches and alarm bell. Coordinate for proper operation. The Fire Detection and Alarm Division will provide an alarm bell on the exterior of the building.

4 Submittals
4.1 An action submittal for the fire suppression system shall be submitted to the Owner for review and approval prior to system installation and shall include all of the following:
   4.1.1 Hydraulic calculations and shop drawings with riser diagram and system layout showing the actual location of all components. Obtain approval from the IDHS Division of Fire and Building Safety.
   4.1.2 Manufacturer’s product data sheets for all equipment and materials including pipes, couplings, fittings, valves, sprinkler heads, backflow preventers, fire department connections, pipe supports, specialties and accessories. Indicate which products will be used in the project.
4.2 A closeout submittal for the fire suppression system shall be submitted to the Owner after the system installation is complete and shall include as-built drawings, as-built hydraulic calculations and Operation and Maintenance Manuals for the fire suppression system. These documents should reflect all changes made since the approved action submittal.
4.3 Provide spare parts to the Owner as specified
   4.3.1 Provide spare sprinkler heads of each type and temperature rating installed on the project.
   4.3.2 Provide one sprinkler wrench for each type of sprinkler head installed on the project.
   4.3.3 Mount sprinkler head cabinets on wall next to main riser assembly.
   4.3.4 Provide a list of sprinkler heads installed on the project in the sprinkler cabinet.
   4.3.5 Specialty sprinkler heads shall include extra escutcheons and cover plates.

5 Quality Assurance
5.1 Work shall be performed by a contractor regularly engaged in the design and installation of fire suppression systems.
5.2 It is the contractor’s responsibility to notify the engineer, architect and owner in writing prior to installation if there is a conflict or discrepancy between the applicable codes, standards or regulations and the drawings or specifications.
5.3 The Contractor shall assume full financial responsibility for compliance with all applicable codes, standards and regulations. This includes compliance for modification or extension of existing systems. All deficiencies shall be corrected at no additional cost to the Owner.

6 Products
6.1 All products, equipment and materials shall be new and installed in accordance with the manufacturer’s instructions and its listing.
6.2 All products, equipment and materials shall be rated for the maximum working pressures involved, but not less than 175 PSI cold water pressure, unless noted otherwise.
6.3 Pressure gauges shall be listed, 3½” dial type with pressure range of not less than twice the normal working pressure. Provide pressure gauges where shown on the Drawings and as required.

7 Pipe
7.1 Pipe shall conform to ASTM Standards.
7.2 The manufacturer’s name or brand, and applicable ASTM Standard shall be marked on each length of pipe.
7.3 Pipe shall have a factory applied protective coating to provide resistance to microbiologically influenced corrosion (MIC).
7.4 Grooves shall be rolled and shall be dimensionally compatible with the coupling. Cut grooves are not acceptable.
7.5 Lightwall pipe is not acceptable.
7.6 Schedule 40
   • Black steel pipe, ASTM A135 or A53, joined by welded joints, mechanical grooved couplings, or threaded joints.
7.7 Schedule 10
   • Black steel pipe, ASTM A135, joined by welded joints or mechanical grooved couplings.
7.8 The following piping shall be galvanized:
   • [Note galvanized pipe on drawings or list areas here:]
   • Piping inside the building upstream of the backflow preventer shall be schedule 40 galvanized only.
   • Existing dry and preaction systems that do not have dry pipe nitrogen inerting.

8 Fittings
8.1 Plain end, pressure fit type fittings are not acceptable.
8.2 Hole cut mechanical tee fittings are not acceptable.
8.3 Galvanized piping shall have galvanized fittings.
8.4 Threaded
   8.4.1 Cast iron in accordance with ASME B16.4 Class 125 or 250.
   8.4.2 Malleable iron in accordance with ASME B16.3 Class 150 or 300.
8.5 Flanged
   8.5.1 Cast iron in accordance with ASME B16.1 Class 125 or 250.
   8.5.2 Gaskets shall be full face of 1/8” minimum thickness, red sheet rubber.
   8.5.3 Flange bolts shall be hexagon head machine bolts with heavy semi-flushed hexagon head nuts, cadmium plated, with dimensions in accordance with ASME B18.2.
8.6 Welded
   8.6.1 Standard weight, black steel in accordance with applicable ASME and ASTM standards.
   8.6.2 The branch fitting diameter shall not exceed half of the nominal pipe size.
8.7 Grooved
   8.7.1 Couplings and fittings shall be ductile iron conforming to ASTM A536, minimum 350 psi rated pressure. 5”, 6”, and 8” couplings shall be a minimum of 300 psi rated pressure.
   8.7.2 Short pattern fittings shall be full-flow with flow characteristics similar to standard pattern full-flow fittings.
   8.7.3 Couplings shall be rigid type. Flexible type couplings shall be used in locations where vibration attenuation and stress relief are required.
8.8 Braided Flexible Hose
   8.8.1 Braided flexible hose fittings shall be either FlexHead or VicFlex.
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8.8.2 Braided flexible hose fittings shall only be installed with manufacturer approved brackets.

9 Valves
9.1 General
   • All valve sizes shall be compatible with the pipe size.
9.2 Gate Valves
   9.2.1 1½” pipe and smaller: OS&Y, bronze, threaded.
   9.2.2 2” pipe and larger: OS&Y, resilient seated, iron body, bronze mounted, flanged or grooved.
9.3 Butterfly Valves
   9.3.1 Iron body (lug-style or grooved end), minimum 300 PSI rated pressure, and gear operator with position indicator.
9.4 Check Valves
   9.4.1 1½” pipe and smaller: bronze, threaded.
   9.4.2 2” pipe and larger: Class 150 or 300, center guided, non-slam type, ductile iron body, stainless steel spring, flange or grooved.
9.5 Relief Valves
   • Relief valves shall not be less than ½” in size and set to operate at 175 PSI or 10 PSI in excess of the maximum system pressure, whichever is greater.

9.6 Ball Drip Valves
   • ¾” automatic drain, cast brass, Potter Roemer 5980 Series or approved equal.
9.7 Globe and Angle Valves (Drains and Flow Regulation)
   9.7.1 1½” pipe and smaller: bronze, renewable composition disc, threaded.
   9.7.2 2” pipe and larger: iron body, bronze mounted, renewable composition disc, flanged or grooved.

10 Sprinkler Heads
10.1 Temperature Ratings
   10.1.1 Ordinary temperature, except where higher temperature sprinkler heads are required.
   10.1.2 Sprinkler heads shall be color coded.

10.3 Window sprinklers shall be quick response, horizontal sidewall or pendent vertical sidewall. Tyco Model WS or approved equal.

11 Backflow Preventers
11.1 Indiana Department of Environmental Management approved, ASSE listed and USC approved.
11.2 Double Check Valve Assembly [If the water utility is from Purdue – West Lafayette]
   • Double check valve assembly shall be a Watts Series LF709, Febco LF850, or approved equal.
11.3 Double Check Detector Assembly [If the water utility isn’t from Purdue – West Lafayette]
   • Double check detector assembly shall be a Febco LF856 or approved equal.

12 Fire Department Connections
12.2 [Indiana University Purdue University Fort Wayne (IFPW) Only]: Fire department connections shall be listed, 5” Storz, 30 degree elbow adapter, with heavy and blind cap.
12.3 [Wall] [Base] plates shall have 1” letters and read [”AUTO SPKR”] [”STANDPIPE”] [”DRY STANDPIPE”] [”AUTO SPKR AND STANDPIPE”].
12.4 Wall type shall be [flush] [exposed] with a [polished brass] [polished chrome plated] finish.
12.5 Freestanding type shall have cast brass body with [polished brass] [rough brass] [polished chrome plated] finish. [Polished brass] [Polished chrome plated] trim and seamless cover sleeve. Cast brass base plate.

13 Hose Connections
13.1 Non-adjustable pressure regulating angle valve (where pressure is 100 PSI or higher)
13.1.1 1½" hose thread outlet, listed, cast brass, 300 PSI rated, brass finish with cap and chain. Potter Roemer 4045 or approved equal.

13.1.2 2½" hose thread outlet, listed, cast brass, 300 PSI rated, brass finish with cap and chain. Potter Roemer 4053 or approved equal.

13.2 Angle hose valve (where pressure is less than 100 PSI)

13.2.1 1½", listed, 300 PSI rated, hose thread outlet, polished brass finish with cap and chain. Potter Roemer 4060 or approved equal.

13.2.2 2½", listed, cast brass, 300 PSI rated, hose thread outlet, polished brass finish with cap and chain. Potter Roemer 4065 or approved equal.

13.3 Hose Valve Cabinets: 20 gauge steel, 18" x 18" x 8" valve cabinet with [full glass with tempered safety glass] [flush solid metal] door, prime coat finish, 18 gauge frame, continuous steel hinge. Cabinet shall be [surface mounted] [fully recessed] and contain 2½" angle hose valve with cap and chain. Provide "Fire Department Valve" decal. Potter Roemer 1810 Series or approved equal.

13.4 Combination Hose Valve/Fire Extinguisher Cabinets: 20 gauge steel, 18" W x 24"H x 8"D valve and extinguisher cabinet with [duo-panel with tempered safety glass] [flush solid metal] door, prime coat finish, 18 gauge frame, continuous steel hinge. Cabinet shall be [surface mounted] [fully recessed] and contain 2½" angle hose valve with cap and chain. Provide "Fire Department Valve" and "Fire Extinguisher" decals. Potter Roemer Series 1880 or approved equal.

13.5 Roof Hose Valves

13.5.1 Provide remote gate valve located in a heated area. Provide automatic ball drip on downstream side of valve and pipe to closest discharge point. Roof manifolds shall be listed, [2] [3] way with 2½" outlets x [4] [6]" inlet, complete with hose valves, caps and chains. Outlet shall be made freeze proof by connection to above mentioned valve system.

13.5.2 [Floor Type]: provided with an indication floor stand with extension stem and stem to valve coupling.

13.5.3 [Wall Type]: provided with a wall type indicator post with extension rod, coupling and extension barrel.

14 Dry Pipe Valve Assemblies

14.1 Provide a complete dry pipe valve assembly with accessories and trim package including but not limited to drain valves, check valves, test valve, alarm pressure switch, low-air supervisory switch, drain cup, reset bar and pressure gauges. Provide accelerator as required. Viking or approved equal.

15 Deluge Valve Assemblies

15.1 Provide a complete deluge valve assembly with accessories and trim package including but not limited to emergency release, pressure operated relief valve, drain valves, check valves, test valve, drain cup, pressure gauges. System shall have [hydraulic release] [electric actuation] [pneumatic actuation]. Viking [Model E-1] [Model E-2] or approved equal.

16 Preaction Valve Assemblies

16.1 Double interlock, supervised, dry system with deluge valve controlled by an electric release system and pneumatic system pressure. The electric detector system must actuate and a sprinkler must operate before water will enter the system. Activation of one without the other shall only sound an alarm. System shall include all valves, trim, accessories and components to provide a complete assembly. System shall be of a fail-safe design on loss of power. Viking Surefire or approved equal.

16.2 Release control panel shall be Viking VFR-400.

16.3 Deluge Valve and Trim

- Deluge Valve.
- Test drain valve.
- Auxiliary drain valve.
- Drain cup.
- Drip check.
- Alarm test shut-off valve.
- Strainer orifice check valve.
- Pressure operated relief valve.
- Priming valve.
- Emergency release. Ball valve with stainless steel enclosure.
- Priming pressure gauge and valve.
- Water supply pressure gauge and valve.

16.4 Water Flow Alarm Trim

- Alarm pressure switch.

16.5 Riser Valves

- Water supply control valve.
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16.6 System Air/Nitrogen Supply Trim
- System pressure gauge and valve.
- Soft seat check valve.
- Air pressure supervisory switch.
- Air maintenance control device.

16.7 Air supply control valve
16.7.1 Release Trim
16.8 Pneumatic actuator.
- Solenoid Valves.
- Strainer.
- Accelerator (as required).

17 Corrosion Accessories
17.1 Corrosion monitor shall be AGF CORRinSITE 7700 or approved equal. The piping of the corrosion monitor shall be equivalent to the adjacent piping.
17.2 Automatic air vents shall be AGF PURGenVENT 7900AAV or approved equal.
17.3 Nitrogen generator and dry vents shall be South-Tek N2Blast or Owner approved by equal. The nitrogen generator shall be sized appropriately per NFPA 25.

18 Fire Alarm Devices
18.1 Waterflow switches shall be vane type with field replaceable instantly recycling adjustable pneumatic retard and visual indication of activation. Potter VSR or approved equal.
18.2 Valve Supervisory Switches — Die cast enclosure with red enamel finish and tamper resistant screws. Two sets of contacts. Mounting device shall be weatherproof and suitable for indoor or outdoor use. Potter or approved equal.
- Post-Indicator Valves: Potter PCVS-2.

19 Examination
19.1 Verification of Conditions
19.1.1 Examination shall be done before design approval and fabrication. Prefabrication is done at This Contractor’s risk.
19.1.2 Examine the project site and become familiar with the actual job conditions under which the work will be performed.
19.1.3 Coordinate all work and placement of components with other trades.

19.1.4 Verify all dimensions. Be responsible for all measurements, fitting and assembly of all work.
19.1.5 Modify design as required to integrate with actual job conditions, coordination and dimensions.
19.1.6 This Contractor shall be responsible for any redesign and refabricating.

20 Preparation
20.1 The action submittal for the fire suppression system must be approved before work may begin.
20.2 Inspect pipe and fittings for defects and clean all dirt and other foreign matter prior to installation. Damaged pipe and fittings will be rejected.

21 Installation
21.1 General
21.1.1 Contractor shall make all connections to utilities as required to install the system. All connections to utilities and their shutdown shall be arranged with the Owner.
21.1.2 The sprinkler system shall be zoned on a floor-by-floor basis. In addition, systems protecting special hazards shall be zoned separately.
21.1.3 Install chrome plated and other finished components with care so that marring does not occur to the finish.
21.2 Pipe
21.2.1 The Drawings indicate general intent and location. Install piping in the most direct and straight manner as possible.
21.2.2 Install piping high enough to permit relocation of lights without moving ceiling grid.
21.2.3 Conceal piping in finished areas unless otherwise shown on the Drawings.
21.2.4 Install vertical lines plumb and horizontal lines parallel to building lines.
21.2.5 Install horizontal piping pitched to low points and in a manner to make it possible to test and empty entire system. Provide valves at low points to facilitate system drainage.
21.2.6 Protect open pipe ends whenever work is suspended during construction to prevent foreign material from entering.
21.2.7 Protect piping that passes through non-sprinkler areas with fire resistive construction as required by code and approved by the Owner.
21.2.8 This Contractor shall sterilize all piping upstream of fire sprinkler system backflow preventer.

21.3 Pipe Hangers and Supports — Support piping from the structure above with hangers. Sizing, spacing and installation shall be in accordance with NFPA 13, unless otherwise shown on the Drawings or specified herein. Comply with other sections of this specification relating to Basic Mechanical Materials and Methods.

21.3.1 Seismic Performance [New Buildings with a Seismic Design Category “C” or higher]
- System piping shall be capable of withstanding the effects of earthquake motions determined in accordance with the Indiana Building Code and NFPA 13.
- [Some existing facilities require seismic bracing.]

21.4 Pipe Penetrations
21.4.1 Provide all components necessary for the aesthetics of pipe penetrations. The aesthetics of pipe penetrations shall be selected by the architectural design professional.
21.4.2 Provide all components necessary for the protection of pipe penetrations in accordance with the applicable fire stop system or code exception.

21.5 Sprinkler Heads
21.5.1 Install sprinkler heads in accordance with the manufacturer's instructions.
21.5.2 Center sprinkler heads in grid or lay-in ceilings in both directions.
- Exception: In rooms with an area of 150 sq. ft. or less, sprinkler heads may be centered in the grid or tile in one direction only.
21.5.3 Coordinate location of sprinkler heads with ceiling grid, diffusers, light fixtures and other obstructions. Provide additional sprinkler heads which may be required for coordinated ceiling pattern and for centering, even though it may exceed minimum code requirements. Show actual sprinkler head locations in the action submittal and closeout submittal.
21.5.4 Provide sprinkler head guards on heads below 7'6" above the floor or walkway or where sprinkler heads may be exposed or subject to damage.

21.5.5 Protect finishes against scratches, dents and discoloration. Defective items will not be accepted.
21.5.6 Only new sprinklers shall be installed. When a sprinkler head has been removed from the piping for any reason, it shall not be reinstalled. Install a new sprinkler head that matches the specifications of other sprinkler heads in the same compartment.
21.5.7 Sprinkler head locations shown on the Drawings are for general intent only. This Contractor is responsible for a system layout in accordance with code requirements and Owner specification.

21.6 Main Riser and/or Header Assembly — Provide main riser or header assembly consisting of a backflow preventer, fire department connection, drain valve, pressure gauge, main waterflow switch, and corrosion monitor.

21.7 Backflow Preventers
21.7.1 Install in compliance with state regulations. Mount horizontal, maximum 4 ft. above the floor.
21.7.2 Complete full flow backflow preventer test to ensure proper operation. Inspection shall be performed by a registered inspector in accordance with the Indiana Department of Environmental Management. Submit reports to the Owner and include a copy in the Operation and Maintenance manuals.

21.8 Fire Department Connections — Provide a check valve with ball drip valve in line connecting fire department connection to fire suppression system.

21.9 Inspector’s Test Connections
21.10 Inspector's test connections shall be installed at the most remote point of each sprinkler system zone. Test connections shall be provided with a 1” pipe and valve. Test pipe shall discharge to the outside through a corrosion resistant orifice of the proper size, where it can easily be seen. Location of discharge shall be as approved by the Owner.

21.11 Sectional Control Assembly — Provide sectional control assembly for each sprinkler zone. Sectional control assembly shall include supervised shut off valve, [check valve], pressure gauge, water flow indicator, test valve, drain valve, sight glass, and restricted orifice union of the proper size.

21.12 Drains — Pipe drains to terminate at floor drains or outside the building as shown on the
Drawings or as specified. Location of drains to the building exterior shall be approved by the Owner.

**21.13 Ball Drip Valves** — Locate ball drips in accessible locations and pipe discharge full size to nearest floor drain.

**21.14 Fire Alarm Devices** — Provide a waterflow switch for each sprinkler zone. Provide a redundant hardwired main waterflow switch upstream of all of the sprinkler zones.

**21.15 Valve Supervisory Switches** — Provide valve supervisory switches for all water supply shut-off valves.

### 22 Corrosion Accessories Installation

**22.1** Provide a corrosion monitor in a location that visible from the ground, near the main riser assembly, and in accordance with the manufacturer’s instructions.

**22.2 Automatic Air Vents**

**22.2.1** Provide an automatic air vent at an accessible, high point in each sprinkler zone. The location of the vents shall be proposed in the action submittal and approved by the Owner.

**22.2.2** Provide an automatic air vent at the high point of each standpipe or combination riser.

**22.3 Dry Pipe Nitrogen Inerting**

**22.3.1** Provide a nitrogen generation system to serve dry and preaction sprinkler systems.

**22.3.2** Provide a manual dry vent for each dry/preaction sprinkler system on the system side of the valve.

### 23 Wet Pipe Sprinkler Systems

**23.1** General

**23.1.1** Fire sprinklers shall be provided for the [entire building.] [project area.]

**23.1.2** The following sprinkler zones shall be provided:

**23.1.3** Do not provide sprinkler coverage in elevator shafts or elevator equipment rooms in accordance with the Indiana sprinkler exemption.

**23.1.4** Do not provide sprinkler coverage in transformer vaults.

**23.1.5** Provide sprinkler heads at all stair landings, except intermediate landings.

**23.2 Design Criteria:**

**23.2.1** All new sprinkler designs shall be in accordance with all code provisions for Ordinary Hazard. Light Hazard provisions for small rooms shall not be used. The purpose of this specification is for future flexibility.

**23.2.2** Alterations to existing fire sprinkler designs shall not reduce the Occupancy Classification of the original specified design.

**23.2.3** The system shall be hydraulically calculated to provide \(0.XX\) GPM/ft\(^2\) over the most hydraulically remote \([X,XXX]\) ft\(^2\), including \([XXX]\) GPM hose allowance. Sprinklers shall have a maximum coverage area of \([XXX]\) ft\(^2\) per head.

**23.2.4** The quick-response area reduction may be used where an Ordinary Hazard design is provided in accordance with the current code. The entire area of hydraulic design basis (assume the entire story) must comply with the code for a reduction. For future flexibility, the ceiling height used in the calculation shall be equal to the worse case floor to deck dimension on the entire story. The worse-case “ceiling height” shall be provided on the shop/as-built drawings with this explanation.

**23.3 [Paint Spray:]** — Provide sprinkler heads in finishing room and for paint spray booth and related exhaust ductwork in accordance with NFPA 33. Maximum 12 ft. sprinkler spacing in ductwork. Use dry type sprinkler heads in ductwork as required. All sprinklers shall be controlled by an accessible and supervised OS&Y sectional control valve.

### 24 Dry Pipe Sprinkler Systems

**24.1 General**

**24.1.1** [Provide dry pipe sprinkler systems for:]

**24.1.2** Provide a nitrogen/air supply line from the nitrogen generation system. Provide air maintenance device and check valve at connection to the trim work.

**24.2 Design Criteria:**

**24.2.1** All new sprinkler designs shall be in accordance with all code provisions for Ordinary Hazard. Light Hazard provisions for small rooms shall not be used. The purpose of this specification is for future flexibility.

**24.2.2** Alterations to existing fire sprinkler designs shall not reduce the Occupancy Classification of the original specified design.
24.2.3 The system shall be hydraulically calculated to provide [0.0X] GPM/ft$^2$ over the most hydraulically remote [X,XXX] ft$^2$, including [XXX] GPM hose allowance. Sprinklers shall have a maximum coverage area of [XXX] ft$^2$ per head.

25 Preaction Sprinkler Systems

25.1 General

25.1.1 [Provide double interlocked preaction system for:]

25.1.2 Provide a nitrogen/air supply line from the nitrogen generation system. Provide air maintenance device and check valve at connection to the trim work.

25.1.3 Emergency release shall be provided at deluge valve. An additional release shall be located in [choose location]. Pipe drain to floor drain located in [choose location].

25.1.4 This Contractor shall provide a completely pre-assembled, pre-wired fire protection valve system that includes trim piping and a release panel. The Electrical Contractor shall be responsible for programming the release panel, setting pressure switch trip points, verifying the proper operation of the preaction system controlled by the releasing panel, and connecting the release panel to the fire alarm system. The fire alarm system will monitor alarm, trouble and supervisory conditions from the release panel. The Electrical Contractor will provide system initiating devices and will terminate associated wiring. Coordinate for proper operation.

25.2 Design Criteria:

25.2.1 All new sprinkler designs shall be in accordance with all code provisions for Ordinary Hazard. Light Hazard provisions for small rooms shall not be used. The purpose of this specification is for future flexibility.

25.2.2 Alterations to existing fire sprinkler designs shall not reduce the Occupancy Classification of the original specified design.

25.2.3 The system shall be hydraulically calculated to provide [0.0X] GPM/ft$^2$ over the most hydraulically remote [X,XXX] ft$^2$, including [XXX] GPM hose allowance. Sprinklers shall have a maximum coverage area of [XXX] ft$^2$ per head. The design area of operation shall not be decreased, even when allowed by NFPA 13.

26 Hydraulic Calculations

26.1 General

26.1.1 This Contractor shall prepare hydraulic calculations for the design of the system and submit to the Owner and IDHS Division of Fire and Building Safety for approval before any fabrication or installation is started.

26.1.2 Hydraulic calculations shall include the volume in gallons of all systems installed.

26.1.3 Room Design method shall not be used.

26.1.4

26.2 Flow Test Data: [If the water utility is from Purdue – West Lafayette]

26.2.1 This flow test data shall be used in the design of the system: Static pressure of [XX] PSI, with a residual pressure of [XX] PSI flowing [X,XXX] GPM.

26.3 Flow Test Data: [If the water utility isn’t from Purdue – West Lafayette]

26.3.1 Flow tests shall be performed by This Contractor and verified by local fire department. Make all arrangements and pay for all costs involved. The static pressure shall be adjusted to 85%. The residual pressure shall be adjusted by same fixed value as the static pressure. This adjustment does not change the slope of the water supply curve.

27 Standpipe Systems

27.1 Provide a [Class I] [Class II] [Class III], [automatic-dry] [semiautomatic-dry] [manual-dry] [automatic-wet] [semiautomatic-wet] [manual-wet] standpipe in each stairway in accordance with NFPA 14. The system shall be [pipe sized] [hydraulically designed to provide the required minimum pressure and flow rate].

27.2 Provide a 2½" hose valve, 4 ft. above the floor, at the following locations:
- At each intermediate landing between floor levels in every required stairway.
- At the highest landing of stairways with stairway access to the roof.

27.3 At each standpipe where stairway does not access the roof, provide a roof manifold when the roof has a slope of less than 4" in 12". Where lines pass through the roof, provide flashing and counterflashing as required for a watertight installation. Roof manifold is not required if stairway goes to roof.

27.4 All standpipes shall be interconnected at the bottom. Provide isolation valve for all risers.
27.5 Provide drain valves with hose connection at the low point of all standpipes downstream of the isolation valve.

27.6 Provide a ¾” water connection with shut-off valve and check valve for maintaining water within a manual-wet system. Water supply connection shall be made downstream of backflow preventer.

27.7 Provide sign at each hose connection for manual standpipes that reads “MANUAL STANDPIPE FOR FIRE DEPARTMENT USE ONLY”.

28 Existing Construction

28.1 Provide all work necessary to accommodate additions and alterations as required to meet code requirements and this Specification.

28.2 Modify the fire suppression system to accommodate renovations that affect sprinkler spacing or coverage. Relocate existing piping or provide additional sprinkler heads and piping to accommodate new work.

28.3 Only new sprinklers shall be installed. When a sprinkler head or piping with sprinkler head attached has been removed for any reason, it shall not be reinstalled. Install a new sprinkler head that matches the specifications of other sprinkler heads in the same compartment.

28.4 Piping and sprinkler heads shown on the Drawings and old record drawings are for general information and reference only. This Contractor shall examine the project site for verification.

28.5 Existing fire suppression systems can be shut down and drained by the Owner after the action submittal is approved. Plan work so that the interruption is minimized. Provide temporary caps to isolate piping to areas where work is being performed.

29 Identification

29.1 Identify piping installed in this project, exposed or concealed, with a label.

29.2 Piping shall be labeled close to valves, at changes in direction, at branches, at access panels, before pipes pass through the floor and at entry point into rooms; however, spacing of labels shall not exceed 20 ft. Labels shall be in contrasting colors such as black on white placed in conspicuous location subject to approval by the Owner.

29.3 The label shall consist of an arrow, approximately 6” in length with the width to be determined by letter height, and an abbreviation of the service (“FL” for Fireline). The following letter sizes shall apply:

- Pipe under 1” diameter: Letter Size ½”
- Pipe 1” to 3” diameter: Letter Size 1”
- Pipe over 3” diameter: Letter Size 2”

30 Closeout Activities

30.1 Testing and Acceptance

30.1.1 Perform all operational and acceptance tests required by NFPA 13 and 14. All tests shall be made in the presence of the Design Professional of Record or the Owner’s consultant.

30.1.2 Test all piping hydrostatically at not less than 200 PSI for 2 hours without loss of pressure. Retest piping that fails initial tests after correction of defective work.

30.1.3 Schedule a final acceptance test with Owner at least seven days in advance.

30.1.4 Complete and sign Contractor’s Material and Test Certificates. Pay for all inspections by the authority having jurisdiction and obtain approval of the installation. Include copies of the certificates in the Operations and Maintenance Manuals.

30.2 Demonstration

30.2.1 When required approvals of this work have been obtained, schedule to demonstrate to the Owner's fire equipment personnel the operation and maintenance of the systems.

30.2.2 Demonstrate equipment, specialties, and accessories. Review operating and maintenance information.