

**SAM HOUSTON STATE UNIVERSITY  
DESIGN AND CONSTRUCTION STANDARDS**

**DIVISION 21 00 00  
FIRE SUPPRESSION**



## **21 12 00 FIRE SUPPRESSION STANDPIPE SYSTEM**

### **A. General**

1. Standpipe hose connections shall be provided at intermediate landings and at all other locations required by NFPA 14. Where multiple intermediate floor landings are provided between two levels, the standpipe hose connection shall be provided at the highest intermediate floor landing.
2. Storage of Materials, Equipment, and Fixtures – During construction, all standpipe system piping, fittings, and equipment shall not be stored directly on the ground and shall be protected from weather and damage. All pipe ends and outlets shall be covered until installation to prevent contamination on pipe interior.
3. All standpipe systems shall be provided with a hard piped main drain located at the lowest point of each standpipe riser. The main drain shall meet all the requirements of NFPA 14. A main drain shall be provided for each standpipe riser on the system side of the system control valve. The lowest hose connection is not permitted to be used as the main drain. The main drain shall be sized in accordance with NFPA 14. Standpipe drains shall be routed to discharge at either a floor drain or the building exterior. Where standpipe drains are routed to the building exterior, the drain location shall be coordinated so that it does not discharge to sidewalks, porches, walkways, or other areas where the discharge would interrupt daily operations. Drain discharge locations shall also be coordinated so that the drain discharge does not damage sensitive vegetation or other landscape features.

### **B. Piping**

1. All standpipe system piping shall be a minimum of Schedule 40 black steel seamless piping. Where a nitrogen inerting system is provided for all standpipe system piping, a minimum of Schedule 10 black steel seamless piping is permitted. The use of galvanized steel piping is not permitted. The use of Electric-Resistance Welded (ERW) piping is not permitted unless otherwise approved by SHSU Facility Services.
2. All standpipe system piping shall be painted red. In occupied areas where the standpipe system piping is exposed, the system piping shall be permitted to be painted a color other than red given it is approved by SHSU Facility Services and pipe markers are provided as indicated below.
  - a. Pipe markers shall be marked “Fire Protection” and indicate direction of flow. Where direction of flow can be in both directions, the pipe marker shall indicate as such.
  - b. Pipe markers shall be either wrap-around type or stick-on vinyl type with red background and white lettering a minimum of 1 inch in height.
  - c. Pipe markers shall be visible from the floor.
  - d. Pipe markers shall be provided on all standpipe feed mains, risers, and branch lines at intervals not exceeding 20 feet.

### **C. System Acceptance**

1. Prior to final system acceptance testing, the contractor shall perform all necessary pretesting of the standpipe system in accordance with NFPA 14. This may include, but is not limited to, flushing of pipe, hydrostatic testing, flow testing, and testing of pressure reducing valves.
  2. After completion of all necessary pretesting, the contractor shall perform final acceptance testing in accordance with NFPA 14 and SHSU Third Party Testing Guidelines with a representative of SHSU Fire Prevention Services and/or FSSS (Fire Safety System Specialist) present. Prior to SHSU arriving for final acceptance testing, the documents and training listed below shall be
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submitted/provided to SHSU Facility Services at least five business days prior to the scheduled final acceptance testing.

- a. All documentation and reports from pre-testing performed by the contractor.
  - b. All as-built drawings, test reports, and manuals required by NFPA 14.
  - c. Standpipe system training performed by the contractor to SHSU Fire Prevention Services and FSSS staff. Training shall indicate, at a minimum, location of all system control valves, location of all auxiliary drain and main drain valves, and all inspection, testing, and maintenance requirements of NFPA 25.
3. After successful acceptance testing and approval from SHSU Fire Prevention Services and/or FSSS, the contractor shall provide all required closeout documentation required by NFPA 14 and the contract design documents.

**D. Warranty**

1. The installing contractor shall warranty all materials and workmanship for a period of two years beginning with the date of final written acceptance by SHSU. The contractor shall be responsible during the design, installation, testing, and warranty periods for any damage caused by their (or their subcontractors') work, materials, or equipment.

**21 13 00 FIRE SUPPRESSION SPRINKLER SYSTEM**

**A. General**

1. Sprinkler piping and sprinkler heads shall not pass-through or be installed in Electrical rooms or closets. Electrical rooms and closets shall comply with the requirements of NFPA 13 to permit the omission of sprinkler protection. These requirements include:
  - a. The room/closet is dedicated to electrical equipment only.
  - b. Only dry-type electrical equipment is used
  - c. Equipment is installed in a 2-hour fire-rated enclosure including protection for penetrations.
  - d. No combustible storage is present in the room/closet.
2. Sprinkler piping shall not pass-through Data rooms/closets. Data rooms/closets shall be provided with sprinkler protection in accordance with NFPA 13.
3. Storage of Materials, Equipment, and Fixtures – During construction, all sprinkler system piping, fittings, and equipment shall not be stored directly on the ground and shall be protected from weather and damage. All pipe ends and outlets shall be covered until installation to prevent contamination on pipe interior.
4. All devices within the automatic sprinkler system (including fire pump, jockey pump, control valves, spare head box, gauges, inspector test valves) are to be barcoded and uploaded via Building Reports-no exceptions. Once added to the system, the contractor shall add a bar code sticker obtained from BuildingReports.com for identification.

**B. Aboveground Piping**

1. All sprinkler system piping shall be a minimum of Schedule 40 black steel seamless piping. Where a nitrogen inerting system is provided for all sprinkler system piping, a minimum of Schedule 10 black steel seamless piping is permitted. The use of galvanized steel piping is not permitted. The use of Electric-Resistance Welded (ERW) piping is not permitted unless otherwise approved by SHSU Facility Services.





- general purpose indoor rated housing. Either unauthorized removal of the switch housing (when the valve is open) or closing the valve, shall cause the switch contacts to change position. The switch shall have four conductors to accommodate connections to signaling line circuit devices.
3. Where OS&Y indicating valves are installed, the following shall apply:
    - a. Valves 2-1/2 inches and larger shall be iron body with brass seats, discs, and stems. Include tamper switches listed for use with OS&Y valves.
    - b. Valves 2 inches and smaller shall be brass body, stem, and seat. Include tamper switches listed for use with OS&Y valves.
  4. Check valves shall comply with the following:
    - a. Check valves 2-1/2 inches and larger shall be iron body swing check with cast brass hinge, rod, and brass faced discs.
    - b. Check valves 2 inches and smaller shall be UL listed brass body and all brass fitted.
  5. Ball valves shall be full port. Ball valves shall be constructed of forged brass with Teflon seats and shall be provided with a vinyl-covered handle. Ball valves shall be lockable if accessible to the public.
  6. Post Indicator Valve
    - a. Gate valve on incoming water service shall be operable by a UL listed post indicator valve secured in the open position by a chain and lock (provided by SHSU).
  7. All valves controlling water supply for sprinklers shall be readily accessible for use by emergency and maintenance personnel.
- G. Except for underground water supply valves located in roadway boxes and exterior post indicator valves, all valves controlling water supply to sprinklers shall be electronically supervised and locked in its normal position (either normally open or normally closed) via a chain and lock (chain and lock provided by SHSU). Where sprinkler control valves are located in a locked room that is only accessible to SHSU personnel (i.e., locked mechanical room), the chain and lock are not required.
- Floor Control Assemblies
1. Multi-story buildings (including those with NFPA 13R sprinkler systems) shall be configured so that each story has its own system with a floor control assembly for each story. The floor control valve assembly shall meet the requirements of NFPA 13. A remote express drain and inspectors test shall also be provided.
- H. Drains and Test Piping
1. All sprinkler system drains that discharge to the building exterior shall be coordinated so that they -1.2459 TScqui
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- a. Nitrogen inerting equipment shall not be located in a unsecure location (area accessible to the public).
- b. The nitrogen generator, air compressor, and equipment shall be selected by the contractor and meet all manufacturer requirements.
- c. Where nitrogen inerting vents are provided at remote locations of the sprinkler system (i.e., any location not at the system riser), the nitrogen inerting vents shall be accessible for testing and maintenance.
- d. Air compressor shall be sized based on manufacturer and NFPA 13 requirements. One backup air compressor of equal size shall be provided to serve as a backup to the primary air compressor in case of malfunction or maintenance needs.  
Nitrogen generator shall have the ability to be monitored via the buildings BMS system, fire alarm system, or manufacturer's software.

L. Renovations and Servicing

- 1. Where renovations or servicing to existing sprinkler systems occur, the renovation/work area shall be isolated so that all portions outside of the renovation/work area remain in service while the contractor is not actively working on the project. The contractor is responsible for achieving the required system isolation, including but not limited to, addition of isolation control valves,

SHS Form 864-059-10-078j T10 to indicate 667-1 system standards -17.03459 T10.978j Tc.0009 Tw[compre

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