

**SECTION 21 12 00
MANUAL DRY STANDPIPE SYSTEMS**

SPEC WRITER NOTES:

1. Delete between // --- // if not applicable to the project. Also delete any other item or reference which is not applicable and renumber the paragraphs. Insert additional provisions as required for this project.
2. Use Manual Dry Standpipe Systems for unheated areas only.

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Design, materials, equipment and installation, inspection and testing of a manual dry standpipe system as required by NFPA 14.
- B. //Modification of the existing manual dry standpipe system as indicated on the drawings and as further required by these specifications.//

1.2 RELATED WORK

- A. Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Section 07 84 00, FIRESTOPPING.
- C. Section 09 91 00, PAINTING.
- D. Section 28 31 00, FIRE DETECTION AND ALARM.

1.3 DESIGN CRITERIA

- A. Design Basis Information: Provide design, materials, equipment, installation, and testing of the manual dry standpipe system in accordance with NFPA 14.
 1. For hydraulic calculations, calculated demand shall not fall less than 10 percent below the water supply curve.

SPEC WRITER NOTE: The A/E shall verify in writing that the responding fire department has a pumper truck with a minimum rating of 1000 gpm at 150 psi. Base design on the water supply below even if the responding fire department can provide more capacity. Reduce design water supply to what the fire department can provide if it is less than that identified below.

2. Water Supply: Base water supply on a fire pumper truck being able to provide 1000 gpm at 150 psi and 700 gpm at 200 psi at the fire department connection.
3. Size standpipes to provide 100 psi at the most remote connections.

SPEC WRITER NOTE: The A/E's structural engineer must determine if seismic protection is required in accordance with VA Seismic Design Requirements H-18-8. The seismic calculation should be provided to the COR and the following section added when seismic protection is required.

//4. Provide seismic protection in accordance with NFPA 14. Contractor shall submit load calculations for sizing of sway bracing for systems that are required to be protected against damage from earthquakes.//

1.4 SUBMITTALS

A. Submit as one package in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Prepare detailed working drawings that are signed by a NICET Level III or Level IV Sprinkler Technician or stamped by a Registered Professional Engineer licensed in the field of Fire Protection Engineering. As the Government review is for technical adequacy only, the installer remains responsible for correcting any conflicts with other trades and building construction that arise during installation. Partial submittals will not be accepted. Material submittals shall be approved prior to the purchase or delivery to the job site. Suitably bind submittals in notebooks or binders and provide index referencing the appropriate specification section. In addition to the hard copies, provide submittal items in Paragraphs 1.3(C)1 through 1.3(C)5 electronically in pdf format on a compact disc or as directed by the COR. Submittals shall include, but not be limited to, the following:

1. Qualifications:

- a. Provide a copy of the installing contractors // fire sprinkler // and state // contractor's license.
- b. Provide a copy of the NICET certification for the NICET Level III or Level IV Sprinkler Technician who prepared and signed the detailed working drawings unless the drawings are stamped by a Registered Professional Engineer licensed in the field of Fire Protection Engineering.
- c. Provide documentation showing that the installer has been actively and successfully engaged in the installation of commercial automatic sprinkler systems for the past ten years.

2. Drawings: Submit detailed 1:100 (1/8 inch) scale (minimum) working drawings conforming to the Plans and Calculations chapter of NFPA 14. Drawings shall include graphical scales that allow the user to determine lengths when the drawings are reduced in size. Include a plan showing the piping to the water supply test location.
3. Manufacturer's Data Sheets: Provide data sheets for all materials and equipment proposed for use on the system. Include listing information and installation instructions in data sheets. Where data sheets describe items in addition to those proposed to be used for the system, clearly identify the proposed items on the sheet.
4. Calculation Sheets:
 - a. Submit hydraulic calculation sheets in tabular form conforming to the requirements and recommendations of the Plans and Calculations chapter of NFPA 14.

SPEC WRITER NOTE: The A/E's structural engineer must determine if seismic protection is required in accordance with VA Seismic Design Requirements H-18-8. Delete below if seismic bracing is not required.

//b. Submit calculations of loads for sizing of sway bracing in accordance with NFPA 14.//

5. Valve Charts: Provide a valve chart that identifies the location of each control valve. Coordinate nomenclature and identification of control valves with COR. Where existing nomenclature does not exist, the chart shall include no less than the following: Tag ID No., Valve Size, Service (control valve, main drain, aux. drain, inspectors test valve, etc.), and Location.
6. Final Document Submittals: Provide as-built drawings, testing and maintenance instructions in accordance with the requirements in Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. In addition, submittals shall include, but not be limited to, the following:
 - a. A complete set of as-built drawings showing the installed system with the specific interconnections between the system switches and the fire alarm equipment. Provide a complete set in the formats as follows. Submit items 2 and 3 below on a compact disc or as directed by the COR.
 - 1) One full size (or size as directed by the COR) printed copy.

- 2) One complete set in electronic pdf format.
 - 3) One complete set in AutoCAD format or a format as directed by the COR.
- b. Material and Testing Certificate: Upon completion of the standpipe system installation or any partial section of the system, including testing and flushing, provide a copy of a completed Material and Testing Certificate as indicated in NFPA 14. Certificates shall be provided to document all parts of the installation.
 - c. Operations and Maintenance Manuals that include step-by-step procedures required for system startup, operation, shutdown, and routine maintenance and testing. The manuals shall include the manufacturer's name, model number, parts list, and tools that should be kept in stock by the owner for routine maintenance, including the name of a local supplier, simplified wiring and controls diagrams, troubleshooting guide, and recommended service organization, including address and telephone number, for each item of equipment.
 - d. One paper copy of the Material and Testing Certificates and the Operations and Maintenance Manuals above shall be provided in a binder. In addition, these materials shall be provided in pdf format on a compact disc or as directed by the COR.
 - e. Provide one additional copy of the Operations and Maintenance Manual covering the system in a flexible protective cover and mount in an accessible location adjacent to the riser or as directed by the COR.

1.5 QUALITY ASSURANCE

SPEC WRITER NOTE: Most states do not have or issue fire sprinkler or standpipe contractor's licenses. Therefore, as a minimum, the contractor must hold a contractor's license in the state where the work is to be performed.

- A. Installer Reliability: The installer shall possess a valid State of // (insert state in which work is being performed) // fire sprinkler contractor's license. The installer shall have been actively and successfully engaged in the installation of commercial automatic sprinkler systems for the past ten years.

B. Materials and Equipment: All equipment and devices shall be of a make and type listed by UL or approved by FM, or other nationally recognized testing laboratory for the specific purpose for which it is used. All materials, devices, and equipment shall be approved by the VA. All materials and equipment shall be free from defect. All materials and equipment shall be new unless specifically indicated otherwise on the contract drawings.

1.6 APPLICABLE PUBLICATIONS:

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

SPEC WRITER NOTE: Specify the latest edition of publications at time of award of A/E contract. Insert the edition date between [] for the project.

- B. National Fire Protection Association (NFPA):
 - NFPA 14-13.....Installation of Standpipe and Hose Systems
 - NFPA 101-15.....Life Safety Code
 - NFPA 170-15.....Fire Safety Symbols
- C. Underwriters Laboratories, Inc. (UL):
 - Fire Protection Equipment Directory (2011)
- D. Factory Mutual Engineering Corporation (FM):
 - Approval Guide

PART 2 - PRODUCTS

2.1 PIPING & FITTINGS:

A. Piping and fitting shall be in accordance with NFPA 14. Do not use plain end pipe and fittings with locking lugs or shear bolts.

2.2 VALVES

- A. Valves shall be in accordance with NFPA 14.
- B. Do not use quarter turn ball valves for 50 mm (2 inches) or larger drain valves.
- C. Standpipe Hose Valves: 65 mm (2-1/2 inches) screwed, brass hose angle valve, male hose threads same as local fire protection service, 65 mm (2-1/2 inches) by 40 mm (1-1/2 inches) reducer, with permanently attached polished brass cap and chain.
- D. Automatic Ball Drips: Cast brass 20 mm (3/4-inch) in-line automatic ball drip with both ends threaded with iron pipe threads.

SPEC WRITER NOTE: Where the local fire department uses a Storz or other type of

fire department connection, the requirements below should specify the connection that is compatible with the local fire department requirements.

2.3 FIRE DEPARTMENT SUPPLY CONNECTION:

- A. Brass, // flush wall type, // freestanding, // exterior fire department connection with brass escutcheon plate, // without sill cock, // and a minimum of two 65 mm (2-1/2 inches) connections, or a configuration acceptable to the responding fire department. Connections shall be threaded to match those on the local fire protection service, with polished brass caps and chains. Provide escutcheon with integral raised letters "Dry Standpipe System". Install an automatic ball drip between fire department connection and check valve with drain piping routed to the exterior of the building or a floor drain.

2.4 IDENTIFICATION SIGNS:

- A. Rigid plastic, steel or aluminum signs with white lettering on a red background with holes for easy attachment. Standpipe system signage shall be attached to the valve or piping with chain.

SPEC WRITER NOTE: Provide the following paragraph where cabinets are to be installed.

//2.5 STANDPIPE HOSE VALVE CABINETS:

- A. White glossy polyester coated 1 mm (20 gauge) steel box, 1 mm (20 gauge) tubular steel door and 1.3 mm (18 gauge) frame with continuous steel hinge with brass pin, welded and ground smooth steel corner seams, recess type, 600 mm by 600 mm by 250 mm deep (24-inches by 24-inches by 10-inches deep). Finish door and frame with white prime polyester coating.//

SPEC WRITER NOTE: Where electrical supervision is provided, the following paragraph needs to be included in the section.

//2.6 VALVE SUPERVISORY SWITCHES:

- A. Contain in a weatherproof die cast red baked enamel, oil resistant, aluminum housing with tamper resistant screws, which shall provide a 13 mm (1/2 inch) conduit entrance and necessary facilities for attachment to the valves. Provide two SPDT switches rated at 2.5 amps at 24 VDC. Valve supervisory switches for ball and butterfly valves may be integral with the valve.//

2.7 PIPE SUPPORTS:

- A. Pipe hangers, supports, and restraint of system piping shall be in accordance with NFPA 14.

2.8 WALL, FLOOR AND CEILING PLATES:

- A. Provide chrome plated steel escutcheon plates.

2.9 VALVE TAGS

Engraved black filled numbers and letters not less than 15 mm (1/2 inch) high for number designation, and not less than 8 mm (1/4 inch) for service designation on 19 gage, 40 mm (1-1/2 inches) round brass disc, attached with brass "S" hook, brass chain, or nylon twist tie.

PART 3 - EXECUTION**3.1 INSTALLATION:**

- A. Installation shall be accomplished by the licensed contractor. Provide a qualified technician, experienced in the installation and operation of the type of system being installed, to supervise the installation and testing of the system.
- B. Installation of Piping: Accurately cut pipe to measurements established by the installer and work into place without springing or forcing. In any situations where bending of the pipe is required, use a standard pipe-bending template. Conceal piping in all spaces which have finished ceilings. In stairways, locate piping as near to the ceiling as possible to prevent tampering by unauthorized personnel and to provide a minimum headroom clearance of 2250 mm (seven feet six inches). Piping shall not obstruct the minimum means of egress clearances required by NFPA 101. Pipe hangers, supports, and restraint of system piping, // and seismic bracing // shall be installed accordance with NFPA 13.
- C. Face fire department hose connections in valve cabinets outward in a manner which prevents crimping of the hose.
- D. Drains: Pipe drains to discharge at safe points outside of the building or to sight cones attached to drains of adequate size to readily carry the full flow from each drain under maximum pressure. Do not provide a direct drain connection to sewer system or discharge into sinks. Install drips and drains where necessary and as required by NFPA 14.

SPEC WRITER NOTE: Supervision may be performed in any manner as identified in NFPA 14, such as locks and chains. The following paragraph need only be added when the valves are electrically supervised.

- //E. Valve Supervisory Switches: Provide supervisory switches that are connected to the fire alarm system. Do not provide valve supervisory switches on standpipe hose valves, test or drain valves. See Section 28 31 00 for connections. //
- F. Provide escutcheon plates for exposed piping passing through walls, floors or ceilings.
- G. Clearances: For systems requiring seismic protection, piping that passes through floors or walls shall have penetrations sized 50 mm (2 inches) nominally larger than the penetrating pipe for pipe sizes 25 mm (1 inch) to 90 mm (3 ½ inches) and 100 mm (4 inches) nominally larger for penetrating pipe sizes 100 mm (4 inches) and larger.
- H. Sleeves: Provide for pipes passing through masonry or concrete. Provide space between the pipe and the sleeve in accordance with NFPA 13. Seal this space with a UL Listed through penetration fire stop material in accordance with Section 07 84 00, FIRESTOPPING. Where core drilling is used in lieu of sleeves, also seal space around penetrations. Seal penetrations of walls, floors and ceilings of other types of construction, in accordance with Section 07 84 00, FIRESTOPPING.
- I. Paint all piping Fire Safety Red in accordance with Section 09 91 00 or a color designated by the Contracting Officers Technical Representative (COR).
- J. For each fire department supply connection, provide the symbolic sign given in NFPA 170 located 2400 to 3000 mm (8 to 10 feet) above each connection. The sign shall be 450 by 450 mm (18 by 18 inches) with the symbol being at least 350 by 350 mm (14 by 14 inches).
- K. Securely attach identification signs to control valves, drain valves, and test valves.

SPEC WRITER NOTE: Impairments to existing standpipe systems shall be kept to a minimum. Existing systems being replaced shall remain functional as long as possible during the installation of the new system. New systems should be placed in service as the structure rises.

- L. Interruption of Service: There shall be no interruption of the existing sprinkler protection, water, electric, or fire alarm services without prior permission of the Contracting Officers Technical Representative (COR). Permission shall be requested in writing at least one (1) week prior to the planned interruption. Any interruption shall be limited to 4 hours for final connections or repairs.

M. Welding: All welding shall conform to the requirements and recommendations of NFPA 14.

3.2 INSPECTION AND TEST:

- A. Hydrostatic Testing: Hydrostatically test the system including the fire department connections, as specified in NFPA 14, in the presence of the Contracting Officers Technical Representative (COR) or his designated representative.
- B. Final Inspection and Testing: Test the system in accordance with NFPA 14 when all necessary corrections have been accomplished. Advise the Contracting Officers Technical Representative (COR) who will then schedule the final inspection and test. Furnish all instruments, labor and materials required for the tests and provide the services of the installation foreman or other competent representative of the installer to perform the tests. Correct any deficiencies found and retest the system. Include the operation of all features of the systems under normal conditions in the test.

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