SECTION 21 12 00
STANDPIPE SUPERVISORY SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes: Standpipe supervisory system.

B. Related sections:

1. 21 12 00 Fire Suppression Standpipes

2. 01 43 00 Quality Control.

3. 21 05 00 Common Work Results for Fire Suppression.

4. 21 06 00 Schedules for Fire Suppression.

5. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections.

1.2 REFERENCES

A. All requirements of the Fire Department of the City of Boston.

B. Boston FD TCM3-51725 – “Requirements for Air Pressurized Standpipe”.

C. Boston FD TCM3-51726 – “Air Pressurized Dry Standpipe Summary”.

1.3 SYSTEM DESCRIPTION

A. Furnish and install a self-contained and pre-assembled standpipe supervisory system that contains all mechanical and electrical components required. The assembly shall be STANDPIPE-PAC™ Model SSS-101, manufactured by United Fire Systems, Kenilworth, NJ (908-688-0300, x222).

B. The assembly shall be pre-assembled, pre-wired, and fully factory tested as a system.

1.4 PERFORMANCE REQUIREMENTS

A. General.

1. Design and performance of systems, components, and methods specified herein shall comply with all applicable referenced codes and standards.

2. Contract drawings indicate the general arrangement of the system and are a guide for intent only. Contractor is responsible for providing and installing all equipment necessary to complete the installation in compliance with all applicable requirements.

3. Contractor shall design, furnish, and install the standpipe supervisory system(s) per this specification, and shall provide Professional Engineering services needed to assume Engineering responsibility.

4. All piping system components shall be approved for at least 175 PSIG working pressure.

5. Power Requirements.

    a. Primary. Primary power shall be from a 110VAC dedicated branch circuit.

    b. Standby. Standby power for the control panel shall be provided by a rechargeable gel-cell battery installed in the STANDPIPE-PAC™ control panel enclosure.

B. System Operation. The system shall operate in accordance with Boston FD TCM3-51726. In addition, the following items shall be included:

1. The audible devices shall be silenceable at the control panel.

2. A separate trouble signal shall be generated by trouble on any supervised circuit.

3. Battery shall be capable of powering the control panel in the event of AC power loss. The battery shall be kept charged by the power supply of the control panel.

4. A built-in digital communicator shall annunciate signals to the site safety office or to a central station.

1.5 QUALITY ASSURANCE

A. Perform a level of Quality Control in accordance with Section 01 43 00.

B. Furnish a Quality Work Plan per Section 01 43 00 for this work.

C. Shop drawings and design calculations shall include a seal and signature by a qualified Licensed Professional Engineer, registered in Massachusetts.

1.6 SUBMITTALS

A. Action Submittals.

1. Product Data. For STANDPIPE-PAC™ product, include, as applicable, product rated capacities, operational characteristics, electrical characteristics, materials of construction, standards of construction, and approvals.

2. Shop Drawings. Include all pertinent information.

    a. An electrical riser diagram, specific to this design, showing interconnection of all electrical devices.

    b. A mechanical riser diagram specific to this design, showing interconnection of all mechanical devices.

    c. Wiring diagrams for all electrical devices and power, signal, and control wiring.

B. Delegated-Design Submittals. Include performance requirements and design criteria analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Information Submittals.

1. Qualification Data.

a. Installing Contractor.

b. Professional Engineer.

D. Commissioning Submittal: Field Test Plan.

E. Closeout Submittal: As-Built Drawing.

F. Operation and Maintenance Submittals: Instructions for STANDPIPE-PAC™.

PART 2 - PRODUCTS

2.1 STANDPIPE SUPERVISORY SYSTEM. Furnish and install factory-wired and factory-tested self-contained standpipe supervisory system containing all mechanical and electrical components required. The assembly shall be STANDPIPE-PAC™ Model SSS-101, manufactured by United Fire Systems, Kenilworth, NJ USA (908-688-0300 x222), and shall contain all components factory-assembled and tested to make up a complete, ready-to-install device The assembly shall consist of:

A. A painted plywood backplane to which the following devices are securely attached:

1. Compressor to provide supervisory pressure factory assembled, wired and attached to system outlet.

a. Compressor shall be sized to permit filling of standpipe to minimum 13 PSIG in 4 hours or less.

b. Compressor shall be of the oil-less piston type, equipped with a pressure switch and a bubble-tight check valve.

c. Power: 110 VAC 60 Hz, 1 phase, controlled through a manual on / off switch.

2. All necessary pressure switches for signaling and compressor control.

a. Switch that operates when pressure in standpipe drops below supervisory pressure. Switch contact factory-connected to control panel input circuit.

b. Switch that operates when pressure in standpipe exceeds 25 PSIG. Switch contact factory-connected to control panel input circuit

c. Switch integral to compressor that cuts in at 13 PSIG and cuts out at 18 PSIG. Switch contacts factory-connected to compressor power circuit.

3. Air dryer.

4. Control panel for signaling and notification functions, factory wired to signaling pressure switches and audible horn. In addition, control panel shall:

    a. Include digital communicator for site safety office and / or central station notification.

    b. Supervise and charge control panel backup battery, and shall automatically switch to backup power, in the event AC power is lost.

5. Audible horn.

6. Pressure gage for local indication.

7. Lockable shutoff valve.

8. Check valve to prevent water from entering device.

9. 120VAC, 60 Hz, single phase connection point to serve both control panel and compressor.

10. Pipe, fittings, fasteners, wire, raceway, and boxes factory assembled for complete interconnection of all items. No field assembly permitted.

B. A separate manual air release angle valve with label to be field installed.

C. A separate weatherproof audible / amber visual signal to be field installed.

2.2 PIPE AND FITTINGS. Pipe and fittings for connection of STANDPIPE-PAC™ to standpipe.

A. Pipe – Schedule 40 Steel, per ASTM A53 / A53M – Specification for Pipe, Steel, Black, Welded and Seamless.

B. Nipples – Steel Pipe Nipples, Threaded End, per ASTM A733 – Specification for Welded and Seamless Carbon Steel Pipe Nipples.

C. Fittings – All fittings shall be black. Galvanized fittings shall not be permitted. Fittings per ANSI B16.3 – Malleable Iron Threaded Fittings, or ANSI B16.4 – Cast Iron Threaded Fittings.

D. Couplings – Per ASTM A 865 – Specification for Threaded Couplings, Steel, Black, Welded or Seamless, for Use in Steel Pipe Joints.

E. Unions. Use unions only as necessary where joining pipe is impossible or impractical without them. Unions per ANSI B16.39 – Malleable Iron Threaded Pipe Unions.

F. Threads - Threaded ends per ANSI B2.1 – Basic Standards for Steel Pipe Threads, and ANSI B1.20.1 – Pipe Threads, General Purpose (Inch). All threads shall be NPT.

2.3 ALARM NOTIFICATION DEVICES.

A. General Requirement – Provide audible alarm notification devices as indicated on the Contract Drawings.

B. Horns – Manufactured by Cooper Wheelock, Model HNR, operating at 12 VDC. Devices shall meet the requirements of FCC Part 15 Class B.

C. Weatherproof Audible / Amber Visual Signal – Manufactured by System Sensor, Model P2RK-P, operating at 12 VDC.

PART 3 - EXECUTION

3.1 STORAGE AND HANDLING

A. Deliver all material and equipment properly identified by type, size, manufacturer's name and specification section. All material to be undamaged.

B. Do not store exposed to weather. Store indoors or cover to protect from damage.

C. Protect all material and equipment to prevent damage and entrance of foreign matter.

D. During loading, transporting, and unloading, handle all material and equipment with care to prevent damage. Do not drop.

E. Store all material and equipment to the satisfaction of the Resident Engineer.

3.2 INSTALLATION

A. Location and Arrangement. Contract drawings, plans, schematics, and diagrams indicate general location and arrangement of system. Working drawings shall indicate actual system installation layout. Install system per working drawings.

B. Deviations. Installation deviations from approved working drawings require written approval from the Engineer. During installation, do not deviate from approved working drawings without written approval from the Engineer.

C. Pipe Ends. Ream ends of pipe to remove burrs. Bevel plain ends of pipe.

D. Examination. Examine all pipe and fittings thoroughly before installation. Do not install damaged or defective pipe or fittings.

E. Cleaning. Remove scale, slag, dirt, oil, cutting and threading shavings, and debris from inside and outside of pipe after fabrication and before assembly. Use a non-toxic solvent to ensure pipe is clean. Pipe shall be free of solvent and water when installed.

3.3 TESTING AND COMMISSIONING. Perform all testing and commissioning in accordance with instructions supplied with STANDPIPE-PAC™.