
Part 1 General

1.1 RELATED SECTIONS

- .1 Section 07 84 00 - Firestopping.
- .2 Section 21 05 05 - Common Work Results for Fire Suppression.
- .3 Section 23 05 05 - Installation of Pipework.
- .4 Section 23 05 19 - Thermometers and Pressure Gauges - Piping Systems.
- .5 Section 23 05 29 - Hangers and Supports For HVAC Piping and Equipment.
- .6 Section 23 05 49.01 - Seismic Restraint Systems (SRS).
- .7 Section 23 05 53.01 - Mechanical Identification.

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)/American Petroleum Institute (API).
 - .1 ANSI/API Spec 5L, Specification for Line Pipe.
- .2 American Society for Testing and Material (ASTM).
 - .1 ASTM A-47M, Standard Specification for Ferritic Malleable Iron Castings.
 - .2 ASTM A-53, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - .3 ASTM A-135, Standard Specification for Electric-Resistance-Welded Steel Pipe.
- .3 Canadian Standards Association/CSA International.
 - .1 CSA B242, Groove and Shoulder Type Mechanical Pipe Couplings.
 - .2 CSA W47.1, Certification of companies for fusion welding of steel.
- .4 Underwriters Laboratories of Canada (ULC).
 - .1 CAN/ULC S543, Internal Lug Quick Connect Coupling for Fire Hose.
- .5 National Fire Protection Association (NFPA).
 - .1 NFPA 14-2013, Installation of Standpipe Systems.
 - .2 NFPA 25-2014, Inspection, Testing and Maintenance of Water-Based Fire Protection Systems.
 - .3 NFPA 170-2012, Standard for Fire Safety and Emergency Symbols.

1.3 SUBMITTALS

- .1 Submit manufacturer's printed product literature, specifications, and datasheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit coordinated erection plans with all others disciplines, according to the construction documents.
- .3 Shop drawings shall include manufacturing materials, finishes, anchoring method, the number of anchors, dimensions, construction and assembly details, accessories for equipment, tables and performance curves of apparatus.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit all required documents and items after completion of Work for incorporation into manual such as specified in Section 01 78 00 - Closeout Submittals.
- .2 Maintenance Data Sheets.
 - .1 Maintenance data sheets must include the following elements:
 - .1 Technical data from catalogs and product literature, including the model number, type and size for the items mentioned below:
 - .1 Piping and fittings;
 - .2 Valves, including gate valves, check valves and globe valves;
 - .3 Pipes hangers and suspension;
 - .4 Monitoring switches;
 - .5 Mechanical couplings.
 - .2 Relevant details concerning operation, maintenance and servicing.
 - .3 A list of recommended spare parts.
 - .3 Provide a copy of NFPA 25 "Inspection, Testing, and Maintenance of Water Based Fire Protection Systems" and incorporate it into the "Operation and Maintenance Manual".

1.5 HEALTH AND SAFETY

- .1 Take necessary measures to ensure health and safety on construction site, in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort waste in order to re-use and recycle in conformity with section 01 74 21 - Waste Management Plan.
- .2 Collect packaging materials and send to appropriate recycling facilities.
- .3 Collect and sort plastic, paper, and corrugated cardboard wrappings, and dispose them in appropriate designated bins in conformity with the Waste Management Plan.

- .4 Disposed unused metallic elements in designated area for metal recycling.
- .5 Sort metal banding, flatten, and place in designated area for recycling.

1.7 SKETCHES

- .1 Submit diagram complying with requirements.
- .2 Submitted diagram must include following items:
 - .1 A key localisation plan at 1: 500 scale;
 - .2 A plan for every floor (basement, ground floor, above ground floor and attics) affected by fire protection work, showing the zone covered by each system, localisation of isolating valves, flow detectors, and drainage test pipes.
- .3 Once approved, provide two laminated copies of the diagram, plasticized, glued on plywood, and inserted in a solid wooden frame.
- .4 Install one diagram in the alarm valve room and deliver the other one to the Departmental Representative.

1.1 ACCEPTABLE PRODUCTS AND MATERIALS

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products.

Part 2 Products

2.1 GENERAL

- .1 All products used in fire safety installations must be "cUL" or "ULC" listed and must be labelled as such.
- .2 Provide accessories that can withstand the normal pressure exerted in the fire protection network.

2.2 PIPES AND FITTINGS

- .1 Pipes:
 - .1 Pipes NPS 2 or less:
 - .1 Black steel, Schedule 40, grooved or threaded, complying with NFPA 14 and ASTM A-53 or ASTM A-135 Standards.
 - .2 Pipes NPS 2 ½ and over:
 - .1 Black steel, Schedule 10, roll grooved, complying with NFPA 14 and ASTM A-135 Standards.

- .3 Acceptable products:
 - .1 Allied;
 - .2 Bull Moose;
 - .3 Wheatland;
 - .4 Replacement materials or products: approved by addendum according to Instructions to bidders.
- .2 Fittings and couplings as per NFPA 14 Standard:
 - .1 Fittings and couplings up to NPS 2:
 - .1 Fittings and joints, rigid, provided by same manufacturer.
 - .2 Fittings, screwed with teflon tape, to ASTM A-47M, grade 32510.
 - .3 Joints for pipes with grooved ends, Standard coupling to CSA B242 and ANSI/API Spec 5L.
 - .4 Fittings with grooved ends, to ASTM A-536, grade 65-45-12.
 - .2 Fittings and couplings NPS 2½ and over:
 - .1 Joints and fittings, rigid, provided by the same manufacturer.
 - .2 Fittings and welded flanges, to CSA W47.1 and CSA W47.1S1.
 - .3 Joints for pipes with grooved ends, Standard couplings, to CSA B242 and ANSI B-3620 (API-5L).
 - .4 Fittings with grooved ends, to ASTM A-536, grade 65-45-12.

2.3 AUXILIARY VALVES

- .1 All valves to be listed for fire protection service.
- .2 Acceptable Products:
 - .1 Valves, NPS 2 and less, threaded ends:
 - .1 Bronze gate valves, with outside screw and yoke (OS&Y):
 - .1 Acceptable products:
 - .1 Nibco T-104-0;
 - .2 Replacement materials or products: approved by addendum according to Instructions to bidders.
 - .2 Bronze ball valves:
 - .1 Acceptable products:
 - .1 Victaulic S/728 Firelock with monitoring switches;
 - .2 Anvil F171N;
 - .3 Jenkins Fig. 202J;
 - .4 Nibco KT-505-W-8;
 - .5 Replacement materials or products: approved by addendum according to Instructions to bidders.

- .2 Valves, NPS 2 and less, grooved ends:
 - .1 Bronze ball valves.
 - .1 Acceptable products:
 - .1 Victaulic S/728 Firelock with monitoring switches;
 - .2 Nibco KG-505-W-8;
 - .3 Replacement materials or products: approved by addendum according to Instructions to bidders.
 - .3 Gate valves, NPS 2½ and over, grooved or flanged ends:
 - .1 Ductile iron gate valve with outside screw and yoke (OS&Y), bronze trim, grooved ends.
 - .1 Victaulic 771H;
 - .2 Replacement materials or products: approved by addendum according to Instructions to bidders.
 - .2 Ductile iron gate valve with outside screw and yoke (OS&Y), bronze trim, flanged ends.
 - .1 Nibco F-607-RW;
 - .2 Replacement materials or products: approved by addendum according to Instructions to bidders.
 - .4 Butterfly valves, NPS 2½ and over, with monitoring switch:
 - .1 Ductile iron butterfly valves, with indicating yoke, flanged ends.
 - .1 Acceptable products:
 - .1 Tyco, model BFV-N, TFP1520;
 - .2 Nibco LD3510-8;
 - .3 Replacement materials or products: approved by addendum according to Instructions to bidders.
 - .2 Ductile iron butterfly valves, with indicating yoke, grooved ends.
 - .1 Acceptable products:
 - .1 Victaulic S/705W Firelock;
 - .2 Tyco, models BFV-N, TFP1510 and TFP1515;
 - .3 Gruvlok GN722-FP, GN7722-6D and AE7722-3A;
 - .4 Replacement materials or products: approved by addendum according to Instructions to bidders.
 - .5 Drain valve: NPS 1, equipped with a threaded end and a chained female cap.

2.4 HANGERS

- .1 Hangers for fire protection service, in conformity with NFPA 14 Standard, as well as and Sections 23 05 29 - Hangers and Supports for HVAC Piping and Equipment and 23 05 49.01 - Seismic Restraint Systems (SRS) Requirements.

2.5 FIRE STOPPING AND SMOKE CONTROL SYSTEMS

- .1 Fire stopping and smoke control systems for penetrations of fire separation assemblies, in accordance with requirements described in section 07 84 00 – Firestopping.

2.6 ACCESSORIES FOR STANDPIPES

- .1 Standpipe Connection:
 - .1 Standpipe connection with a 65 mm antique bronze angle valve, casted or forged, threaded to match the threads of the local Fire Department, equipped with an antique bronze chain wheel.
 - .2 Acceptable products:
 - .1 Wilson & Cousins, model IE23;
 - .2 Giacomini, model A56;
 - .3 Guardian, model 5015;
 - .4 Replacement materials or products: approved by addendum according to Instructions to bidders.

2.7 MONITORING SWITCHES

- .1 General: Switches approved for fire protection service, complying with NFPA 14 Standard.
- .2 Valves:
 - .1 Mechanically attached to valve body, with normally open and normally closed contacts, with monitoring capability.
 - .2 Add monitoring contacts on non-supervised valves, as indicated on-site.
 - .3 Acceptable products:
 - .1 OS&Y valve:
 - .1 System Sensor, model OSY2A;
 - .2 Replacement materials or products: approved by addendum according to Instructions to bidders.
 - .2 Pluggable valves:
 - .1 System Sensor, model PSP1A;
 - .2 Replacement materials or products: approved by addendum according to Instructions to bidders.
- .3 Flow Switches:
 - .1 Designed to ensure monitoring of the system:
 - .1 Acceptable products:
 - .1 System Sensor, WFDxxA Series;
 - .2 Potter, VSR;

- .3 Replacement materials or products: approved by addendum according to Instructions to bidders.

2.8 PRESSURE GAUGES

- .1 ULC approved pressure gauges in compliance with Section 23 05 19 - Thermometers and Pressure Gauges - Piping Systems.
- .2 Maximum limit of not less than twice normal working pressure at point where installed.
- .3 Provide an isolation ball valve, bronze type, with drain cock at each pressure gauge.

2.9 IDENTIFICATION

- .1 Indicating plates for test/drain valves: to NFPA 14 Standard.
- .2 Fire protection equipment identification to NFPA 170, Standard for Fire Safety and Emergency Symbols.
- .3 Refer to Section 23 05 53.01 - Mechanical and Network Equipment Identification.

2.10 TEST AND DRAIN VALVE

- .1 Combined valve for test and drain, including one three-position ball valve, two flow indicators, pressure gauge outputs, and a label plate indicating orifice diameter.
 - .1 Acceptable products:
 - .1 Victaulic S/720 TestMaster™ II or S/747 Riser Manifold;
 - .2 Replacement materials or products approved by addendum according to Instructions to bidders.

Part 3 Execution

3.1 INSTALLATION

- .1 Install the standpipes, inspect and perform acceptance tests in accordance with NFPA 14.
- .2 Install pipe work in accordance with Section 23 05 05 - Installation of Pipework, supplemented as specified herein.

- .3 Execute installation in accordance with established Standards and laws, regulations and current codes, and Standards requirements.
- .4 Proper operation and installation coordination of the system, including automatic sprinkler system, system's monitoring points as well as the systems commissioning are all under the fire protection Contractor's responsibility.
- .5 Clearly identify main shut-off valves, drain valves, by-pass valves, and all auxiliary valves.
- .6 Install the standpipes and the drain valve in order to be able to drain every parts of the system. It has to be possible to drain any riser without shutting the water supply of any other part of the system.
- .7 Install, at the top of each riser, a pressure gauge of 90 mm, gauges in compliance with Section 23 05 19 - Thermometers and Pressure Gauges - Piping Systems and the NFPA 14.
- .8 Install drainage piping of test drains to provided open drains.

3.2 TRAINING

- .1 Contractor shall organize a 2-hour training session for the building's operation and maintenance staff.
- .2 Staff training shall cover normal sprinkler system operation, emergency procedure, and system maintenance, as per NFPA 25 Standard.

3.3 TESTS AND VERIFICATIONS

- .1 Carry out the following tests on the standpipes system, complying with NFPA 14 Standard:
 - .1 Execute complete hydrostatic testing on the automatic sprinkler systems piping and appurtenances at a pressure of 1,380 kPa for 2 hours.
 - .2 Execute a flow test with the two more demanding valves to verify the demand from the system.
 - .3 Complete a flow test through the test connection of each zones in order to confirm flow switches operation. The alarm signals must be transmitted to the alarm panel within 60 secondes maximum starting at test connection opening and during test flow.
 - .4 Execute opening and closing of all water supply control valves while under system pressure.
- .2 Conduct tests in presence of the Departmental Representative and supply test certificates, as required by NFPA 14.

3.4 REPORT AND CERTIFICATE

- .1 Provide both inspection report and inspection attestation to the Departmental Representative at the end of the project, in addition to the properly completed and signed Contractor's materials and tests certificate. Record all tests results in a notebook appended to the report.

3.5 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.

END OF SECTION