SECTION 211313 - WET-PIPE SPRINKLER SYSTEM MODIFICATION

PART 1. - GENERAL

1.1 DESCRIPTION OF WORK

A. Scope: Provide new wet-pipe automatic sprinkler piping in the Communications Center at the Portland Jetport in Portland, Maine.

B. Description of Work: The work includes designing and installing sprinkler pipe within the new Communications Center. The work includes the following:

1. Install 1-¼" black steel fire sprinkler branch piping throughout the interior of the communications center.

2. Install 1-½" black steel fire sprinkler piping to connect the interior of the communications center tenant space to a future main line sprinkler supply in the corridor.

3. Provide a 1" arm-over assembly at the sprinkler installation points.
   a. Arm-over assembly shall consist of a 1" riser, 1" fittings, and 1" drop nipple.
   b. Drop nipple shall be provided with a reducing coupling.
   c. Reducing coupling shall be provided with a ½" brass plug.

4. Arm-over assembly shall provide sufficient clearance to be fully above the dropped ceiling when installed. Clearance between the arm-over assembly (at the brass plug) and the face of the dropped ceiling tile shall be based on the Portland Jetport standard for concealed sprinkler model.

C. Compliance: The wet-pipe automatic sprinkler system piping shall be designed in accordance with section 1.3 A. Any reference to "authority having jurisdiction" shall be interpreted to mean the Portland Jetport, City of Portland building and fire departments, and the State of Maine Fire Marshal. All material and equipment used shall be listed or approved by UL, FM or another nationally recognized testing agency, for their intended use and service.

D. Related Sections and Divisions:

1. Refer to these specifications for related guidance:

   a. Supports and Anchors
   b. Mechanical Identification
   c. Mechanical Basic Requirements
   d. Power Wiring
   e. Hard-Wired Fire Alarm System
   f. Firestopping

1.2 QUALITY ASSURANCE

A. Installer Requirements: Design shall be by a NICET Level III or IV Technician or a Registered Fire Protection Engineer. Installation shall be performed by a certified sprinkler contractor or a specialist who is experienced in the design and installation of automatic sprinkler systems (minimum 3 years). Design and installation must be performed by a sprinkler contractor whose business is

located within a 75 mile radius of Portland, Maine and whose business has been operated and established within this radius for at least three (3) years.

The Contractor shall submit the following for verification of qualifications: Prior to installation, submit documentation, to Portland Jetport, showing that the Contractor has successfully installed automatic fire suppression sprinkler systems of comparable size, type and design as specified herein or that the Contractor has a firm contractual agreement with a Subcontractor having such experience. The data shall include the names and locations of at least two installations where the Contractor, or Subcontractor, installed such systems. The Contractor, or Subcontractor, shall certify that each system has performed satisfactorily for a period of not less than one year.

B. Service Organization: The Contractor shall furnish, to Portland Jetport, evidence that there is an experienced and effective service organization that carries a stock of repair parts for the system in order to readily effect repairs throughout the warranty period. Should the Contractor fail to comply with the service requirements of this section, the Portland Jetport will then have the option to make the necessary repairs and back charge the Contractor without any loss of warranty or guarantee as provided by the contract documents.

C. Guarantee: The Contractor shall guarantee labor, materials, and equipment provided under this contract against defects for a period of one year after the date of final acceptance of this work by the Portland Jetport and AHJ. Final Acceptance includes, but is not limited to, the receipt of as-built drawings and operation and maintenance manuals.

D. Codes and Standards: Provide wet-pipe sprinkler system piping conforming to the latest editions of codes and standards of the following organizations:

1. National Fire Protection Association (NFPA), including all amendments and appendices:
   NFPA No. 13: Standard for the Installation of Sprinkler Systems.
   NFPA No. 25: Inspection, Testing, and Maintenance of Water Based Fire Protection Systems.
   NFPA No. 70: National Electrical Code.

2. American Water Works Association (AWWA)
   AWWA C651 (Addendum 1990) Disinfecting Water Mains)

3. Factory Mutual Engineering and Research Corporation (FM)
   FM-P7825 Approval Guide

4. Underwriters Laboratories Inc. (U.L.)
   UL-FPED Fire Protection Equipment Directory

5. International Code Council (ICC) including all supplements:
   International Building Code

6. Maine Uniform Building and Energy Code (MUBEC)
   State of Maine Fire Codes and Regulations
   City of Portland, Maine Code of Ordinances

1.3 SYSTEM DESIGN

A. General: Design automatic sprinkler system piping in accordance with all required and advisory provisions of NFPA 13. The sprinkler piping system shall include materials, accessories, and equipment, inside and outside the building, so that the system is complete and ready for use. Design and provide the system piping to give full consideration to blind spaces, piping, electrical equipment, ducts and other construction and equipment in accordance with detailed working drawings to be submitted for approval.

1. Location of Sprinkler Installation Points: The sprinkler piping shall be designed such that the spacing of sprinklers, to be installed at a later date, shall not exceed that permitted by NFPA 13 for ordinary hazard occupancy. Where practical, uniformly space sprinkler installation points on the branch piping. Locate future sprinkler installation points in a pattern consistent with ceiling grid, lights, and air supply diffusers.

1.4 SUBMITTALS

A. Division-1: Submit 6 complete sets of submittals. Partial submittals will not be acceptable and will be returned without review. Before any work is commenced, the submittal must be approved by the Portland Jetport and AHJ. Manufacturer's data shall be provided for the following and annotated to show the specific model, type and size of each item:

1. Pipe, fittings, hangers, supports, and mechanical couplings
2. All other associated equipment

B. Test Certification and Instruction: Submit test certification for all pipe and fittings. Information shall include but not be limited to the following:

1. Hydrostatic testing results

C. Shop Drawings: Submit detailed shop drawings, in accordance with NFPA 13, "Working Plans", on uniform size sheets for review and approval. Information shall include but not be limited to the following:

1. Layout indicating details and plan view of the system piping. Indicate the location of sprinkler installation points and piping in relation to the ceiling layout, showing pipe lengths and sizes.

2. The signature and seal of a registered Professional Fire Protection Engineer, registered Professional Engineer with a minimum of two years fire protection design experience, or a NICET Level III or IV Technician.

1.5 AS-BUILT DRAWINGS

A. General: Prepare and submit, to Portland Jetport, 3 sets of detailed "As-Built Drawings". The drawings shall show the system as installed, including all deviations from both the project drawings and the approved shop drawings. The drawings shall also include all information as required by NFPA 13. The drawings shall be prepared on uniform sized sheets not less than 30 by 42 inches (760 by 1070 mm). Submit these drawings within two weeks after the final acceptance test of the system.

PART 2. - PRODUCTS

2.1 ABOVEGROUND PIPING SYSTEMS

A. General: Provide piping, valves, and fittings, approved for a working pressure of not less than 175 psi in accordance with NFPA 13, as specified herein. Conceal all piping in areas with suspended ceilings as indicated on the contract drawings. Provide fittings for changes in direction of piping and for connections. Make changes in piping through tapered reducing pipe fittings; bushings will not be permitted. Steel piping with wall thickness less than Schedule 30 shall not be threaded. Plastic piping shall not be permitted. Minimum pipe schedule shall be schedule 40 for 2.0 inches and smaller. Side outlet tees using rubber gasketed fittings shall not be permitted. All sprinkler piping shall be so installed that it can be thoroughly drained, and, where practical, shall be arranged to drain at the main riser drain.

B. Fittings: Fittings, mechanical couplings and rubber gaskets shall be supplied by the same manufacturer. Fittings into which sprinklers, sprinkler riser nipples, or drop nipples are threaded shall be welded, threaded, or grooved-end type. Plain-end fittings will not be permitted.

1. Branch Outlet Fittings:
    a. Shall be supplied by the same manufacturer
    b. Standard: UL 213.
    c. Pressure Rating: 175 psig (1200 kPa) minimum
    d. Body Material: Ductile-iron housing with EPDM seals and bolts and nuts.
    e. Type: Mechanical-T and -cross fittings.
    f. Configurations: Snap-on and strapless, ductile-iron housing with branch outlets.
    g. Size: Of dimension to fit onto sprinkler main and with outlet connections as required to match connected branch piping.
    h. Branch Outlets: Grooved, plain-end pipe, or threaded.

2. Adjustable Drop Nipples:
    a. Shall be supplied by the same manufacturer
    b. Standard: UL 1474.
    c. Pressure Rating: 250 psig (1725 kPa) minimum
    d. Body Material: Steel pipe with EPDM-rubber O-ring seals.
    e. Size: Same as connected piping.
    f. Length: Adjustable.
    g. Inlet and Outlet: Threaded.

C. Pipe and Hanger Supports: Provide pipe supports, sway braces, hangers, and clamps in accordance with NFPA 13.

D. Identification Signs: Attach properly lettered and approved metal signs to each control valve. Each sign shall indicate the normal valve position as well as the portion of the system that the valve serves.

2.2 SPRINKLERS

A. General: Sprinklers will not be installed as part of this scope of work; however, the sprinkler system piping shall be designed to accommodate the installation of sprinklers in the project area at a future date. Use the Portland Jetport sprinkler standard (model & size) to determine dimensions for concealed heads and clearance for piping above dropped ceilings.

2.3 ESCUTCHEON PLATES

A. General: Provide escutcheons for pipes passing through walls, partitions, or suspended-type ceiling. Escutcheons shall be steel, primed and finish painted to match adjacent wall finish.

2.4 PIPE SLEEVES

A. General: Provide pipe sleeves where piping passes entirely through walls, floors and partitions. Secure sleeves in position during construction. Provide sleeves of sufficient length to pass through entire thickness of walls, floors and roofs. Provide 1 inch (25 mm) minimum clearance between exterior of piping and interior of sleeve or core-drilled hole. Firmly pack space with mineral wool insulation. Seal space at both ends of the sleeve or core-drilled hole with plastic waterproof cement that will dry to a firm but pliable mass, or provide a mechanically adjustable segmented elastomeric material. Penetrations of fire-rated wall shall be sealed with a listed firestopping material as described in the firestopping specification.

1. Sleeves in Masonry and Concrete Walls: Provide hot-dip galvanized steel, ductile-iron, or cast-iron sleeves. Core-drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in the core-drilled hole are completely grouted smooth.

2. Sleeves in Other Than Masonry and Concrete Walls: Provide 26 gauge galvanized steel sheet.

PART 3. - EXECUTION

3.1 INSTALLATION

A. Installation, workmanship, fabrication, assembly, erection, examination, inspection and testing shall be in accordance with NFPA 13, except as modified herein. Install piping straight and true to bear evenly on hangers and supports. Do not hang piping from plaster ceilings. Keep the interior and ends of new piping and existing piping affected by Contractor's operation thoroughly cleaned of water and foreign matter. Keep piping systems clean during installation by means of plugs or other approved methods. When work is not in progress, securely close (cap) the open ends of any piping to prevent entry of water and foreign matter. Inspect piping before placing into position.

B. Field Changes: Do not make field changes in the piping layout or pipe sizes without the prior approval of the Portland Jetport.

C. Welding: Perform all welding in the shop; field welding must be approved by the Portland Jetport before they occur.

D. Painting: Painting shall meet the requirements of the Painting and Finishing specification. In addition, exposed threads of all ferrous pipe shall be given one coat of corrosion-resistant paint at the time of installation. All piping and other metal that is exposed in unfinished areas, except sprinklers, bronze, chrome or brass fittings, and moving parts shall be painted red. Concealed piping shall have 4 inch wide red painted bands placed no more than 10 feet on center and on each side of wall penetrations.

3.2 FIRESTOPPING

A. General: Firestop all holes for conduit, piping, or other penetrations which pass through floor slabs, fire-rated walls, partitions with fire-rated doors, vertical service shafts, or any fire-rated assemblies in accordance with firestopping specification.

3.3 TESTING

A. Preliminary Testing: Hydrostatically test wet-pipe sprinkler system piping, as required by NFPA 13 in the presence of the Portland Jetport. The Contractor and an authorized representative from each supplier of equipment shall be in attendance at the preliminary test. When tests are completed and corrections made, submit a signed and dated material and test certificate similar to that specified in NFPA 13, with a request for formal inspection and tests.

END OF SECTION 211313