

Part 1 General

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 – Submittal Procedures. Submit hydraulic design data, system operation and sprinkler layout drawings and details to the Departmental Representative for review prior to fabrication. All information to be to applicable NFPA Standards.
- .2 Shop drawings; submit drawings stamped and signed by professional engineer registered or licensed in Province of New Brunswick, Canada.
- .3 Shop drawings to show:
 - .1 Mounting arrangements.
 - .2 Operating and maintenance clearances.
- .4 Shop drawings and product data accompanied by:
 - .1 Detailed drawings of bases, supports, and anchor bolts.
 - .2 Acoustical sound power data, where applicable.
 - .3 Points of operation on performance curves.
 - .4 Manufacturer to certify current model production.
 - .5 Certification of compliance to applicable codes.
 - .6 Seismic calculations for equipment and supports, for project location.
- .5 Closeout Submittals:
 - .1 Provide operation and maintenance data for incorporation into manual as specified in Section 01 78 00 – Closeout Submittals.
 - .2 Operation and maintenance manual approved by, and final copies deposited with, Departmental Representative before final inspection.
 - .3 Operation data to include:
 - .1 Control schematics for systems including environmental controls.
 - .2 Description of systems and their controls.
 - .3 Description of operation of systems at various loads together with reset schedules and seasonal variances.
 - .4 Operation instruction for systems and component.
 - .5 Description of actions to be taken in event of equipment failure.
 - .6 Valves schedule and flow diagram.
 - .7 Colour coding chart.
 - .4 Maintenance data to include:
 - .1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
 - .2 Data to include schedules of tasks, frequency, tools required and task time.

- .5 Performance data to include:
 - .1 Equipment manufacturer's performance datasheets with point of operation as left after commissioning is complete.
 - .2 Equipment performance verification test results.
 - .3 Special performance data as specified.
 - .4 Testing, adjusting and balancing reports.
- .6 Approvals:
 - .1 Submit 2 copies of draft Operation and Maintenance Manual to Departmental Representative for approval. Submission of individual data will not be accepted unless directed by Departmental Representative.
 - .2 Make changes as required and re-submit as directed by Departmental Representative.
- .7 Additional data:
 - .1 Prepare and insert into operation and maintenance manual additional data when need for it becomes apparent during specified demonstrations and instructions.
- .8 Site records:
 - .1 Departmental Representative will provide sets of white prints as required for each phase of work. Mark changes as work progresses and as changes occur. Include changes to existing mechanical systems, control systems and low voltage control wiring.
 - .2 Transfer information weekly to record drawing set to show work as actually installed.
 - .3 Use different colour waterproof ink for each service.
 - .4 Make available for reference purposes and inspection.
- .9 As-built drawings:
 - .1 Prior to start of Testing, Adjusting and Balancing, finalize production of as-built drawings.
 - .2 Identify each drawing in lower right hand corner in letters at least 12 mm high as follows: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (Date).
 - .3 Submit to Departmental Representative for approval and make corrections as directed.
 - .4 Perform testing, adjusting and balancing using as-built drawings.
 - .5 Submit completed reproducible as-built drawings with Operating and Maintenance Manuals.
- .10 Submit copies of as-built drawings for inclusion in final TAB report.

1.2 QUALITY ASSURANCE

- .1 Quality Assurance: in accordance with Section 01 45 00 – Quality Control.
- .2 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29 – Health and Safety Requirements.

1.3 MAINTENANCE

- .1 Furnish spare parts in accordance with DIVISION 01 - GENERAL REQUIREMENTS.
- .2 Provide one set of special tools required to service equipment as recommended by manufacturers.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Waste Management and Disposal:
 - .1 Construction/Demolition Waste Management and Disposal: separate waste materials for recycling in accordance with Section 01 74 22 – Construction Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

- .1 Materials and products in accordance with Section 01 61 00 – Common Product Requirements.

2.2 FIRE STOPPING

- .1 Information for pipe sheets is for reference only, all fire stopping work is to be completed by dedicated fire stop trades to requirements of Section 07 84 00 – Fire Stopping.

Part 3 Execution

3.1 PAINTING REPAIRS AND RESTORATION

- .1 Do painting in accordance with Architectural Specifications.
- .2 Prime and touch up marred finished paintwork to match original.
- .3 Restore to new condition, finishes which have been damaged.

3.2 CLEANING

- .1 Clean interior and exterior of all systems including strainers.

3.3 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.

- .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.4 DEMONSTRATION

- .1 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .2 Use operation and maintenance manual, as-built drawings, and audio visual aids as part of instruction materials.
- .3 Instruction duration time requirements as required for appropriate sections.
- .4 Departmental Representative may record these demonstrations on video tape for future reference.

3.5 PROTECTION

- .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .2 National Fire Protection Association (NFPA)
 - .1 NFPA 10, Standard for Portable Fire Extinguishers.
 - .2 NFPA 13, Standard for the Installation of Sprinkler Systems.
 - .3 NFPA 1963, Fire Hose Connections.
 - .4 NFPA 24, Installation of Private Fire Service Mains and Their Appurtenances.

1.2 DESIGN PERFORMANCE REQUIREMENTS

- .1 Perform flow test to determine flow data for hydraulic design calculations. Parks Canada has advised that the anticipated flow data is approximately 3500 Litres/min at 560kPa at the existing compound fire hydrant.
- .2 Provide dry pipe type sprinkler system.
- .3 Interface system with building fire and smoke alarm system.
- .4 Provide fire department connections.
- .5 Design, calculate, and lay out sprinkler system, to local codes and NFPA.
- .6 Sprinkler areas of building unless strictly prohibited by codes or standards.
- .7 Sprinkler system to provide fire sprinkler protection for entire area.
- .8 Design and install system in accordance with NFPA.
- .9 Base sprinkler system design on hydraulic calculations, and other provisions specified.

1.3 SUBMITTALS

- .1 Submit shop drawings, product data, hydraulic calculations and sprinkler layout drawings/sections to authority having jurisdiction for approval.
- .2 Submit operation and maintenance data for equipment and components for incorporation into manual.
- .3 Test reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

Part 2 Products

2.1 MATERIALS

- .1 Materials: to NFPA and local authorities having jurisdiction.

2.2 SPRINKLER HEADS

- .1 Escutcheon: standard and semi-recessed, chrome plated, and escutcheon plate of same material. Provide head guard in exposed areas.
- .2 Fusible link: temperature rated for specific area hazard.

2.3 SPRINKLER PIPING

- .1 Piping: size hydraulically.
- .2 Sprinkler alarm valve: check type valve, to automatically actuate water motor alarm with test and drain valve.
- .3 Flooding deluge valve: gate type valve, pneumatically actuated with water motor alarm and electric alarm, with alarm testing trim.
- .4 Fire alarm: electrically operated gong with pressure alarm switch.
- .5 Water flow switch: suitable for horizontal or vertical mounting, with contacts compatible for use with alarm control system.
- .6 Fire Department Connections:
 - .1 Outlet: flush mounted wall type, thread size to suit fire department requirements, internal lug quick-connect, with threaded dust cap and chain of matching material and finish.
 - .2 Capacity: required by local codes.
 - .3 Label: "Sprinkler - Fire Department Connection".

2.4 SPRINKLER EQUIPMENT

- .1 Pressure Maintenance Pump:
 - .1 Type: close coupled motor and positive displacement pump unit.
 - .2 Performance: flow and pressure required to perform design requirements, plus 30% additional capacity.
 - .3 Motor: capable of additional 30% of design load, open drip proof, permanently lubricated.
 - .4 Accessories: flexible hose connections, inlet strainer, relief valve, steel mounting plate.
 - .5 Operation: automatic, with manual override.
- .2 Air compressor: sufficient size and capacity to maintain design requirements plus 30%, with motor, motor starter, safety valves, check valves, air maintenance device incorporating electric pressure switch and unloader valve.

2.5 MULTI-PURPOSE DRY CHEMICAL FIRE EXTINGUISHERS

- .1 Stored pressure rechargeable type with hose and shut-off nozzle, ULC labelled for A, B and C class protection.
 - .1 Sizes: 2.25 and 4.5 kg as indicated on the drawings.

2.6 EXTINGUISHER BRACKETS

- .1 Type recommended by extinguisher manufacturer.

2.7 EXTINGUISHER CABINETS

- .1 Semi-recessed type as indicated, constructed of 1.6 mm thick steel, 180 degrees opening door of 2.5 mm thick steel with latching device.
- .2 Cabinet to maintain fire resistive rating of construction in which they occur.
- .3 Cabinet door: with 5 mm full glass panel.
- .4 Finish:
 - .1 Tub: prime coated.
 - .2 Door and frame: No.4 satin finish stainless steel.

2.8 EXTINGUISHER IDENTIFICATION

- .1 Identify extinguishers in accordance with recommendations of ANSI/NFPA 10.
- .2 Attach bilingual label to extinguishers, indicating month and year of installation. Provide space for service dates.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 PREPARATION

- .1 Arrange for permits, inspections and tests.

3.3 INSTALLATION

- .1 Do not use plug-in cord type supervisory devices for valve supervision.
- .2 Provide sprinkler risers with adequate posts or guards to protect from physical damage.
- .3 Provide alarm valve with necessary trim, including low pressure alarm switch and automatically activated excess pressure pump.
- .4 Provide fire alarm annunciator panel complete with indication of various fire zones and trouble signal.
- .5 Provide piping to drain points so that entire system can be drained.
- .6 Run piping parallel to building structure.
- .7 Provide sprinklers above and below false ceilings.
- .8 Install or mount extinguishers in cabinets or on brackets as indicated in accordance with NFPA 10.

3.4 VERIFICATION

- .1 Operate equipment and verify that performance requirements specified in this section has been achieved.
- .2 Perform periodic site inspection visits by manufacturer's representative to verify that installation complies with manufacturer's instructions:

- .1 After delivery and storage of products.
- .2 When preparatory work upon which product installation depends is complete.
- .3 Twice during installation progress at 25% and 60% complete.
- .4 After installation and cleaning is complete.

END OF SECTION