

**TERMS OF REFERENCE AND CONSTRUCTION SPECIFICATIONS
FOR
DESIGN, SUPPLY AND INSTALLATION OF TWO
SPRINKLER SYSTEMS AT DE LA PLAGNE & DUHAGET BUILDINGS
FORTRESS OF LOUISBOURG, NOVA SCOTIA**

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1.0 Description of Project

1.1 Purpose:

The purpose of this Terms of Reference is for Parks Canada Agency (PCA) to acquire a Contractor that will provide the design, materials and installation for two new dry pipe sprinkler systems at the De la Plagne and Duhaget buildings at the Fortress of Louisbourg in Louisbourg, Nova Scotia.

- 1.2 Title of Project:** De la Plagne & Duhaget Sprinkler Systems
1.3 Project Location: 259 Park Service Road, Louisbourg, NS
1.4 Client / User: PCA, Cape Breton Field Unit

2.0 Background

The project is to design, supply, install, inspect and test a new sprinkler system at both the De la Plagne and Duhaget buildings, Louisbourg, NS. These buildings which require a new sprinkler system are both period construction buildings on the interior and exterior. The Duhaget building is completely used for interpretation while De la Plagne is used for interpretation and office space. Extreme care is required during the installation of sprinkler systems in both of these buildings and the installation of sprinkler systems in the period interpretation section(s) of the buildings must be totally camouflaged into the surrounding structure where at all possible.

The Contractor is not permitted to drill into or make any holes in existing timber beams in this project unless authorized by Department Representative which will only be granted in exceptional circumstances.

All sprinkler piping and fittings to be galvanized.

De la Plagne building is a two storey building with a full attic in use and a basement which must be provided with a complete new sprinkler system installed as part of this project all four levels of the building must be sprinklered. Appendix A shows drawings for the existing De la Plagne building.

The sprinkler piping for the first floor of this building must be completely disguised as it is used as a period building open to the public. Areas which are open to the visitor including the stair case must ensure that sprinkler system and heads are disguised even on the 2nd floor. The second floor of this building is primarily office space and sprinkler system installation should involve minimal intrusion into the office space. The sprinkler piping for the main floor of the building should be disguised as much as possible using the existing exposed beams to disguise in combination with dry drops.

The Duhaget building is a two story building with a full attic and basement that must be provided with a complete new sprinkler system. The first and second floors of the Duhaget building are used for interpretation so the sprinkler system must be totally disguised. The

attic in this building is not in use so the attic floor can be used to run sprinkler piping in combination with dry pendant heads to protect the 2nd floor. Appendix B shows drawings for the existing Duhaget building. All four floors of the Duhaget building must be provided with adequate sprinkler protection.

3.0 Key Objectives

The contractor must provide design, construction drawings, specifications, shop drawings, site supervision, clean-up, contract administration sprinkler testing to the completion of this project. The contractor must also provide all labour, equipment and materials required to fully install a new operational sprinkler system at the De la Plagne and the Duhaget buildings. The Contractor will provide a complete copy of test results on the sprinkler system certified by the Engineering consultant that designed the system.

3.1 Quality

The Agency expects the Supplier to maintain a high standard of engineering design, based upon recognized design principles. All design elements, planning, engineering and architecture must be fully coordinated, and consistent in adherence to good design principles. The engineering drawings for this project must be approved by the Fire Commissioners office in addition to being a fully stamped set of engineering drawings. The engineered drawings must be stamped by an Engineer licensed to practice engineering in the province of Nova Scotia. The client at the completion of the project will be provided with both a digital and hard copy of the drawings.

3.2 Code Compliance

Codes, regulations, by-laws and decisions of authorities having jurisdiction will be observed. The Contractor shall comply with all other jurisdictions appropriate to the project.

4.0 Project Requirements

The Contractor will be responsible for the production of drawings and specifications suitable to install **dry pipe sprinkler systems** at the De la Plagne and Duhaget Buildings at the Fortress of Louisbourg.

The Scope of Work is provided as part of this package for information only. Verification of measurements, site conditions and design requirements are the full responsibility of the Contractor. It is also the Contractors full responsibility to produce AutoCAD drawings for this project, Parks Canada will not provide this information but will receive the digital asbuilt drawings from the Contractor at the completion of the project. The Contractor shall examine site conditions prior to developing a design build proposal in order to ensure that details are appropriate to existing conditions.

The Contractor is responsible for all related structural mechanical and electrical engineering along with any other sub-consultants required.

Design consultants and engineers engaged by the Contractor must be fully qualified, accredited professionals, licensed to practice in Nova Scotia. The Consultant's must be identified in the Contractor's proposal.

Up to 2 drawing reviews by Parks Canada / Fire Commissioners Office may be required in the design development stage. The Contractor is responsible for obtaining any and all inspections and permits. Contractor is responsible to obtain the Fire Commissioners office approval for the complete set of construction drawings.

System is to be designed and installed to meet or exceed all applicable codes and standards including, but not limited to: the National Building Code of Canada (2010), the National Fire Code, Canada Labour Code, The Nova Scotia Standard Specification for Municipal Services, CSA and The Nova Scotia Building Code and Regulations.

Contractors must be prepared to submit a detailed design / construction schedule and demonstrate that they can meet the deadlines on this schedule.

Contractor is required to submit a site specific health and safety plan, and an environmental protection plan.

The Contractor is cautioned that this is a National Historic Site and every effort should be made to incorporate the sprinkler system with minimal visual impact while still achieving compliancy with current codes and standards.

The Contractor is not permitted to cut any beams or other structural components within the National Historic building without prior consent from the Owner.

Painting of pipe will be by Others

Wiring of system monitoring devices (tamper switches, alarm switches, etc.) is by others.

Contractor to maintain fire access / controls throughout the duration of the project.

Execute work with least possible interference to building operations, occupants, and the public. All work to be completed starting upon contract award, sometimes after November 19th, and must be completed by February 28th, 2014.

Existing sprinkler system water supply is 150mm Ø capped water main that enters their respective buildings as shown in Appendix A and Appendix B.

5.0 Design and Shop Drawings

The Contractor shall provide two sets of design drawings for each of the new **dry pipe sprinkler** systems. These drawings are to be stamped by a Professional Engineer who is registered and licensed to practice in the province of Nova Scotia. These drawings must be reviewed and approved by the Parks Canada Agency and the Fire Commissioners Office. Approval will not release the engineer whose professional stamp appears on the

drawings or the Contractor from responsibility for conformity to specifications, codes, correct details, or adequacy design.

The Contractor shall allow a minimum of fourteen (14) days for review each shop drawing/submission, etc.

The Contractor is to work closely with the Departmental Representative to ensure total coordination of all design aspects of the project.

6.0 Execution of the Work

In general, the work shall be carried out in accordance with the National Fire Code and National Building Code of Canada (NBCC).

The installation is to be carried out in accordance with the drawings and specifications submitted and approved for construction.

Qualified and experienced trades people shall be employed in the erection and installation of the sprinkler system. The construction and erection work shall be executed under the continuous supervision and direction of a competent supervisor.

The Contractor will provide on-site finished, quality products as specified and shown on the shop drawings. Burning, cutting, welding, or other on-site modifications to the existing building structure will not be permitted unless approved by the Departmental Representative.

Once started, the installation shall be continuous until completion.

The Contractor is to obtain approval from the Departmental Representative for any shutdown or interruption of active service, facility, or operations in the work area. The contractor shall adhere to any approved interruption schedule.

The Contractor shall keep the site free from debris and shall store his equipment and material on site so as to not interfere with the operations on the site. Work is to be completed between contract award, sometimes after November 19, 2013, and February 28th, 2014, during this time the Fortress of Louisbourg period site is closed to visitors and the contractor will be permitted to drive vehicles / equipment onsite and have access to the building. However, in the event there are any delays and the contractor has to work into the visitor season the Contractor will not be permitted to bring vehicles onto the site during operating hours.

The Contractor shall be responsible for the storage and security of his own materials and equipment. The Agency will not be held liable for any materials or equipment which are stolen or damaged at the site.

The Contractor shall be responsible for temporary power and water.

The Contractor shall be responsible for the removal and disposal of all materials and debris remaining after the work has been completed and the overall cleanup of the site.

Total performance for the project occurs when the sprinkler system is complete and the Departmental Representative has issued notification of acceptance. Issuance of a certificate of Total Performance will require written certification from the Contractor's design engineer that the structure has been constructed and tested in accordance with the approved design/working drawings and specifications.

Contractor to maintain fire access / control throughout the duration of the project.

A final inspection of the structure and written report to the Departmental Representative must be undertaken by the manufacturer upon completion of the work. The Contractor is required to coordinate the scheduling of the final inspection with the Departmental Representative.

Upon completion of the project, two (2) copies of an Operation and Maintenance Manual prepared and written by the Manufacturer shall be supplied to the Owner outlining recommended maintenance, repair, and inspection procedures for the structure.

At the completion of the project the Contractor will be required to provide a training seminar to Parks Canada on the new systems operation.

7.0 General Conditions

- 7.1 The Contractor shall use the best available methods of performing the work and shall employ only skilled and competent staff thereon, who will be under the supervision of a senior member of the Contractor's staff.
- 7.2 Drawings and documents or copies thereof required for the work shall be exchanged between the Contractor and the Agency on a reciprocal basis. All drawings and documents prepared by the Contractor for the Agency shall be the property of the Agency, free from all claims by the Contractor of any nature and kind whatsoever.
- 7.3 The Agency may, in writing, at any time increase/decrease or otherwise alter the whole or any part of the work. Payment for the contract adjustment will be subject to price negotiation.
- 7.4 The Contractor agrees to obtain the consent of the Agency before publishing or issuing any account of the project.
- 7.5 Drawings shall be prepared in SI units in standard size sheets using the title block and format acceptable to the Agency

- 7.6 Drawings shall be produced using CADD and the final working drawings shall be accompanied by the appropriate electronic format acceptable for use by the Agency. No other systems are acceptable.
- 7.7 The design must be completed under the supervision of Engineers in the Province of Nova Scotia for their respective portions of the work.
- 7.8 Where deliverables and submissions include reports, summaries drawings, specifications, plans or schedules, four (4) hard copies shall be provided plus one (1) copy in electronic format unless otherwise specified.
- 7.9 Unless otherwise arranged with the Departmental Representative, the Contractor shall communicate with the Departmental Representative only.
- 7.10 The Contractor shall not respond to requests for project related information or questions from the media. Such inquiries shall be directed to the Departmental Representative.
- 7.11 The Contractor shall not be entitled to payment in respect to cost incurred by the Contractor in remedying errors and omissions in the services that are attributable to the Contractor, the Contractor's employees, or persons for whom the Contractor has assumed responsibility in performing the services.

8.0 PROPOSAL SUBMISSION REQUIREMENTS

Proposal Submission shall address all items as follows:

- 8.1 A list of key personnel by name including sub-Contractors and supporting staff.
- 8.2 A detailed schedule showing the work to be completed from the day of the award.

9.0 Agency Departmental Representative

Information to be provided once the contract is awarded.

10.0 FOL - De la Plagne & Duhaget Sprinklers Construction Specifications**Table of Contents**

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APPENDIX A DE LA PLAGNE BUILDING PLANS

APPENDIX B DUHAGET BUILDING PLANS

PART 1 - GENERAL

1.1 REFERENCES

- .1 National Building Code of Canada (NBC) 2010 including all amendments up to bid closing date
- .2 National Fire Code of Canada
- .3 Provincial Government Act and Regulations; including, but not limited to:
 - .1 Provincial Building Code Act
 - .2 Occupational Health and Safety Act revised Statutes of Nova Scotia 1996, Chapter 7 and regulations
 - .3 Worker's Compensation Act
 - .4 Fire Prevention Act
 - .5 Dangerous Goods Transportation Act

1.2 REFERENCE
STANDARDS

- .1 Where edition date is not specified, consider that references to manufacturer's and published codes, standards and specifications approved by the issuing organization, current at the date of this Specification.
- .2 Reference Standards and specifications are quoted in this Project Manual to establish minimum standards. Work which in quality exceeds these minimum standards shall be considered to conform.
- .3 Should the Contract Documents conflict with specified reference standards or specifications the General Conditions of the Contract shall govern.
- .4 Where reference is made to manufacturer's directions, instructions or specifications they shall include full information on storing, handling, preparing, mixing, installing, erecting, applying, or other matters concerning the materials pertinent to their use and their relationship to materials with which they are incorporated and written to suit this specific project.
- .5 Have a copy of each code, standard and specification and manufacturer's directions, instructions and specifications, to which reference is made in this Project Manual, always available at construction site, when requested by Departmental Representative.
- .6 Standards, specifications, associations, and regulatory bodies are generally referred to throughout the project manual by their abbreviated designations.

1.3 WORK COVERED BY
CONTRACT DOCUMENTS

- .1 Work of this Contract comprises of the complete design and construction of two new sprinkler systems for the DeLaPlange and Duhaget buildings in the Parks Canada

Fortress of Louisbourg site, 259 Park Service Road, Louisbourg, NS, a complete description of the scope of work is included in the attached specifications along with drawings of DeLaPlange building is attached in Appendix A and Duhaget building in Appendix B.

Both of the buildings in this contract DeLaPlange and Duhaget are period interpretation buildings that are open to the public to visit during the operating season. It is critical that the contractor makes all effort to disguise all sprinkler system components during installation and the absolute minimum amount of piping is located in the public areas.

Contractor must provide all labour, materials, equipment, etc. to design, supply and install the two new sprinkler systems.

A site visit will be hosted during the tender period to show the above site locations and conditions.

1.4 CONTRACT METHOD .1 Construct Work under design-build stipulated price contract.

1.5 CODES/STANDARDS .1 Meet or exceed requirements of:
 .1 contract documents
 .2 specified standards, codes and referenced documents.

1.6 TOLERANCES .1 Meet or exceed requirements of:
 .1 Unless ~~accepted~~ ~~acceptable~~ tolerances are otherwise specified in applicable standards, codes and referenced documents.
 .1 "Plumb and level" shall mean plumb or level within 3mm in 3m (1/8" in 10'0")
 .2 "Square" shall mean not in excess of 10 seconds less or greater than 90.
 .3 "Straight" shall mean within 3mm under a 3m (1/8" under a 10' -0") long straightedge.

1.7 WORK SEQUENCE .1 Provide at start-up meeting or within 10 Working Days after award of contract, whichever occurs first, schedule showing anticipated progress stages and final completion of work within time period required by Contract Documents
 .2 Provide in form acceptable to Consultant, within 10 working days after Contract award, schedule showing dates for:
 .1 Submission of shop drawings.

- .2 Delivery of items of equipment and materials to each site.
- .3 Final completion date within time period required by Contract documents.

- .3 Interim reviews of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule updated by Contractor in conjunction with and to approval of Departmental Representative.

1.8 CONTRACTOR USE OF PREMISES

- .1 Co-ordinate use of premises under direction of Departmental Representative.
- .2 The Parks Canada Fortress of Louisbourg site is not open to the public during the projected work period; however, some visitors may arrive by scheduled tours. The contractor will be expected to ensure visitors are accommodated and their safety is respected during these scheduled visits. The Contractor will also attempt to confine all their work and work materials to the building they will be installing the new sprinkler system in and will ensure fire controls are in place.
- .3 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.9 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.10 SETTING OUT OF WORK

- .1 Assume full responsibility for design and construction of the Work and execute complete layout of work to locations, lines and elevations as indicated in the program.
- .2 Provide devices needed to design, layout and construct work.

1.11 EXISTING SERVICES

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to

existing services, give Departmental Representative 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, and vehicular traffic.

- .3 Provide alternative routes for personnel and vehicular traffic if required.
- .4 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
- .5 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary services when directed by Departmental Representative to maintain critical building systems.
- .7 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .8 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .9 Record locations of maintained, re-routed and abandoned service lines.

1.12 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Documents.
 - .2 Contractor's Consultant's Drawings and Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 Change Orders.
 - .6 Other Modifications to Contract.
 - .7 Field Test Reports.
 - .8 Copy of Approved Work Schedule.
 - .9 Health and Safety Plan and Other Safety Related Documents.
 - .10 Manufacturers' installation and application instructions
 - .11 Other documents as specified.

1.13 ADDITIONAL
DRAWINGS

- .1 Departmental Representative may furnish additional drawings for clarification of the Contract Documents. These additional drawings have same meaning and intent as if they were included with plans referred to in Contract drawings.

1.14 RECORD
DOCUMENTS

- .1 Record information on a set of opaque drawings and in a copy of a Project Manual.
- .2 Record information concurrently with construction progress. Do not conceal work until required information is recorded.
- .3 Specifications: legibly mark each item to record actual construction including manufacturer, trade name, and catalog number of each project actually installed.
- .4 Other Documents: Maintain manufacturer's field test records and any other documents required by individual contract documents.

PART 2 - PRODUCTS2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION3.1 NOT USED

- .1 Not used.

Part 1 General

1.1 EXISTING SERVICES

- .1 Provide for staff or scheduled visitor visits for the duration of the construction.

1.2 USE OF THE WORK SITE

- .1 The Work Site shall be specified by PCA and shall only be used for the purposes of the Work. The Work Site will be made available by PCA to the Contractor for its non-exclusive use for the duration of the Work, unless otherwise provided in the Contract Documents. The Contractor's work or equipment shall not exceed the contract boundaries.
- .2 The Contractor shall maintain adequate drainage at the Worksite.
- .3 The Contractor shall keep the Work Site clean and free from accumulation of waste materials and rubbish regardless of source.
- .4 Damage to the Work Site caused by the Contractor shall be repaired by the Contractor at their expense.

1.3 UTILITIES

- .1 The Contractor shall coordinate an on-site inspection with the Agency Representative to locate any utility prior to starting work. The Contractor shall be responsible for work related to the protection or relocation of all utilities.
- .2 The locations of Utilities, if any, shown or not shown are subject to verification by the Contractor.
- .3 Whenever working in the vicinity of Utilities, the Contractor shall locate such Utilities and expose those that may be affected by the Work, using hand labour as required.
- .4 The Contractor shall immediately report any damage to Utilities to the Agency Representative and to the Utility company or authority affected, and shall promptly undertake such remedial measures as are necessary at no additional cost to the Owner.

1.4 SURVEY OF EXISTING PROPERTY CONDITIONS

- .1 Submission of tender is deemed to be confirmation that the Contractor has inspected the site and is conversant with all conditions affecting execution and completion of work.
- .2 The Contractor shall regularly monitor the condition of the Work Site and of property on and adjoining the Work Site throughout the construction period, and shall immediately notify the Owner if any deterioration in condition is detected. Such monitoring shall cover all pertinent features and property including, but not limited to, buildings, structures, roads, walls, fences, slopes, sewers, culverts and landscaped areas.

1.5 PROTECTION OF PERSONS AND PROPERTY

- .1 The Contractor shall comply with all applicable safety regulations of the Workers' Compensation Board of Nova Scotia including, but not limited to, WCB's Industrial Health and Safety Regulations, Industrial First Aid Regulations, and Workplace Hazardous Materials Information System Regulations.
- .2 The Contractor shall take all necessary precautions and measures to prevent injury or damage to persons and property on or near the Work Site.
- .3 The Contractor shall promptly take such measures as are required to repair, replace or compensate for any loss or damage caused by the Contractor to any property or, if PCA so directs, shall promptly reimburse to PCA the costs resulting from such loss or damage.

1.6 USE OF PUBLIC AREAS

- .1 The Contractor shall ensure that its vehicles and equipment do not cause nuisance in public areas. All vehicles and equipment leaving the Work Site and entering public roadways shall be cleaned of mud and dirt clinging to the body and wheels of the vehicle. All vehicles arriving at or leaving the Work Site and transporting materials shall be loaded in a manner which will prevent dropping of materials or debris on the roadways, and where contents may otherwise be blown off during transit such loads shall be covered by tarpaulins or other suitable covers. Spills of materials in public areas shall be removed or cleaned immediately by the Contractor at no cost to the Owner. All activities shall be in accordance with Section 01 35 43 - Environmental Procedures.

1.7 MEETINGS

- .1 The Work includes attending meetings between the Contractor and the Agency Representative. The meetings will be called and chaired by the Contractor. The Contractor shall be represented at such meetings to the satisfaction of the Agency Representative.
- .2 The Departmental Representative will schedule an initial meeting to be held on site after award notification.
- .3 Cost of attending the above meetings shall be considered incidental to the contract price proposal.

1.8 WASTE DISPOSAL

- .1 All surplus, unsuitable and waste materials shall be removed from the job site to appropriate sites outside of the Fortress of Louisbourg National Historic Site.
- .2 Deposit of any construction debris into any waterway is strictly forbidden.
- .3 Cost for Waste Disposal described above shall be considered incidental to the contract price; no additional payment will be made.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

- .1 Mobilization and Demobilization consists of preparatory work and operations including but not limited to, those necessary for the movement of personnel, equipment, buildings, shops, offices, supplies and incidentals to and from the project sites.

1.2 MEASUREMENT PROCEDURES

- .1 This Work shall be incidental to contract and will not be measured for payment.

END OF SECTION

Part 1 General

1.1 MEASUREMENT PROCEDURES

- .1 This Work shall be incidental to the contract price proposal.

1.2 COORDINATION

- .1 Perform coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities, and construction Work, with progress of Work of other Contractors, and Work by Owner.

1.3 PROJECT MEETINGS

- .1 Attend weekly project meetings throughout progress of Work and provide information as determined by the Agency Representative. Meetings shall be chaired by the Contractor who will prepare the minutes of the meetings.
- .2 Coordinate field engineering and layout work with the Agency Representative.

1.4 ON-SITE DOCUMENTS

- .1 Maintain at job site, one copy each of the following:
 - Contract Drawings.
 - Safety Plan.
 - Environmental Screening Document.
 - Copy of accepted Work schedule and most recent updated schedule.
 - Labour conditions and wage schedules.
- .2 The Owner will not be responsible for any construction delays resulting from delays in submission acceptance if the submittal dates shown in the Submittal Schedule are not achieved.

1.5 PROJECT SCHEDULES

- .1 Submit construction progress schedule to Departmental Representative coordinated with Owner's project schedule.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Province of Nova Scotia
 - .1 Occupational Health and Safety Act, S.N.S. [1996].

1.2 SUBMITTALS

- .1 Make submittals in accordance with agreed upon practice.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 3 days after receipt of comments from Departmental Representative.
- .8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.3 FILING OF NOTICE

- .1 File Notice of Project with authorities prior to beginning of Work.

1.4 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

1.6 REGULATORY REQUIREMENTS

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.7 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes,

regulations, and ordinances, and with site-specific Health and Safety Plan.

1.9 COMPLIANCE REQUIREMENTS

- .1 Comply with Workers Compensation Act.
- .2 Comply with Occupational Health and Safety Act, Occupational Safety General Regulations, NS Reg.
- .3 Comply with Provincial Building Code Act.
- .4 Comply with National Building Code 2005, Part 8
- .5 Comply with National Fire Code of Canada
- .6 Comply with Dangerous Goods Transportation Act

1.10 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Nova Scotia having jurisdiction and advise Departmental Representative verbally and in writing.

1.11 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have site-related working experience.
 - .2 Have working knowledge of occupational safety and health regulations.
 - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
 - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
 - .5 Be on site during execution of Work [and report directly to and be under direction of site supervisor.

1.12 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Nova Scotia having jurisdiction, and in consultation with Departmental Representative.

1.13 CORRECTION OF
NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 BLASTING

- .1 Blasting or other use of explosives is not permitted

1.15 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not used.

PART 1 – GENERAL

1.1 MINIMUM STANDARDS

- .1 Conform to the following standards:
 - .1 FCC 403(M)-1985, Sprinkler Systems.
 - .2 NFPA 13-2010, Standard for the Installation of Sprinkler Systems.
 - .3 National Building Code of Canada 2005.
 - .4 National Fire Code of Canada 2005.

1.2 FIRE COMMISSIONER'S INSPECTION AND TEST

- .1 Notify the Departmental Representative that the installation of fire protection system is complete. Provide certificate that components are compatible and the systems conform to the requirements of the specifications, applicable codes and standards. A copy of the contractor's Material and Test Certificate shall be submitted prior to the final inspection.
- .2 Fire protection systems shall be subject to the final inspection and test of the Fire Commissioner of Canada or their authorized representative. Work shall not be considered complete until a satisfactory inspection report from the Fire Commissioner of Canada is obtained.

1.3 SHOP DRAWINGS AND PRODUCT DATA SHEETS

- .1 Submit shop drawings and product data sheets in accordance with Sections 01 11 01 for review before commencing work.
- .2 Shop drawings shall bear the stamp of a Registered Professional Engineer, registered in the Province of Nova Scotia.
- .3 Submit hydraulic calculations for review. Hydraulic calculations derived by computer shall be verified by the Insurers Advisory Organization Inc. (IAO) prior to submittal to Departmental Representative for review.
- .4 Shop drawings and product data sheets shall include the following equipment:
 - .1 Sprinkler system and components.
 - .2 Hydraulic calculations.

1.4 ENGINEERING DESIGN CRITERIA

- .1 Design sprinkler system for DeLaPland and Duhaget in accordance with NFPA 13, using following parameters:
 - .1 Hazard:

- .1 Light hazard for office areas and ordinary hazard group 1 for storage area unless noted otherwise.
- .2 Pipe size and layout:
 - .1 Hydraulic design.
 - .2 Sprinkler head layout: to NFPA 13.
- .3 Water supply:
 - .1 Conduct flow and pressure test of water supply in vicinity of project to obtain criteria for bases of design in accordance with NFPA 13.
- .4 Zoning:
 - .1 System zoning as indicated.

PART 2 - PRODUCTS

2.1 PIPE, FITTINGS AND VALVES

- .1 Pipe: ferrous to NFPA 13 for Sprinkler Systems.
- .2 Fittings and joints to be ferrous, screwed, welded, flanged or roll grooved to NFPA 13 for Sprinkler Systems.
- .3 Valves:
 - .1 ULC listed and labelled for fire protection service.
 - .2 NPS 2 and smaller to be bronze, screwed ends, OS&Y gate.
 - .3 NPS 2½ or over to be cast iron, flanged or roll grooved ends, indicating butterfly valve.
 - .4 Swing check valves.
 - .5 Ball drip.
- .4 Pipe hangers to be ULC listed for fire protection services.
- .5 Drain valve to be NPS 1 complete with hose end, cap and chain.

2.2 SPRINKLERS

- .1 Provide standard upright type sprinklers of current manufacture.
- .2 Sprinklers shall be ULC listed and labelled.
- .3 Provide minimum 12 mm nominal diameter discharge orifice.

2.3 ALARM CHECK VALVE

- .1 Alarm check valve to NFPA 13 and ULC listed for fire service.

2.4 SUPERVISORY SWITCHES

- .1 General: to NFPA 13 and ULC listed for fire service.
- .2 Valves:
 - .1 Mechanically attached to valve body, with normally open and normally closed contacts and supervisory capability.
- .3 Flow switch type:
 - .1 With normally open and normally closed contacts and supervisory capability.
- .4 Pressure alarm switch:

- .1 With normally open and normally closed contacts and supervisory capability.

2.5 DRY PIPE VALVE

- .1 ULC listed.
- .2 Cast or ductile iron, flanged or grooved end type, sized to suit water main.
- .3 Components:
 - .1 Accelerator.
 - .2 Air maintenance device with low pressure alarm.
 - .3 Alarm pressure switch with supervisory capability.
 - .4 Pressure gauges.
 - .5 Drain valve.
 - .6 Test valve with associated piping.
 - .7 Shut off valve - OS & Y with tamper-proof device wired back to fire alarm panel.
 - .8 Required air pressure 90 kPa (13 psi).
- .4 Provide valve complete with internal components that are replaceable without removing valve from installed position.

2.6 COMPRESSED AIR SUPPLY

- .1 Automatic Air Compressor.
- .2 ULC listed.
- .3 Capacity:
 - .1 To restore normal air pressure in system within 30 minutes.
 - .2 To provide air pressure in accordance with instruction sheet furnished with dry pipe valve.
- .4 Piping: ferrous, NPS 3/4 screwed joints and fittings, to NFPA 13.

2.7 PRESSURE GAUGES

- .1 ULC listed.
- .2 Shall have maximum limit of not less than twice normal working pressure at point where installed.

PART 3 – EXECUTION

3.1 INSTALLATION

- .1 Install material and fixtures in accordance with referenced standards and manufacturer's written instructions.

3.2 TESTS

- .1 Conform to Section 23 05 00 for tests.
- .2 Conduct tests in the presence of the Departmental Representative and the Representative of Fire Commissioner of Canada.
- .3 Hydrostatically test sprinkler systems at 350 kPa in excess of nominal working pressure but at not less than 1.4 MPa for 2 h without loss under supervision of FCC.

- .4 During tests, repair any leaks and remove and replace any defective parts.
Repeat test until satisfactory results are obtained.
- .5 Refer to other Sections for requirements of commissioning.

PART 1 - GENERAL

1.1 GENERAL

- .1 "Provide" shall mean "supply, install and connect".
- .2 Provide new materials, equipment and plant of proven design and quality, and of current models with published ratings for which replacement parts are readily available.

1.2 CO-ORDINATION

- .1 Locate distribution systems, equipment and materials to provide minimum interference and maximum useable space.
- .2 Where interference occurs, Departmental Representative shall approve relocation of equipment and materials.

1.3 DRAWINGS

- .1 Working drawings, except where dimensioned, indicate general mechanical layouts only. Do not scale.
- .2 Existing equipment and services shown on the drawings:
 - .1 The information shown on the drawings is incomplete and is for reference only. Some of the existing equipment, ducts, pipes and other services are not shown on the drawings.
 - .2 The Contractor shall make arrangements to examine existing conditions, determine conditions affecting the work, and verify sizes and location of existing equipment, pipes and any other services. Refer to Section 01 11 00 for instructions regarding site visits.
 - .3 Unless the discrepancies are noted and reported to the Departmental Representative prior to close of the bid, the Contractor shall be responsible for the work to relocate existing equipment and to reroute existing ducts, pipes and any other services required for the installation of new work at no extra cost to the contract.
- .3 If required by Departmental Representative, provide field drawings to show relative positions of various services. Obtain approval before beginning work.

1.4 SHOP DRAWINGS AND PRODUCT DATA SHEETS

- .1 Submit shop drawings and product data sheets for major equipment listed in each section.
- .2 Submit early enough to permit Project Schedules to be met.

.3 Show materials; sizes, dimensions, performance ratings, curves and operating characteristics, compliance with codes and standards, wiring, controls, piping diagrams, installation instructions, fabrication, assembly and installation details.

.4 For additional requirements pertaining to shop drawings and product data refer to Section 01 11 00.

1.5 OPERATION AND MAINTENANCE DATA

.1 Supply operating and maintenance instructions complete with names and addresses of spare parts suppliers in accordance with requirements of Section 01 11 00.

1.6 EQUIPMENT DESIGN AND INSTALLATION

.1 Uniformity:

.1 For equipment or material of same type or classification, use product of one manufacturer.

.2 Installation:

.1 Install equipment to manufacturer's recommendations with adequate and easy access for inspection, servicing and lubrication.

.2 Install equipment to permit maintenance and disassembly with minimum disturbance to connecting piping and duct systems and without interference with building structure or equipment.

.3 Provide support brackets, bases, and all necessary fastenings.

1.7 ELECTRIC MOTORS AND CONTROLS

.1 Electrical equipment shall bear CSA label. Obtain inspection labels required by Provincial authority having jurisdiction.

.2 Use high efficiency motors. Minimum acceptable motor efficiency levels shall be based on the latest table of motor efficiency levels in accordance with CSA C390-10, Test methods, marking requirements, and energy efficiency levels for three-phase induction motors.

.3 Unless otherwise specified or indicated, motors ½ HP and larger shall be 3 phase.

1.8 PIPING INSTALLATION

.1 Conform to requirements of ASME B31.1-2007 Power Piping.

.2 Provide dielectric couplings where piping of dissimilar metals are joined.

.3 Provide easily accessible unions close to equipment, to permit easy removal of equipment with minimum disturbance to piping systems.

.4 Valves:

- .1 Provide easy access for servicing and operation. Install access doors where concealed.
- .2 Install with stems above horizontal.

.5 Drainage:

- .1 Provide easily accessible drain valves at low points to permit complete drainage of piping systems.
- .2 Extend equipment drain piping to discharge into floor or hub drain.

1.9 PIPE HANGERS AND SUPPORTS

- .1 Fabricate hangers, supports and sway braces in accordance with ASME B31.1-2007.
- .2 Provide adjustable clevis type hangers on all sizes of pipe except where roller type hangers are required.
- .3 Minimum 150 mm hanger rod length.
- .4 Provide hangers on piping as follows:
 - .1 Rigid hangers when rod length is 300 mm or more, pipe expansion to hanger rod length ratio is less than 1:24 and hanger is supported from top of structural steel.

1.10 TESTS

- .1 Give written notice of date when tests will be made.
- .2 Conduct tests in presence of Departmental Representative and representatives of agencies having jurisdiction.
- .3 Bear all costs in connection with all tests.
- .4 Obtain acceptance certificates from authorities having jurisdiction. Work shall not be considered complete until certificates are delivered to the Departmental Representative.
- .5 Piping pressure tests:
 - .1 Fill water piping with water and test at 1-1/2 times system operating pressure or at 860 kPa, whichever is greater.
 - .2 Maintain test pressures without loss for four hour period.
 - .3 Repair leaks and defects. Retest until approved by Departmental Representative.
- .6 Flushing and cleaning:
 - .1 After pressure tests are completed and approved, prior to start-up and placing into operation, flush and clean out piping systems.

**1.15 INSTRUCTION OF
OPERATING STAFF**

- .1 Furnish competent instructors to fully instruct operating staff in care, adjustment and operation of mechanical systems.
- .2 Instruct during regular work hours before systems accepted and turned over to operating staff for regular operation.
- .3 Where significant changes or modifications in equipment are made under terms of guarantee, instruct operating staff about changes or modifications.

PART 2 - PRODUCTS**2.1 NOT USED**

- .1 Not used.

PART 3 – EXECUTION**3.1 NOT USED**

- .1 Not used.