ARCHAMBAULT ESTABLISHMENT
Modernization of the fire alarm system –
PWGSC: R.060914.001

SPECIFICATIONS – ELECTRICAL

2012-186-104

2022-02-24

CORRECTIONNEL SERVICE CANADA

ARCHAMBAULT ESTABLISHMENT

SAINTE-ANNE-DES-PLAINES (QUÉBEC)

J0N 1H0

MODERNIZATION OF THE FIRE ALARM SYSTEM – PWGSC: R.060914.001

DIVISIONS 01, 26, 28 AND 33

DOCUMENT ORIGINAL PDF SIGNÉ NUMÉRIQUEMENT

INGÉNIEUR-ENGINEER
Robert Bigras
43269
QUÉBEC
Électricité
2022-02-24

For tender
February 24, 2022

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Part 1 General

1.1 NOT USED

.1 Not Used

Consultant for Building Code Review: Robert Bigras, Eng. (OIQ 43269_
Building Code Identification Number (BCIN): N/A

Part 2 Products

2.1 NOT USED

.1 Not Used

Part 3 Execution

3.1 NOT USED

.1 Not Used

END OF SECTION

Part 1 General

1.1 DEFINITION

.1 The terms "Contractor", "General Contractor" and "Supervisor" refer to the person or entity designated as in contract with the Departmental Representative.

.2 The expressions "section", "sections", "each section", "each related section", "performed by section" and "supplied by section" refers to the firm responsible for the work of that section.

.3 The terms "Departmental Representative" mean the designated person by contract or with a written notice given to the Contractor to act as the Departmental Representative in this contract.

1.2 EXAMINATION OF THE SITES

.1 Prior to submitting his bid, each bidder can visit the site to familiarize himself with anything that may affect his work in any way. No claim due to ignorance of local conditions will be considered by the Departmental Representative.

1.3 VERIFICATION OF DRAWINGS AND SPECIFICATIONS

.1 Only drawings and specifications marked "for tender" should be used for the calculation of bids.

.2 Check that the copy of the documents is complete: number of drawings, specifications' number of pages.

.3 Specialties mentioned in the titles of the drawings are to facilitate the work of each section and should not be regarded as restrictive.

.4 Drawings indicate the approximate placements of equipment. Each section must check the exact emplacements before any installation.

.5 During bids, each section must study the mechanical and electrical drawings and specifications and compare all documents for all disciplines included in the tender and notify the Departmental Representative at least five (5) working days before submission of the tender of any contradictions, errors or omissions that can be observed.

.6 During the execution of the works, notify the Departmental Representative of any inconsistency, error or omission discovered before starting the work.

.7 The Departmental Representative reserves the right to interpret the contents of mechanical and electrical drawings and specifications.

.8 No indemnity or compensation will be given for the displacement of ducts, pipes, etc., deemed necessary because of the Architecture, the structure or any other normal consideration.

1.4 PRODUCTS USED FOR TENDERS AND EQUIVALENCY

.1 Each section must prepare an overall price for a tender based only on the products described in the drawings and specifications. The person preparing the tender must not assume that the manufacturers' materials and equipment whose names appear on the "MANUFACTURER LIST" are automatically equivalent. Each section is solely responsible for the verification and validation of equivalence (and, where appropriate, of the special manufacturing requirements for it) of the product that will need to be used from a manufacturer on the list.

.2 Where an asterisk (*) is used in the manufacturer list at the request of the Departmental Representative, the relevant section must bid with the product from that manufacturer.

.3 All modifications required by the usage of an equivalent material or device to that specified is to be performed at the cost of the division supplying the device, even if it applies to other specialties and if implications are discovered after the acceptance of the substitution request.

1.5 SUBSTITUTION OF MATERIALS

.1 Equipment and materials from manufacturers other than those mentioned in the manufacturer list may be substituted only after the presenting the tender, provided that they are approved according to the following procedure:

.1 Equivalency requests must be made by the relevant section only. They must be submitted within a maximum of fifteen (15) business days following the signing of the contract. They must be accompanied by the following documents:

.1 Original tender for the specified products.

.2 Tender received for products to be substituted.

.3 Justification of the request.

.4 Proofs of equivalency.

.2 The submission of equivalency requests to periods other than that mentioned above will only be considered for reasons truly exceptional and extraordinary.

.2 The main points of comparison are construction, performance, capacity, dimensions, weight, encumbrance, technical specifications, parts' availability, maintenance, delivery delays, the evidence of tried and true equipment in service and impact on other specialties.

.3 Any changes caused by the use of an equivalent equipment or material is to the cost of the section that provided the equipment, even when it applies to other specialties, and even if the implications are made apparent after the substitution request is accepted.

.4 Any request for substitution will be rejected if it were to impede or delay the execution of the works.

1.6 QUEBEC TENDER OFFICE (BDSQ)

.1 Each section whose work falls under the jurisdiction of the Submission Code of the Quebec Tender Office must submit a copy of their tender to the Departmental Representative at the same time as their submission to the electronic submission system (TES) of the BDSQ.

1.7 IMPORTANT NOTE: SUPPLY AND INSTALL

.1 Supply and install all materials and equipment described in this specification and/or shown in the drawings, whether the term "supply and install" is used or not. See also the article "MINOR WORKS".

1.8 LAWS, REGULATIONS AND PERMITS

.1 All laws and regulations issued by the authorities having jurisdiction relating to the works described herein apply. Each section is required to comply with them without additional compensation.

.2 Each section must obtain, at its expense, all necessary permits and certificates, pay all costs for drawing approvals and for inspections required by organisations having jurisdiction.

.3 Submit to the Departmental Representative a copy of the drawings bearing the seal of approval of the relevant inspection services.

.4 Where applicable, upon completion of the work, obtain and deliver to the Departmental Representative, all permits, certificates of approval and the like obtained from the various offices and departments having jurisdiction over such building.

.5 Discovery of dangerous materials:

.1 If materials applied by spray or trowel, likely to contain asbestos, polychlorinated biphenyls (PCBs), moulds or other designated hazardous materials are discovered during demolition, immediately stop work.

.1 Take corrective action and immediately notify the Departmental Representative.

.2 Do not restart work until written instruction is received.

1.9 TAXES

.1 Pay all taxes required by law, including federal, provincial and municipal.

1.10 MINOR WORKS

.1 Each section shall provide all material required and do all small work that, even if not specified in specs, are required to the working of equipment and to the completion of the work included by contract.

1.11 TOOLS AND SCAFFOLDING

.1 On the worksite, provide the full range of tools required for the proper execution of the work. Also supply, erect, and remove the scaffolding required to perform the work.

1.12 MATERIALS

.1 Unless otherwise specified, use new materials, free of imperfections or defects, of the required quality, bearing CSA, ULC, FM, AMCA, ARI and other approval labels as applicable.

1.13 PROTECTION OF WORKS AND MATERIALS

.1 Each section must protect its installations against all damage, from any cause, during the execution of works until the work is accepted in a definitive manner.

.2 All equipment and materials stored on-site must be adequately protected, sheltered from bad weather, or any other possible damage.

.3 At the end of each workday, seal with a screw cap or a suitable metal cap all openings in conduits of any kind.

1.14 USING DIGITAL MODELS FOR COORIDNATION

.1 DWG plans:

.1 Where approved by the Departmental Representative, the Contractor may receive files in DWG format used in the preparation of the contract documents.

.2 The Contractor must respect the "RESPONSIBILITY WAIVER – DWG PLANS" form included at the end of this section, understanding the limitations of using the digital plans, and complete and sign the form. Submit the duly completed form to the Departmental Representative.

.3 The Departmental Representative reserves the right to not provide the design files to the Contractor and/or related sections.

.4 The Departmental Representative reserves the right to claim fees for the conversion of design files and specifications issued "for tender" to the format or edition requested by the Contractor and/or related section.

1.15 TECHNICAL REQUESTS FOR INFORMATION

.1 The Contractor must submit all requests for information (RFIs) by email.

.2 All correspondence and/or document submitted via project management software by the Contractor or a Sub Contractor will not be reviewed and will be not be considered as submitted/received.

.3 Technical Requests for Information:

.1 Each question must be submitted using a standardized RFI form.

.2 Each PDF RFI form may include only one question.

.3 Each question must be assigned a sequential number to facilitate tracking.

.4 The Contractor is responsible to review questions submitted by other sections to ensure that answers are not present in the contractual documents or previously provided, and to track progress of the RFIs to ensure work is not delayed.

.5 The RFI form must include, at minimum:

.1 Submission date of the question.

.2 Name of the sender and recipient.

.3 Subject line.

.4 Clearly formulated question.

.5 Clips of the plans, specifications and photos relating to the question.

.6 Proposed solutions.

.7 Sufficient space for the Departmental Representative to respond to the question on the form.

1.16 FRAMES AND ACCESS DOORS

.1 Unless otherwise specified, recessed frames and access doors in walls and ceilings, other than easily removable ceilings, shall be provided by the relevant section but installed by the company responsible for the construction of walls and ceilings.

.2 Each mechanical and electrical section shall determine the size and location of doors in such a way as to ensure easy access to all baffles, control devices, fire dampers, valves, vents, cleanouts, siphons, sieves, traps, ventilation units, pull boxes, electrical appliances, etc.

.3 The doors must be at the same fire resistance specified for the walls and ceilings.

.4 These frames and doors shall be built-in, constructed of 1.6129 mm (16-gauge) galvanized sheet metal with a layer of sealant. Hidden frames with exposed line with face flush with wall or ceiling, concealed hinge, 150° opening with lock and key (except on fire doors). The door must be self-closing.

.5 The lock and keys must be “Stanley BEST” E serie with removable core. The core will be provided by NCC. Generic core will have to be use by the Contactor.

.6 The types of frames and doors are as follows:

.1 Walls made of brick, concrete block, finished in tile, poured cement blocks covered with gypsum boards or other similar finish: Karp no DSC-214M.

.2 Ceilings and walls of plaster or with cement finish or other similar finish: Karp KDW.

.3 Firewalls: Karp no KRP150FR, in steel, 16-gauge, with 50 mm (2") of insulation in the door, fire resistance of ULC 1½ h, with self-closing mechanism and without lock/latch.

.7 All Contractors must coordinate in order to provide the same type of door for all mechanical and electrical sections.

1.17 UP TO DATE DRAWINGS

.1 Each section must, at its expense, clearly indicate all changes, additions, etc., on a separate copy of the drawings and specifications, so as to have a complete and accurate copy of the work as executed and materials installed when the contract is completed. In particular, any displacement, even minor, of underground piping must be indicated with precision

.2 This copy of the drawings must be kept up to date and be available on site.

.3 Deliver these plans to the Departmental Representative at the end of the works.

1.18 CONCEALED WORK

.1 Do not conceal any work, material, such as pipes, boxes, etc. before the installation has been verified.

.2 If a section does not comply with this requirement, it will have to pay the cost of all work required to proceed to the examination of the works.

.3 Unless otherwise indicated, all piping and ducts must be concealed in partitions, walls, between floors, in ceilings, etc. The cost of all necessary leveling shall be borne by the Contractor.

1.19 PLACEMENT OF PIPING AND DUCTS

.1 No pipe may be in contact with another. Allow a clearance of at least 15 mm (½") between them. No piping may be in contact with any part of the building. Take special care in the case of piping through a steel beam.

.2 Take particular care to conserve space in vital areas, including in the case of piping rising along columns.

.3 Any piping or ducting that may possibly be covered by insulation must be installed at a sufficient distance from walls, ceilings, columns or other piping, ducts, and equipment to facilitate the insulation of the pipe or duct.

.4 Any piping or ducting placed horizontally must be installed to maximize the headroom of the area. This is of particular importance in rooms where ceilings are suspended, such as in parking lots and warehouses.

.5 Exposed piping should be straight and generally, parallel to the framework.

.6 Consider the symmetry with respect to the piping of the apparent equipment. Consult the Departmental Representative if necessary.

.7 Before installing a pipe or duct, make note of the location of the other mechanical, electrical, architectural and structural work to avoid interference, otherwise the relevant section will be required to move the pipe or duct at its expense.

.8 When uninsulated piping passes through a wall or a poured concrete floor, install rigid insulation on the pipe before casting, after the installation of the pipe, so that the concrete does not come into contact with the pipe.

1.20 MANUFACTURERS' INSTRUCTIONS

.1 Install the various pieces of prefabricated materials and equipment, in accordance with the manufacturer's instructions. Obtain all relevant instructions.

.2 Ensure the presence of the Manufacturers Representative to attest the conformity of the installation.

1.21 LAYOUT AND ACCESS TO THE EQUIPMENT

.1 Install the equipment so that they are easily accessible for maintenance, disassembly, repair, and moving.

.2 Future provisions:

.1 In any place where a space was left free for future use, ensure that this space remains free and install materials and equipment related to the work so that future connections of the added equipment can be done without needing to redo the floor, walls or ceiling, or even, a portion of the mechanical or electrical facilities.

1.22 NEW OPENINGS, DRILLING IN WALLS, FLOORS, BEAMS, AND COLUMNS

.1 General:

.1 Unless otherwise indicated, all direct and indirect costs associated with location, marking, openings necessary for the piping and the ventilation and electrical conduits of openings to be made, are the responsibility of the General Contractor.

.2 The General Contractor is responsible for all damages and repair caused by the openings.

.3 The openings must be sufficiently large to permit the laying of sleeves and thermal and acoustic insulation.

.4 Piercing holes with pneumatic or electric hammers by vibratory action as well as hand drilling and any other process by mechanical impacts are prohibited.

.5 In the concrete, drill the holes using a rotary water drill or any other equipment accepted by the Departmental Representative.

.6 The General Contractor is responsible for all formwork required for the installation of rectangular ducts. Instructions related to dimensions, quantity, location, and testing must come from the related section. All additional steel framing and related work are also the responsibility of the General Contractor.

.7 The General Contractor must employ a specialised firm to scan and digitize the existing slabs, with Georadar (GPR) or similar technology, in order to determine the location of buried elements and services such as conduits, pipes, and reinforcements, before making openings in the existing concrete. Unless otherwise indicated, these elements must not be damaged when the opening is made.

.2 Concrete beams and columns:

.1 The drilling of new openings in the concrete beams and columns is prohibited.

.3 Steel beams and columns:

.1 The drilling of new openings in the steel beams and columns is prohibited.

.4 Firestop and smoke deflector assemblies: complies with the standard CAN/ULC S115-11 – Standard method of fire tests of firestop systems. Place firestops and smoke deflectors around pipes, conduits, cables and other objects passing through firewalls in order to provide the same fire resistance as the neighbouring floors, ceilings and walls.

1.23 SUPERVISOR

.1 Each section must retain and pay for the services of a competent and permanent supervisor or superintendent who must remain on site until the works are accepted, and, having full authority to represent the section. All communications, orders, etc. supplied by the Departmental Representative or Contractor are considered as given directly to the company responsible for the work of the section.

.2 Submit for approval the name, qualifications, and experience of the supervisor or superintendent. Following revisions made at the request by the Departmental Representative, a lack of experience and qualifications relevant to the project will result in the mandatory replacement of the Superintendent by one meeting the requirements.

.3 This supervisor cannot be removed from the work site without a valid reason and prior written approval of the Departmental Representative.

.4 Facilitate site inspections for Departmental Representative at any time. During these visits, the supervisor must be available to them.

1.24 INSPECTIONS

.1 It is absolutely necessary before any inspection request to the Departmental Representative, that the testing was previously conducted and successful.

1.25 TESTING

.1 Once the test is finished, readjust all the equipment used for this test, to permit their proper operation.

.2 General requirements:

.1 The Departmental Representative may assist, at any time, in any test they deem necessary.

.2 All tests must be performed to the satisfaction of the Departmental Representative.

.3 The Departmental Representative may require a test of installations and equipment before accepting them.

.4 For temporary trials, obtain written permission to operate and test installations and permanent equipment before being accepted by the Departmental Representative.

.5 Give a written 48 h notice to the Departmental Representative before the date of the test.

.6 Provide equipment, meters, material and staff required to run tests during the project until the acceptance of installations by the Departmental Representative and pay all fees.

.7 If a piece of equipment or device does not meet the manufacturer's data or the specified performance during a test, immediately replace the defective unit or part and pay all expenses incurred by the replacement. Make adjustments to the system to achieve the desired performance. Cover all costs, including those of new tests and repair.

.8 Prevent dust, dirt and other foreign matter from entering openings of facilities and equipment during testing.

.9 Provide to the Departmental Representative a certificate or letter from the manufacturer confirming that each section of the installation was implemented to their satisfaction.

.10 Submit the written test results to the Departmental Representative.

.11 The tests must be performed and accepted prior to the installation of the thermal insulation.

.12 If it is impossible to test the entire installation in a single trial, it can be divided into several zones, each of which will be tested individually. The installation must be tested in several stages.

.13 Provide two copies of a written report for each of the tests performed.

.3 Special requirements:

.1 For details about the tests to perform, see the other sections of this specification.

1.26 INSTRUCTIONS TO THE DEPARTMENTAL REPRESENTATIVE

.1 Give to the Departmental Representative all the details on the operation of the equipment specified and installed under this contract. Provide qualified personnel to operate this equipment until the Departmental Representative is adequately qualified to take charge of the operation and maintenance of said equipment.

.2 This training can be combined with the final testing period provided that the Departmental Representative’s team is available.

.3 It is understood that such tests are not an automatic acceptance of equipment by the Departmental Representative.

.4 The Departmental Representative has the right to do this test as soon as the work is considered sufficiently complete by the relevant Departmental Representative's section, and considered in accordance with the drawings and specifications.

1.27 WARRANTY

.1 Each section guarantees its work for a period of one year after acceptance "with reservation" of the work by the Departmental Representative. It is required to repair or replace, at its expense, any defects that would become apparent during this period and that, within 48 h after having been formally notified.

.2 Manufacturers must offer a one (1) year warranty from the starting operation date or eighteen (18) months from the date of delivery to the site, as appropriate. The warranty must include the cost of materials and labour, and the replacement of defective parts and/or manufacturing defect. In the case of chillers, a five-year warranty applies if the refrigerant charge is contaminated due to the compressor motor burning.

.3 The warranty is for a period greater than one (1) year (extended/or special warranties), for the areas indicated in the respective specifications.

.4 This warranty is fully independent of the article of the Civil Code concerning the five (5) year warranty.

.5 The use of permanent equipment for temporary purposes does not relieve the relevant section of its responsibilities and obligations with respect to the acceptance and guarantee of its work.

.6 The Departmental Representative reserves the right to start the equipment and mechanical and electrical works without affecting the section's obligation to see to the full maintenance of its work up to acceptance "with reservation".

1.28 OBLIGATIONS DURING THE WARRANTY PERIOD

.1 During the warranty period, in addition to the obligations described in the specifications, the relevant section must provide any technical assistance required by the Departmental Representative with respect to the operation of the installations and their improvements or adjustments as required.

.2 The temporary use or testing with the goal of adjusting equipment or any other purpose, or permanent use by the Departmental Representative of the mechanical and electrical works before the final acceptance of the works should not be interpreted as evidence that such works are accepted by the Departmental Representative and does not alter the terms of the warranty. During this time period, the relevant section retains responsibility for the maintenance of installation. No claim for damage or failure of any part of the work put into use will be considered by the Departmental Representative.

1.29 MAINTENANCE DURING THE CONSTRUCTION PERIOD

.1 This article applies only in cases where the equipment is used during the construction period.

.2 In addition to the responsibilities and obligations of each section, as to the temporary or permanent use of its installations and the use of equipment by the Departmental Representative or any other section during construction and before final acceptance of the work, the relevant section still remains as responsible for the operation, preventive maintenance, or other, of its equipment during the same period.

.3 However, the relevant section does not have the responsibility to provide the staff required for the equipment's operation during the construction period and before final acceptance of work. However, it remains responsible for the equipment during testing, the adjustment period, calibration, and maintenance of this equipment.

1.30 TEMPORARY SERVICES

.1 From a mechanical and electrical point of view, temporary services include: electricity, telephone service, fire alarms, lighting, water supply, sanitation and drainage, heating, ventilation, controls, intercom systems, fire protection, refrigeration, and all the systems necessary for the completion of the works.

.2 All temporary services, as well as energy costs, are the responsibility of the general Contractor. Refer to general conditions of contract.

.3 No device that is not part of the permanent installation will be used for temporary services before the building is deemed complete.

.4 The temporary service period ends upon acceptance "with reservation".

1.31 RENOVATIONS

.1 Continuous service:

.1 The following services are not to be interrupted without prior agreement with the Departmental Representative: telephone, electricity, lighting, intercom, fire alarms, sprinklers, fire protection water, aqueduct water, domestic water, sanitary plumbing, storm drainage, external drainage systems, ventilation – air-conditioning, etc.

.2 To ensure the continuity of services during the hours required by the Departmental Representative, each relevant section must do all temporary works required, including labour and equipment.

.2 Demolition:

.1 All demolition work, including road cuts, utilities, and sealing of disused pipes, are the responsibility of the Contractor.

.3 Occupied rooms:

.1 The work is being done during the occupancy of rooms in the building, therefore, the work must be performed by stages in the rooms designated by the Departmental Representative.

.2 Perform work after prior agreement with the Departmental Representative, and establish an acceptable work schedule.

.3 Before undertaking work in a given area, ensure the availability of all equipment, tools, and labour required to perform the work without interruption.

.4 Follow the Departmental Representative's instructions as to the delivery to the worksite of its personnel and equipment.

.5 The Departmental Representative will indicate which staircase can be used and within what limits it is permitted to circulate in the present corridors.

.6 Take all necessary precautions to adequately protect existing installations in these areas.

.7 At no time must the traffic and the functioning of the building services be impeded. Follow all of the Departmental Representative's instructions.

.4 Noise:

.1 Because of the proximity of the occupied premises, take all necessary measures to reduce the noise from construction and demolition.

.5 Other restrictions:

.1 In order not to impair the function of the building that must remain in operation during construction:

.1 No vehicles other than trucks used to transport equipment has access to the site for the duration of the works. The vehicles must stay in designated area by the Departmental Representative.

.2 The use of all elevators is prohibited for construction purposes.

.3 The interior circulation outside the boundaries of the services to be renovated must be minimized.

.4 The access permitted to the various rooms, for demolition and construction purposes, must be determined by the Departmental Representative.

.2 Obey the Departmental Representative's rules and directives about signs, announcements, advertisements, smoking, etc.

.3 Limit equipment/materials to the area delimited set by the Departmental Representative for the storage of equipment. They must not congest the area. No part of the construction is to be burdened with a load of equipment that may be hazardous for it.

.6 Dismantling of existing piping, materials, and equipment. Unless otherwise instructed:

.1 No device should be reused.

.2 All existing equipment and material removed and not re-used or not returned to the Departmental Representative, as described below, belong to the Contractor who is to dispose of them as quickly as possible off site.

.3 The Contractor must anticipate the cost of transporting waste off site and bear all related costs to dispose of it.

1.32 EQUIPMENT TO BE HANDED OVER TO THE DEPARTMENTAL REPRESENTATIVE

.1 Provide the Departmental Representative with the following items:

.1 Maintenance products and portable equipment indicated in the specification.

.2 The replacement materials indicated in the specification.

.3 The keys of all supplied equipment with locks.

.2 Obtain receipts for each of the above items and submit them to the Departmental Representative.

1.33 CERTIFICATION OF COMPLIANCE

.1 At the end of the work, each section must submit to the Departmental Representative a certification of compliance stating that all work was performed following the drawings and specifications, and all applicable standards and codes. Refer to example form at the end of this section.

.2 Submit the certificate to the Departmental Representative at the same time as the request for an attestation of successful work completion.

.3 Have this form signed by a manager of the company and affixed with the seal of the company.

1.34 BREAKDOWN OF COSTS

.1 Before submitting a request for first payment, provide a detailed breakdown of costs relative to the contract, indicating also the overall price of the contract, as per the Departmental Representative's instructions. Once approved by the Departmental Representative, the breakdown will serve as a reference for payment installment calculations.

.2 Where applicable, include the following lines, as well as the related amounts, in the monthly statements of each of the specialized Contractors:

.1 Mobilization.
.2 Insurance and surety bonds.
.3 Erection drawings.
.4 One line per activity per sector, floor or phase.
.5 Tests and trials.
.6 Equipment start-up.
.7 Commissioning of systems.
.8 Seismic measurement compliance report.
.9 Demobilization.
.10 Operation and maintenance manual.
.11 Training.
.12 Drawings "as annotated by the Contractor". Addresses of each fire alarm device shall be shown on the "As annoted" drawings or as specified on the construction drawings.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

COMPLIANCE CERTIFICATE

Project: _____

Project address: _____

Discipline: _____

Specification section: _____

We certify that all materials and equipment used, as well as all apparent or concealed work that we have completed or that we have ordered completed, are in all aspects, compliant with the plans, specification, addenda, and changes prepared by the Engineers of Bouthillette Parizeau Inc., and with all applicable codes, laws and regulations in effect.

Company name: _____

Address: _____

Telephone number: _____

Signatory name: _____

Signature: _____

Signatory title: _____

COMPANY SEAL

RESPONSIBILITY WAIVER – DWG PLANS

The _____

Mr./Ms. _____
Bouthillette Parizeau
8580 de l'Esplanade Avenue, office 200
Montréal (Québec),
H2P 2R8

Project: _____

Subject: _____

We, _____ , relieve Bouthillette Parizeau of any liability resulting from the use of their digital drawings for the development of contractual documents and our coordination, and/or detail drawings, or for any other use related to the project.

We also recognize and agree that:

- That the electronic drawings in question are provided to us for our use only and that they cannot be disseminated without the permission of Bouthillette Parizeau.
- That no assurance is given to us as to the consistency and accuracy of the information contained in it.
- That Bouthillette Parizeau cannot be held responsible should the digital drawings in question contain certain inaccuracies or errors.
- That Bouthillette Parizeau cannot be held responsible for any errors that results from the use of the drawings by us, our subcontractors, or our suppliers.
- That we will remain fully responsible for our submitted drawings or orders, according to contract stipulations.

In addition, we will undertake to verify in site the accuracy of the dimensions and information contained within the digital drawings, as if we had created them ourselves.

Signature: _____

Name (in print): _____

Address: _____

Telephone: _____

Email: _____

END OF SECTION

Part 1 General

1.1 WORK BY OTHERS

.1 Cooperate with other Contractors in carrying out their respective works and carry out instructions from the Departmental Representative.

.2 Coordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to the Departmental Representative, in writing, any defects which may interfere with proper execution of Work.

1.2 FUTURE WORK

.1 Insure that work avoids encroachment into areas required for future work.

1.3 WORK SEQUENCE

.1 Construct work in stages to accommodate Owner's continued use of premises during construction.

.2 Coordinate the work progress schedule according to the occupancy of the premises with the Owner during the construction work.

.3 Carry out the work in stages so as to allow the continuous use of the premises by the occupants of the building. Maintain public access to the premises as long as the progress of the work prevents offering an alternative solution.

.4 Maintain access for firefighting purposes; also provide the means of fire fighting.

.5 The migration of fire detection and signalling from the existing system to the new system shall be carried out gradually, without interruption of human operations and without shutting down the fire alarm network. Refer to section 01 14 00 – Work Restriction for specific restrictions.

1.4 CONTRACTOR USE OF PREMISES

.1 Unrestricted use of site until substantial performance.

.2 Limit use of premises for Work, to allow:

- .1 Owner occupancy.
- .2 Partial owner occupancy.
- .3 Work by other contractors.
- .4 Public usage.

.3 Coordinate use of premises under direction of Departmental Representative.

.4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.

.6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.

.7 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.5 OCCUPANCY BY THE DEPARTMENTAL REPRESENTATIVE

.1 The Departmental Representative will occupy premises during entire construction period for execution of normal operations.

.2 Co-operate with the Departmental Representative in scheduling operations to minimize conflict and to facilitate the Departmental Representative usage.

1.6 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations occupants and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

.2 Use only existing stairs in building for moving workers and material.

1.7 EXISTING UTILITY SERVICES

.1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.

.2 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.

1.8 REQUIRED DOCUMENTS

.1 Maintain at job site one copy each document as follows:

- .1 Contract drawings.
- .2 Specifications.
- .3 Addenda.
- .4 Reviewed shop drawings.
- .5 List of outstanding shop drawings.
- .6 Change orders.
- .7 Other modifications to contract.
- .8 Field test reports.
- .9 Copy of approved work schedule.
- .10 Health and safety plan and other safety related documents.
- .11 Other documents as specified.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.

.2 Maintain existing services to building and provide for personnel and vehicle access.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

1.4 EXISTING SERVICES

.1 Notify the 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 the Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep the duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

.3 Provide for personnel and vehicular traffic.

.4 Construct barriers in accordance with section 01 56 00 – Temporary Barriers and Enclosures.

1.5 SPECIAL REQUIREMENTS

.1 Submit schedule in accordance with section 01 32 16.07 – Construction Progress Schedule - Bar (GANTT) Chart.

.2 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.3 Keep within limits of work and avenues of ingress and egress.

1.6 SECURITY

.1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.

.2 Security clearances:

.1 Personnel employed on this project will be subject to security check.

.2 Obtain requisite clearance, as instructed, for each individual required to enter premises.

.3 Personnel will be checked daily at start of work shift and provided with pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.

.3 Security escort:

.1 Personnel employed on this project must be escorted when executing work in non-public areas during normal working hours. Personnel must be escorted in all areas after normal working hours.

.2 Submit an escort request to Departmental Representative at least two (2) days before service is needed. For requests submitted within time noted above, costs of security escort will be paid for by Departmental Representative. Cost incurred by late request will be Contractor's responsibility.

.3 Any escort request may be cancelled free of charge if notification of cancellation is given at least four (4) hours before scheduled time of escort. Cost incurred by late request will be Contractor's responsibility.

.4 Calculation of costs will be based on average hourly rate of security officer for minimum of eight (8) hours per day for late service request and of four (4) hours for late cancellations.

1.7 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions. Smoking is not permitted.

1.8 MIGRATION OF THE FIRE ALARM SYSTEM

.1 Carry out work one wing at a time and one floor at a time.

.2 The ground floor work of wing C must be made in two (2) separate parts.

.3 The duration work in each wing or in each part of the ground floor of wing C must be no more than five (5) days.

.4 However, individual shutdown of fire alarm circuits may be planned for a maximum duration of eight (8) consecutive hours.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 PRECONSTRUCTION MEETING

.1 Within fifteen (15) days after award of the Contract, request a meeting of parties in the contract to discuss and resolve administrative procedures and responsibilities.

.2 Departmental Representative, Contractor, field inspectors and supervisors will be in attendance.

.3 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with section 01 32 16.07 – Construction Progress Schedules - Bar (GANTT) Chart.

.3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with section 01 33 00 – Submittal Procedures.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with section 01 52 00 – Construction Facilities.

.5 Proposed changes, change orders, procedures, required approvals, allowable margin percentages, extensions of time, overtime, and other administrative terms.

.6 Site security in accordance with section 01 56 00 – Temporary Barriers and Enclosures.

.7 Record drawings in accordance with section 01 33 00 – Submittal Procedures.

.8 Maintenance manuals in accordance with section 01 78 00 – Closeout Submittals.

.9 Take-over procedures, acceptance, warranties in accordance with section 01 78 00 – Closeout Submittals.

.10 Monthly progress claims, administrative procedures, photographs, hold backs.

.11 Appointment of inspection and testing agencies or firms.

.12 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

.1 Establish a schedule of meetings to be held every two weeks during the course of the work and two weeks before the work is completed.

.2 Major Subcontractors involved in Work and Departmental Representative and Owner are to be in attendance.

.3 Notify parties minimum five (5) days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within five (5) days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.
.2 Review of Work progress since previous meeting.
.3 Field observations, problems, conflicts.
.4 Problems which impede construction schedule.
.5 Review of off-site fabrication delivery schedules.
.6 Corrective measures and procedures to regain projected schedule.
.7 Revision to construction schedule.
.8 Progress schedule, during succeeding work period.
.9 Review submittal schedules: expedite as required.
.10 Maintenance of quality standards.
.11 Review proposed changes for affect on construction schedule and on completion date.
.12 Other business.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 DEFINITIONS

.1 Activity: distinct, scheduled portion of work performed during course of a project.

.2 Activity duration: time in calendar units between start and finish of a scheduled activity. See also Duration.

.3 Assumption: factor in planning process that is considered true, real, or certain without proof or demonstration.

.4 Bar Chart (Gantt Chart): graphic display of schedule-related information.

.1 In typical bar chart, schedule activities or work breakdown structure components are listed down left side of chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars.

.5 Baseline: approved version of a work product that can be changed only through formal change control procedures and is used as a basis for comparison.

.6 Budget: approved estimate for a project or work breakdown structure component or schedule activity.

.7 Cash flow: projection of progress payment requests based on cash loaded construction schedule.

.8 Change control: process whereby modifications to documents, deliverables, or baselines associated with a project are identified, documented, approved, or rejected.

.9 Completion milestones: they are firstly substantial completion and secondly final certificate.

.10 Constraint: scheduled limiting factor that effects execution of a project, program, portfolio, or process.

.11 Contract: mutually binding agreement that obligates a seller to provide a specified product or service or result and obligates a buyer to pay for it.

.12 Control: comparing actual performance with planned performance, analyzing variance, assessing trends, to effect process improvements, evaluating possible alternatives, and recommending appropriate corrective action as needed.

.13 Corrective action: intentional activity that realigns performance of project work with project management plan.

.14 Critical path: sequence of activities that represents longest path through a project, which determines shortest possible duration.

.15 Critical path activity: activity on critical path in a project schedule.

.16 Critical path method (CPM): method used to estimate minimum project duration and determine amount of scheduling flexibility on logical network of paths within schedule model.

.17 Data date: point in time when the status of the project is recorded.

.18 Decomposition: technique used for dividing and subdividing project scope and project deliverables into smaller, more manageable parts.

.19 Deliverable: unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.

.20 Duration: total number of work periods (not including holidays or other non-working periods) required to complete a schedule activity or work breakdown structure component.

.1 Usually expressed as workdays or work weeks.

.21 Early finish date (EF): in critical path method, earliest possible point in time when uncompleted portions of schedule activity can finish based on schedule network logic, data date, and schedule constraints.

.1 Early finish dates can change as Project progresses and changes are made to Project plan.

.22 Early start date (ES): in critical path method, earliest possible point in time when uncompleted portions of a schedule activity can start based on schedule network logic, data date, and schedule constraints.

.1 Early start dates can change as Project progresses and changes are made to Project Plan.

.23 Execute: directing, managing, performing, and accomplishing project work; providing deliverables, and providing work performance information.

.24 Finish date: point in time associated with a schedule activity's completion.

.1 Usually qualified by one of following: actual, planned, estimated, scheduled, early, late, baseline, target, or current.

.25 Float: (also known as slack) amount of time a schedule activity can be delayed without delaying early start date of a successor or violating a schedule constraint.

.26 Forecast: estimate or prediction of conditions and events in project future based on information and knowledge available at time of forecast.

.1 Information is based on projects past performance and expected future performance, and includes information that could impact project in future, a such as estimate at completion and estimate to complete.

.27 Gantt Chart: see Bar Chart.

.28 Impact analysis: schedule analysis technique that adds a modeled delay to an accepted construction schedule to determined possible outcome of that delay on project completion.

.29 Imposed date: a fixed date imposed on a schedule activity or schedule milestone, usually in form of a "start no earlier than" and "finish no later than" date.

.30 Lag: amount of time whereby a successor activity is required to be delayed with respect to a predecessor activity.

.31 Late finish date (LF): in critical path method, latest possible point in time when uncompleted portions of a schedule activity can finish based on schedule network logic, project completion date, and schedule constraints.

.32 Late start date (LS): in critical path method, latest possible point in time when uncompleted portions of a schedule activity can start based on schedule network logic, project completion date, and schedule constraints.

.33 Lead: amount of time whereby a successor activity can be advanced with respect to a predecessor activity.

.34 Logic diagram: see project "Network diagram".

.35 Logical relationship: dependency between two activities or between an activity and a milestone.

.36 Master schedule: summary-level schedule that identifies major deliverable; work breakdowns structure components, and key schedule milestones.

.37 Milestone: significant point or event in a project, program, or portfolio.

.38 Monitor: collect project performance data with respect to a plan, procedure performance measures, and report and disseminate performance.

.39 Network: see project "Schedule network diagram".

.40 Non-critical activities: activities which when delayed, do not affect specified contract duration.

.41 Project control system: fully computerized system utilizing commercially available software packages.

.42 Project management: application of knowledge, skills, tools, and techniques, to project activities to meet project requirements.

.43 Project management plan: approved document that describes how project will be executed, monitored, and controlled.

.1 Primary uses of project management plan are to document planning assumptions and decisions, facilitate communication among stakeholders, and document approved scope, cost, and schedule baselines.

.2 Project management plan may be summary or detailed.

.44 Project management planning: development and maintenance of project management plan.

.45 Project management planning, monitoring and control system: overall system operated to enable monitoring of project work in relation to established milestones.

.46 Project schedule: planned dates for performing activities and planned dates for meeting milestones.

.47 Project schedule network diagram: graphical representation of logical relationships among project schedule activities.

.1 Always drawn from left to right to reflect Project chronology.

.48 Project scope: work performed to deliver a product, service, or result with specified features and functions.

.49 Quantified days duration: working days based on five (5) day work week, discounting statutory holidays.

.50 Risk: uncertain event or condition that, if it occurs, has positive or negative effect on one or more project objectives.

.51 Schedule: see project "Schedule".

.52 Schedule data: collection of information for describing and controlling schedule.

.53 Scope: see project "Scope".

.54 Start date: point in time associated with activity's start, usually qualified by one of following: actual, planned, estimated, scheduled, early, late, target, baseline, or current.

.55 Work breakdown structure (WBS): hierarchical decomposition of total scope of work to be carried out by project team to accomplish project objectives and create the required deliverables.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Project meeting:

.1 Meet with Departmental Representative within five (5) of the contract signatures.

.2 Participate in regular project progress meetings with Departmental Representative specifically intended to discuss update of detailed schedule and contract changes.

.2 Scheduling:

.1 Ensure that planning process is iterative and results in generally top-down processing with more detail being developed as planning progresses, and decisions concerning options and alternatives are made.

.2 Ensure project schedule efficiencies through monitoring of project in detail to ensure integrity of Critical Path, by comparing actual completions of individual activities with their scheduled completions, and review progress of activities that has started but are not yet completed.

.3 Monitor sufficiently often so that causes of delays can immediately be identified and mitigated.

.3 Project monitoring and reporting:

.1 Keep team aware of changes to schedule, and potential consequences as project progresses.

.2 Use narrative reports to provide advice on seriousness of challenges and measures to overcome them.

.3 Begin narrative reporting with statement on general status of project followed by summarization of delays, potential problems, corrective measures and project status criticality.

.4 Critical Path Method (CPM) Requirements:

.1 Ensure Master Plan and Detail Schedule are practical and remain within specified contract duration.

.2 Revise Master Schedule and Detail Schedule deemed impractical by Departmental Representative and resubmit for approval.

.3 Change to Contract Duration:

.1 Acceptance of Master Schedule and Detail Schedule showing scheduled Contract duration shorter than specified Contract duration does not constitute change to Contract.

.2 Duration of Contract may only be changed through bilateral Agreement.

.4 Consider Master Schedule and Detail Schedule deemed practical by Departmental Representative, showing Work completed in less than specified Contract duration, to have float.

.5 First Milestone on Master Schedule and Detail Schedule will identify start Milestone with an Early Start, "ES", constraint date equal to Award of Contract date.

.6 Calculate dates for completion of milestones from Plan and Schedule using specified time periods for Contract.

.7 Substantial Completion with Late Finish, "LF", constraint equal to calculated date.

.8 Calculations on updates such that if early finish of Interim Certificate falls later than specified Contract duration then float calculation to reflect negative float.

.9 Delays to non-critical activities with float may not be basis for time extension.

.10 Do not use float suppression techniques such as imposed dates other than required by Contract.

.11 Allow for adverse weather conditions normally anticipated and show in Master Plan and Detail Schedule.

.1 Specified Contract duration has been predicated assuming normal amount of adverse weather conditions.

.12 Provide necessary crews and manpower to meet schedule requirements for performing Work within specified Contract duration.

.1 Simultaneous use of multiple crews on multiple fronts on multiple critical paths may be required.

.13 Arrange participation on and off site of subcontractors and suppliers, as required by Departmental Representative, for purpose of network planning, scheduling, updating and progress monitoring.

.1 Approvals by Departmental Representative of original networks and revisions do not relieve Contractor from duties and responsibilities required by Contract.

.14 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00- Submittal Procedures.

.2 Submit to Departmental Representative Project Control System for planning, scheduling, monitoring and reporting of project progress.

.3 Submit letter ensuring that schedule has been prepared in co-ordination with major sub-contractors.

.4 Refer to article "PROGRESS MONITORING AND REPORTING" of this specification Section for frequency of Project control system submittals.

.5 Submit impact analysis of schedule for changes that result in extension of contract duration.

.1 Include draft schedule update and report as outlined in article "PROGRESS MONITORING AND REPORTING".

.6 Submit Project planning, monitoring and control system data as part of initial schedule submission and monthly status reporting in following form.

.1 Master Schedule Bar Chart.

.2 Construction Detail Schedule Bar Chart.

.3 Listing of project activities including milestones and logical connectors, networks (sub-networks) from Project start to end. Sort activities by activity identification number and accompany with descriptions. List early and late start and finish dates together with durations, codes and float.

.4 Criticality report listing activities and milestones with zero day total float used as first sort for ready identification of critical paths through entire project. List early and late starts and finishes dates, together with durations, codes and float for critical activities.

.5 Progress report in early start sequence, listing for each trade, activities due to start, within 2 months from monthly update date. List activity identification number, description, and duration. Provide columns for entry of actual start and finish dates, duration remaining and remarks concerning action required.

1.5 QUALITY ASSURANCE

.1 Use experienced personnel, fully qualified in planning and scheduling to provide services from start of construction to Final Certificate, including Commissioning.

1.6 PROJECT MILESTONES

.1 Mandatory and recommended project milestones form targets for both Master Schedule and Detail Schedule of CPM construction network system.

.1 Mandatory: interim Certificate (substantial completion) within 365 calendar days of contract signatures.

1.7 MASTER SCHEDULE

.1 Structure and base CPM construction networks system on WBS coding in order to ensure consistency throughout Project.

.2 Prepare comprehensive construction Master Schedule (CPM logic diagram) and dependent Cash Flow Projection within 30 days of contract signature.

.1 Master Schedule will be used as baseline.

.1 Revise baseline as conditions dictate and as required by Departmental Representative.

.2 Departmental Representative as Project progresses will review and return revised baseline within 10 days.

.3 Reconcile revisions to Master Schedule and Cash Flow Projections with previous baseline to provide continuous audit trail.

.4 Initial and subsequent Master Schedule will include:

.1 USB Drive containing schedule, clearly labelled with data date, specific update, and person responsible for update.

.2 Bar chart identifying coding, activity durations, early/late and start/finish dates, total float, completion as percentile, current status and budget amounts.

.3 Network diagram showing coding, activity sequencing (logic), total float, early/late dates, current status and durations.

1.8 DETAIL SCHEDULE

.1 Provide detailed project schedule (CPM logic diagram) five (5) days before each meeting:

.1 Shop drawings.

.2 Samples.

.3 Approvals.

.4 Procurement.

.5 Construction.

.6 Installation.

.7 Testing.

.8 Commissioning and acceptance.

.2 Detail CPM schedule to cover in detail the project.

.1 Show remaining activities for CPM construction network system up to Final Certificate and develop complete detail as project progresses.

.2 Detail activities completely and comprehensively throughout duration of project.

.3 Relate Detail Schedule activities to basic activities and milestones developed and approved in Master Schedule.

.4 Clearly show sequence and interdependence of construction activities and indicate:

.1 Start and completion of all items of Work, their major components, and interim milestone completion dates.

.2 Activities for procurement, delivery, installation and completion of each major piece of equipment, materials and other supplies, including:

.1 Time for submittals, resubmittals and review.

.2 Time for fabrication and delivery of manufactured products for Work.

.3 Interdependence of procurement and construction activities.

.3 Include sufficient detail to assure adequate planning and execution of Work. Activities generally range in duration from three (3) to fifteen (15) workdays each.

.5 Provide level of detail for project activities such that sequence and interdependency of Contract tasks are demonstrated and allow co-ordination and control of project activities. Show continuous flow from left to right.

.6 Ensure activities with no float are calculated and clearly indicated on logical CPM construction network system as being, whenever possible, continuous series of activities throughout length of Project to form "Critical Path". Increased number of critical activities is seen as indication of increased risk.

.7 Insert Change Orders in appropriate and logical location of Detail Schedule. After analysis, clearly state and report to Departmental Representative for review effects created by insertion of new Change Order.

1.9 REVIEW OF CONSTRUCTION DETAIL SCHEDULE

.1 Allow minimum five (5) work days for review by Departmental Representative of proposed construction Detail Schedule unless otherwise specified.

.2 Upon receipt of reviewed Detail Schedule make necessary revisions and resubmit to Departmental Representative for review within maximum five (5) work days unless otherwise specified.

.3 Promptly provide additional information to validate practicability of Detail Schedule as required by Departmental Representative.

.4 Submittal of Detail Schedule indicates that it meets Contract requirements and will be executed generally in sequence.

1.10 COMPLIANCE WITH DETAIL SCHEDULE

.1 Comply with reviewed Detail Schedule.

.2 Proceed with significant changes and deviations from scheduled sequence of activities that cause delay, only after written receipt of approval by Departmental Representative.

.3 Identify activities that are behind schedule and causing delay. Provide measures to regain slippage.

.1 Corrective measures may include:

.1 Increase of personnel with more experience/qualifications on site for effected activities or work package.

.2 Overtime work.

.4 Submit to Departmental Representative, justification, project schedule data and supporting evidence for approval of extension to Contract completion date or interim milestone date when required. As part of supporting evidence, include:

.1 Written submission of proof of delay based on revised activity logic, duration and costs, showing time impact analysis illustrating influence of each change or delay relative to approved contract schedule.

.2 Prepared schedule indicating how change will be incorporated into overall logic diagram. Demonstrate perceived impact based on date of occurrence of change and include status of construction at that time.

.3 Other supporting evidence requested by Departmental Representative.

.4 Do not assume approval of Contract extension prior to receipt of written approval from Departmental Representative.

.5 In event of Contract extension, display in Detail Schedule that scheduled float time available for work involved has been used in full without jeopardizing earned float.

.1 Departmental Representative will determine and advise Contractor number of allowable days for extension of Contract based on project schedule updates for period in question, and other factual information.

.2 Construction delays affecting project schedule will not constitute justification for extension of contract completion date.

1.11 PROGRESS AND REPORTING

.1 On an ongoing basis, Detail Schedule on job site to show "Progress to Date". Arrange participation on and off site of subcontractors and suppliers, as, and when necessary, for purpose of network planning, scheduling, updating and progress monitoring. Inspect Work with Departmental Representative at least [once] monthly to establish progress on each current activity shown on applicable networks.

.2 Update and reissue project Work Breakdown Structure and relevant coding structures as project develops and changes.

.3 Perform Detail Schedule update [monthly] with status dated (Data Date) on last working day of month. Update to reflect activities completed to date, activities in progress, logic and duration changes.

.4 Do not automatically update actual start and finish dates by using default mechanisms found in project management software.

.5 Submit to Departmental Representative copies of updated Detail Schedule.

.6 Requirements for monthly progress monitoring and reporting are basis for progress payment request.

.7 Submit monthly written report based on Detail Schedule, showing Work to date performed, comparing Work progress to planned, and presenting current forecasts. Report summarize progress, defining problem areas and anticipated delays with respect to Work schedule, and critical paths. Explain alternatives for possible schedule recovery to mitigate potential delay. Include in report:

.1 Description of progress made.

.2 Pending items and status of: change orders, shop drawings.

.3 Status of Contract completion date and milestones.

.4 Current and anticipated problem areas, potential delays and corrective measures.

.5 Review of progress and status of Critical Path activities.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 DEFINITIONS

.1 Activity: element of work performed during course of project. Activity normally has expected duration and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar chart (GANTT chart): graphic representation of data relating to the implementation schedule of a project. In the usual bar chart, the activities or other elements of the project are presented from top to bottom, to the left of the graph while the dates are presented at the top, from left to right; the duration of each activity is indicated by horizontal segments placed between the dates. Usually the bar chart is generated from a commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction work week: Monday to Friday, inclusive, will provide five (5) day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project planning, monitoring and control system: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.3 REQUIREMENTS

.1 Ensure master plan and detail schedules are practical and remain within specified Contract duration.

.2 Plan to complete work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately ten (10) working days, to allow for progress reporting.

.4 Ensure that it is understood that award of contract or time of beginning, rate of progress, interim certificate and final certificate as defined times of completion are of essence of this contract.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with section 01 33 00 – Submittal Procedures.

.2 Submit to Departmental Representative within fifteen (15) working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.3 Submit project schedule to Departmental Representative within five (5) working days of receipt of acceptance of Master Plan.

1.5 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of work as Bar Chart (GANTT).

.2 Departmental Representative will review and return revised schedules within five (5) working days.

.3 Revise impractical schedule and resubmit within five (5) working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.6 PROJECT SCHEDULE

.1 Develop a detailed execution schedule from the overall plan.

.2 Ensure detailed project schedule includes as minimum milestone and activity types as follows:

.1 Award.
.2 Shop drawings, Samples.
.3 Permits.
.4 Mobilization.
.5 Electrical.
.6 Fire systems.
.7 Testing and commissioning.
.8 Supplied equipment long delivery items.

1.7 PROJECT SCHEDULE REPORTING

.1 Update project schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of project schedule, narrative report identifying work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.8 PROJECT MEETINGS

.1 Discuss project schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed and negotiated.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 ADMINISTRATIVE

.1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

.10 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.3 Allow five (5) days for Departmental Representative's to review of each submission.

.4 Adjustments made on shop drawings by the Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.5 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.

.6 The documents submitted must be accompanied by a cover letter in two (2) copies, containing the following information:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.7 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.
  - .9 Single line and schematic diagrams.
  - .10 Relationship to adjacent work.

.8 Distribute copies of shop drawings and data sheets after Departmental Representative has completed verification.

.9 Submit one (1) electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.10 Submit (1) electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.11 Submit (1) electronic copy and six (6) printed copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.12 Submit (1) electronic copy and six (6) printed copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.13 Submit (1) electronic copy and six (6) printed copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.

.14 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.15 Submit (1) electronic copy and six (6) printed copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.

.16 Delete information not applicable to project.

.17 Supplement standard information to provide details applicable to project.

.18 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, a confirmation will be sent electronically, and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.19 The review of shop drawings by the Departmental Representative is only intended to verify compliance with the general concept of the data indicated on them.

.1 This review shall not mean that Departmental approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 CERTIFICATES AND TRANSCRIPTS

.1 Submit the documents required by the relevant occupational health and safety board immediately after contract award.

.2 Submit transcription of insurance immediately after award of Contract.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 GENERAL

.1 Ensure that the construction project and facility operations proceed without undue interruption or impediment and that the safety of the facility is maintained at all times.

1.2 DEFINITIONS

.1 "Prohibited Items" means:

.1 Intoxicants, including alcoholic beverages, drugs or narcotics.

.2 Weapons or parts of weapons, ammunition and any object designed to kill, injure or incapacitate any person, or any object modified or assembled for such purposes, the possession of which has not been previously authorized.

.3 Explosives or bombs, or their components.

.4 Amounts of money exceeding regulatory limits.

.5 Any other item not described in paragraphs (a) through (d), possessed without prior authorization, which may endanger the safety of persons or the penitentiary.

.2 "Unauthorized smoking materials" means tobacco products including, but not limited to, cigarettes, cigars, tobacco, chewing tobacco, snuff, cigarette rollers, matches and lighters which are considered unauthorized items.

.3 "Commercial vehicle" means any motorized vehicle intended for the transportation of materials, equipment or tools required for the construction project.

.4 "CSC" means Correctional Services Canada.

.5 "Director" means the Director of the institution, as applicable, or their authorized Representative.

.6 "Construction Employees" means employees of the Prime Contractor, any of the Sub-Contractors, equipment operators, material suppliers, testing and inspection laboratories, and regulatory agencies.

.7 "Departmental Representative" means the Project Manager from Public Works, Government Services Canada (PWGSC) or Correctional Service Canada (CSC) depending on the project.

.8 "Perimeter" means the area of the facility surrounded by secure fences or walls restricting the movement of inmates.

.9 "Construction Zone" means the area where, as indicated in the contract documents, the Contractor will be permitted to work. This area may or may not be isolated from the facility's security compound.

1.3 PRELIMINARY MEASURES

.1 Prior to commencing work, the Contractor shall meet with the Director to:

.1 Discuss the nature and scope of all project activities.

.2 Establish mutually acceptable security measures in accordance with this directive and the specific needs of the facility.

.2 The Contractor shall:

.1 Ensure that all construction employees are aware of CSC safety requirements.

.2 Ensure that CSC safety requirements are prominently displayed on the job site at all times.

.3 Work with facility staff to ensure construction employees comply with all safety requirements.

1.4 CONSTRUCTION EMPLOYEES

.1 The Contractor shall provide the Director with a list of names with dates of birth for all employees scheduled to work on the construction site. A completed safety check form may be required for each employee.

.2 If required, allow two (2) weeks for processing of security clearance requests. No employee will be admitted to the facility without a current photo identification card such as a provincial driver's license. Security clearances are specific to each CSC institution and any clearance obtained from another institution is not valid for the institution where this project will take place.

.3 The Director may require that the faces of construction employees be photographed and that the photographs be posted at appropriate locations in the institution or transferred to a database for identification purposes. The Director may require that photo identification cards be produced for all construction employees. These cards shall be left at the designated entrance where they will be given to the holder upon arrival at the facility. They shall be worn prominently on their clothing at all times while at the facility.

.4 No person who has reason to believe that he/she may be a security risk shall be permitted access to the facility property.

.5 Any person employed on the construction site will be immediately removed from the facility property if:

.1 He/she appears to be under the influence of alcohol, drugs or narcotics.

.2 Engages in abnormal or disorderly conduct.

.3 She is in possession of a prohibited item.

1.5 VEHICLES

.1 Any person leaving a vehicle unattended on CSC property shall close the windows, lock the doors and trunks and remove the keys. The Owner of the vehicle or the employee of the company owning the vehicle shall ensure that the keys are kept securely on his/her person.

.2 At any time, the Director may limit the number and type of vehicles permitted on the premises.

.3 Deliverers of materials required for the project will not be required to have a security clearance but shall not leave their vehicle for the duration of their stay in the facility. The Director may require that they be accompanied by a facility employee or commissionaire.

.4 If the Director permits trailers to be left within the security perimeter of the facility, the doors of the trailers shall remain securely locked at all times, as shall the windows, when the trailers are left unoccupied. Windows shall be protected by expanded metal mesh. All trailers used for storage by the Contractor, both inside and outside the perimeter, shall remain securely locked when not in use.

1.6 PARKING

.1 The Director shall identify authorized parking areas for construction employees' vehicles. Parking in other areas will be prohibited and offending vehicles may be towed.

1.7 DELIVERIES

.1 All deliveries of materials, equipment or tools for the project shall be addressed to the Contractor to distinguish them from shipments to the institution. The Contractor shall ensure that his employees are on site to receive shipments, as CSC personnel will not accept **any** deliveries of materials, equipment or tools destined for the Contractor.

1.8 TELEPHONES

.1 No telephone, fax machine or computer connected to the Internet will be permitted within the security perimeter of the facility without prior approval of the Director.

.2 The Warden will ensure that telephones, fax machines and computers with Internet connections are not installed in an area accessible to inmates. Access to each computer shall be password protected, thus preventing unauthorized staff from connecting to the Internet.

.3 Unless specifically authorized by the Director, cellular or digital wireless telephones, including but not limited to messaging devices, pagers, BlackBerries, telephones used as two-way radios, are prohibited in the facility. If cell phones are eventually allowed, the user will not allow their use by inmates.

.4 The Director may authorize, but is not limited to, the use of two-way radios.

1.9 HOURS OF WORK

.1 The work week at the facility shall be Monday through Friday, 7:00 a.m. to 5:00 p.m.

.2 Work is not permitted on weekends or vacations without the express permission of the Director, which must be requested at least two (2) days in advance. In the event of an emergency, or in any other circumstance, this period may be waived by the Director.

1.10 WORK OUTSIDE NORMAL WORKING HOURS

.1 Permission of the Director is required for all work performed outside normal working hours. The Contractor shall give at least forty-eight (48) hours notice when approved work is required to be performed outside normal working hours. If overtime is required to perform an urgent task, such as pouring concrete or ensuring construction safety, the Contractor shall notify the Director as soon as the Contractor is made aware of such a requirement and then follow the directions given by the Director. Any costs incurred by Canada as a result of this situation may be charged to the Contractor.

.2 When work is required outside of normal hours, or on weekends or vacations, and such additional work is authorized by the Director, the Director or his designee may assign additional personnel to security. The Contractor may be charged for the costs associated with such assignment.

1.11 TOOLS AND EQUIPMENT

.1 Maintain at the job site a complete list of tools and equipment to be used during the construction project. Make this list available for inspection when required.

.2 Maintain the above specified tools and equipment list throughout the construction project.

.3 Never leave tools unattended, especially power tools, cartridge tools, cartridges, files, saw blades, carbide saws, wires, ropes, ladders and any type of lifting equipment.

.4 Store tools and equipment in approved secure locations.

.5 Lock all tool boxes after use. Contractor's employees shall keep keys with them at all times.

.6 Secure and lock scaffolding when not erected. When erected, scaffolding shall be secured to the satisfaction of the Manager.

.7 Notify the Director immediately of any lost or missing tools or equipment.

.8 The Director shall ensure that safety personnel perform checks of the Contractor's tools and equipment as per the list provided by the Contractor:

.1 At the beginning and end of each construction project.

.2 Weekly, if the project is longer than one week.

.9 Some tools/equipment, such as cartridges and hacksaw blades, are very strictly controlled items. The Contractor will be issued at the beginning of the day a sufficient quantity for the day's work. Used blades/cartridges shall be returned to the Representative at the end of each work day.

.10 Where propane or natural gas is used for heating the project, the facility will require a Contractor's employee to supervise the construction site during non working hours.

1.12 KEYS

.1 Other keys:

.1 During the construction project, the Contractor will use construction locks in the finish locks.

.2 The Contractor will instruct his employees, and sub-Contractors if necessary, on the safe storage of construction keys.

.3 At the completion of each phase of the construction project, the CSC Representative, in cooperation with the lock manufacturer, shall:

.1 Establish an operational key slip.

.2 Receive operational keys and barrels for locks directly from the lock manufacturer.

.3 Arrange for the removal and return of construction locks and installation of final locks.

.4 Once the permanent detention locks are in place, CSC officers escorting construction employees will be required to obtain keys from the Security Equipment Maintainer to open the doors for the Contractor. The Contractor shall inform its employees that only CSC officers providing escorts will be authorized to use these keys.

1.13 DETENTION HARDWARE

.1 Return all existing detention hardware removed to the Warden for disposal or safekeeping for future use.

1.14 PRESCRIPTION DRUGS

.1 Employees of the Contractor who are required to take prescription medication during the work day shall be required to obtain authorization from the Director to be allowed to bring a day's supply of medication to the facility.

1.15 SMOKING RESTRICTIONS

.1 Contractors and construction employees are not permitted to smoke inside correctional facilities or in the open air within the perimeter of a correctional facility. They shall not carry unauthorized tobacco products within the perimeter.

.2 Contractors and construction employees in violation of this policy will be asked to immediately cease smoking or discarding any unauthorized tobacco products. If they refuse to comply, they will be asked to leave the facility.

.3 Smoking will only be permitted outside the perimeter of the correctional facility at a location designated by the Director.

1.16 PROHIBITED ITEMS

.1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are prohibited on the premises of the institution.

.2 The discovery of prohibited items on the construction site and the identification of the person(s) responsible for the presence of such items shall be reported immediately to the Director.

.3 Contractors shall be vigilant with respect to their employees and employees of their subcontractors, as the discovery of a prohibited item may result in the cancellation of the security clearance of the employee involved. A serious violation may result in the removal of the company's facility from the site for the duration of the construction project.

.4 If weapons or ammunition are found in the vehicle of a Contractor, sub-Contractor, supplier or employee thereof, the security clearance of the driver of the vehicle shall be revoked forthwith.

1.17 SEARCHES

.1 All persons and vehicles accessing the facility's property may be searched.

.2 Where the Director has reasonable grounds to believe that an employee of the Contractor is in possession of contraband or a prohibited item, the Director may require that person to be searched.

.3 The personal effects of any employee arriving at the facility may be checked for residue of prohibited drugs.

1.18 ACCESS TO THE FACILITY

.1 Unless specifically authorized by the Director, construction employees and commercial vehicles will not be permitted to enter the facility outside of normal working hours.

1.19 VEHICULAR TRAFFIC

.1 Vehicles may enter and exit the facility under escort through the vehicle access gate during the following periods: 8:00 a.m. to 3:30 p.m.

.2 Construction vehicles that cannot be easily searched may not leave the facility until an inmate count has been completed. The exit of vehicles that cannot be searched shall be coordinated with the CSC Representative.

.3 The Contractor shall notify the Director twenty-four (24) hours in advance of the arrival of heavy equipment such as concrete mixers, cranes, etc.

.4 Vehicles loaded with soil or garbage, or any other vehicle deemed impossible to search, shall be under constant surveillance by CSC employees or commissionaires reporting to the Director.

.5 Before a commercial vehicle is allowed on the premises, the Contractor or his Representative shall certify that the contents of the vehicle are definitely required for the construction project.

.6 Access to CSC property will be denied to any vehicle whose contents, in the opinion of the Director, represent a security risk to the facility.

.7 Private vehicles of construction employees shall not be permitted within the security perimeter of medium or maximum security institutions without the express permission of the Director.

.8 Subject to prior approval of the Director, a vehicle may be used in the morning to bring a group of employees to the site and in the evening to bring them back. Such vehicle shall not be permitted to remain on the premises during the day.

.9 With the approval of the Director, certain equipment may be left on the job site overnight or on weekends. Such equipment shall be locked and the battery removed. The Director may require that the equipment be secured with a chain and padlock to another fixed object.

1.20 MOVEMENT OF CONSTRUCTION EMPLOYEES ON FACILITY PROPERTY

.1 Subject to the necessity of maintaining adequate security, the Director shall allow the Contractor and his employees as much freedom of action and movement as possible.

.2 However, notwithstanding the preceding paragraph, the Director may:

.1 Prohibit or limit access to any part of the facility.

.2 Require that throughout the construction project, or at certain times, construction employees be accompanied by a CSC security officer or commissionaire to certain areas of the facility.

.3 All construction employees shall remain on site during coffee/health breaks and lunch. They shall not be permitted to eat in the Correctional Officer break room or in the facility dining room.

1.21 MONITORING AND INSPECTION

.1 Construction activities and the movement of personnel and vehicles will be monitored and inspected by CSC security staff to ensure that established security standards are met.

.2 CSC staff will ensure that construction workers understand the need for monitoring and inspection and that this understanding is maintained throughout the project.

1.22 WORK STOPPAGE

.1 At any time, the Director may order the Contractor, its employees, subcontractors or their employees, to not enter or leave the site immediately due to a safety incident in progress at the facility. The Contractor's foreman in charge of the job site shall then note the name of the CSC employee issuing the order, the time of the instruction, and comply with the order received as soon as possible.

.2 The Contractor shall notify the Departmental Representative of the situation within twenty-four (24) hours of the work stoppage.

1.23 CONTACT WITH INMATES

.1 Contacting, talking to, giving items to, or receiving items from inmates is prohibited without specific authorization. Failure to comply with this rule will result in the removal of the responsible employee from the work site and the revocation of his/her security clearance.

.2 It should be noted that cameras are not permitted on CSC property unless previously authorized.

.3 Notwithstanding the foregoing, if the Director authorizes the use of cameras, the photographing of inmates or CSC employees or any part of the institution that is not necessary for the performance of this contract shall be strictly prohibited.

1.24 COMPLETION OF CONSTRUCTION PROJECT

.1 Upon completion of the construction project or, if applicable, upon takeover of the facilities, the Contractor shall remove all materials, tools and equipment not identified in the construction contract as to be left at the facility.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 GENERAL NOTE

.1 In this section, the term "site" refers to all the installations located on the site where the work takes place (the work site itself, buildings, accesses, infrastructures, parking lots, quays, etc.).

1.2 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.3 REFERENCES

.1 Act respecting occupational health and safety, R.S.Q., c. S-2.1.

.2 Safety Code for Construction Work, R.S.Q., c. S-2.1, r.4.

1.4 DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/INFORMATION

.1 Submit required documents and samples in accordance with section 01 33 00 – Documents and Samples to be Submitted.

.2 Submit to the Departmental Representative and to the CNESST the prevention program specific to the construction site, as described in the "GENERAL REQUIREMENTS" section, at least ten (10) days prior to the beginning of the work.

.3 The Departmental Representative will review the Contractor's site specific prevention program and provide comments within ten (10) working days of receipt. If necessary, the Contractor shall revise its prevention program and resubmit it to the Departmental Representative no later than five (5) days after receipt of the Departmental Representative's comments. The Departmental Representative reserves the right not to authorize the start of work on the site until the content of the prevention program is satisfactory. The Contractor shall subsequently update its prevention program and submit it to the Departmental Representative if the scope of the work changes, if the Contractor's work methods differ from its initial forecasts or for any other new applicable condition.

.4 The Departmental Representative's review of the Contractor's prevention program for the site shall not be construed as an approval of that program and shall not limit the Contractor's overall responsibility for health and safety during the construction work.

.5 Submit to the Employer weekly reports of health and safety inspections carried out on the site by the Contractor's Authorized Representative.

.6 Submit to the Departmental Representative within twenty-four (24) hours, a copy of any inspection reports, correction notices or recommendations issued by federal, provincial and territorial health and safety inspectors.

.7 Submit to the Departmental Representative, within twenty-four (24) hours, an investigation report for any accident resulting in injury and for any incident that highlights a potential hazard.

.8 The survey report should contain at least the following elements:

.1 Date, time and place of the accident.

.2 Name of the subcontractor involved in the accident.

.3 Number of people involved and status of injuries.

.4 Identification of witnesses.

.5 Detailed description of the tasks performed at the time of the accident.

.6 Equipment used to perform the tasks carried out at the time of the accident.

.7 Corrective action taken immediately after the accident.

.8 Causes of the accident.

.9 Preventive measures taken to avoid a similar accident.

.9 Medical Surveillance: Where required by law, regulation or safety program, submit certification of medical surveillance of personnel working on the site prior to commencing work. Provide the Departmental Representative with additional certification for any new employees working on the job site.

.10 Provide the Departmental Representative with an emergency response plan along with the prevention program. This emergency response plan must contain the elements listed in the "GENERAL REQUIREMENTS" section of this section.

.11 Provide the Departmental Representative with copies of training certificates for site workers, including the following (where applicable):

.1 Workplace first aid and cardiopulmonary resuscitation.

.2 Work likely to emit asbestos dust (mandatory for all work in the presence of asbestos).

.3 Work in confined spaces (mandatory for all work in confined spaces).

.4 Lockout (mandatory for all work requiring lockout).

.5 Safe operation of forklifts (mandatory for all forklift operations).

.6 Safe operation of aerial work platforms (mandatory for all aerial work platforms).

.7 Any other training required by regulation or by the prevention program.

.12 In addition, attestations from the General Health and Safety Course for construction sites must be available on the site upon request.

.13 Plans and engineer's certificates of compliance: the Contractor must transmit to the Departmental Representative and to the CNESST a copy signed and sealed by an engineer of all plans that are required under the Safety Code for Construction Work (S-2.1, r.4), another law, another regulation or another clause of the specifications or contract. He must also send a certificate of compliance signed by an engineer once the installation for which these plans were designed has been completed and before any person uses this installation. A copy of these documents must be available at all times at the construction site.

1.5 PRODUCTION OF THE NOTICE OF COMMENCEMENT OF WORK

.1 Before the beginning of the work, send the notice of opening of the construction site to the CNESST. Send a copy of the notice of opening and the acknowledgement of receipt sent by the CNESST to the Departmental Representative.

.2 At the end of all work, the notice of closure must be sent to the CNESST, with a copy to the Departmental Representative.

.3 The Contractor shall assume the role of prime contractor at all times within the limits of the work site and anywhere else where he is required to perform work under this project. The Contractor shall acknowledge the responsibility of the prime contractor and so identify himself in the notice of opening of the work site that he sends to the CNESST.

.4 The Contractor must agree to divide and identify the work site adequately, in order to define time and space at all times during the project.

1.6 RISK/HAZARD ASSESSMENT

.1 Conduct an assessment of the safety risks/hazards present on this site as they relate to the execution of the work.

1.7 MEETINGS

.1 Arrange and conduct a health and safety meeting with the Departmental Representative prior to commencement of work.

.2 A Contractor's Decision-Making Representative shall attend all meetings where health and safety on the site is discussed.

.3 If twenty-five (25) or more workers are expected to be on the job site at any time during the course of the work, the Contractor shall establish a site committee and hold meetings as required by the Safety Code for the Construction Industry (S-2.1, r. 4). A copy of the minutes of the worksite committee meetings shall be forwarded to the Departmental Representative no later than five (5) days following the date of the committee meeting.

1.8 REGULATORY AGENCY REQUIREMENTS

.1 Perform the Work in accordance with section 01 41 00 – Regulatory Requirements.

.2 Comply with all laws, regulations and standards applicable to the performance of the Work.

.3 Comply with prescribed standards and regulations to ensure normal operation of the Work on lands contaminated with hazardous or toxic materials.

.4 Always use the most current version of the standards referenced in the Safety Code for the Construction Industry (S-2.1, r.4), notwithstanding the date indicated in that Code.

1.9 FIELD/IMPLEMENTATION CONDITIONS

.1 In addition to the hazards associated with the tasks to be performed, personnel performing work on the job site will be exposed to the following hazards inherent to the location of the work. The Contractor shall include, but not be limited to, these items in his prevention program:

.1 Materials containing asbestos.

.2 Materials containing lead.

.3 Mould.

.4 Other hazardous materials (specify).

.5 Confined spaces.

.6 Overhead power lines.

.7 Underground services (electricity, gas, steam, water, etc.).

.8 Laboratories.

.9 Trees and landscaping to be retained and protected.

.10 Potentially unstable soils.

.11 Barbed wire fences.

.12 Nearby water bodies.

.2 The site where the Work is to be performed is occupied by employees and/or the public at all times. The Contractor shall take into account the presence of these persons, provide safety measures to protect them and include these measures in his prevention program.

1.10 GENERAL REQUIREMENTS

.1 Prior to commencing work, prepare a site-specific prevention program based on the prior risk/hazard assessment in accordance with "RISK/HAZARD ASSESSMENT' AND 'SITE/IMPLEMENTATION CONDITIONS" of this section. Implement this programme and ensure compliance at all points until all site personnel have been discharged. The prevention programme must take into account the particularities of the project and must cover all the work carried out on the site.

.2 The prevention programme shall include at least the following elements:

.1 Company health and safety policy.

.2 Description of work stages.

.3 Total cost of the work, schedule and expected workforce curve.

.4 Health and safety responsibility chart.

.5 Physical and material organization of the work site.

.6 Identification of risks for each stage of the work, corresponding preventive measures and implementation procedures.

.7 Identification of preventive measures in relation to the specific risks inherent in the workplace as indicated in the article Site/implementation conditions.

.8 Training required.

.9 Accident/injury procedure.

.10 Written commitment by all parties to this prevention program.

.11 Site inspection grid based on preventive measures.

.12 Emergency Response Plan, which shall contain at least the following elements:

.1 Site evacuation procedure.

.2 Identification of resources (police, fire, ambulance, etc.).

.3 Identification of responsible persons on site.

.4 Identification of first aiders.

.5 Communication flow chart (including site manager and Departmental Representative).

.6 Training required for those responsible for its application.

.7 Any other information required, taking into account the characteristics of the site.

.3 The Departmental Representative will provide the Contractor with the site evacuation procedure, if applicable. The Contractor shall then match the site procedure with the site procedure and forward it to the Departmental Representative.

.4 The Departmental Representative may provide written comments if there are deficiencies or concerns with the prevention program and may require the submission of a revised program to correct such deficiencies or concerns.

.5 In addition to the prevention program, during the course of the work the Contractor shall develop and submit to the Departmental Representative a specific written procedure for any work with a high risk of accidents (e.g. demolition procedures, special installation procedures, lifting plans, confined space entry procedures, electrical shutdown procedures, etc.) or as requested by the Departmental Representative.

.6 The Contractor shall plan and organize the Work in such a way as to encourage the elimination of hazards at the source or collective protection and thus minimize the use of personal protective equipment.

.7 Equipment, tools or protective devices that cannot be installed or used without compromising the health and safety of workers or the public are deemed to be inadequate for the work to be performed.

.8 All mechanical equipment (e.g., but not limited to, personnel or material hoists, excavators, concrete pumps, concrete saws) shall be inspected prior to delivery to the job site. The Contractor shall obtain an inspection certificate signed by a mechanic and dated within one week prior to the arrival of each piece of equipment at the site and keep it at the site. The Contractor shall submit the certificate to the Departmental Representative upon request.

.9 Ensure that all inspections (daily, periodic, annual, etc.) of personnel or material lifting equipment required by the applicable standards are carried out and be able to provide a copy of the inspection certificates upon request by the Departmental Representative.

.10 The Departmental Representative may at any time, if he suspects a defect or a risk of accident, order the immediate shutdown of any equipment and require an inspection by a specialist of his choice.

.11 The Departmental Representative shall be consulted on the location of gas cylinders and tanks on the work site.

1.11 RESPONSIBILITY

.1 The Contractor shall be responsible for the health and safety of persons on the site and the protection of property on the site. The Contractor shall also be responsible for the protection of persons and the environment in the areas adjacent to the work site insofar as they are affected by the work.

.2 Regardless of the size and location of the work site, the Contractor shall clearly delineate the boundaries of the work site by physical means. The Contractor shall also comply with specific regulatory requirements in this regard. The means chosen to delineate the work site shall be submitted to the Departmental Representative.

.3 The Contractor must accept and assume all tasks and obligations normally devolved to the project manager under the Act respecting occupational health and safety (R.S.Q., chapter S-2.1) and the Safety Code for the Construction Industry (S-2.1, r.4).

.4 Comply with, and have employees comply with, the safety requirements set out in applicable local, territorial, provincial and federal contract documents, ordinances, laws and regulations, and in the prevention program prepared for the work site.

1.12 COMPLIANCE REQUIREMENTS

.1 Comply with the Act respecting occupational health and safety (R.S.Q., c. S-2.1) and the Safety Code for the Construction Industry (S-2.1, r. 4.) in addition to complying with all requirements of this specification.

1.13 UNFORESEEN RISKS/HAZARDS

.1 When a source of danger not specified in the contract documents and not identifiable during the preliminary inspection of the work site becomes apparent through or during the performance of the work, the Contractor shall immediately stop the work, notify the person responsible for health and safety on the work site, implement temporary protective measures for workers and the public and notify the Departmental Representative verbally and in writing. The Contractor shall then make the necessary changes to the prevention programme and put in place the necessary safety measures so that the work can resume.

1.14 PERSON RESPONSIBLE FOR HEALTH AND SAFETY

.1 If the work site meets the criteria of section 2.5.3 of the Safety Code for the Construction Industry (S-2.1, r.4), the Contractor shall hire a competent and authorized person as a Safety Officer and assign that person on a full-time basis from the beginning of the work. The duties of this person must be dedicated exclusively to the management of health and safety on the work site. The safety officer must meet the following criteria:

.1 Hold a safety officer certificate issued by the CNESST for a minimum of five (5) years.

.2 Have practical experience on a construction site where related activities similar to those of the project are conducted.

.3 Have a working knowledge of workplace health and safety regulations.

.4 Be responsible for the Contractor's occupational health and safety training sessions and ensure that only those individuals who have successfully completed the required training are allowed access to the site to perform the work.

.5 Be responsible for the implementation, detailed compliance and monitoring of the Contractor's health and safety plan for the site.

.6 Be present at all times on the job site during the execution of the Work.

.7 Inspect the work and ensure compliance with all regulatory requirements and those specified in the contract documents or prevention program.

.8 Maintain a daily log of work activities and submit a copy to the Departmental Representative at least once a week.

.2 The safety officer's certification shall be forwarded to the Departmental Representative prior to the commencement of the Work.

.3 Where a Safety Officer is not required or is hired by the Departmental Representative, the Contractor shall appoint a competent person to be the supervisor responsible for health and safety, regardless of the size of the work site or the number of workers present. This person must be present at all times on the site and must be able to take all necessary measures to ensure the health and safety of persons and property on the site and in the immediate environment of the site that could be affected by the progress of the work. The Contractor shall forward the name of this person to the Departmental Representative prior to the start of the work.

1.15 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 the Province having jurisdiction, and in consultation with Departmental Representative.

.2 As a minimum, the following information and documents shall be posted in a place easily accessible to workers:

.1 Notice of commencement of work.

.2 Identification of the project manager.

.3 Company's OHS policy.

.4 Prevention programme specific to the work site.

.5 Emergency plan.

.6 Minutes of worksite committee meetings.

.7 Names of site committee representatives.

.8 Names of first aiders.

.9 Intervention and correction reports issued by the CNESST.

1.16 INSPECTIONS AND CORRECTION OF NON-COMPLIANCE

.1 Inspect the work site, complete the worksite inspection grid and submit it to the Departmental Representative in accordance with "DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/INFORMATION" of this section.

.2 Immediately take the necessary measures to correct the situations deemed to be non-compliant found during the inspections mentioned in the previous paragraph or found by the competent authority or by the Departmental Representative or his representative.

.3 Provide the Departmental Representative with a written report of the actions taken to correct any health and safety non-compliance.

.4 The Contractor shall give the Safety Officer or, where there is no Safety Officer, the person appointed to deal with health and safety, full authority to order the stopping and resuming of the work when he deems it necessary or desirable for health and safety reasons. The Departmental Representative shall ensure that the health and safety of the public and site personnel and the protection of the environment shall always take precedence over matters relating to the cost and timing of the work.

.5 The Departmental Representative or his designate may order the work to be stopped if the Contractor fails to correct any health and safety conditions found to be non-compliant. Without limiting the foregoing, the Departmental Representative may also at any time order the work to be stopped if, in his opinion, there is a danger or risk to the health or safety of site personnel or the public or to the environment.

1.17 VIOLENCE PREVENTION

.1 Health and safety management at Public Works and Government Services Canada work sites includes the implementation of measures to protect the psychological health of all persons accessing the work site. In addition to physical violence, verbal abuse, intimidation and harassment are not tolerated on the site. Any person who demonstrates such actions or behaviour will be warned and/or may be permanently removed from the site by the Departmental Representative.

1.18 LOCKOUT

.1 For any work on equipment powered by electricity or any other energy source, the Contractor shall forward a general lockout procedure to the Departmental Representative and implement it.

.2 Supervisory personnel and all workers involved in work requiring lockout shall have received training on lockout from a recognized organization. The Contractor shall forward the training certificates to the Ministry Representative.

.3 Before undertaking lockout of equipment at an occupied site, the Contractor shall coordinate with the Site Representative if the disconnection of energy sources may affect site operations or occupants.

.4 The Contractor shall identify a qualified person as being responsible for lockout and shall ensure that this person prepares a lockout sheet for each piece of equipment to be locked out. The lockout sheet should be sent to the Ministry Representative at least forty-eight (48) hours before the start of the work. The latter will have it checked by a site representative if the work is taking place in an existing building. The lockout sheet should include at least the following information:

.1 Description of work to be performed.

.2 Identification, description and location of circuit and/or equipment to be locked out.

.3 Identification of power sources supplying the equipment.

.4 Identification of each disconnect point.

.5 Sequence of lockout and release of residual energy and sequence of un-lockout.

.6 List of lockout materials required.

.7 Method of verifying zero energy.

.8 Name and signature of the person who completed the form.

.5 If requested by the Departmental Representative, the Contractor shall record all of this information on the Site Representative form.

.6 At the time of lockout, the responsible person shall date the form and ensure that each worker involved in the work on the locked circuit/equipment signs the form.

1.19 ELECTRICAL WORK

.1 The Contractor shall ensure that all electrical work is performed by qualified employees in accordance with provincial qualification and training regulations.

.2 The Contractor shall comply with the requirements of CSA Z462 Electrical Workplace Safety.

.3 All work on electrical equipment shall be done without power unless it is not possible to completely disconnect the equipment.

.4 The Contractor shall comply with all requirements of the "LOCKOUT" section of this section.

.5 The Contractor shall notify the Departmental Representative in writing of any work that cannot be done without power and obtain his approval. The Contractor shall demonstrate to the Departmental Representative that the work cannot be performed off-line and provide all information necessary to complete and obtain a live working permit (work method, arc level assessment, protective perimeter, protective equipment, etc.) prior to commencement of the work, except for the exceptions provided in CSA Z462 Electrical Safety.

.6 The Live Working Permit shall contain at least the following items:

- .1 Description of circuit and equipment and location.
- .2 Justification for the need to perform live work.
- .3 Description of safe working practices to be adopted.
- .4 Findings of the electrical shock hazard analysis.
- .5 Delineation of the electric shock protection perimeter.
- .6 Findings of the arc flash hazard analysis.
- .7 Description of arc flash protection perimeter.
- .8 Description of required personal protective equipment.
- .9 Description of means to restrict access to unqualified persons.
- .10 Evidence of briefing.
- .11 Live working approval signature (by person in authority or owner).

.7 If for the operational needs of the site occupants, the site representative requires the Contractor to carry out live working, the Contractor shall obtain all the necessary information to complete a Live Working Permit (method of working, arc level assessment, protective perimeter, protective equipment, etc.) and have it signed by the site representative designated by the Departmental Representative prior to the commencement of the work.

1.20 EXPOSURE TO ASBESTOS

.1 Prior to the commencement of any work likely to emit asbestos dust, the Contractor shall:

- .1 Provide a written work procedure identifying the level of risk of the work (low, moderate, high), as defined in section 3.23 of the Safety Code for Construction Work S-2.1, r-4, and which takes into account all the requirements of this same section.

.2 Provide certificates demonstrating that all workers involved in the work have been trained in asbestos hazards and the procedure required in the previous paragraph.

.3 Demonstrate that all materials and equipment necessary to comply with the procedure and to perform the work safely are on hand.

1.21 FUNGAL CONTAMINATION

.1 Prior to the commencement of any work where workers may come into contact with mould contaminated materials, the Contractor shall:

.1 Provide a written work procedure that meets the requirements of the Safety Code for the Construction Industry, S-2.1, r.4, and the requirements outlined in the "Mould Guidelines for the Canadian Construction Industry" published by the Canadian Construction Association (https://www.cca-acc.com/wp-content/uploads/2019/02/Mould-guidelines2018.pdf).

.2 Demonstrate that all materials and equipment necessary to follow procedures and perform the work safely are on hand.

1.22 EXPOSURE TO SILICA

.1 For all indoor or outdoor work generating silica dust, the Contractor must respect the following requirements, in addition to those of the Safety Code for Construction Work S-2.1, r.4.

.1 Work in a wet environment or use tools with water to reduce dust, otherwise capture the dust at the source and retain it in a high efficiency filter so as not to spread it to the environment.

.2 Clean surfaces and tools with water, never with compressed air.

.3 Sand and strip surfaces using abrasive containing less than 1% silica (also known as amorphous silica).

.4 Install shields or partitions to prevent dust migration out of the work area to protect other workers and the public.

.5 Wear respiratory and eye protection equipment during all operations where silica dust may be generated in accordance with the requirements of the Safety Code for Construction Work, S-2.1, r.4.

.6 Wear protective coveralls to prevent off-site contamination.

.7 Do not eat, drink or smoke in a dusty area.

.8 Wash hands and face before eating, drinking or smoking.

1.23 LEAD-BASED PAINT REMOVAL

.1 Prior to the commencement of any work in which workers are likely to handle materials containing lead-based paint or other lead-containing substances, the Contractor shall:

.1 Provide a written procedure that complies with the requirements of the Safety Code for Construction Work, S-2.1, r.4 as well as the requirements specified in the document "Guidelines for Exposure to Lead on Construction Sites", published by the Ontario Ministry of Labour (http://www.interprovincial.ca/images/pdfs/publications/lead_guidelines.pdf). In case of differences between the Quebec regulation and the Ontario document, the more stringent requirement applies.

.2 Demonstrate that he has on hand all the materials and equipment necessary to follow the procedure and to perform the work safely.

1.24 RESPIRATORY PROTECTION

.1 The Contractor shall ensure that all workers who are required to wear respirators as part of their duties are trained and fit tested in accordance with CSA Z94.4 Selection, Care and Use of Respirators. Certificates of fit testing shall be provided to the Departmental Representative upon request.

1.25 FALL HAZARD PREVENTION

.1 Plan and organize work to eliminate fall hazards at the source or provide collective protection to minimize the need for personal protective equipment. Where personal fall protection is required, workers shall use a safety harness in accordance with CAN/CSA Z-259.10-18. Seat belts shall not be used as fall protection.

.2 All persons operating a platform lift (scissor lifts, telescopic masts, articulated masts, rotating masts, etc.) shall be trained to do so.

.3 Safety harnesses must be worn on all telescopic, articulated and rotating mast aerial work platforms.

.4 Establish a danger zone around each platform lift.

.5 Any opening in a floor or roof must be surrounded by a guardrail or covered with a cover that is attached to the floor and can withstand the loads to which it may be subjected, regardless of the size of the opening and the height of fall.

.6 Every person working within 2 m of a fall hazard of 3 m or more shall use a safety harness in accordance with the requirements of the regulation unless a guardrail or other element providing equivalent safety is present.

.7 Notwithstanding the requirements of the regulations, the Departmental Representative may require the installation of guardrails or the use of safety harnesses for specific situations where there is a risk of falls of less than 3 m.

1.26 SCAFFOLDING

.1 In addition to the requirements of the Construction Safety Code, the Contractor using scaffolds shall comply with the following requirements:

.1 Bases:

.1 Scaffolds shall be installed on solid bases so that they cannot slip or tip.

.2 The Contractor wishing to install scaffolding on a roof, overhang, canopy or mansard shall submit to the Departmental Representative his load calculations, along with plans signed and sealed by a Professional Engineer and obtain his authorization before beginning the installation.

.2 Assembly, Bracing and Mooring:

.1 All scaffolds shall be assembled, braced and moored in accordance with the manufacturer's instructions and the provisions of the Safety Code for Construction Work.

.2 For any situation where it is necessary to remove certain elements of the scaffolding (example: braces), the Contractor must submit to the Departmental Representative, prior to the assembly of the scaffolding, an assembly procedure signed and sealed by an engineer certifying that the scaffolding thus assembled will allow the work to be carried out in a safe manner, taking into account the loads that will be applied.

.3 For any scaffold structure with a span between two supports greater than 3 m, the Contractor shall provide to the Departmental Representative, prior to assembly of the scaffold, an assembly plan signed and sealed by an Engineer.

.3 Fall Protection During Assembly:

.1 At all times during assembly, all workers shall be provided with fall protection if exposed to a fall hazard of more than 3 m.

.4 Floors:

.1 Scaffold decks shall be designed and installed in accordance with the provisions of the Safety Code for Construction Work.

.2 If planks are used, they shall be approved and stamped in accordance with section 3.9.8 of the Safety Code for Construction.

.3 Scaffolds of four or more sections (or 6 m) in height shall have a solid floor covering the entire bolt area every 3 m in height or fraction thereof and at no time shall the elements of these floors be moved to create intermediate landings.

.5 Guardrails:

.1 Guardrails shall be provided at all working landings.

.2 Bracing braces are not to be considered as guardrails.

.3 Where floors are not solid, guardrails shall be installed just above the edge of the floor so that there is no horizontal gap between the floor and the guardrail.

.4 For scaffolds four sections (or 6 m) and greater in height where solid floors are required, guardrails shall be installed at each such landing at the start of the work and remain in place until the work is completed.

.6 Means of Access:

.1 The Contractor shall ensure that the means of access to the scaffold does not compromise the safety of workers.

.2 Where scaffold decks are constructed of planks, ladders shall be installed so that protruding planks do not interfere with climbing or descending.

.3 Notwithstanding the provisions of the Safety Code for Construction, stairs shall be provided for all scaffolds with six or more rows of uprights and six or more sections (or nine metres) in height.

.7 Protection of Public and Occupants:

.1 Where scaffolding is erected in an area accessible to the public, the Contractor shall take steps to prevent public access to the scaffolding and, where applicable, to the work or storage area in the vicinity of such scaffolding.

.2 The Contractor shall install walkways, netting or similar devices to protect workers, the public and occupants from falling objects. The selected means of protection shall be approved by the Departmental Representative.

.8 Engineering Plans:

.1 In addition to those required by the Safety Code for construction work, the Department Representative reserves the right to require engineering drawings for other types or configurations of scaffolds.

.2 A plan signed and sealed by a Professional Engineer is required for all scaffolding to which tarps, covers or other wind-bearing devices will be attached.

.3 A certificate of compliance signed by a Professional Engineer is required for all cases where an engineer's plan is required before a person uses the facility that is the subject of the plan. A copy of these documents shall be available at all times at the site.

1.27 CONFINED SPACES

.1 In addition to complying with Provincial Confined Space Regulations, the Contractor shall comply with the requirements outlined in the following paragraphs.

.2 The Departmental Representative reserves the right, depending on the nature of the confined space hazards, the work to be performed and/or the level of confined space expertise demonstrated by the Contractor, to require the Contractor to use the services of a firm specializing in health and safety or confined spaces to perform the confined space hazard analysis, to complete the entry permit, to perform the supervision of the work or for any other task related to confined space work.

.3 Information on Confined Spaces Present on Site:

.1 The following is a non-limiting list of confined spaces that the Contractor may be required to access during the course of this project:

.1 Crawl spaces in B, C, F, G, K, L, P, R, S (partial) and T (partial) wings.

.2 The Contractor shall consider each of these confined spaces and shall also add to this list any new confined spaces that may be constructed/installed during the course of this project.

.4 Person in charge:

.1 The Contractor shall designate a person responsible for the health and safety of confined space work. This person shall be a qualified person as defined in section 297 of the Occupational Health and Safety Regulations (S-2.1, r.13). The qualified person shall be present at all times during the confined space work and shall ensure that all regulatory requirements and the requirements set out in this section are met. This includes completing and issuing the confined space entry permit.

.5 Training:

.1 All persons having access to a confined space, as well as the person in charge and the confined space supervisor, shall be trained in confined space entry.

.2 All persons required to use self-contained breathing apparatus for confined space access shall be trained in the use of such apparatus.

.3 All persons identified as confined space rescuers shall be trained in confined space rescue.

.4 Each of the training requirements in the above paragraphs shall be conducted by a firm specializing in health and safety or confined space.

.5 Training certificates for the above listed individuals shall be forwarded to the Departmental Representative prior to the commencement of confined space work.

.6 Confined Space Hazard Assessment:

.1 For each of the confined spaces listed at the beginning of this section, the Contractor shall obtain the necessary information from the Site Representative and conduct a hazard assessment of the inherent hazards of each such confined space relating to:

.1 The prevailing internal atmosphere, i.e. the concentration of oxygen, flammable gases and vapors, combustible dusts presenting a fire or explosion hazard, as well as the categories of contaminants generally likely to be present in or around the confined space.

.2 Insufficient natural or mechanical ventilation.

.3 Materials in the confined space that may cause the worker to become entangled, buried or drown, such as sand, grain or liquid.

.4 Its interior configuration.

.5 Pipes and ducts that enter the confined space.

.6 Energy, such as electricity, moving mechanical parts, thermal stress, noise, and hydraulic energy.

.7 Sources of ignition such as open flames, lighting, welding and cutting, static electricity or sparks.

.8 Any other special circumstances such as vermin, rodents or insects.

.2 These risk assessments shall be completed by the person responsible for the health and safety of confined space work. They shall be forwarded to the Department Representative for analysis a minimum of ten (10) days prior to the scheduled confined space work and shall also contain the following information:

.1 Location of the confined space.

.2 Description of the confined space.

.3 Confined space dimensions.

.4 Number, location and dimensions of openings.

.5 Confined space contents (equipment, substances, etc.).

.6 Date of assessment.

.7 Name and signature of person who performed the assessment and name of employer.

.3 The Contractor shall perform the same exercise for each confined space he will construct/install during the course of this project.

.7 Confined Space Entry Permits:

.1 The Contractor shall forward to the Department Representative for review a minimum of five (5) days prior to the date of the Confined Space Work a copy of each Confined Space Entry Permit specific to the Confined Space Work to be entered. Entry permits shall be completed by the person responsible for confined space work health and safety, and shall include at a minimum the following information:

.1 Description of the work to be performed and the method of work, including the equipment and tools required to perform the work.

.2 Description of the hazards and corresponding control measures, based on the results of the confined space hazard assessment and the hazards inherent in the work to be performed.

.3 Safety equipment that will be used to control confined space hazards (e.g. fan, gas detector, local exhaust, personal protective equipment, etc.).

.4 Rescue procedure containing at least the following:

.1 Means of communication between the confined space supervisor and workers within the confined space.

.2 Rescue equipment specific to each confined space.

.3 Confirmation that the municipality's emergency response service has been notified of confined space work specifically on this job site and can respond to a confined space rescue. Alternatively, the Contractor shall identify site workers who will act as rescuers in the event that such rescuers are required to access the confined space (rescue training required).

.4 Location of telephone and telephone number of municipal emergency response service (if applicable).

.5 Date of entry permit.

.6 Name of person issuing permit and name of employer.

.7 Name of supervisor and name of employer.

.8 Name of workers to be entered into the confined space and name of employer of each.

.2 In cases where the site representative requires the use of their site specific Confined Space Entry Permit, the Contractor shall comply with the requirements of that permit.

.8 Medical Surveillance:

.1 The Contractor shall forward to the Departmental Representative a medical certificate less than two (2) years old for all persons required to use air-supplied respirators. This certificate shall confirm each person's fitness to use the air supplied respirator.

.2 It is recommended that persons required to work in sewage collection systems or similar systems be vaccinated against diphtheria, tetanus and hepatitis B.

.9 Requirements while working in confined spaces:

.1 Prior to each entry into a confined space, the person in charge shall take readings for oxygen, flammable gases and any toxic gases that may be present and record the results of these readings on the previously required entry permit.

.2 No worker shall enter the confined space unless the following requirements are met:

.1 Oxygen concentration shall be greater than or equal to 19.5% and less than or equal to 23%.

.2 The concentration of flammable gases or vapors must be less than or equal to 10% of the lower explosion limit.

.3 The concentration of other gases must not exceed the standards set out in Schedule I of the Regulation respecting occupational health and safety (S-2.1, r.13).

.3 If the measured oxygen and gas concentrations are within the regulatory values, the person in charge shall ensure that all preventive measures indicated on the permit are in place and shall complete the entry permit (date, time, signatures, etc.) before issuing the permit and allowing access to the confined space.

.4 An entry permit shall cover one shift only. The Contractor shall issue a new permit for each additional shift.

.5 While working in the confined space, the concentration of gases shall be measured continuously and the detector shall be installed at the workers breathing zone. If conditions within the confined space are such that workers may not hear/see the detector alarm, the Contractor shall provide a means for the confined space supervisor to monitor the concentration measurements while maintaining measurements at the workers' breathing zone.

.6 If the Work is arranged so that workers may be separated in a large confined space, the Contractor shall provide additional gas detectors.

.7 The Contractor shall provide and maintain gas detectors in good repair. The Contractor shall be able to demonstrate that gas detectors used have been calibrated and adjusted by the person in charge or a qualified person and in accordance with the manufacturer's recommendations. At any time, the Department Representative may have the accuracy of the Contractor's equipment checked. In the event of a detection device failure, work shall be immediately suspended and all workers shall leave the confined space.

.8 The gas detector manufacturer's manual shall be available on the job site.

.9 The Contractor shall provide a ventilation system of sufficient capacity to maintain contaminant levels below regulatory concentration limits.

.10 Where work generating airborne contaminants is performed (welding, use of products, etc.), the Contractor shall, where required, install a contaminant exhaust system so that regulatory air quality values can be met at all times.

.11 In the event of a gas detector alarm, all workers shall exit the confined space. Concentration readings shall be recorded on the entry permit. The Contractor shall then identify the source of the contamination, neutralize it, ventilate the confined space to remove residual contaminants and not allow access to the confined space until oxygen and gas concentrations have returned to normal.

.12 No compressed gas cylinders or welding machines shall be brought into confined spaces: such equipment shall remain outside and shall not block access or exit. All cylinders must be properly secured.

.13 Electrical tools and equipment used for confined space work shall be grounded and, where necessary, explosion proof. All equipment shall be connected to a ground fault circuit interrupter or step-down transformer. The Contractor shall, at his own expense, have a qualified electrician modify any power outlets and/or circuit breakers he intends to use that do not meet these criteria.

.14 Where confined space work requires hot work to be performed, the Contractor shall obtain a hot work permit and shall comply with the hot work requirements.

.15 The Contractor shall assign a competent person to perform the duties of a supervisor. The supervisor shall be assigned exclusively to these duties and shall remain outside the confined space at all times while a worker remains inside. In addition, he/she shall:

.1 Verify that the entry permit is completed, signed and posted adjacent to the confined space.

.2 Be familiar with the confined space specific work procedure and ensure that it is followed.

.3 Maintain constant communication with all workers in the confined space. Ensure emergency equipment is in place.

.4 Be familiar with and ensure proper operation of make-up ventilation systems for the duration of the work.

.5 Prevent access to unauthorized persons.

.6 Ensure that conditions in the area surrounding the confined space do not adversely affect the health and safety of workers within the confined space.

.7 Initiate emergency procedures as required.

.16 The same person may perform the duties of both supervisor and confined space health and safety officer provided they can meet all the requirements of both duties.

1.28 H&S SUBORDINATION AGREEMENT

Project: _____

Address: _____

.1 Contractor:

.1 I hereby agree to submit to the authority of (name of prime contractor) _____, who is the Owner for the project listed above, for the duration of our work on the job site. Therefore, I confirm that I have read the Owner's prevention program and agree to:

.1 Inform my employees of the content of the project manager's prevention program and ensure that its content is respected at all times.

.2 Inform my employees of the contents of the Owner's Prevention Program and ensure that its contents are followed at all times.

.3 Inform the Owner of my work on the job site and obtain his approval before proceeding with the work.

.4 Follow the health and safety instructions given by the Owner's Representative on the job site and attend, as required, training activities and health and safety meetings organized by him/her.

Name of Representative: _____

Company Name: _____

Description of work to be done on site: _____

_____

Approximate dates of work (start-finish): _____

Signature: _____ Date: _____

.2 Owner:

.1 I hereby agree to allow (name of Contractor) _____ to perform work on the project indicated above and, as prime contractor, to take the necessary steps to protect the health and safety of the workers on the site. In the event that the Contractor repeatedly refuses or fails to comply with my instructions, I agree to inform the PWGSC Departmental Representative and to provide documentary evidence of my interventions with the Contractor.

Name of Representative: _____

Name of Owner: _____

Signature: _____ Date: _____

.3 Submit the completed and signed copy to the PWGSC Departmental Representative.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 FIRE DEPARTMENT BRIEFING

.1 Departmental Representative will co-ordinate arrangements for contractor for briefing on Fire Safety at pre-work conference by Fire Chief before work is commenced.

1.3 REPORTING FIRES

.1 Know location of nearest fire alarm box and telephone, including emergency phone number.

.2 Report immediately fire incidents to Fire Department as follows:

- .1 Activate nearest fire alarm box.
- .2 Telephone.

.3 When reporting fire by telephone, give location of fire, name or number of building and be prepared to verify location.

1.4 INTERIOR AND EXTERIOR FIRE PROTECTION AND ALARM SYSTEMS

.1 Fire protection and alarm system will not be:

- .1 Obstructed.
- .2 Shut-off.
- .3 Left inactive at end of working day or shift without authorization from Fire Chief.

.2 Fire hydrants, standpipes and hose systems will not be used for other than fire-fighting purposes unless authorized by Fire Chief.

1.5 FIRE EXTINGUISHERS

.1 Supply fire extinguishers, as scaled by Fire Chief, necessary to protect work in progress and contractor's physical plant on site.

1.6 SMOKING PRECAUTIONS

.1 Observe smoking regulations.

1.7 RUBBISH AND WASTE MATERIALS

.1 Keep rubbish and waste materials at minimum quantities.

.2 Burning of rubbish is prohibited.

.3 Removal:

- .1 Remove rubbish from work site at end of work day or shift or as directed.

.4 Storage:

.1 Store oily waste in approved receptacles to ensure maximum cleanliness and safety.

.2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles and remove specified.

1.8 QUESTIONS AND/OR CLARIFICATION

.1 Direct questions or clarification on Fire Safety in addition to above requirements to Fire Chief.

1.9 FIRE INSPECTION

.1 Co-ordinate site inspections by Fire Chief through Departmental Representative.

.2 Allow Fire Chief unrestricted access to work site.

.3 Co-operate with Fire Chief during routine fire safety inspection of work site.

.4 Immediately remedy unsafe fire situations observed by Fire Chief.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 REFERENCES AND CODES

.1 Perform Work in accordance with National Building Code of Canada (NBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

1.3 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Departmental Representative.

.2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative.

.3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative.

1.4 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions and municipal by-laws.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 INSPECTION

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

.1 The Department Representative will arrange for the services of independent testing and inspection agencies. The cost of these services will be borne by the Departmental Representative.

.2 Provide materials required by the designated agencies for the performance of tests and inspections.

.3 The use of testing and inspection agencies does not relieve the Contractor of responsibility for the performance of the Work in accordance with the requirements of the Contract Documents.

.4 If defects are found during testing and/or inspection, the designated agency will require further inspection and/or additional testing to accurately define the nature and extent of such defects. The Contractor shall correct the defects and imperfections as directed by the Department Representative, at no additional cost to the Department Representative, and shall be responsible for the cost of testing and inspection to be performed after such corrections.

1.4 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

.1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.7 REPORTS

.1 Submit four (4) copies of inspection and test reports to Departmental Representative.

.2 Provide copies to subcontractor of work being inspected or tested.

1.8 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

1.9 MOCK-UPS

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.

.2 Construct in locations as specified in specific Section, acceptable to Departmental Representative.

.3 Prepare mock-ups for Departmental Representative’s review with reasonable promptness and in orderly sequence, to not cause delays in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.

.6 Remove mock-up at conclusion of Work or when acceptable to Departmental Representative.

.7 Mock-ups may remain as part of Work.

.8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.10 MILL TESTS

.1 Submit mill test certificates as required of specification Sections.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International):

.1 CSA-A23.1/A23.2-04 – Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA-0121-M1978(R2003) – Douglas Fir Plywood.

.3 CAN/CSA-S269.2-M1987(R2003) – Access Scaffolding for Construction Purposes.

.4 CAN/CSA-Z321-96(R2001) – Signs and Symbols for the Occupational Environment.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with section 01 33 00 – Submittal procedures.

1.4 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

.4 Provide construction facilities in order to execute work expeditiously.

.5 Remove from site all such work after use.

1.5 SCAFFOLDING

.1 Scaffolding in accordance with CAN/CSA-S269.2.

.2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, temporary stairs.

1.6 SITE STORAGE/LOADING

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.7 CONSTRUCTION PARKING

.1 Parking will be permitted on site provided if it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project site.

1.8 EQUIPMENT, TOOLS AND MATERIALS STORAGE

.1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 No equipment, tools or materials shall stay on work area unless is designated area by the Ministry Representative.

1.9 SANITARY FACILITIES

.1 The Contractor can use sanitary facilities designated by the Ministry Representative.

1.10 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International):

.1 CSA-O121-M1978(R2003) – Douglas Fir Plywood.

1.3 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.4 DUST TIGHT SCREENS

.1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.2 Maintain and relocate protection until such work is complete.

1.5 PROTECTION OF BUILDING FINISHES

.1 Provide protection for finished and partially finished building finishes and equipment during performance of work.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Departmental Representative locations and installation schedule three (3) days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 REFERENCES

.1 References to relevant standards can be made in each section of the specification. A list of standards writing organizations is given in ULC standards.

.2 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

.4 If the products or systems comply with the contractual documents, the costs incurred by these tests will be assumed by the Departmental Representative, otherwise they will have to be assumed by the Contractor.

1.3 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.

.3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.4 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

.5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

1.4 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.7 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

.8 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

.2 Transportation cost of products supplied by Owner will be paid for by Departmental Representative. Unload, handle and store such products.

1.7 MANUFACTURER'S INSTRUCTIONS

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.8 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.9 COORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.10 CONCEALMENT

.1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

1.11 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.12 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Departmental Representative of conflicting installation. Install as directed.

1.13 FASTENINGS – GENERAL

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.14 FASTENINGS – EQUIPMENTS

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use no. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.15 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

1.16 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of elements of project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of operational elements.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.3 Include in request:

- .1 Identification of project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.3 MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 – Submittal Procedures.

1.4 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.5 EXECUTION

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.9 Restore work with new products in accordance with requirements of Contract Documents.

.10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.

.12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

.13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.

.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.4 Provide on-site containers for collection of waste materials and debris.

.5 Clean interior areas prior to start of finishing work and maintain areas free of dust and other contaminants during finishing operations.

.6 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.7 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.8 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 DAILY CLEAN-UP

.1 At the end of each work period that corresponds to the completion of the scheduled area, remove debris and waste materials and leave the area clean and ready for occupancy.

.2 Arrange and obtain permits from appropriate authorities for disposal of debris and waste materials.

.3 Clean and polish glass, mirrors, hardware, wall tiles, chrome or enamel surfaces, laminate surfaces, stainless steel or porcelain enamel components, mechanical and electrical equipment. Replace broken, scratched or damaged glass.

.4 Remove dust, stains, marks and scratches from decorative work, mechanical and electrical equipment, furniture, walls and floors.

.5 Clean reflectors, diffusers and other lighting surfaces.

.6 Dust and vacuum interior building surfaces as required.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Tous les documents contractuels s'appliquent aux Divisions 01, 26 et 28.

1.2 REFERENCES

.1 Canadian Environmental Protection Act (CEPA):

.1 SOR/2008-197 – Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: Contractor conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

.2 Request Departmental Representative's inspection.

.2 Departmental Representative's Inspection:

.1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates in English and French that tasks have been performed as follows:

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Equipment and systems: tested and fully operational.

.4 Certificates required by Utility companies submitted.

.5 Operation of systems: demonstrated to Owner's personnel.

.6 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by Departmental Representative and Contractor.

.2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.7 Final Payment: when Departmental Representative considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.4 FINAL CLEANING

.1 Clean in accordance with section 01 74 00 – Cleaning.

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 RÉFÉRENCES

.1 Canadian Environmental Protection Act (CEPA):

.1 SOR/2008-197 – Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.3 MODALITÉS ADMINISTRATIVES

.1 Pre-warranty Meeting:

.1 Convene meeting one (1) week prior to work completion with the contractor's representative and the Departmental Representative, in accordance with Section 01 31 19 – Project Meetings to:

.1 Verify Project requirements.

.2 Review warranty requirements.

.2 Departmental Representative to establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Two (2) weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four (4) final copies of operating and maintenance manuals in English and French.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.5 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, three (3) 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings.

.1 Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems, under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab.

.1 Bind in with text; fold larger drawings to size of text pages.

.9 Provide 1:1 scaled CAD files in dwg format on CD.

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Departmental Representative and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data.

.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section [01 45 00 - Quality Control].

.6 Training: refer to Section 01 79 00 - Demonstration and Training.

1.7 AS -BUILT DOCUMENTS AND SAMPLES

.1 Maintain, at site for Departmental Representative, one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Departmental Representative.

1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Other Documents: maintain inspection certifications, field test records required by individual specifications sections.

.7 Provide digital photos, if requested, for site records.

1.9 EQUIPMENT AND SYSTEMS

.1 For each item of equipment and each system include description of unit or system, and component parts.

.1 Give function, normal operation characteristics and limiting conditions.

.2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

.1 Include regulation, control, stopping, shut-down, and emergency instructions.

.2 Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control and 01 91 13 - General Commissioning (Cx) Requirements.

.15 Additional requirements: as specified in individual specification sections.

1.10 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.1 Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional requirements: as specified in individual specifications sections.

1.11 MAINTENANCE MATERIALS

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.2 Extra Stock Materials:

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Special Tools:

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

1.12 DELIVERY, STORAGE AND HANDLING

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by Departmental Representative.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section content:

.1 General requirements for commissioning project components, equipment and systems, including those for performance monitoring (PM) of components, equipment, systems, subsystems and integrated systems.

.2 Acronyms, abbreviations and definitions:

.1 OFSP - Other forms of service provision, service provider.

.2 BMM - Building Management Manual.

.3 C - Commissioning.

.4 EMS - Energy management system.

.5 O&M - Operation and maintenance.

.6 PI - Product Information.

.7 PC - Performance check.

.8 TAB - Testing, adjustment and balancing.

1.2 GENERAL

.1 Commissioning is a coordinated program of tests, checks, verifications and other procedures, which is applied systematically to the equipment, systems and integrated systems of a project, once it has been completed. Commissioning is carried out after the equipment and systems have been installed, when they are operational, when the Contractor has carried out the performance control and this control has been approved. The objectives are as follows :

.1 Ensure equipment, systems and integrated systems operate in accordance with contract document requirements, design criteria and designer intent.

.2 Ensure that the appropriate documentation has been submitted to the BMM.

.3 Train operations and maintenance staff.

.2 The Contractor must collaborate in the commissioning process, in the operation of equipment and systems, in their troubleshooting and in making the necessary adjustments.

.1 Operate systems at full capacity in various modes to determine if they are operating correctly and consistently at peak efficiency. The various systems must work in interaction, according to the intention of the project and in accordance with the requirements of the contract documents and the design criteria.

.2 During these checks and controls, make the necessary adjustments to obtain a level of performance that meets the environmental requirements or the user's needs.

.3 Design criteria: meet customer requirements or criteria established by the Departmental Representative. The criteria selected must meet the functional and operational requirements set for the project.

.4 In the case of projects managed according to the OFSP mode, the Departmental Representative mentioned in the commissioning estimate is an OFSP service provider.

1.3 SCOPE OF COMMISSIONING

.1 Commissioning of electrical equipment, systems and materials required in the contract documents: fire alarm systems.

1.4 PRE-DISMANTLING CHECK-UP OF THE CR5 ROOM

.1 Have the manufacturer of the interpretation system perform a complete check of the system before dismantling.

.2 List and notify the Departmental Representative of any anomalies identified.

1.5 COMMISSIONING OVERVIEW

.1 Commissioning must appear as an expense item in the cost breakdown prepared by the Contractor.

.2 Commissioning activities complement the testing and quality control procedures described in the relevant technical sections.

.3 Commissioning is closely associated with the activities carried out during the realization of the project. It makes it possible to identify the elements of planning and design which are dealt with during the stages of construction and commissioning, and to ensure that the operation of the installation is satisfactory under conditions (climate, environment and occupation) corresponding to functional and operational needs. Commissioning activities include the transfer of sensitive knowledge to facility operating personnel.

.4 The Departmental Representative will issue a provisional acceptance certificate when:

.1 Completed commissioning documents will have been received, evaluated and then approved by the Departmental Representative.

.2 Equipment, systems and components will have been commissioned.

.3 Training of operations and maintenance personnel will be completed.

1.6 NON-COMPLIANCE WITH PERFORMANCE REQUIREMENTS

.1 If any equipment, systems, components and related control / regulation devices have been improperly installed or show anomalies during commissioning, correct the anomalies, repeat the verification of non-functional equipment and system components, including related systems, if required by the Departmental Representative to ensure the installation is functioning as it should.

.2 Assume the costs related to corrections, inspections and additional tests to determine the acceptability and good performance of these elements. These costs will be deducted from down payments or will be subject to deductions.

1.7 EXAMINATION PRIOR TO COMMISSIONING

.1 Before the start of construction work:

.1 Review the Contract Documents and confirm in writing to the Departmental Representative:

.1 Compliance with provisions for commissioning.

.2 All other aspects of the design and installation relevant to successful commissioning.

.2 During construction:

.1 Coordinate the preparation and implementation of all arrangements for commissioning.

.3 Before starting the commissioning, make sure:

.1 That the commissioning plan is complete and up to date.

.2 That the installation of related components, equipment, systems and subsystems is complete.

.3 You understand the requirements and procedures for commissioning.

.4 That the commissioning documents are ready for use.

.5 That we understand the design criteria, the intention of the design and the special features.

.6 That the complete documentation relating to the start-up has been submitted to the Departmental representative.

.7 That the commissioning schedules are up to date.

.8 That the systems have been completely cleaned.

.9 That the TAB operations of equipment and systems have been completed and that the relevant reports have been submitted to the Departmental Representative for review and approval.

.10 That as-built drawings of equipment and systems are available.

.4 Report in writing to the Departmental Representative any anomalies in the finished works as well as any deviations detected from the specifications of the estimate.

1.8 CONFLICTS

.1 Report to the Departmental Representative, before starting up the equipment and systems, any discrepancy between the requirements of this section and those of the other sections of the specifications, then obtain the necessary clarifications.

.2 Failure to report these discrepancies and obtain clarification, the more stringent requirements will apply.

1.9 DOCUMENTS/SAMPLES TO BE SUBMITTED FOR APPROVAL/INFORMATION

.1 Submit the documents and samples required in accordance with section 01 33 00 - Documents and samples to be submitted.

.1 Submit, no later than four (4) weeks after contract award, the following information and documents:

.1 Name of the Contractor's commissioning agent.

.2 Provisional version of the commissioning documents.

.3 Preliminary commissioning schedule.

.2 Submit written requests for changes to Departmental Representative and obtain written approval from Departmental Representative at least eight (8) weeks prior to start of commissioning.

.3 If no commissioning procedure is prescribed, submit proposed procedures to Departmental Representative and obtain written approval from Departmental Representative at least eight (8) weeks prior to commencement of commissioning.

.4 Provide the Departmental Representative with the additional documents required on the commissioning process.

1.10 COMMISSIONING DOCUMENTS

.1 Submit the documents relating to commissioning, completed and approved to the Departmental Representative.

1.11 COMMISSIONING SCHEDULE

.1 Provide a detailed commissioning schedule, attached to the construction work schedule, in accordance with Section 01 32 16.19 - Work Schedule.

.2 Allow sufficient time for commissioning activities prescribed in technical sections and commissioning sections, including the following activities:

.1 Approval of commissioning reports.

.2 Verification of declared results.

.3 Repair, resumption of tests, return to service, resumption of checks.

.4 Training.

1.12 START-UP AND TEST

.1 Assume the responsibilities and costs of inspections, including disassembly and reassembly after approval, commissioning, testing and adjustment of equipment and systems, as well as the supply of test equipment.

1.13 PRESENCE AT START-UP AND TESTS

.1 Provide a fourteen (14) days notice prior to start-up and testing.

.2 Start-up and tests must be carried out in the presence of the Departmental Representative.

.3 The Contractor's commissioning agent must be present at the tests, which must be carried out and documented by the trades, suppliers and manufacturers of the equipment and systems concerned.

1.14 PROCEDURES

.1 Ensure that equipment and systems are complete, clean, functioning normally and without danger, before starting, testing and putting them into service.

.2 Start up and test by following the separate steps below:

.1 Delivery and installation:

.1 Verify compliance with specifications, approved shop drawings, complete Product Information Report (PI) forms.

.2 Perform a visual inspection of the quality of the installation.

.2 Start-up: observe recognized start-up procedures.

.3 Functional tests: document the performance of equipment and systems.

.4 Performance check (PC): if necessary, repeat the tests after correcting the anomalies.

.5 Performance check (PC) after Substantial Completion: This check must include the tuning.

.3 Correct anomalies after the completion of each phase, but before the start of the next phase, and obtain approval from the Departmental Representative.

.4 Document required tests documented on approved PC report forms.

.5 Failure to observe recognized start-up procedures will result in a reassessment of the equipment or system by an independent testing body appointed by the Departmental Representative. If the re-evaluation results show that the start-up was not in accordance with the requirements and caused damage to the equipment or system, perform the following procedure.

.1 Less important equipment/systems: implement the corrective measures approved by the Departmental Representative.

.2 Important equipment/systems: if the reassessment shows that the damage caused is minor, implement the corrective measures approved by the Departmental Representative.

.3 If the reassessment shows the existence of major damage, the Departmental Representative will refuse the equipment/system.

.1 Any refused equipment/system must be removed from the site and replaced with a new one.

.2 Subject new equipment/system to prescribed start-up procedures.

1.15 START-UP DOCUMENTS

.1 Assemble commissioning documents and submit to Departmental Representative for approval prior to commissioning.

.2 The start-up documents should include the following.

.1 Factory and field test certificates for specified equipment/system.

.2 Pre-start-up inspection reports.

.3 Signed installation/commissioning checklists.

.4 Start-up reports.

.5 Step-by-step description of start-up procedures to allow the Departmental Representative to resume start-up at any time.

1.16 TEST RESULTS

.1 If the results of the commissioning, testing and/or performance check (PC) are unacceptable, repair or replace the defective parts or repeat the prescribed start-up and/or performance check procedures until obtaining acceptable results.

.2 Provide labor, materials necessary to resume commissioning.

1.17 START OF COMMISSIONING

.1 Inform the Departmental Representative at least twenty-one (21) days before the start of commissioning.

.2 Start commissioning only after completing the building elements that affect the commissioning and performance check (PC) of the equipment and systems involved.

1.18 INSTRUMENTS / EQUIPMENT REQUIRED FOR COMMISSIONING

.1 Submit instruments and equipment for review and approval by the Departmental Representative.

.1 Provide a complete list of proposed instruments.

.2 Also provide relevant information, including serial number, current certificate of calibration, date of calibration, expiration date of calibration as well as degree of calibration accuracy.

.2 Provide the following equipment as needed:

.1 Radios with transceiver.

.2 Ladders.

.3 Any other equipment necessary to carry out commissioning.

1.19 PERFORMANCE CHECK/COMMISSIONING

.1 Carry out commissioning:

.1 Under actual operating conditions, over the entire operating range, in all modes.

.2 Independent systems and interactive systems.

.2 It must be possible to resume commissioning operations and confirm the declared results.

.3 Observe the operating instructions published by the manufacturer of the equipment and systems.

.4 Information on EMS trends can be used to support performance monitoring.

1.20 PRESENCE AT COMMISSIONING

.1 Commissioning activities must take place in the presence of the Departmental Representative, who will verify the results.

1.21 COMPETENT AUTHORITIES

.1 In cases where the prescribed start-up, test or commissioning procedures duplicate the control requirements of the competent authority, arrange for that authority to certify the procedures so that the tests are not performed in duplicate and to simplify the timely reception of facilities.

.2 Obtain certificates of approval, reception and compliance with the requirements of the competent authority.

.3 Provide copies of the certificates of approval, acceptance and compliance to the Departmental Representative no later than five (5) days after testing, and at the same time as the commissioning report.

1.22 CONSTRAINTS ASSOCIATED WITH COMMISSIONING

.1 As it will be very difficult to access secure or restricted areas once the facility or building is occupied, it is important to commission the occupancy-sensitive equipment and systems, which are located in these areas, before issuance of the provisional certificate.

1.23 SCOPE OF CONTROL

.1 All premises:

.1 Unless otherwise indicated in other sections of the estimate, provide the labor and tools necessary to verify 100% of the declared results.

.2 The Ministry representative will decide on the number of instruments and their location.

.3 The tests repeated during the inspection must be carried out under the same conditions as the initial tests, using the same equipment and the same instruments.

.4 If inconsistencies are found in the declared results, examine and resume commissioning of equipment/systems.

.5 Perform additional commissioning work until results are acceptable to the Departmental Representative.

1.24 RESUMPTION OF CONTROL

.1 Assume all costs incurred by the Departmental Representative for the third inspection and for subsequent inspections, when:

.1 Verified results are not approved by the Departmental Representative.

.2 The results of the second test are also not approved.

.3 The Departmental Representative considers that the Contractor's request to carry out a second test was premature.

1.25 MISCELLANEOUS CONTROLS AND ADJUSTMENTS

.1 Carry out as the commissioning progresses the adjustments and changes of which the need is obvious.

.2 Perform appropriate static and operational tests as needed.

1.26 ANOMALIES, VICES AND DEFECTS

.1 Correct to the satisfaction of the Departmental Representative any anomalies, vices and defects noted during commissioning and commissioning.

.2 Report in writing to the Departmental Representative any anomalies, vices or defects affecting the commissioning. Stop commissioning until the problems are corrected. Obtain written approval from Departmental Representative before proceeding with commissioning.

1.27 COMPLETION OF COMMISSIONING

.1 Once commissioning is complete, leave the systems in normal operating mode.

.2 Except for seasonal control activities and warranty purposes prescribed in the commissioning specification, complete commissioning prior to issuance of the interim certificate of completion.

.3 Commissioning is not considered complete until all documents relating to commissioning have been submitted to and accepted by the Departmental Representative.

1.28 ACTIVITIES AT THE COMPLETION OF COMMISSIONING

.1 If changes are made to basic components, equipment or systems or to settings established during the commissioning process, provide updated C forms for the components, equipment or systems affected by these changes.

1.29 TRAINING

.1 Provide training in accordance with section 01 91 41 – Commissioning (C) – Training.

1.30 REPLACEMENT MATERIALS, SPECIAL TOOLS AND SPARE PARTS

.1 Supply, deliver and document replacement materials, special tools and spare parts according to contractual requirements.

1.31 OCCUPATION

.1 Collaborate fully with the Departmental Representative during the various stages of the reception and occupancy of the facility/building.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 SUMMARY

.1 Section includes:

.1 This Section specifies roles and responsibilities of Commissioning Training.

.2 Related requirements:

.1 All contract documents apply to Divisions 01, 26 and 28.

1.3 TRAINEES

.1 Trainees: personnel selected for operating and maintaining this facility. Includes Property Facility Manager, building operators, maintenance staff, security staff, and technical specialists as required.

.2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

1.4 INSTRUCTORS

.1 Departmental Representative will provide:

.1 Descriptions of systems.

.2 Instruction on design philosophy, design criteria, and design intent.

.2 Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:

.1 Start-Up, operation, shutdown of equipment, components and systems.

.2 Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.

.3 Instructions on servicing, maintenance and adjustment of systems, equipment and components.

.3 Contractor and equipment manufacturer to provide instruction on:

.1 Start-up, operation, maintenance and shutdown of equipment they have certified installation, started up and carried out PV tests.

1.5 TRAINING OBJECTIVES

.1 Training to be detailed and duration to ensure:

.1 Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.

.2 Effective on-going inspection, measurements of system performance.

.3 Proper preventive maintenance, diagnosis and troubleshooting.

.4 Ability to update documentation.

.5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

1.6 TRAINING MATERIALS

.1 Instructors to be responsible for content and quality.

.2 Training materials to include:

.1 "As-Built" Contract Documents.

.2 Operating Manual.

.3 Maintenance Manual.

.4 Management Manual.

.5 TAB and PV Reports.

.3 Project Manager, Commissioning Manager and Property Manager will review training manuals.

.4 Training materials to be in a format that permits future training procedures to same degree of detail.

.5 Supplement training materials:

.1 Multimedia presentations.

.2 Manufacturer's training videos.

.3 Equipment models.

1.7 SCHEDULING

.1 Include in Commissioning Schedule time for training.

.2 Deliver training during regular working hours, training sessions to be four (4) hours in length.

.3 Training to be completed prior to acceptance of facility.

1.8 RESPONSIBILITIES

.1 Be responsible for:

.1 Implementation of training activities,

.2 Coordination among instructors,

.3 Quality of training, training materials,

.2 Departmental Representative will evaluate training and materials.

.3 Upon completion of training, provide written report, signed by Instructors, witnessed by Departmental Representative.

1.9 TRAINING CONTENT

.1 Training to include demonstrations by Instructors using the installed equipment and systems.

.2 Content includes:

.1 Review of facility and occupancy profile.

.2 Functional requirements.

.3 System philosophy, limitations of systems and emergency procedures.

.4 Review of system layout, equipment, components and controls.

.5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shutdown procedures.

.6 System operating sequences, including step-by-step directions for starting up, shutdown, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.

.7 Maintenance and servicing.

.8 Troubleshooting diagnosis.

.9 Inter-Action among systems during integrated operation.

.10 Review of O M documentation.

.3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

1.10 VIDEO-BASED TRAINING

.1 Manufacturer's videotapes to be used as training tool with Departmental Representative's review and written approval two (2) weeks prior to commencement of scheduled training.

Part 2 Product

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 ELECTRICITY PLANS AND ESTIMATES

.1 The plans show approximately the location of the devices and conduits; their exact location will be determined by the Contractor from the location. In addition, the Contractor will check the space available on the site before installing the devices and conduits.

.2 No additional remuneration will be granted for the relocation of conduits and devices which are deemed necessary due to the structure, architecture or any other normal consideration.

.3 The detailed plans that could be provided to the Contractor during the work will also form part of the contractual documents. If the Contractor needs detailed plans, he must ask the Departmental Representative in writing, at least fifteen (15) working days in advance.

1.2 SCOPE OF WORK

.1 Provide all materials, labor, connection, start-up, tools and devices necessary for the complete execution of all the work described in the specifications and/or indicated on the plans.

.2 This list is not limited to and any work described herein will be part of the project. The list of works will include, among others, but not limited to:

.1 Replacement of the fire alarm system.

.2 Temporary installations required to ensure the continuity of services.

.3 Fasteners, supports, earthquake protection, as well as all the equipment's earthquake-resistant fasteners.

.4 Removal of existing equipment that has become unnecessary and/or not reused.

.5 Relocation of existing reused equipment.

.6 Removal of all recovered equipment and reinstallation of it.

.7 Ensuring the continuity of all existing services.

.8 Verification and coordination of all existing services with the Representative of the Ministry, public service companies and the services of other specialties concerned.

.9 Delivery to the Representative of the Ministry of the equipment described in the estimate and the other equipment he wants to recover. The Contractor will clear the premises of anything that is not recovered by the Departmental Representative.

.10 In the description of the work, unless otherwise indicated, the description includes the supply, installation and connection of equipment and materials with all the accessories necessary for a complete installation.

1.3 RESPONSIBILITY FOR THE WORK

.1 Any change made to the plans and specifications, without the written authorization of the Departmental Representative, will make the Contractor concerned solely responsible for the malfunction of the systems. He will be responsible for any defect that may arise within a year after the final acceptance of the work.

1.4 SEISMIC RETAINERS

.1 The Contractor is responsible for the compliance of the seismic protection systems required by his work.

.2 Refer to section 26 05 49 - Seismic protection systems.

1.5 COORDINATION BETWEEN ENTREPRENEURS

.1 In order to ensure full coordination of all the work of the building mechanical and electrical trades, in relation to the architecture and the structure, coordination meetings will be held before any work is carried out on the site by the present trades. In the event of adjustments made necessary by a lack of one or the other of the interveners, the one who will have caused this situation will be responsible of the other trades.

.2 The plumbing-heating contractor has priority over other contractors to run his conduits. However, the Construction Professional will have the right to intervene if it is judged that the Plumbing - Heating Contractor refuses to take into account the requirements of others or delays the work.

.3 The Electrical Contractor is responsible for verifying and validating with the Mechanical Contractors the quantity, the supply rating and the type of control required for each of the motors that he will have to connect within the framework of the project, and this , before proceeding with the purchase and installation of the electrical equipment required for the operation of said motors. Any discrepancies between the information on the plans and specifications and that obtained from other Contractors must be reported to the Construction Professional in order to establish the mitigation strategy required to meet the requirements for the electrical connection of mechanical systems.

.4 The coordination and checks mentioned above will be done by the various Contractors before ordering each device, as well as before starting to perform any work. If a difficulty arises, he must submit the case to the construction professionals before starting the work. If this verification is not made by the Contractor and a difficulty arises, and the Contractor must incur additional costs to overcome it, these costs will be borne by the Contractor concerned.

.5 Unless otherwise indicated, we must provide the necessary accessories to complete on site the installation of the elements he has manufactured.

.6 No compensation is granted for the relocation of conduits, boxes, equipment, etc. interfering with the proper execution of other work or the general appearance.

.7 Each Contractor will coordinate its openings, anchors, supports and other arrangements required for the installation of the mentioned works and will obtain the required information in time so as not to delay the execution of the works.

1.6 MATERIALS AND EQUIPMENT

.1 Unless otherwise specified, use products from a single manufacturer for materials and equipment of the same type or class. The equipment supplied will be from the same manufacturer to obtain maximum interchangeability between the elements.

.2 In special places, use appropriate products; thus, in humid, dusty, etc. places, the equipment must be impervious to water, dust, etc. Also, the ends of the conduits entering the boxes, panels and similar equipment, must be sealed with a special compound for this purpose.

.3 Installation and finishing:

.1 All installation must be carried out in such a way as to facilitate inspections, repairs and maintenance operations.

.2 For the exposed part of the electrical installation, the Contractor undertakes to respect symmetry. Also, when the ceilings are covered with acoustic tiles and any panels, the Contractor must coordinate his work with that of other trades so that lighting fixtures, etc. occupy the space of a tile or row of tiles or are centered in relation to them.

.3 Unless otherwise indicated, the mention of a device always includes its supply with its accessories, as well as the labor to install, connect and start it up.

.4 Perform all minor work, whether or not specified in the plans and specifications, but which are customary and necessary for the completion of the contract.

.5 Apply at least one coat of corrosion resistant primer to ferrous metal fasteners, brackets, suspensions and field fabricated equipment (CGSB-IGP-140).

.6 Prime and touch up surfaces whose finish has been damaged, all to the satisfaction of the Departmental Representative.

1.7 EQUIPMENT PROTECTED BY SPRINKLERS

.1 Electrical equipment inside perforated boxes installed in a room protected by sprinklers must be protected by hoods or non-combustible shielding arranged so as to interfere as little as possible with the protection offered by the sprinklers.

1.8 LOCATION OF OUTLETS

.1 The location of the outlets can be changed without additional charge or credit, provided that the displacement does not exceed 3000 mm and that the notice is given before installation.

.2 Locate the outlets according to the indications on the plans and align the outlets symmetrically.

.3 Install the outlets located back to back in a common wall, leaving a horizontal clearance of at least 300 mm between the boxes.

.4 Locate outlets for lighting and outlets in suspended ceilings on grid lines in both directions, without interfering with ceiling suspensions. Make sure the outlets are easily accessible.

.5 Make the necessary adjustments when the interior finish is complete.

.6 Position light switches 225-300mm from the frame of single doors, handle side, 225 – 300 mm from the end of double doors.

.7 The exact position of the outlets should be coordinated with the architectural drawings before proceeding with the installation.

1.9 MOUNTING HEIGHTS

.1 Mounting height of equipment is from finished floor to centreline of equipment unless specified or indicated otherwise. In rooms where the floor is elevated, measure the height from the top of the elevated floor.

.2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.

.3 Install electrical equipment at following heights unless indicated otherwise.

.1 Fire alarm stations: 1150 mm

.2 Signaling device (sound, visual): 2300 mm

.3 Fire alarm end-of-line devices: 1800 mm

1.10 FIREPROOFING

.1 When cables or conduits pass through floors and fire walls or rooms with halon networks, fire and smoke tightness will be ensured using products 3M, CP25, 303, FS195, CS195 and 7902 and 7904 series sealing kits, all will be installed according to the manufacturer's recommendations and standard CAN/ULC-S115-16.

1.11 TEST

.1 The Electrical Contractor must collaborate with other trades so as to allow them to carry out their tests within the time limits required by the Departmental Representative.

.2 Une fois l'essai terminé, ajuster tous les appareils concernant cet essai, de façon à permettre leur fonctionnement convenable.

.3 General requirements:

.1 All tests must be done in the presence of the Departmental Representative and to his satisfaction.

.2 The Departmental Representative may require a test of installations and devices before accepting them.

.3 For temporary testing, obtain written permission to start up and test permanent installations and devices, prior to their acceptance by the Departmental Representative.

.4 Give a forty-eight (48) hours written notice to the Departmental Representative before the date of the tests.

.5 Provide the equipment, materials and personnel required to perform tests during the project until acceptance of the facilities by the Departmental Representative and pay all costs.

.6 If a piece of equipment or a device does not meet the manufacturer's data or the performance specified during a test, replace without delay the defective unit or part and pay all costs incurred by such replacement. Make adjustments to the system to obtain the desired performance. Pay all costs, including re-testing and refurbishment.

.7 Prevent dust, dirt and other foreign matter from entering openings of facilities and apparatus during testing.

.8 Provide the Departmental Representative with a certificate or letter from the manufacturers confirming that each network of the entire installation has been put in place to their satisfaction.

.9 Send the test results in writing to the Departmental Representative.

.10 The tests must be carried out and accepted before the installation of the thermal insulation.

.11 Do not hide or embed any conduit, accessory or device before the tests have been carried out and accepted.

.4 Special requirements:

.1 The presence of the Electrical Contractor may be required during a test carried out by another trade body.

1.12 STARTING THE INSTALLATION

.1 Instruct Departmental Representative of the operating mode and maintenance methods of the installation, its devices and its components.

.2 Provide these services for a sufficient period of time, scheduling the number of visits necessary to put the devices into operation and ensuring that operating personnel are familiar with all aspects of their maintenance and operation.

.3 Include four tours of eight hours each.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

.1 Demolish: Detach items from existing construction and legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.

.2 Remove: Planned deconstruction and disassembly of electrical items from existing construction including removal of conduit, junction boxes , cabling and wiring from electrical component to panel taking care not to damage adjacent assemblies designated to remain; legally dispose of items off site, unless indicated as removed and salvaged, or removed and reinstalled.

.3 Remove and Salvage: Detach items from existing construction and deliver them to Representative ready for reuse.

.4 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

.5 Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed and salvaged, or removed and reinstalled.

.6 Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCB's, poisons, corrosive agents, flammable substances, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as defined by Federal Hazardous Products Act (RSC 1985) including latest amendments.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Scheduling: during selective demolition, take into account the continued occupation of the premises by the Departmental Representative. Coordinate these needs with the Departmental Representative and organize a phased occupation as well as the activities on the site, in accordance with section 01 32 16.19 - Work schedule - Bar chart (Gantt).

1.3 QUALITY ASSURANCE

.1 Regulatory Authority Requirements: Perform the work in this section in accordance with the following: Government of Canada Work Program: Occupational Safety.

1.4 SITE CONDITIONS

.1 Existing Conditions: Condition of materials identified as being salvaged or demolished are based on their observed condition at time of site examination before tendering.

.2 Discovery of Hazardous Substances: It is not expected that Hazardous Substances will be encountered in Work; immediately notify the Representative if materials suspected of containing hazardous substances are encountered and perform following activities:

.1 Refer to Section 01 41 00– Regulatory Requirements for directives associated with specific material types.

.2 Hazardous substances will be as defined in Hazardous Products Act.

.3 Stop work in area of suspected hazardous substances.

.4 Take preventative measures to limit users' and workers' exposure, provide barriers and other safety devices and do not disturb.

.5 Hazardous substances will be removed by the Representative under a separate contract or as a change to Work.

.6 Proceed only after written instructions have been received from the Representative.

Part 2 Products

2.1 NOT USED REPAIR MATERIALS

.1 Electrical Repair Materials: Use only new materials, CSA or ULC labelled as appropriate and matching components remaining after work associated with components identified for removal or demolition are completed.

.2 Firestopping Repair Materials: Use firestopping materials compatible with existing firestopping systems where removal or demolition work affects rated assemblies, restore to match existing fire rated performance.

2.2 SALVAGE AND DEBRIS MATERIALS

.1 Material Ownership: Demolished materials become Contractor's property and will be removed from Project site; except for items indicated as being reused, salvaged, reinstalled, or otherwise indicated to remain the Representative's property.

.2 Salvaged Materials: Carefully remove materials designated for salvage and store in a manner to prevent damage or devaluation of materials.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Existing Conditions: visit site, thoroughly examine and become familiar with conditions that may affect work of this Section before tendering Bid; Representative will not consider claims for extras for work or materials necessary for proper execution and completion of contract that could have been determined by a site visit.

3.2 PREPARATION

.1 Protection of Existing Systems to Remain: protect systems and components indicated to remain in place during selective demolition operations and as follows:

.1 Prevent movement and install bracing to prevent settlement or damage of adjacent services and parts of existing buildings scheduled to remain.

.2 Notify the Representative and cease operations where safety of buildings being demolished, adjacent structures or services appears to be endangered and await additional instructions before resuming demolition work specified in this Section.

.3 Prevent debris from blocking drainage inlets.

.4 Protect mechanical systems that will remain in operation.

.2 Protection of Building Occupants: Sequence demolition work so that interference with use of the building by the Representative and users is minimized and as follows:

.1 Prevent debris from endangering safe access to and egress from occupied buildings.

3.3 EXECUTION

.1 Coordinate the requirements of this section with the following:

.1 Refer to section 01 14 00 – Work Restrictions for specific restrictions.

.2 Disconnect and remove existing fire alarm system including associated conduits, boxes, wiring, and similar items unless specifically noted otherwise.

.3 Perform demolition work in a neat and workmanlike manner:

.1 Remove tools or equipment after completion of work and leave site clean and ready for subsequent renovation work.

.2 Repair and restore damages caused as a result of work of this Section to match existing materials and finishes.

.4 Grind off conduits and make flush with surface of concrete where conduits are cast into concrete; seal open ends of conduit with silicone sealant and leave in place.

.5 Seal open ends of conduit with silicone sealant and leave in place where they are inaccessible or cannot be removed without damaging adjacent construction.

3.4 CLOSEOUT ACTIVITIES

.1 Demolition Waste Disposal: arrange for legal disposal and remove demolished materials to accredited provincial landfill site or alternative disposal site (recycle center).

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contract documents apply to Divisions 01, 26 and 28.

1.2 REFERENCE STANDARDS

.1 CSA Group (CSA):

.1 CAN/CSA-C22.2 no.18.1-13 (R2018) – Metallic Outlet Boxes.

.2 CAN/CSA-C22.2 no.65-18 – Wire Connectors (Tri-National Standard with UL 486A-486B and NMX-J-543-ANCE-03).

.2 National Electrical Manufacturers Association (NEMA).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 – Submittal procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for wire and box connectors and include product characteristics, performance criteria, physical size, finish and limitations.

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 – Closeout submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for wire and box connectors for incorporation into manual.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.2 Storage and Handling Requirements:

.1 Store materials indoors in dry location off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect wire and box connectors from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Product

2.1 MATERIALS

.1 Pressure type wire connectors to CAN/CSA-C22.2 no.65, with current carrying parts of copper sized to fit copper conductors as required.

.2 Clamps or connectors for armoured cable as required to CAN/CSA-C22.2 no. 18.

2.2 TERMINAL BLOCK

.1 All conductor joints in fire alarm boxes and panels must be made on device terminals or terminal blocks with sufficient terminals for each conductor.

.2 Terminal blocks, such as Wieland n o. 9700B or approved equivalent, 10 A, 300 V, complete with rail, end plates, identification, end clamps and jumpers.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wire and box connectors installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of the Departmental Representative.

.2 Inform the Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Departmental Representative.

3.2 INSTALLATION

.1 Remove insulation carefully from ends of conductors and cables and:

.1 Apply coat of zinc joint compound on aluminum conductors prior to installation of connectors.

.2 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CAN/CSA-C22.2 no. 65.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

.1 Remove recycling bins and dumpsters from site and dispose of materials at appropriate facilities.

END OF SECTION

Part 1 General

1.1 EXIGENCES CONNEXES

.1 All contractual documents apply to Divisions 01, 26 and 28.

.2 The Contractor is responsible for performing all his voltage drop calculations and choosing the wire size accordingly, in order to comply with the requirements of the contractual documents and the manufacturer's recommendations.

1.2 TECHNICAL SHEETS

.1 Provide product data in accordance with Section 01 33 00 – Submittal Procedures.

Part 2 Product

2.1 BUILDING WIRES

.1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.

.2 Copper conductors: size as indicated, with 600 V insulation of cross-linked thermosetting polyethylene material rated RW90 XLPE.

2.2 FIRE ALARM WIRE

.1 FAS-105 and FT4 certified conductors, copper, rated voltage 300 V with PVC insulation.

.2 Alarm trigger circuits: minimum 16 AWG stranded conductors, and according to manufacturer's requirements.

.3 Signal circuits: conductors of at least 16 AWG, and according to manufacturer's requirements.

.4 Control circuits: conductors of at least 14 AWG, and according to manufacturer's requirements.

Part 3 Execution

3.1 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 – Common Work Results for Electrical.

.2 Perform tests using methods appropriate to local conditions and approved by the Departmental Representative and local authorities having jurisdiction.

.3 Perform tests before energizing electrical system.

3.2 GENERAL CABLE INSTALLATION

.1 Terminate cables in accordance with Section 26 05 20 – Wire and Box Connectors (0 – 1000 V).

.2 Cable Colour Coding: to Section 26 05 00 – Common Work Results for Electrical.

.3 Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points.

.4 Wiring in walls: typically drop or loop vertically from above to better facilitate future renovations. Generally wiring from below and horizontal wiring in walls to be avoided unless indicated.

3.3 INSTALLATION OF BUILDING WIRES

.1 Install wiring in conduit systems in accordance with Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings.

.2 Install the wiring dedicated to the fire alarm system, in accordance with section 28 31 00.01 – Multiplex Fire Alarm Systems.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contractual documents apply to Divisions 01, 26 and 28.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for hangers and supports and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect hangers and supports from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Product

2.1 SUPPORT CHANNELS

.1 U shape, size 41 x 41 mm, 2.5 mm thick, surface mounted.

.1 Material:

.1 Interior: galvanized.

.2 Exterior for temporary installations: galvanized.

.3 Exterior for permanent installations: aluminum

.2 Fasteners used outdoors and in wet areas should be stainless steel.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for hangers and supports installation in accordance with manufacturer's written instructions.

- .1 Visually inspect substrate in presence of the Departmental Representative.
- .2 Inform the Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from the Departmental Representative.

3.2 INSTALLATION

.1 Secure equipment to masonry, tile and plaster surfaces with nylon shields.

.2 Secure equipment to poured concrete with expandable inserts.

.3 Secure equipment to hollow masonry walls or suspended ceilings with toggle bolts.

.4 Secure surface mounted equipment with twist clip fasteners to inverted T bar ceilings. Ensure that T bars are adequately supported to carry weight of equipment specified before installation.

.5 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.

.6 Suspended support systems.

- .1 Support individual cable or conduit runs with 6 mm diameter threaded rods and spring clips.
- .2 Support two (2) or more cables or conduits on channels supported by 6 mm diameter threaded rod hangers where direct fastening to building construction is impractical.

.7 To surface-mount two (2) or more conduits, use U-profiles fitted:

- .1 1.5 m for conduits of nominal size 16 and 21 mm.
- .2 2 m for conduits of nominal size 27 and 35 mm.
- .3 3 m for conduits of nominal size 41 mm and more.

.8 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.

.9 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.

.10 Do not use wire lashing or perforated strap to support or secure raceways or cables.

.11 Use clamps to secure exposed cables or conduits to the framing or structural elements of the building.

- .1 One (1) steel hole flange for protruding conduits and cables 50mm in diameter or less.

.2 Two (2) steel hole flange to secure protruding conduits and cables over 50mm in diameter.

.3 Use clamps to secure conduits to exposed steel framing members.

.12 Do not use supports or equipment installed for other trades for conduit or cable support except with permission of other trade and approval the Departmental Representative.

.13 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 – Cleaning.

.1 Leave work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 – Cleaning.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contractual documents apply to Divisions 01, 26 and 28.

1.2 REFERENCE STANDARDS

.1 CSA Group (CSA):

.1 CSA C22.1-18F – Canadian Electrical Code, Part I (24th Edition).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data:

.1 Provide manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Provide shop drawings: in accordance with Section 01 33 00 – Submittal Procedures.

Part 2 Product

2.1 JUNCTION AND PULL BOXES

.1 Construction: welded steel enclosure.

.2 Covers Flush Mounted: 25 mm minimum extension all around.

.3 Covers Surface Mounted: screw-on flat covers.

2.2 CABINETS

.1 14 gauges steel cabinets with frame, concealed hinged door, lock, no visible terminal screws, folded edges for surface mounting, supplied with 19mm thick fire retardant plywood backing panel.

Part 3 Execution

3.1 JUNCTION, PULL BOXES AND CABINETS INSTALLATION

.1 Install pull boxes in inconspicuous but accessible locations.

.2 Install terminal block as indicated in cabinets.

.3 Only main junction and pull boxes are indicated. Install additional pull boxes as required by CSA C22.1.

3.2 IDENTIFICATION

.1 Equipment Identification: to Section 26 05 00 – Common Work Results for Electrical.

.2 Identification Labels: size 2 indicating voltage, amperage and phases or as indicated.

END OF SECTION

Part 1 General

1.1 EXIGENCES CONNEXES

.1 All contractual documents apply to Divisions 01, 26 and 28.

1.2 REFERENCE STANDARDS

.1 CSA Group (CSA):

.1 CSA C22.1-18F – Canadian Electrical Code, Part I (24th Edition).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals and samples in accordance with Section 01 33 00 – Submittal Procedures.

Part 2 Product

2.1 OUTLET AND CONDUIT BOXES GENERAL

.1 Size boxes in accordance with CSA C22.1.

.2 102 mm square or larger outlet boxes as required.

.3 Gang boxes where wiring devices are grouped.

.4 Blank cover plates for boxes without wiring devices.

.5 Combination boxes with barriers where outlets for more than one system are grouped.

2.2 GALVANIZED STEEL OUTLET BOXES

.1 One-piece electro-galvanized construction.

.2 Single gang flush device boxes for flush installation, minimum size 76 mm x 50 mm x 38 mm or as indicated. 102 mm square outlet boxes when more than one conduit enters one side with extension and plaster rings as required.

.3 Utility boxes for outlets connected to surface mounted EMT conduit, minimum size 102 mm x 54 mm x 48 mm.

.4 Extension and plaster rings for flush mounting devices in finished plaster walls.

2.3 MASONRY BOXES

.1 Electro-galvanized steel masonry single gang boxes for devices flush mounted in exposed block walls.

2.4 CONCRETE BOXES

.1 Electro-galvanized sheet steel concrete type boxes for flush mount in concrete with matching extension and plaster rings as required.

2.5 CONDUIT BOXES

.1 FS type die-cast aluminum boxes, with factory tapped openings, and mounting brackets for surface mounting within 2.4m of the floor.

2.6 OUTLET BOXES FOR NON-METALLIC SHEATHED CABLE

.1 Electro-galvanized, sectional, screw ganging steel boxes, minimum size 76 mm x 50 mm x 63 mm with two double clamps to take non-metallic sheathed cables.

2.7 FITTINGS – GENERAL

.1 Bushing and connectors with nylon insulated throats.

.2 Knock-out fillers to prevent entry of debris.

.3 Conduit outlet bodies for conduit up to 35 mm and pull boxes for larger conduits.

.4 Double locknuts and insulated bushings on sheet metal boxes.

Part 3 Execution

3.1 INSTALLATION

.1 Support boxes independently of connecting conduits.

.2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of work.

.3 For flush installations mount outlets flush with finished wall using plaster rings to permit wall finish to come within 6 mm of opening.

.4 Provide correct size of openings in boxes for conduit, mineral insulated and armoured cable connections. Do not install reducing washers.

.5 Vacuum clean interior of outlet boxes before installation of wiring devices.

.6 Identify systems for outlet boxes as required.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contractual documents apply to Divisions 01, 26 and 28.

1.2 REFERENCE STANDARDS

.1 CSA Group (CSA):

.1 CAN/CSA-C22.2 no 18.3-12 (R2017) – Conduit, tubing and cable fittings, A National Standard of Canada.

.2 CSA C22.2 no 45.1-07 (C2017) – Rigid Metal Conduit.

.3 CSA C22.2 no. 56-17 – Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.

.4 CSA C22.2 no. 83-FM1985(C2017) – Electrical Metallic Tubing.

.5 CSA C22.2 no 211.2-06 (C2016) – Rigid PVC (Unplasticized) Conduit.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product data: submit manufacturer's printed product literature, specifications and datasheets.

.1 Submit cable manufacturing data.

.3 Quality assurance submittals:

.1 Test reports: submit certified test reports.

.2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.3 Instructions: submit manufacturer's installation instructions.

Part 2 Product

2.1 CABLES AND REELS

.1 Provide cables on reels or coils.

.1 Mark or tag each cable and outside of each reel or coil, to indicate cable length, voltage rating, conductor size, and manufacturer's lot number and reel number.

.2 Each coil or reel of cable to contain only one continuous cable without splices.

.3 Identify cables for exclusively dc applications.

.4 Reel and mark shielded cables rated 2,001 V and above.

2.2 CONDUITS

.1 Rigid metal conduit: to CSA C22.2 no. 45, hot dipped galvanized steel.

.2 Electrical metallic tubing (EMT): to CSA C22.2 no. 83, with couplings.

.3 Flexible metal conduit: to CSA C22.2 no. 56, liquid-tight flexible galvanized steel.

.4 Already paint for fire alarm.

2.3 CONDUIT FASTENINGS

.1 One hole steel straps to secure surface conduits 50 mm and smaller.

.1 Two holes steel straps for conduits larger than 50 mm.

.2 Beam clamps to secure conduits to exposed steel work.

.3 Channel type supports for two or more conduits at:

.1 1.5 m for conduits of nominal size 16 and 21 mm.

.2 2 m for conduits of nominal size 27 and 35 mm.

.3 3 m for conduits of nominal size 41 mm and more.

.4 Threaded rods, 6 mm diameter, to support suspended channels.

2.4 CONDUIT FITTINGS

.1 Fittings: conform to standard CAN/CSA C22.2 no. 18, specially manufactured for the prescribed conduits. Coating: the same as that used for the ducts.

.2 Ensure factory "L" where 90° bends for 25 mm and larger conduits.

.3 Watertight connectors and couplings for EMT.

.1 Set-screws are not acceptable.

2.5 EXPANSION FITTINGS FOR RIGID CONDUIT

.1 Weatherproof expansion fittings with internal bonding assembly suitable for 100 mm linear expansion.

2.6 FISH CORD

.1 Polypropylene.

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 datasheets.

3.2 INSTALLATION

.1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.2 Conceal conduits except in mechanical and electrical service room.

.3 Surface mount conduits.

.4 Unless otherwise indicated, use EMT conduits (electrical metallic tubing).

.5 Use flexible metal conduits in the case of recessed connections and without a pre-wired outlet box and works or elements mounted in removable metal partitions.

.6 Bend conduit cold:

.1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.

.7 Mechanically bend steel conduit over 19 mm diameter.

.8 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.

.9 Install fish cord in empty conduits.

.10 Remove and replace blocked conduit sections.

.1 Do not use liquids to clean out conduits.

.11 Dry conduits out before installing wire.

3.3 SURFACE CONDUITS

.1 Run parallel or perpendicular to building lines.

.2 Locate conduits behind infrared or gas fired heaters with 1.5 m clearance.

.3 Run conduits in flanged portion of structural steel.

.4 Group conduits wherever possible on surface channels.

.5 Do not pass conduits through structural members except as indicated.

.6 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.

3.4 CLEANING

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

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Content:

.1 This section covers the general requirements for the identification of electrical equipment.

1.2 NAME PLATES

.1 Use the classification of the devices indicated on the plans.

1.3 DOCUMENTS TO BE SUBMITTED FOR APPROVAL/INFORMATION

.1 Submit the required documents, in accordance with section 01 00 10 – General mechanical and electrical instructions.

.2 Workshop drawings: name plates for electrical equipment.

1.4 DOCUMENTS/ELEMENTS TO BE SUBMITTED ON COMPLETION OF THE WORK

.1 Submit the required documents/elements, in accordance with section 01 00 10 - General mechanical and electrical instructions.

.2 Operation and Maintenance (O&M) Sheets: Provide operation and maintenance instructions, which will be incorporated into the O&M manual.

Part 2 Produc

2.1 ELECTRICAL EQUIPMENT IDENTIFICATION PLATES

.1 Manufacturing:

.1 General characteristics: 3 mm thick, in laminate plastic, square corners, letters precisely aligned and machine-engraved right down to the core.

.2 Dimensions according to the indications in the table below:

Formats	Dimensions (L x H)	Dimensions: lettering in mm or Arial font size			
		First line	Second line	Third line	Fourth line
1	300 mm x 100 mm	8 (30)	22 (80)	10 (36)	---
2	150 mm x 50 mm	6.5 (24)	13 (50)	6.5 (24)	---
3	100 mm x 30 mm	4.5 (16)	8 (30)	4.5 (16)	---
4	100 mm x 40 mm	4.5 (16)	8 (30)	5.5 (20)	4.5 (16)
5	75 mm x 35 mm	3 (12)	6 (22)	3 (12)	---
6	75 mm x 20 mm	6 (24)	3 (12)	---	---
7	50 mm x 10 mm	3 (12)	---	---	---

.3 Colors:

Network	Lettering	Fonts
Normal "N "	Black	White
Conditional emergency	White	Red
Emergency – Personal safety	Red	White
Timed emergency	Blue	Yellow
Uninterruptible power supply UPS	White	Blue

2.2 IDENTIFICATION FOR OUTLETS AND SWITCHES

.1 Materials:

.1 Normal network: "P-Touch" type tape or equivalent approved transparent 9 mm wide with black lettering.

.2 Emergency network: "P-Touch" type tape or equivalent approved transparent 9 mm wide with red lettering.

2.3 IDENTIFICATION OF EMERGENCY LIGHTING EQUIPMENT

.1 Materials:

.1 Identify all lighting devices connected to the emergency network with a red sticker 6 mm in diameter with a plasticized finish resistant to cleaning.

2.4 ELECTRICAL EQUIPMENT IDENTIFICATION

.1 Material:

.1 Normal network: "P-Touch" type tape or equivalent approved white 12 mm wide with black lettering.

.2 Emergency network: "P-Touch" type tape or equivalent approved white 12 mm wide with red lettering.

.3 UPS network: "P-Touch" type tape or equivalent approved white 12 mm wide with blue lettering.

2.5 FIRE ALARM IDENTIFICATION

.1 Material:

.1 12mm wide "P-Touch" type tape or equivalent approved transparent with black lettering.

2.6 UNILINGUAL ENTRIES

.1 The inscriptions used to identify the systems and elements must be written in French.

Part 3 Execution

3.1 GENERAL

.1 Provide the ULC and/or CSA certification plates required by each of the respective organizations.

.2 A procedure for identifying equipment numbers is provided in the legend, identify the equipment numbers according to this procedure.

.3 The installation of the circuit identification must be done from each equipment and/or outlet, up to the main power source.

.4 The circuit numbers must be indicated on all the covers of the junction boxes using a black felt-tip pen.

3.2 LOCATION OF IDENTIFICATION PLATES

.1 The plates must clearly identify the devices and they must be placed in places where they will be clearly visible and easily read from the work floor.

.2 Do not apply paint or heat insulation on the identification plates.

3.3 OUTLETS, SWITCHES AND OTHER SIMILAR DEVICES

.1 Place identification marks on all outlet plates, switches and other similar devices.

.2 Install a tape across the width of the plate and turn the tape inside on each side of the plate.

.3 Write circuit numbers on the inside of all outlet boxes and switches. Use a white tape and fix it on the wiring inside the box.

.4 The circuit number must be entered in full and include the distribution panel number followed by the circuit number (example: PS-1, 22).

3.4 FIRE ALARM

.1 Write down on the base of each smoke and heat detector, its address, as well as on each manual station, relay module, module one (1) input or two (2) inputs, isolator module, and any other addressable module or equipment.

3.5 WIRING WITH DEGREE OF FIRE RESISTANCE

.1 Identify the mineral-insulated cable using self-adhesive strips on which is written the type of network or the voltage supplying the cable.

.2 Apply self-adhesive identification strips at the following locations:

.1 On long cables in open areas of boiler rooms, equipment rooms and technical galleries, so that at least one can be easily seen from any point in the operating areas or aisles. Place the markers at intervals not exceeding 4.5 m.

.2 Where cables change direction.

.3 In each small room where a cable passes (at least one marker).

.4 On either side of visual obstacles or where it is difficult to follow the cable route.

.5 On either side of partitions, such as walls, floors or dividers.

.6 Where cables are concealed in a channel, service duct, or other restricted space, at entry and exit points, and near each access opening.

.7 At the start and end points of each cable, and near each piece of equipment.

.8 Install the self-adhesive strips in such a way that the designation is easily readable from the usual operating areas and from all easily accessible points.

.9 Position the self-adhesive strips perpendicular to the best possible line of sight, taking into account the usual location of operating personnel, lighting conditions, reduced visibility of colors or designations caused by dust and dirt, as well as the risk of damage.

.10 Place a self-adhesive strip near each hatch or inspection door.

3.6 EXISTING NETWORK

.1 Write the circuit numbers on all junction boxes of existing circuits to be kept or relocated using a black marker.

.2 When the wiring of a circuit is removed to a junction box, write on the latter the circuit number with the inscription "RÉSERVE".

3.7 DESIGNATION OF THE SECTOR

.1 Conductors will be identified by the color code of CSA C22.10-2007.

.2 In each fire alarm panel and in all junction boxes, each conductor will be identified by the circuit and loop number and with the identification aid Type Z solenoid valve or approved equivalent suitable for the size of the wire used or sticker made from a printer designed for this purpose.

3.8 DESIGNATION OF CONDUITS, BOXES AND CABLES

.1 Color coded metal conduits, pre-painted by the conduit manufacturer:

Network	Colors of the conduit
Emergency at 120/208 V, 120/240 V	Orange
Normal at 120/208 V, 120/240 V	Violet
Fire-Alarm	Red
Telecommunications	Blue
Security	Yellow
Building control (GBM), grounding	Galvanized natural

.1 Add to the color code of the metal conduits a secondary color marked with a 19 mm plastic tape colored according to the color codes indicated in the following table:

Secondary colors	
Mechanic	Mechanic
Medical	Medical
Building management (BM)	Building management (BM)
Grounding	Grounding

.2 Apply color markers (plastic tape) to cables or conduits at the points where they enter a wall, ceiling or floor, electrical / mechanical room, to each box and equipment.

.2 Permanently and indelibly mark with colored plastic tape the conductors for each power supply circuit. The Contractor must identify the phases according to the color codes indicated in the following table:

Building wire color codes	
Phase A	Red
Phase B	Black
Phase C	Blue
Neutral	White
Ground	Green

.1 On the box lids (on the visible face), indicate the circuit numbers and the name of the panel, or its function. Use a "P-Touch" type sticker or approved equivalent for this.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contracting documents from Divisions 01, 26 and 28 are applicable.

1.2 REFERENCE STANDARDS

.1 National Research Council Canada (NRC):

.1 National Building Code of Canada 2015 (NBC).

.2 Underwriter's Laboratories of Canada (ULC):

.1 CAN/ULC-S524-14 – Standard for the Installation of Fire Alarm Systems.

.2 CAN/ULC-S526-16 –Visible Signal Devices for Fire Alarm Systems, Including Accessories.

.3 CAN/ULC-S527-19 – Standard for Control Units for Fire Alarm Systems.

.4 CAN/ULC-S528-14 – Manual Stations for Fire Alarm Systems, Including Accessories.

.5 CAN/ULC-S529-16 – Smoke Detectors for Fire Alarm Systems.

.6 CAN/ULC-S530-91(R1999) – Heat Actuated Fire Detectors for Fire Alarm Systems.

.7 CAN/ULC-S531-14 – Standard for Smoke Alarms.

.8 CAN/ULC-S537-13 – Standard for the Verification of Fire Alarm Systems.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for multiplex fire alarm system and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Indicate on shop drawings:

.1 Detailed diagrams of assembly and internal wiring of the control module. Drawings should also include auxiliary cabinets.

.2 Overall system riser wiring diagram identifying control equipment signaling circuits initiating zones. identifying terminations, terminal numbers, conductors and raceways.

.3 Details for devices.

.4 Details and performance specifications for control, annunciation and peripherals with item by item cross reference to specification for compliance.

.5 Step-by-step operating sequence, cross referenced to logic flow diagram.

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 – Closeout Submittals. Documents/Items to be submitted upon completion of the work.

.2 Operation and Maintenance Data: submit operation and maintenance data for fire alarm system for incorporation into manual.

.3 Include:

.1 Instructions for complete fire alarm system to permit effective operation and maintenance.

.2 Technical data illustrated parts lists with parts catalogue numbers.

.3 Copy of approved shop drawings with corrections completed and marks removed except review stamps.

.4 List of recommended spare parts for system.

1.5 MAINTENANCE MATERIAL SUBMITTALS

.1 Submit maintenance materials in accordance with Section 01 78 00 – Closeout Submittals. Documents/Items to be submitted upon completion of the work.

1.6 TEMPORARY DEACTIVATION OF THE FIRE ALARM SYSTEM

.1 When the fire alarm system or part of it is deactivated, for any reason, including a malfunction, power failure or repair, the following procedures must apply:

.1 A supervisor provided par CSC must ensure constant surveillance by making continuous rounds of non-functional areas.

.2 The supervisor must have in his possession a portable communications radio or cell phone and a flashlight. He must be able to communicate with the site foreman.

.3 The supervisor must be informed of the instructions to be followed in the event of burning odors, the presence of smoke and/or fire.

.4 Refer to section 01 35 35 – Fire Safety requirements for the instructions in cast of fire.

.2 During a repair likely to trigger the fire alarm system, the Contractor must ensure that the detection devices in the work area are protected by safety caps or that the detection devices in the work area are temporarily disabled.

.3 After each repair or at the end of each day, the safety caps must be removed and the detection devices must be reactivated.

.4 In the event that it is impossible to reactivate a detection zone, a supervisor must remain on the premises to ensure constant surveillance of the premises, at the Contractor's expense.

1.7 UNFOUNDED FIRE ALARM (FALSE ALARM)

.1 For the duration of the work, the Contractor is responsible at all times for the proper functioning and continuity of the fire alarm system.

.2 Before the start of work, the Contractor must ensure that the fire alarm network does not have any failure (trouble).

.3 All costs due to the triggering of an unfounded fire alarm (false alarm) must be defrayed by the Contractor.

.4 Non-exhaustive list of examples of unfounded fire alarm triggers (false alarm) :

.1 Accidental testing and handling.
.2 System test without notifying the control panel where the system is connected.
.3 Failure to deactivate the system.
.4 Accidental triggering of a manual station in the work area.
.5 Construction or renovation work.
.6 Dust caused by the work.
.7 Wiring or equipment damaged by the work.
.8 All other situations during the work.

Part 2 Product

2.1 DESCRIPTION

.1 Fully supervised, microprocessor-based, fire alarm system, utilizing digital techniques for data control and digital, and multiplexing techniques for data transmission.

.2 System to carry out fire alarm and protection functions, including receiving alarm signals; initiating a two (2) stage alarm, supervising components and wiring; actuating annunciators and auxiliary functions, initiating trouble signals and signalling to fire department.

.3 Zoned, two (2) stages.

.4 Modular in design to allow for future expansion.

.5 Operation of system shall not require personnel with special computer skills.

.6 System to include:

.1 Central control unit in separate enclosure with power supply, stand-by batteries, central processor with microprocessor and logic interface, main system memory, input-output interfaces for alarm receiving, annunciation/display, and program control/signalling.
.2 Power supplies.
.3 Initiating/input circuits.
.4 Output circuits.
.5 Auxiliary circuits.
.6 Wiring.
.7 Manual and automatic initiating devices.
.8 Audible and visual signalling devices.
.9 End-of-line resistors.
.10 Annunciators.
.11 Printer.
.12 Historic event recorder.

.7 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.

.8 Power supply: to CAN/ULC-S524.

.9 Audible signal devices: to CAN/ULC-S524.

.10 Visual signal devices: to CAN/ULC-S526.

.11 Control unit: to CAN/ULC-S527.

.12 Manual pull stations: to CAN/ULC-S528.

.13 Thermal detectors: to CAN/ULC-S530.

.14 Smoke detectors: to CAN/ULC-S529.

.15 Smoke alarms: to CAN/ULC-S531.

.16 Regulatory requirements:

.1 Components of the fire alarm system: approved by the Underwriters' Laboratories of Canada (ULC), in accordance with the relevant provisions of the National Building Code and the requirements of the competent local authority having jurisdiction.

.17 Data logger interface:

.1 A data logger, connected to the communication system of which it is part, must record the triggering of all alarms, including fire alarms, noting in each case the time and zone, the time of the event, if there has been a response, cancellation, as well as validation or invalidation of the alarm. This system is independent of the fire alarm system.

.2 The fire alarm system must include a socket for connection of a data logger.

.1 The display unit must be equipped with three LED: alarm, fault, power on.

.2 The system must allow serial or multiplex connection to a main building and security management system equipped with a screen.

2.2 SYSTEM OPERATION: TWO STAGE ALARM – SIGNALS ONLY

.1 Actuation of any alarm initiating device to:

.1 Perform the actions indicated in article 2.21.

.2 Transmit signal to fire department via central station.

.3 Cause air conditioning and ventilation fans to shut down or to function to provide required control of smoke movement.

.4 Cause fire doors and smoke control doors, if normally held open, to close automatically.

.2 The triggering of an alarm triggering device, in the second step, must do the following:

.1 Sound the audible signaling devices throughout the building in an alarm tone.

.3 If the first stage alarm is not acknowledged after five (5) minutes, the system will automatically switch to the second stage.

.4 Acknowledging alarm: indicated at central control unit.

.5 Ensure that it is possible to silence signals by "alarm silence" switch at control unit, after 60 seconds period of operation.

.6 Subsequent alarm, received after previous alarm has been silenced, to re-activate signals.

.7 Actuation of supervisory devices to:

.1 Indicate respective supervisory zone at central control unit and at remote annunciator.

.2 Cause audible signal at central control unit to sound.

.3 Activate common supervisory sequence.

.8 Resetting alarm and supervisory devices not to return system indications/functions back to normal until control unit has been reset.

.9 Trouble on system to:

.1 Indicate circuit in trouble at central control unit.

.2 Activate "system trouble" indication, buzzer and common trouble sequence. Acknowledging trouble condition to silence audible indication; whereas visual indication to remain until trouble is cleared and system is back to normal.

.10 Trouble on system: suppressed during course of alarm.

.11 Trouble condition on any circuit in system not to initiate alarm conditions.

2.3 CONTROL PANEL

.1 Central control unit (CCU).

.1 Suitable for DCLA, DCLB and DCLC communication styles: to CAN/ULC-S524.

.2 Features specified are minimum requirements for microprocessor-based system with digital data control and digital multiplexing techniques for data transmission.

.3 Minimum capacity of 2,000 addressable monitoring and 1,000 addressable control/signal points.

.4 System to provide for priority reporting levels, with fire alarm points assigned highest priority, supervisory and monitoring lower priority, and third priority for troubles. Possible to assign control priorities to control points in system to guarantee operation or allow emergency override as required.

.5 Integral power supply, battery charger and standby batteries.

.6 Basic life safety software: retained in non-volatile Erasable Programmable Read-Only-Memory (EPROM). Extra memory chips: easily field installed. Random-Access-Memory (RAM) chips in panel to facilitate password-protected field editing of simple software functions (i.e. zone labels, priorities) and changing of system operation software.

.7 Circuitry to continuously monitor communications and data processing cycles of microprocessor. Upon failure, audible and visual trouble indication to activate.

.8 Communication between CCU and remote DGP's/TPR's to be supervised, DCLA and DCLB. Should communications fail between CCU and remote units, audible and visual trouble to be indicated at CCU. Data communication to be binary DC, baseband, time-division multiplex, half-duplex. Each data channel: capable of communicating up to distance of 3,000 m.

.9 Equipped with software routines to provide Event-Initiated-Programs (EIP); change is status of one or more monitor points, may be programmed to operate any or all of system's control points.

.10 Software and hardware to maintain time of day, day of week, day of month, month and year.

.11 Printer to record activities on system controlled by EIA RS-232-C link from within CCU.

.12 Software to operate variable sensitivity addressable smoke detectors and annunciate their status and sensitivity settings at control panel.

.2 Description of components:

.1 Cabinet type EEMAC-1, for surface mounting on wall, front metal door on concealed hinges, key lock, window for viewing all light indications and operating instructions.

.2 Set of compartments inside the cabinet, making it possible to house all the electronic modules required for the operation of the system, plus the free spaces requested, including central control unit of microprocessor type and memory unit containing the operating program.

.3 Display and control unit comprising an annunciator with a minimum of eight (8) lines of twenty-eight (28) alphanumeric characters, controls for alarm location, subsequent alarm display, alarm display subsequent fault, reset button, acknowledgment/silence button, light emitting diode (LED) type light indicators "alarm" fault "power", keypad for performing system functions.

.4 Zone reception modules for DCLA communication style for addressable type detectors. Add three DCLA communication style circuit.

.5 Zone reception modules for DCLB communication style for addressable type detectors. Add three DCLB communication style circuit.

.6 Campus network modules for DCLC communication style. Add three DCLC communication style circuit.

.7 Zone reception modules for short-circuit contact type detectors.

.8 Warning signaling modules (first step), according to the mode defined in paragraph 4.2 of ISO 8201 "Alarm systems – Audible emergency evacuation signal".

.9 Evacuation alarm signaling modules, according to the mode defined in paragraph 4.2 of ISO 8201 "Alarm systems – Audible emergency evacuation signal".

.10 Signaling modules in the panel with its device for alarm and fault.

.11 Zone isolator modules.

.12 Visual warning devices synchronization modules.

.13 Auxiliary control modules with output relays rated at 120 V, 5 A.

.14 Command modules for printer.

.15 Command modules for flat screen.

.16 120 V, 60 Hz, power supply unit.

.17 Accumulator chargers.

.18 Gel-Cel type accumulators, of sufficient capacity to power the entire system for a minimum of twenty-four (24) hours .and thereafter with full emergency power for at least one (1) hour. This current must be able to supply all the devices connected to the fire alarm system.

.19 Modules for remote alarm transmission according to section 2.8.

.20 Commands for triggering each alert zone.

.21 Key switch for triggering each evacuation alarm zone.

.22 Audio communication panel described in the article "FIRE ALARM CONTROL PANEL (TCAI)".

.23 Normal control buttons for auxiliary functions.

.24 Fully programmable on site.

.25 Multi-level password protection.

.26 Logic output functions.

.3 The TCAI is equipped with the following manual controls:

.1 One command for each of the functions "stop the ventilation systems indicated", when signaled.

.2 A command for disconnecting the electromagnets.

.3 These commands are done using a single button per command. These buttons are mounted in a metal case with faceplate, finished in the color chosen by the architect.

.4 Each control has a light emitting diode (LED) type function indicator.

2.4 POWER SUPPLIES

.1 120 V, 60 Hz as primary source of power for system.

.2 Voltage regulated, current limited distributed system power.

.3 Primary power failure or power loss (less than 102 V) will activate common trouble sequence.

.4 Interface with battery charger and battery to provide uninterruptible transfer of power to standby source during primary power failure or loss.

.5 During normal operating conditions fault in battery charging circuit, short or open in battery leads to activate common trouble sequence and standby power trouble indicator.

.6 Standby batteries: sealed, maintenance free.

.7 Continuous supervision of wiring for external initiating and alarm circuits to be maintained during power failure.

2.5 INITIATING/INPUT CIRCUITS

.1 Receiving circuits for alarm initiating devices such as manual pull stations, smoke detectors, heat detectors, supervision and control modules, smoke detectors for ventilation ducts and water flow switches, wired in DCLA configuration to central control unit.

.2 Alarm receiving circuits (active and spare): compatible with smoke detectors and open contact devices.

.3 Actuation of alarm initiating device: cause system to operate as specified in "System Operation".

.4 Receiving circuits for supervisory, N/O devices. Devices: wired in DCLA configuration to central control unit.

.5 Actuation of supervisory initiating device: cause system to operate as specified in "System Operation".

2.6 ALARM OUTPUT CIRCUITS

.1 Alarm output circuit: connected to signals, wired in DCLA configuration to central control unit.

2.7 CONNECTING THE FIRE DEPARTMENT

.1 Digital communicator conforming to the ULC-S561 standard, having two (2) passive communication means, namely a telephone line and a GSM cellular link or an IP link and a GSM cellular link or an active communications link always in communication with the monitoring station.

2.8 AUXILIARY CIRCUITS

.1 Auxiliary contacts for control functions.

.2 Alarm supervisory on system to cause operation of programmed auxiliary output circuits.

.3 Two (2) sets of separate contacts for elevator capture to main floor of egress and to alternate floor of egress.

.4 Upon resetting system, auxiliary contacts to return to normal or to operate as pre-programmed.

.5 Auxiliary circuits: rated at 2 A, 24 V D.C. or 120 V A.C., fuse protected.

2.9 MANUAL ALARM STATIONS

.1 Addressable manual pull station.

.1 Metallic pull lever, surface wall mounted type, two (2) stage, electronics to communicate station's status to addressable module/transponder over two (2) wires and to supply power to station. Station address to be set on station in field.

.2 The second stage shall be activated with a key.

2.10 AUTOMATIC ALARM INITIATING DEVICES

.1 Addressable smoke detector.

.1 Photoelectric type with automatic compensation to provide a maximum stability against dust and wear. Sensibility shall be adjustable.

.2 Electronics to communicate detector's status to addressable module/transponder.

.2 Addressable variable-sensitivity smoke detectors.

.1 Photo-electric type.

.2 Thermovelocimetric thermal detectors, sensitive element at a rise of 8.3°C per minute, with automatic reset.

.3 Electronics to communicate detector's status to addressable module/transponder.

.3 Smoke detector: photo-electric type air duct type with sampling tubes with protective housing.

.1 Plug-in type with fixed base.

.4 Reflective beam smoke detector:

.1 Transmitter and receiver in a single enclosure.

.2 Range of 8 to 100 m.

.3 Reflector.

.4 Laser-assisted prism mounting installation.

.5 Ground level controller.

2.11 ADDRESSABLE INTERFACE MODULE

.1 Module for interfacing between shorting contact devices N.O. or N.C. and an addressable trigger circuit.

.2 Monitored interface module, including the connecting switch in circuit short.

.3 Programmable on site to provide the address and the type of report.

.4 Relay monitored to control auxiliary functions.

.5 Relay contact 120 V, 2 A.

2.12 ADDRESSABLE RELAY INTERFACE

.1 Relays for addressable interfacing by a trigger circuit.

.2 Programmable on site to provide the address and the type of report.

.3 Relay monitored to control auxiliary functions.

.4 Relay contact 120 V, 2 A.

2.13 MODULE ISOLATOR

.1 Module insulator on the detection and signaling loops installed so that a defect in an area does not prevent the normal operation of other input or output devices in another room.

.2 Provide an isolator module for each 2 000 m² (maximum) floor area to be served.

2.14 AUDIBLE SIGNAL DEVICES

.1 Surface mounted, polarized horns designed for a voltage of 24 V D.C., 90 dB, 3 m, with at least two (2) settings.

.2 The Contractor must add a bank of horns with 5 m of cable each corresponding to 10% of the total quantity of horns already supplied within the framework of the project.

2.15 VISUAL ALARM SIGNAL DEVICES

.1 Strobe type: flashing, red, 24 V D.C.

.2 Unless otherwise indicated, the light intensities:

.1 15 candelas: corridor and room up to 35 m².

.2 30 candelas: room up to 80 m².

.3 75 candelas: room up to 145 m².

.4 110 candelas: room larger than 145 m².

.3 Visual signage designed for surface-mounted, surface-mounted installation, with at least two settings.

2.16 COMBINED SOUND AND VISUAL SIGNALING DEVICES

.1 Surface mounted installation, with at least two sound and light settings.

.2 Horns, polarized, designed for a voltage at 24 V D.C., 90 dB, 3 m.

.3 Strobe signaling: signaling at 24 V D.C., red in color.

.4 Unless otherwise indicated, the light intensities:

.1 15 candelas: corridor and room up to 35 m².

.2 30 candelas: room up to 80 m².

.3 75 candelas: room up to 145 m².

.4 110 candelas: room larger than 145 m².

.5 Separate wiring between sound and visual signaling.

2.17 REMOTE ANNOUNCERS FOR THE MAIN ENTRANCE (T-110A)

.1 A touch screen annunciator large enough to display the entire Archambault Establishment. Each building, floor, staircase, without being limited to it, will have to be mapped in order to display the zones being in alarms.

.2 Displays warning signal and alarms for the whole building.

.3 Announcers with visualization of the following situations:

.1 Alarms and troubles for alarm initiating circuits.

.2 Supervisory alarms and troubles for supervisory initiating circuits.

.3 Common system trouble.

.4 Trouble buzzer:

.1 Acknowledging trouble at main panel to silence trouble buzzers in system.

.5 Wiring reduced to a minimum between the main control board.

2.18 REMOTE ANNOUNCIATORS FOR GUARDIAN POSITIONS

.1 Remote alphanumeric annunciators displaying eight (8) simultaneous events.

.2 Displays alerts and alarms for the area served by the guard station only.

.3 Announcers with visualization of the following situations:

.1 Alarms and troubles for alarm initiating circuits.

.2 Supervisory alarms and troubles for supervisory initiating circuits.

.3 Common system trouble.

.4 No trouble buzzer.

.5 Minimum wiring configuration with main panel and other remote annunciators.

2.19 REMOTE ANNOUNCERS FOR THE MAIN CONTROL STATION

.1 A touch screen annunciator large enough to display the entire Archambault Establishment. Each building, floor, staircase, without being limited to it, will have to be mapped in order to display the zones being in alarms.

.2 Displays alarms for the whole building (second step). Warning signals (first step) are not displayed on this annunciator.

.3 Announcers with visualization of the following situations:

.1 Alarms and troubles for alarm initiating circuits.

.2 Supervisory alarms and troubles for supervisory initiating circuits.

.3 Common system trouble.

.4 Trouble buzzer:

.1 Acknowledging trouble at main panel to silence trouble buzzers in system.

.5 Wiring reduced to a minimum between the main control board.

2.20 REMOTE PRINTER

.1 System printer: to give a hard copy record of system events c/w following features:

.1 120 V A.C., 60 Hz.

.2 80 columns.

.3 Utilizes fan fold paper.

.4 Connected to RS-232 output at central control panel.

.2 Electronic teleprinter compatible with TCAI.

.3 Table model.

.4 Main Features:

.1 Speed: two hundred (200) characters/sec.

.2 Number of columns: eighty (80).

.3 Cartridge tape, 1,200 bauds communications speed.

.4 Communications port, RS-232-C serial.

2.21 SMOKE DETECTOR PROTECTORS

.1 Rugged smoke detector protectors for installation in high security areas. The protectors will be provided by the Archambault Establishment.

2.22 SIGNALING DEVICES PROTECTORS

.1 cUL polycarbonate covers for signaling devices.

2.23 TRIGGERING SIGNALING DEVICES

.1 The alarms programming for this building is such that:

.1 The alert in each of the blocks triggers a local sound signal in the security command post affected by the block. In addition, a visual signaling affects the operational area detection during the alert.

.2 An alarm in control block A or in CRSM triggers the signaling devices of control block A and CRSM only.

.3 An alarm in control block E triggers the signaling devices of control block E only.

.4 An alarm in control block J triggers the signaling devices of control block J only.

.5 An alarm in building T triggers the signaling devices of building T only.

.6 An alarm in wings J, K, L and M triggers the signaling devices in wings J, K, L and M only.

2.24 PROGRAMMING AND SEQUENCE

.1 The Contractor must provide its proposed programming matrix for comments to the Departmental Representative.

.2 The activation sequence will be confirmed by staff at Archambault Institution at the start of the project.

.3 An annunciator located elsewhere than in an alarm zone will not be able to acknowledge and reset the alarm.

.4 The main control center panel will not be able to reset or acknowledge a fire alarm in a building other than where the main panel is located.

.5 Each station will guard a switch for turning off the audible signal and visual alarms and alarm failures.

.6 Automatic door openers installed in fire separations must be connected to the fire alarm system in order to deactivate the automatic door opening.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for fire alarm installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

.1 Install systems in accordance with CAN/ULC-S524 and TB Fire Protection Standard.

.2 Install central control unit and connect to ac power supply, A.C. standby power.

.3 Install manual alarm stations and connect to alarm circuit wiring.

.4 Locate and install detectors and connect to alarm circuit wiring. Mount detectors more than 1 m from air outlets. Maintain at least 600 mm radius clear space on ceiling, below and around detectors.

.5 Locate duct type detectors in straight portions of ducts. Refer to ULC-S524 standard for installation instructions.

.6 Connect alarm circuits to main control panel.

.7 Install signal, horns and visual signal devices and connect to signalling circuits.

.8 Connect signalling circuits to main control panel.

.9 Install remote annunciator panels and connect to annunciator circuit wiring.

.10 Install remote relay units to control fan shut down in replacement of existing relay.

.11 Sprinkler system: wire alarm and supervisory switches and connect to control panel in replacement of existing module.

.12 Splices are not permitted.

.13 Provide necessary raceways, cable and wiring to make interconnections to terminal boxes, annunciator equipment and CCU, as required by equipment manufacturer.

.14 Ensure that wiring is free of opens, shorts or grounds, before system testing and handing over.

.15 Identify circuits and other related wiring at central control unit, annunciators, and terminal boxes.

3.3 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 – Common Work Results for Electrical and CAN/ULC-S537.

.2 Fire alarm system:

.1 Test such device and alarm circuit to ensure manual stations and smoke detectors transmit alarm to control panel and actuate a general alarm, auxiliary devices and a first stage alarm.

.2 Check annunciator panels to ensure zones are shown correctly.

.3 Simulate grounds and breaks on alarm and signalling circuits to ensure proper operation of systems.

.4 Addressable circuits system style DCLA:

.1 Test each conductor on all DCLA addressable links for capability of providing three (3) or more subsequent alarm signals on each side of single open-circuit fault condition imposed near midmost point of each link. Operate "Acknowledge/Silence" switch after reception of each of the three (3) signals. Correct imposed fault after completion of each series of tests.

.2 Test each conductor on all DCLA addressable links for capability of providing three (3) or more subsequent alarm signals during ground-fault condition imposed near midmost point of each link. Operate "Acknowledge/Silence" switch after reception of each of the three (3) signals. Correct imposed fault after completion of each series of tests.

.3 Provide final PROM program re-burn for system to the Departmental Representative incorporating program changes made during construction.

3.4 CONDUIT AND CONDUCTORS

.1 Install all conductors in thin-walled rigid steel metal conduits, unless otherwise specified in the plans or in this specification.

.2 Install all conduits in accordance with section 26 05 34.

.3 Install the conductors for the detection in conduits separate from the conductors for the bells.

.4 Fill the conduits so that the total area of the conductors does not exceed 40% of the free area of the conduit.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

3.6 DISPOSITION OF EQUIPMENTS

.1 Return to Departmental Representative all fire alarm devices, including removed signs and annunciators.

.2 Dispose of devices and equipment that the representative of the Ministry does not want to keep.

3.7 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by fire alarm system installation.

3.8 CLOSEOUT ACTIVITIES

.1 Provide on-site lectures and demonstration by fire alarm equipment manufacturer to train operational personnel in use and maintenance of fire alarm system.

3.9 MAINTENANCE

.1 Give, on the tender form, a separate price included covering the reprogramming of the PROM (programmable read only memory).

.2 Provide a separate price on the bid form covering temporary software modifications made during construction, including modifications to zoning labels, various control functions and system operation.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All contracting documents from Divisions 01, 26 and 28 are applicable.

1.2 REFERENCE STANDARDS

.1 National Research Council Canada (NRC):

.1 National Building Code of Canada 2015 (NBC).

.2 Underwriter's Laboratories of Canada (ULC):

.1 CAN/ULC-S524-14 – Standard for the Installation of Fire Alarm Systems.

.2 CAN/ULC-S526-16 –Visible Signal Devices for Fire Alarm Systems, Including Accessories.

.3 CAN/ULC-S527-19 – Standard for Control Units for Fire Alarm Systems.

.4 CAN/ULC-S528-14 – Manual Stations for Fire Alarm Systems, Including Accessories.

.5 CAN/ULC-S529-16 – Smoke Detectors for Fire Alarm Systems.

.6 CAN/ULC-S530-91(R1999) – Heat Actuated Fire Detectors for Fire Alarm Systems.

.7 CAN/ULC-S531-14 – Standard for Smoke Alarms.

.8 CAN/ULC-S537-13 – Standard for the Verification of Fire Alarm Systems.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for multiplex fire alarm system and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Indicate on shop drawings:

.1 Detailed diagrams of assembly and internal wiring of the control module. Drawings should also include auxiliary cabinets.

.2 Overall system riser wiring diagram identifying control equipment signaling circuits initiating zones. identifying terminations, terminal numbers, conductors and raceways.

.3 Details for devices.

.4 Details and performance specifications for control, annunciation and peripherals with item by item cross reference to specification for compliance.

.5 Step-by-step operating sequence, cross referenced to logic flow diagram.

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 – Closeout Submittals. Documents/Items to be submitted upon completion of the work.

.2 Operation and Maintenance Data: submit operation and maintenance data for fire alarm system for incorporation into manual.

.3 Include:

.1 Instructions for complete fire alarm system to permit effective operation and maintenance.

.2 Technical data illustrated parts lists with parts catalogue numbers.

.3 Copy of approved shop drawings with corrections completed and marks removed except review stamps.

.4 List of recommended spare parts for system.

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.3 The supervisor must be informed of the instructions to be followed in the event of burning odors, the presence of smoke and/or fire.

.4 Refer to section 01 35 35 – Fire Safety requirements for the instructions in cast of fire.

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.4 Non-exhaustive list of examples of unfounded fire alarm triggers (false alarm) :

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.7 Equipment and devices: ULC listed and labelled and supplied by single manufacturer.

.8 Power supply: to CAN/ULC-S524.

.9 Audible signal devices: to CAN/ULC-S524.

.10 Visual signal devices: to CAN/ULC-S526.

.11 Control unit: to CAN/ULC-S527.

.12 Manual pull stations: to CAN/ULC-S528.

.13 Thermal detectors: to CAN/ULC-S530.

.14 Smoke detectors: to CAN/ULC-S529.

.15 Smoke alarms: to CAN/ULC-S531.

.16 Regulatory requirements:

.1 Components of the fire alarm system: approved by the Underwriters' Laboratories of Canada (ULC), in accordance with the relevant provisions of the National Building Code and the requirements of the competent local authority having jurisdiction.

.17 Data logger interface:

.1 A data logger, connected to the communication system of which it is part, must record the triggering of all alarms, including fire alarms, noting in each case the time and zone, the time of the event, if there has been a response, cancellation, as well as validation or invalidation of the alarm. This system is independent of the fire alarm system.

.2 The fire alarm system must include a socket for connection of a data logger.

.1 The display unit must be equipped with three LED: alarm, fault, power on.

.2 The system must allow serial or multiplex connection to a main building and security management system equipped with a screen.

2.2 SYSTEM OPERATION: ONE STAGE ALARM – SIGNALS ONLY

.1 Actuation of any alarm initiating device to:

.1 Transmit signal to fire department via central station and main TCAI.

.2 Sound the audible signaling devices throughout the building in an alarm tone.

.2 Acknowledging alarm: indicated at central control unit.

.3 Ensure that it is possible to silence signals by "alarm silence" switch at control unit, after 60 seconds period of operation.

.4 Subsequent alarm, received after previous alarm has been silenced, to re-activate signals.

.5 Actuation of supervisory devices to:

.1 Indicate respective supervisory zone at central control unit and at remote annunciator.

.2 Cause audible signal at central control unit to sound.

.3 Activate common supervisory sequence.

.6 Resetting alarm and supervisory devices not to return system indications/functions back to normal until control unit has been reset.

.7 Trouble on system to:

.1 Indicate circuit in trouble at central control unit.

.2 Activate "system trouble" indication, buzzer and common trouble sequence. Acknowledging trouble condition to silence audible indication; whereas visual indication to remain until trouble is cleared and system is back to normal.

.8 Trouble on system: suppressed during course of alarm.

.9 Trouble condition on any circuit in system not to initiate alarm conditions.

2.3 CONTROL PANEL

.1 Central control unit (CCU).

.1 Suitable for DCLA, DCLB and DCLC communication style: to CAN/ULC-S524.

.2 Features specified are minimum requirements for microprocessor-based system with digital data control and digital multiplexing techniques for data transmission.

.3 Minimum capacity of 2,000 addressable monitoring and 1,000 addressable control/signal points.

.4 System to provide for priority reporting levels, with fire alarm points assigned highest priority, supervisory and monitoring lower priority, and third priority for troubles. Possible to assign control priorities to control points in system to guarantee operation or allow emergency override as required.

.5 Integral power supply, battery charger and standby batteries.

.6 Basic life safety software: retained in non-volatile Erasable Programmable Read-Only-Memory (EPROM). Extra memory chips: easily field installed. Random-Access-Memory (RAM) chips in panel to facilitate password-protected field editing of simple software functions (i.e. zone labels, priorities) and changing of system operation software.

.7 Circuitry to continuously monitor communications and data processing cycles of microprocessor. Upon failure, audible and visual trouble indication to activate.

.8 Communication between CCU and remote DGP's/TPR's to be supervised, DCLA and DCLB. Should communications fail between CCU and remote units, audible and visual trouble to be indicated at CCU. Data communication to be binary DC, baseband, time-division multiplex, half-duplex. Each data channel: capable of communicating up to distance of 3,000 m.

.9 Equipped with software routines to provide Event-Initiated-Programs (EIP); change is status of one or more monitor points, may be programmed to operate any or all of system's control points.

.10 Software and hardware to maintain time of day, day of week, day of month, month and year.

.11 Printer to record activities on system controlled by EIA RS-232-C link from within CCU.

.12 Software to operate variable sensitivity addressable smoke detectors and annunciate their status and sensitivity settings at control panel.

.2 Description of components:

.1 Cabinet type EEMAC-1, for surface mounting on wall, front metal door on concealed hinges, key lock, window for viewing all light indications and operating instructions.

.2 Set of compartments inside the cabinet, making it possible to house all the electronic modules required for the operation of the system, plus the free spaces requested, including central control unit of microprocessor type and memory unit containing the operating program.

.3 Display and control unit comprising an annunciator with a minimum of eight (8) lines of twenty-eight (28) alphanumeric characters, controls for alarm location, subsequent alarm display, alarm display subsequent fault, reset button, acknowledgment/silence button, light emitting diode (LED) type light indicators "alarm" fault "power", keypad for performing system functions.

.4 Zone reception modules for DCLA communication style for addressable type detectors. Add three DCLA communication style circuit.

.5 Zone reception modules for DCLB communication style for addressable type detectors. Add three DCLB communication style circuit.

.6 Campus network modules for DCLC communication style.

.7 Zone reception modules for short-circuit contact type detectors.

.8 Evacuation alarm signaling modules, according to the mode defined in paragraph 4.2 of ISO 8201 "Alarm systems – Audible emergency evacuation signal".

.9 Signaling modules in the panel with its device for alarm and fault.

.10 Zone isolator modules.

.11 Visual warning devices synchronization modules.

.12 Auxiliary control modules with output relays rated at 120 V, 5 A.

.13 120 V, 60 Hz, power supply unit.

.14 Accumulator chargers.

.15 Gel-Cel type accumulators, of sufficient capacity to power the entire system for a minimum of twenty-four (24) hours .and thereafter with full emergency power for at least one (1) hour. This current must be able to supply all the devices connected to the fire alarm system.

.16 Commands for triggering each alert zone.

.17 Key switch for triggering each evacuation alarm zone.

.18 Audio communication panel described in the article "FIRE ALARM CONTROL PANEL (TCAI)".

.19 Normal control buttons for auxiliary functions.

.20 Fully programmable on site.

.21 Multi-level password protection.

.22 Logic output functions.

.3 The TCAI is equipped with the following manual controls:

.1 One command for each of the functions "stop the ventilation systems indicated", when signaled.

.2 A command for disconnecting the electromagnets.

.3 These commands are done using a single button per command. These buttons are mounted in a metal case with faceplate, finished in the color chosen by the architect.

.4 Each control has a light emitting diode (LED) type function indicator.

2.4 POWER SUPPLIES

.1 120 V, 60 Hz as primary source of power for system.

.2 Voltage regulated, current limited distributed system power.

.3 Primary power failure or power loss (less than 102 V) will activate common trouble sequence.

.4 Interface with battery charger and battery to provide uninterruptible transfer of power to standby source during primary power failure or loss.

.5 During normal operating conditions fault in battery charging circuit, short or open in battery leads to activate common trouble sequence and standby power trouble indicator.

.6 Standby batteries: sealed, maintenance free.

.7 Continuous supervision of wiring for external initiating and alarm circuits to be maintained during power failure.

2.5 INITIATING/INPUT CIRCUITS

.1 Receiving circuits for alarm initiating devices such as manual pull stations, smoke detectors, heat detectors, supervision and control modules, smoke detectors for ventilation ducts and water flow switches, wired in DCLA configuration to central control unit.

.2 Alarm receiving circuits (active and spare): compatible with smoke detectors and open contact devices.

.3 Actuation of alarm initiating device: cause system to operate as specified in "System Operation".

.4 Receiving circuits for supervisory, N/O devices. Devices: wired in DCLA configuration to central control unit.

.5 Actuation of supervisory initiating device: cause system to operate as specified in "System Operation".

2.6 ALARM OUTPUT CIRCUITS

.1 Alarm output circuit: connected to signals, wired in DCLA configuration to central control unit.

2.7 CONNECTING THE FIRE DEPARTMENT

.1 Digital communicator conforming to the ULC-S561 standard, having two (2) passive communication means, namely a telephone line and a GSM cellular link or an IP link and a GSM cellular link or an active communications link always in communication with the monitoring station.

2.8 AUXILIARY CIRCUITS

.1 Auxiliary contacts for control functions.

.2 Alarm supervisory on system to cause operation of programmed auxiliary output circuits.

.3 Upon resetting system, auxiliary contacts to return to normal or to operate as pre-programmed.

.4 Auxiliary circuits: rated at 2 A, 24 V D.C. or 120 V A.C., fuse protected.

2.9 MANUAL ALARM STATIONS

.1 Addressable manual pull station.

.1 Metallic pull lever, surface wall mounted type, one (1) stage, electronics to communicate station's status to addressable module/transponder over two (2) wires and to supply power to station. Station address to be set on station in field.

2.10 AUTOMATIC ALARM INITIATING DEVICES

.1 Addressable smoke detector.

.1 Photoelectric type with automatic compensation to provide a maximum stability against dust and wear. Sensibility shall be adjustable.

.2 Electronics to communicate detector's status to addressable module/transponder.

2.11 ADDRESSABLE INTERFACE MODULE

.1 Module for interfacing between shorting contact devices N.O. or N.C. and an addressable trigger circuit.

.2 Monitored interface module, including the connecting switch in circuit short.

.3 Programmable on site to provide the address and the type of report.

.4 Relay monitored to control auxiliary functions.

.5 Relay contact 120 V, 2 A.

2.12 ADDRESSABLE RELAY INTERFACE

.1 Relays for addressable interfacing by a trigger circuit.

.2 Programmable on site to provide the address and the type of report.

.3 Relay monitored to control auxiliary functions.

.4 Relay contact 120 V, 2 A.

2.13 MODULE ISOLATOR

.1 Module insulator on the detection and signaling loops installed so that a defect in an area does not prevent the normal operation of other input or output devices in another room.

.2 Provide an isolator module for each 2 000 m² (maximum) floor area to be served.

2.14 AUDIBLE SIGNAL DEVICES

.1 Surface mounted, polarized horns designed for a voltage of 24 V D.C., 90 dB, 3 m, with at least two (2) settings.

.2 The Contractor must add a bank of horns with 5 m of cable each corresponding to 10% of the total quantity of horns already supplied within the framework of the project.

2.15 VISUAL ALARM SIGNAL DEVICES

.1 Strobe type: flashing, red, 24 V D.C.

.2 Unless otherwise indicated, the light intensities:

.1 15 candelas: corridor and room up to 35 m².

.2 30 candelas: room up to 80 m².

.3 75 candelas: room up to 145 m².

.4 110 candelas: room larger than 145 m².

.3 Visual signage designed for surface-mounted, surface-mounted installation, with at least two settings.

2.16 COMBINED SOUND AND VISUAL SIGNALING DEVICES

.1 Surface mounted installation, with at least two sound and light settings.

.2 Horns, polarized, designed for a voltage at 24 V D.C., 90 dB, 3 m.

.3 Strobe signaling: signaling at 24 V D.C., red in color.

.4 Unless otherwise indicated, the light intensities:

.1 15 candelas: corridor and room up to 35 m².

.2 30 candelas: room up to 80 m².

.3 75 candelas: room up to 145 m².

.4 110 candelas: room larger than 145 m².

.5 Separate wiring between sound and visual signaling.

2.17 SIGNALING DEVICES PROTECTORS

.1 cUL polycarbonate covers for signaling devices.

2.18 PROGRAMMING AND SEQUENCE

.1 The Contractor must provide its proposed programming matrix for comments to the Departmental Representative.

.2 The activation sequence will be confirmed by staff at Archambault Institution at the start of the project.

.3 An annunciator located elsewhere than in an alarm zone will not be able to acknowledge and reset the alarm.

.4 The main control center panel will not be able to reset or acknowledge a fire alarm in a building other than where the main panel is located.

.5 Each station will guard a switch for turning off the audible signal and visual alarms and alarm failures.

.6 Automatic door openers installed in fire separations must be connected to the fire alarm system in order to deactivate the automatic door opening.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for fire alarm installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

.1 Install systems in accordance with CAN/ULC-S524 and TB Fire Protection Standard.

.2 Install central control unit and connect to ac power supply, A.C. standby power.

.3 Install manual alarm stations and connect to alarm circuit wiring.

.4 Locate and install detectors and connect to alarm circuit wiring. Mount detectors more than 1 m from air outlets. Maintain at least 600 mm radius clear space on ceiling, below and around detectors.

.5 Locate duct type detectors in straight portions of ducts. Refer to ULC-S524 standard for installation instructions.

.6 Connect alarm circuits to main control panel.

.7 Install signal, horns and visual signal devices and connect to signalling circuits.

.8 Connect signalling circuits to main control panel.

.9 Install remote annunciator panels and connect to annunciator circuit wiring.

.10 Install remote relay units to control fan shut down in replacement of existing relay.

.11 Sprinkler system: wire alarm and supervisory switches and connect to control panel in replacement of existing module.

.12 Splices are not permitted.

.13 Provide necessary raceways, cable and wiring to make interconnections to terminal boxes, annunciator equipment and CCU, as required by equipment manufacturer.

.14 Ensure that wiring is free of opens, shorts or grounds, before system testing and handing over.

.15 Identify circuits and other related wiring at central control unit, annunciators, and terminal boxes.

3.3 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 – Common Work Results for Electrical and CAN/ULC-S537.

.2 Fire alarm system:

.1 Test such device and alarm circuit to ensure manual stations and smoke detectors transmit alarm to control panel and actuate a general alarm, auxiliary devices and a first stage alarm.

.2 Check annunciator panels to ensure zones are shown correctly.

.3 Simulate grounds and breaks on alarm and signalling circuits to ensure proper operation of systems.

.4 Addressable circuits system style DCLA:

.1 Test each conductor on all DCLA addressable links for capability of providing three (3) or more subsequent alarm signals on each side of single open-circuit fault condition imposed near midmost point of each link. Operate "Acknowledge/Silence" switch after reception of each of the three (3) signals. Correct imposed fault after completion of each series of tests.

.2 Test each conductor on all DCLA addressable links for capability of providing three (3) or more subsequent alarm signals during ground-fault condition imposed near midmost point of each link. Operate "Acknowledge/Silence" switch after reception of each of the three (3) signals. Correct imposed fault after completion of each series of tests.

.3 Provide final PROM program re-burn for system to the Departmental Representative incorporating program changes made during construction.

3.4 CONDUIT AND CONDUCTORS

.1 Install all conductors in thin-walled rigid steel metal conduits, unless otherwise specified in the plans or in this specification.

.2 Install all conduits in accordance with section 26 05 34.

.3 Install the conductors for the detection in conduits separate from the conductors for the bells.

.4 Fill the conduits so that the total area of the conductors does not exceed 40% of the free area of the conduit.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 – Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

3.6 DISPOSITION OF EQUIPMENTS

.1 Return to Departmental Representative all fire alarm devices, including removed signs and annunciators.

.2 Dispose of devices and equipment that the representative of the Ministry does not want to keep.

3.7 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by fire alarm system installation.

3.8 CLOSEOUT ACTIVITIES

.1 Provide on-site lectures and demonstration by fire alarm equipment manufacturer to train operational personnel in use and maintenance of fire alarm system.

3.9 MAINTENANCE

.1 Give, on the tender form, a separate price included covering the reprogramming of the PROM (programmable read only memory).

.2 Provide a separate price on the bid form covering temporary software modifications made during construction, including modifications to zoning labels, various control functions and system operation.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with section 01 33 00 – Submittal procedures.

.1 Product data:

.1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

Part 2 Product

2.1 PVC DUCTS AND FITTINGS

.1 Rigid PVC duct: type DB2/ES2, with fabricated fittings, for direct burial.

.2 Rigid PVC bends, couplings, reducers, bell end fittings, plugs, caps, adaptors same product material as duct, to make a complete installation.

2.2 SOLVENT WELD COMPOUND

.1 Solvent cement for PVC duct joints.

2.3 CABLE PULLING EQUIPMENT

.1 6 mm stranded nylon pull rope tensile strength 5 kN.

2.4 WARNING TAPE

.1 Standard 4-mil polyethylene 76 mm wide tape, yellow with black letters, imprinted with "CAUTION BURIED ELECTRIC CABLE BELOW".

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 datasheets.

3.2 INSTALLATION

.1 Install duct in accordance with manufacturer's instructions and at elevations as indicated.

.2 Clean inside of ducts before laying.

.3 Install plastic duct spacers and ensure full, even support every 1.5 m and smooth transition throughout duct length.

.4 Slope ducts with 1 to 400 minimum slope.

.5 Install plugs and cap both ends of ducts to prevent entrance of foreign materials during and after construction.

.6 Pull through each duct wooden mandrel not less than 300 mm long and of diameter 6 mm less than internal diameter of duct, followed by stiff bristle brush to remove sand, earth and other foreign material.

.1 Pull stiff bristle brush through each duct immediately before pulling-in cables.

.7 Install a pull rope continuous throughout each duct run with 3 m spare rope at each end.

.8 Place continuous strip of warning tape 300 mm above duct before backfilling trenches.

.9 Install markers as required.

.10 Notify the Departmental Representative for field review upon completion of direct buried ducts and obtain acceptance prior to backfill.

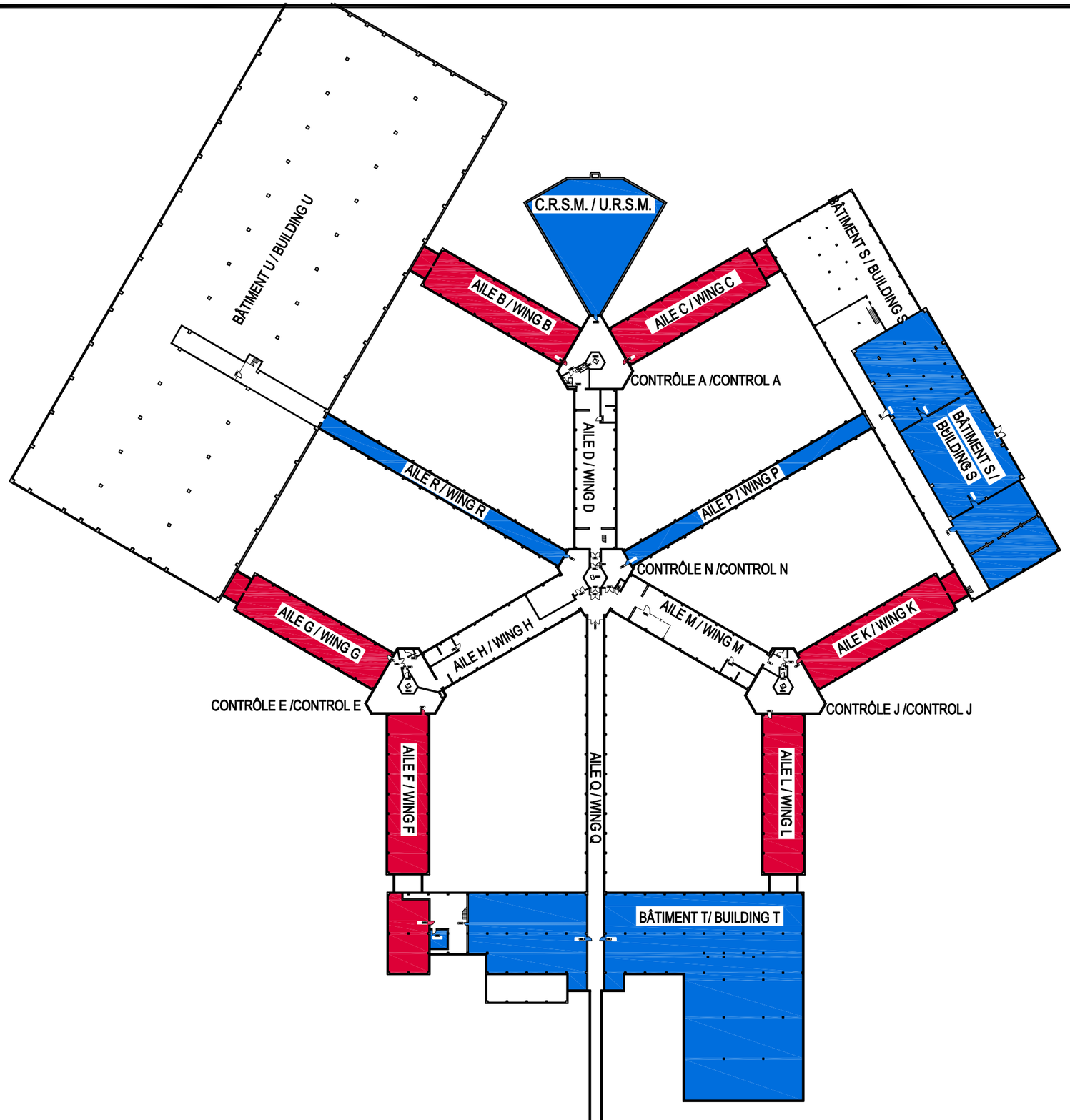
END OF SECTION

APPPENDIX NO. 1 – PROGRAMMING TABLE

ARCHAMBAULT ESTABLISHMENT – MAIN TCAI FIRE ALARM SYSTEM – PROGRAMMING TABLE						
Events	Signaling devices	Control panels	Fresh air systems	Pressurization system	Smoke exhaust system	Magnetic electrical locks
First detection of block A and at the CRSM (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm signal (visual) throughout the operational detection zone for a maximum of five minutes. Local sound signal at the security command station responsible for the sector where the device is located.	First stage alarm at control panel and annunciators.				
First detection of block E and at the CRSM (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm signal (visual) throughout the operational detection zone for a maximum of five minutes. Local sound signal at the security command station responsible for the sector where the device is located.	First stage alarm at control panel and annunciators.				
First detection of block J and at the CRSM (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm signal (visual) throughout the operational detection zone for a maximum of five minutes. Local sound signal at the security command station responsible for the sector where the device is located.	First stage alarm at control panel and annunciators.				
First detection of block T and at the CRSM (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm signal (visual) throughout the operational detection zone for a maximum of five minutes. Local sound signal at the security command station responsible for the sector where the device is located.	First stage alarm at control panel and annunciators.				
First detection of block J, K, L and M and at the CRSM (smoke detector, manual pull station, sprinkler flow detection, extinguishing system, thermal detector).	First stage alarm signal (visual) throughout the operational detection zone for a maximum of five minutes. Local sound signal at the security command station responsible for the sector where the device is located.	First stage alarm at control panel and annunciators.				
Key in pull station.	Second stage alarm signal (sound and visual) in building or wing where the detection occurred.	First stage alarm at control panel and annunciators.				
No acknowledgment after five minutes of first stage alarm signal.	Second stage alarm signal (sound and visual) in building or wing where the detection occurred.	First stage alarm at control panel and annunciators.	Ventilation stop in the affected building or wing. Refer to the existing programming for the ventilation shutdown conditions.			
Alarm signal from another part of the building	To be define based on existing programming.					
Sprinkler supervision valves		Supervision monitoring signal at control panel and annunciators				
If acknowledgment in first five minutes of first stage alarm.		Permission to silence the control panel and reinitialize.				
Reinitialization			Refer to existing programming for ventilation closing and system restart.			

ARCHAMBAULT ESTABLISHMENT – UVFP FIRE ALARM SYSTEM – PROGRAMMING TABLE						
Events	Signaling devices	Control panels	Fresh air systems	Pressurization system	Smoke exhaust system	Magnetic electrical locks
Smoke detector, manual pull station	Alarm signal (sound and visual) in UFVP.	Alarm signal at control panel and annunciators.				
Reinitialization			.			

APPENDIX NO 2 – CLOSED SPACE LOCATION



Service Correctionnel Canada | Correctional Service Canada
Administration régionale Québec | Regional Headquarters Quebec

Notes: | Notes:

ESPACE CLOS
CONFINED SPACE

ESPACE RESTREINT
RESTRICTED SPACE

Rév. Rev.	Objet Object	Date Date

Titre du projet / Project title
Établissement Archambault
242, montée Gagnon
Sainte–Anne–Des–Plaines (QC)

Titre du dessin / Drawing title
PLAN ESPACES CLOS/RESTREINT
CONFINED/RESTRICTED SPACE PLAN
SOUS–SOL / BASEMENT

Conçu par: / Designed by:

Dessiné par: / Drawn by:
SARA FRÉCHETTE–LAFLAMME

Approuvé par: / Approuved by:

No de projet / Project number
312–4706

No du dessin / Drawing no	Date / Date
341–4706 – Réf.	2022–01–27

Echelle / Scale	No de feuille / Sheet no
AUCUNE / NONE	1 DE/OF 1

APPENDIX NO. 3 – SPECIFICATIONS FOR MODERATE RISK DRILLING WORKS

LE GROUPE GESFOR POIRIER, PINCHIN

DEFINING Consulting Engineering

FOR TENDER

Moderate Risk Drill Hole Work

Section 02 82 00.02

Archambault Institution – Medium Security – Fire System
242 Gibson Boulevard,
Sainte-Anne-des-Plaines, Quebec

Prepared for:

Bouthillette Parizeau
8580 De l'Esplanade Avenue, Suite 200
Montreal, Quebec H2P 2R8

Represented by: Mr. Robert Bigras, P. Eng., LEED AP
Technical Director – Electrical

August 2, 2021

Gesfor Project No.: 1705682REV01
PSPC Project No.: 341-3706

Partenaire de PINCHIN Partner of

Issued to:	**Bouthillette Parizeau** **Robert Bigras, P.Eng., LEED AP**
Contact:	**Technical Director – Electrical** **514-383-3747, ext. 2264** **rbigras@bpa.ca**
Issued on:	**August 2, 2021**
Gesfor Project No.:	**1705682REV01**
Issuing Office :	**6705 Jean-Talon Street East, Suite 211,** **Montreal, Quebec H1S 1N2**
Primary Contact:	**Jocya Pellerin, Eng.**

Author: Anne Ruelland
Assistant Project Manager
Asbestos and Hazardous Materials
514-251-1313
aruelland@gesfor.com

Reviewer: Jocya Pellerin, Eng.
Senior Project Manager
Asbestos and Hazardous Materials
514-251-1313, ext. 2245
jpellerin @gesfor.com

PART 1 – GENERAL CONDITIONS

1.1 SCOPE OF WORK

1.1.1 In general, the drill hole work must be performed following Moderate Risk asbestos procedures based on the work method, the volume of debris generated and the type of asbestos stipulated in Section 3.23 of the Safety Code for the construction industry.

1.1.2 Work Area:

1º Various buildings at the Archambault Institution, all according to the drawings and specifications prepared by the Professionals.

1.1.3 Specifically, the work consists of:

1º Drilling holes in asbestos-containing vinyl tiles and in linoleum whose glue contains or is likely to contain asbestos, using power tools equipped with a source dust collector connected to a HEPA vacuum.

2º Drilling holes in asbestos-cement panels using power tools equipped with a source dust collector connected to a HEPA vacuum.

3º Drilling holes in the surface of asbestos-containing roughcast using power tools equipped with a source dust collector connected to a HEPA vacuum;

a) If a source dust collector connected to a HEPA vacuum cannot be used, proceed under Moderate Risk asbestos conditions using the work enclosure method, while limiting the volume of debris for each individual intervention to 0.03 m^3 (1 ft^3).

4º Drilling concrete and precast block walls in which there is asbestos-containing vermiculite using power tools equipped with a source dust collector connected to a HEPA vacuum under Moderate Risk asbestos conditions using the work enclosure method, while limiting the volume of debris for each individual intervention to 0.03 m^3 (1 ft^3);

a) If any vermiculite debris escapes through the drill holes, pick up the debris and clean the surfaces.

5º When drilling slab to slab or wall to wall, use a source dust collector on both sides of the drill hole.

1.2 RELATED REQUIREMENTS

1.2.1 All contractual documents, in particular the drawings and specifications designed by the Professionals, the general conditions and supplementary general conditions, are part of this section of Specifications. Information contained in any one of these documents does not necessarily need to be repeated elsewhere to form an integral part of the contract;

1º Refer to the drawings and specifications designed by the Professionals for the full scope of work and the location of each intervention.

2º No request for additional costs will be accepted due to poor understanding of any of the contractual documents.

1.2.2 Section 1.15 – EXISTING CONDITIONS of this section of specifications identifies the locations and condition of the asbestos-containing materials that will be disturbed by the work.

1.2.3 The Contractor is responsible for verifying existing conditions, the composition of building materials, including substrates, as well as the presence, location, and quantity of asbestos-containing materials before submitting a bid;

1º No claims for additional costs will be accepted due to poor understanding of existing conditions.

1.2.4 The Contractor must submit any discrepancies in the contract documents in writing during the bid period;

1º No claims due to said discrepancies will be accepted during execution of the work.

1.2.5 Remove and dispose of all asbestos-containing material and all materials and substrates that are, or will be, contaminated by asbestos either before or during the work, and which cannot be cleaned.

1.2.6 All workers who have access to the Asbestos Work Area must have the necessary training, as per the Safety Code for the construction industry.

1.2.7 The Owner will ensure that a qualified person performs ambient air sampling to detect the presence of airborne asbestos fibres near a work enclosure during all work involving asbestos-containing material; this shall be done at least once per day if the work lasts for more than one day.

1.3 REFERENCES

1.3.1 Safety Code for the construction industry, CQLR, c. S-2.1, r. 4.

1.3.2 CSA Z94.4-93: Selection, Use and Care of Respirators.

1.3.3 PSPC Asbestos Management Standard.

1.3.4 *Guide des appareils de protection respiratoire utilisés au Québec,* 2002, Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST).

1.3.5 Act Respecting Occupational Health and Safety, CQLR, c. S-2.1.

1.3.6 Regulation respecting occupational health and safety (RROHS), CQLR, c S-2.1, r. 13.

1.3.7 Canada Occupational Health and Safety Regulations (COHSR), SOR/86-304.

1.4 DEFINITIONS

1.4.1 Asbestos: The fibrous form of mineral silicates belonging to rock-forming minerals of the serpentine group (chrysotile) and the amphibole group (actinolite, amosite, anthophyllite, crocidolite, tremolite), or any mixture containing one or more of those minerals.

1.4.2 Asbestos-Containing Material (ACM): Material with an asbestos concentration of at least 0.1%. Includes material identified under Existing Conditions as well as overspray, debris, cleaning residue (water, dust) and material contaminated by asbestos.

1.4.3 Asbestos Professional: Expert, consultant, engineer, and/or their representative for the coordination and monitoring of the work described in this section of specifications, including air sampling.

1.4.4 Asbestos Waste: Any material or debris containing asbestos, any material or debris contaminated by asbestos that cannot be decontaminated, any disposable equipment contaminated by asbestos, and any cleaning residue (water, dust).

1.4.5 Asbestos Work Area: area where work takes place and could disturb ACMs.

1.4.6 Authorized Visitor: The Owner, the Asbestos Professional and individuals representing any regulatory body.

1.4.7 Contaminated Worksite: Work disturbing asbestos-containing material that must be performed in accordance with this section of specifications.

1.4.8 Contractor: Private individual or corporate entity contractually responsible to execute the work described in this section of specifications.

1.4.9 Floor Drain: Water drain situated at a low point on an inclined floor, covered with a metal or plastic filter grid.

1.4.10 Friable Material: Material that can be crumbled, pulverized or reduced to powder by hand pressure when dry, or that is crumbled, pulverized or reduced to powder.

1.4.11 Non-contaminated Worksite: Work with no risk of disturbing asbestos-containing material.

1.4.12 Occupied Area: Any area of the building outside the Asbestos Work Area.

1.4.13 Owner: Private individual or corporate entity, or their representative, who mandates a Contractor to perform work under the terms of a contract.

1.4.14 Polyethylene Sheeting: Impervious or rip-proof plastic material used to provide a continuous membrane so as to protect underlying surfaces in the Asbestos Work Area from contamination or water damage, and to prevent the escape of asbestos fibres into the Occupied Areas.

1.4.15 P100 or HEPA (High Efficiency Particulate Arrestance) Filter: A high efficiency filter capable of filtering particles of 0.3 µm in size at an efficiency rate of at least 99.97%.

1.4.16 Professional: Expert, consultant, engineer, architect, or their representative for the management of the work.

1.4.17 Respirable Fibre: Fibre that has a diameter of less than 3 micrometres (µm) and a length of more than 5 µm, with a ratio of length to diameter of more than 3:1.

1.5 NOTIFICATION

1.5.1 Notify the Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST) at least ten (10) days prior to starting work, as per the Safety Code for the construction industry. Submit a copy of the work start-up form to the Asbestos Professional.

1.5.2 Inform all tradespeople of the presence asbestos-containing materials such as defined in Section 1.15 – EXISTING CONDITIONS of this section of specifications.

1.6 SUBMITTALS

1.6.1 The Contractor must submit the following information in their bid package:

1° Proof of training and experience for the supervisory team (see Section 1.7 – WORKER SUPERVISION of this section of Specifications).

2° Proof of insurance as per the requirements in Section 1.8 – QUALITY ASSURANCE of this section of Specifications.

1.6.2 At least five (5) days before start of work, the Contractor must submit the following documentation to the Asbestos Professional and the Owner for approval:

1º An original certificate of insurance in the Owner's name as per the third-party insurance requirements detailed in Section 1.8 – QUALITY ASSURANCE of this section of specifications.

2º A copy of all notifications issued (see Section 1.5 – NOTIFICATION of this section of specifications).

3º For each worker who has access to the work area, a copy of their training certificate for asbestos abatement, as per the requirements of the Safety Code for the construction industry.

4º A copy of each worker's qualitative fit test card proving that the personal respirator assigned to them was successfully verified.

5º A plan for each phase of work detailing the duration of each phase, the workforce required for each phase, the location of facilities, and access paths to the work area.

6º Complete technical data sheets of equipment, tools, and products to be used for the work.

7º The emergency response plan, including the location of emergency exits to evacuate the building.

8º A declaration of site condition identifying existing damages in the Asbestos Work Area and in the worksite access areas.

1.6.3 During the work, submit the following to the Asbestos Professional and the Owner:

1º Any changes made to the scope of work;

a) Any work deemed as additional, as per the drawings and specifications designed by the Professionals, must be approved by the Owner. Quantities must be reviewed with the Asbestos Professional.

2º A weekly update of the work schedule, including phasing.

3º Proof of disposal of asbestos waste (quantity, transportation, and waste landfill facility).

4º Inspection reports from the CNESST.

1.6.4 At the end of the work, submit to the Owner a signed statement confirming the work was performed in accordance with this specification and that it has been completed, including the repair of any damages not mentioned in the declaration of site condition as well as the location of asbestos-containing material that could not be removed for valid reasons before or during the work.

1.7 WORKER SUPERVISION

1.7.1 All members of the supervisory personnel must hold a recognized certificate proving attendance at an asbestos abatement training course (one (1) day minimum duration) acceptable to the Asbestos Professional and have supervised a minimum of five (5) other asbestos abatement projects.

1.7.2 On the worksite, the Contractor must provide the services of a General Foreman authorized to supervise all aspects of work, notably the negotiation of changes to the contract and the estimation of associated costs, the updating of bids and the requirements of contract documents, work planning and workforce and equipment requirements, management of communications, and coordination with the Asbestos Professional and the Owner.

1.7.3 The Contractor must also provide a Team Foreman who will be responsible for all aspects of manpower, equipment and work execution on the worksite.

1.7.4 The General Foreman or the Team Foreman must be on site at all times when there is a risk of disturbing asbestos. Failure to comply with this requirement will result in immediate work stoppage at no additional cost to the Owner.

1.7.5 Replace supervisory personnel with qualified and approved replacements, within three (3) days of a written request from the Owner;

1º The Owner reserves the right to request replacement of supervisory personnel without explanation.

1.8 QUALITY ASSURANCE

1.8.1 The Contractor:

1º Must be covered by third-party liability insurance for the minimum sum of $2,000,000 with no exclusions or restrictions regarding abatement work, without which the work will be postponed or the contract cancelled. The insurance policy must be issued by a licensed Quebec insurer only.

2º Must ensure that the work is performed by licensed, experienced and qualified workers using the methods, procedures, and practices employed in the asbestos abatement industry, in compliance with the requirements of this section of specifications.

3º Must adhere to the work schedule established before work start-up.

4º Must ensure that all work in this section of specifications, including all associated electrical, mechanical, plumbing, carpentry and glazing, are performed by licensed, experienced and qualified tradespeople.

5º Must coordinate work between all trades according to the asbestos abatement work being performed.

6º Is responsible for, among others:

a) Ensuring compliance of the means, construction methods or techniques, procedures, work sequences, deadlines, practices or programs and precautions related to safety required for the work in accordance with the applicable health and safety on construction sites regulations, or any other legislation pertaining to general construction practices.

b) The Contractor's own acts and omissions as well as those of the Contractor's subcontractors, agents, workers, or other persons performing the work that are under the Contractor's responsibility.

7º Must perform the work in a way that guarantees that no airborne asbestos fibres, asbestos waste, or wastewater ever contaminate the Occupied Areas that are under the Contractor's responsibility.

8º Must comply with federal, provincial, and local regulations, and in any case of conflict between the aforementioned regulations and these specifications, must apply the more stringent requirements;

a) Work procedures must be performed in compliance with the legislation in effect at the time the work is being performed.

9º Must supply all equipment necessary to effectively perform the abatement work.

10º Must replace any defective, damaged, or inadequate equipment.

1.8.2 The Asbestos Professional:

1º May intervene at any time at the request of the Owner to judge the quality of the work. The Asbestos Professional is authorized to access the worksite and is competent to address deficiencies, issue recommendations, and order the Contractor to correct their work to meet the requirements of this section of specifications.

2º Cannot, in any case, be held responsible for the Contractor's actions nor assume the Contractor's responsibilities.

1.9 WORKER PROTECTION

1.9.1 General:

1º Provide instruction to workers before allowing entry to the Asbestos Work Area. Instruction must include the use of respirators, protective coveralls, other protective measures, entry to and exit from the work area, and work procedures.

2º Ensure that workers are fully protected at all times when the possibility of disturbance of asbestos exists.

3º Eating, drinking, smoking or chewing gum or tobacco is strictly prohibited, except in clearly marked designated areas which must be located outside of the Asbestos Work Area.

1.9.2 Respirator:

1º Workers must be trained in respirator use before entering any Asbestos Work Area.

2º Provide appropriate respirators for workers who are required to enter the Asbestos Work Area.

3º All respirators must meet the standards of the *Guide des appareils de protection respiratoire utilisés au Québec*, published by the IRSST, or any other recognized agency in Quebec. The accepted respirators are:

a) For work involving friable materials containing any type of asbestos, except for amosite and crocidolite, a half-face non-powered respirator equipped with a P100 filter.

4º Verify that the filters used meet the manufacturer's standards;

a) Replace the filters after 16 hours of use or when they are saturated.

b) Once worn in the Asbestos Work Area, the filters cannot be removed from this area without either being cleaned or disposed of as asbestos waste.

5º Anyone with a beard, a moustache, glasses, or any other element that may interfere with the seal between the respirator and the face will be prohibited from entering the Asbestos Work Area.

1.9.3 Other Personal Protective Equipment:

1º Supply workers with protective coveralls;

a) Once the coveralls have been worn, treat them as asbestos waste.

2º Supply the workers with safety hats, safety shoes, work gloves, safety glasses and any other personal protective equipment required by the Safety Code for the construction industry or by the contract documents.

3º Clean reusable personal protective equipment with a HEPA vacuum before leaving the Asbestos Work Area.

1.9.4 Asbestos Work Area entry procedure:

1º Outside of the work area, put on the respirator with a new or verified filter and check its seal by testing negative and positive pressure.

2º Put on the protective coveralls;

a) Pull the hood of the coveralls over the respirator straps.

b) Make sure the elastic cuffs at the end of the coverall legs are fitted over the safety shoes. Use duct tape as needed.

c) Put on the work gloves, ensuring that the coverall sleeves cover their cuffs. Use duct tape as needed.

3º Put on the safety hat and all other required personal protective equipment;

a) If using a half-face mask, don safety glasses.

4º Enter the Asbestos Work Area.

1.9.5 Asbestos Work Area exit procedure:

1º Before leaving the Asbestos Work Area, clean the surface of the personal protective equipment, notably the respirator, coveralls and safety hat, using a HEPA vacuum or by wet wiping.

2º Remove the coveralls and discard them in the asbestos waste container provided for this purpose.

3º After exiting the Asbestos Work Area, take off the respirator and remove the filter from the facepiece for testing;

a) If the filters are reusable, clean them.

b) If the filters are to be discarded, dispose of them in the asbestos waste container provided for this purpose.

4º Enter the change room.

5º Rinse the respirator and the parts of the body that were exposed.

6º Store all reusable personal protective equipment in the area provided for this purpose.

1.10 VISITOR PROTECTION

1.10.1 Provide the following personal protective equipment to authorized visitors at no cost:

1º Protective coveralls;

a) Once the coveralls have been worn, treat them as asbestos waste.

2º An approved respirator appropriate for the level of risk.

3º Any other equipment required by the Safety Code for the construction industry or by the contract documents.

1.10.2 Ensure Authorized Visitors have received the required training on the use of protective coveralls and respirators, as well as the procedures for entry into and exit from the Asbestos Work Area.

1.11 PROTECTION IN CASE OF EMERGENCY

1.11.1 The Contractor must always have available on the worksite two (2) regulatory respirators and two regulatory (2) protective coveralls, for any external emergency responders requiring access to the Asbestos Work Area.

1.11.2 In case of incident or accident on the worksite requiring emergency response : (firefighter, paramedic, police), the Contractor must immediately suspend any asbestos abatement work and implement all measures necessary to reduce the concentration of respirable fibres in the air. An access path must be cleared between the area of the emergency and the nearest exit.

1.11.3 Once the incident or accident has been resolved, the Contractor must clean all the areas situated outside the Asbestos Work Area that were used by emergency responders.

1.12 AIR SAMPLING

1.12.1 Perform air sampling for respirable fibres in the work area using Phase Contrast Microscopy (PCM) following IRSST Method 243-1 for counting respirable fibres, in compliance with current legislation.

1.12.2 The collection and analysis of the air samples are performed by the Asbestos Professional;

1° The analyst must have been enrolled in, and successfully completed, the IRSST quality control program for fibre counting.

1.12.3 The cost of sampling inside and outside the Asbestos Work Area as well as the cost of the analyses are the responsibility of the Owner.

1.12.4 Additional costs for air sampling due to any deficiencies by the Contractor will be charged to the Contractor under a Change Order.

1.12.5 During the work:

1° If air sampling is required in the Occupied Areas, results must indicate a respirable fibre concentration of less than 0.01 fibres/cm^3.

1.13 WORKSITE SUPERVISION

1.13.1 The Asbestos Professional is authorized by the Owner to:

1° Ensure compliance with procedures as well as the completion of work and the cleanliness of the Asbestos Work Area.

2° Stop work when asbestos leakage has occurred or is likely to occur;

a) This could be caused by inadequate wetting of materials, lack of airtightness of the work enclosure, or water leaks.

1.13.2 The Asbestos Professional will be present periodically on the worksite site both inside and outside the Asbestos Work Area, from work start-up until dismantlement.

1.13.3 The Asbestos Professional will conduct inspections of the Asbestos Work Area to ensure the Contractor complies with the requirements of this section of specifications and current legislation;

1º Any deviation from these requirements that have not been approved in writing may result in work stoppage.

2º If the Asbestos Work Area is not compliant with these requirements, then the costs for any additional work ordered by the Asbestos Professional to meet the requirements (including additional workforce and equipment, if necessary) will be borne by the Contractor.

3º Costs incurred for additional inspections in the Asbestos Work Area due to deficiencies by the Contractor with regards to quality, safety or schedule will be charged to the Contractor under a Change Order.

4º In the case of a leak, the Occupied Areas will be considered contaminated until the Asbestos Professional performs a visual inspection and deems the work satisfactory.

1.14 WASTE MANAGEMENT

1.14.1 Place asbestos waste in the waste containers defined in Section 2.1.2 of this section of specifications.

1.14.2 Store site waste in bins before transporting it to a landfill facility that accepts this type of waste;

1º Move all asbestos waste to the ground floor before transferring it to the bin.

1.14.3 Coordinate with the Owner:

1º The location of the asbestos waste bins.

2º Any waste transport, 24 hours in advance.

1.14.4 Asbestos waste bins must:

1º Be collected and dropped off at pre-approved times, without disturbing the operations of surrounding buildings.

2º Be kept covered and closed at all times when stored in proximity to the building where asbestos abatement is being performed. Keep the areas clean at all times.

3º Be placed so as not to damage the ground surface (e.g. grass, pavement).

1.14.5 After each waste transfer, clean the paths travelled, as well as the loading areas.

1.14.6 For each load of asbestos waste removed from the worksite, fill out and provide the Owner with a waste transport or disposal document.

1.14.7 Transport the asbestos waste to an authorized landfill facility and give the waste transport document to the Owner.

1.15 EXISTING CONDITIONS

1.15.1 For all buildings:

1° The vermiculite in the concrete and precast block walls of the outside perimeter of the building contains from 1% to 5% actinolite asbestos.

2° All floor tiles and their adhesive contain or are likely to contain asbestos.

3° The adhesive of the linoleum is likely to contain asbestos.

1.15.2 Observation posts 341-T6, 341-T7 and 341-T8:

1° The joint compound on the walls contains from 0.1% to 1% chrysotile asbestos.

1.15.3 Exterior shelter 341-T1:

1° The perforated asbestos-cement panels on the ceiling contain from 55% to 60% chrysotile asbestos.

1.15.4 Building A:

1° The roughcast on the wall of Control Post A (341-A-001A) contains from 0.1 % to 1% chrysotile asbestos.

1.15.5 Building D:

1° The roughcast on the walls of the basement of the entryway of Corridor D towards Control Post A (341-D-001) contains from 0.1% to 1% chrysotile asbestos.

1.15.6 Building E:

1° The roughcast on the walls of the basement of Control Post E (341-E-002) contains from 0.1% to 1% chrysotile asbestos.

1.15.7 Building H:

1° The roughcast on the walls of the basement of the storage room (341-H-001) contains from 0.1% to 1% chrysotile asbestos.

1.15.8 Building J:

1º The roughcast on the walls of the basement of Control Post J (341-J-001A) contains from 0.1% to 1% chrysotile asbestos.

1.15.9 Building N:

1º The roughcast on the walls of the basement, the ground floor and the 1st floor contains from 0.1% to 1% chrysotile asbestos.

2º The perforated asbestos-cement panels on the ceiling of the ground floor contain from 55% to 60% chrysotile asbestos.

1.15.10 Building S:

1º The roughcast on the walls of the basement and the ground floor contains from 0.1% to 1% chrysotile asbestos.

2º The joint compound in the officers office (341-S-105C) contains from 0.1% to 1% chrysotile asbestos.

1.15.11 Building U:

1º The roughcast on the walls of the storage and plumbing room in the basement is likely to contain asbestos.

2º The vermiculite observed on the louvers on the first floor contain from 1% to 5% actinolite asbestos.

1.15.12 All landings, stairs, exits as well as emergency equipment must be accessible at all times during the work.

1.15.13 The following equipment is present in the Asbestos Work Area:

1º Lights and lighting fixtures.

2º Emergency lights.

3º Exit indicator panels.

4º Loudspeakers.

5º Light switches.

6º Plates for electrical sockets on walls or ceilings.

7º Other equipment affixed to the walls and ceilings.

1.16 WORK SCHEDULE

1.16.1 The Contractor must ensure the drill hole work proceeds on schedule, while meeting all the requirements of this section of Specifications.

1.16.2 Submit in writing any changes to the initial work schedule to the Owner for approval.

PART 2 – PRODUCTS AND FACILITIES

2.1 EQUIPMENT AND MATERIALS The equipment and materials brought to the worksite must be clean and in good condition. They must be free of debris and dust. Disposable materials and equipment must be new.

2.1.2 Asbestos Waste Container: Impermeable container for the disposal of asbestos waste. Must be labelled according to the Quebec Safety Code for the construction industry and consist of one of the following:

1º Two (2) 0.075-mm (3 mil) sealable polyethylene bags, inserted one inside the other.

OR

2º One (1) 0.075 mm (3 mil) sealed polyethylene bag placed inside a rigid sealed container of sufficient strength to prevent a perforation during filling, transportation and disposal.

2.1.3 HEPA Vacuum: Vacuum equipped with a HEPA filter.

2.1.4 Impervious polyethylene: Transparent membrane in sheet size, 0.15 mm (6 mil) minimum thickness, impervious to air and water. New materials only.

2.1.5 Protective Coveralls: Disposable coveralls made of polyolefin, a material that is resistant to asbestos fibres, with closures at the wrists, ankles and neck and an attached hood to protect hair. Must cover the entire body except the face, hands and feet.

2.1.6 Rip-proof polyethylene sheeting: Orange, closely-woven, rip-proof membrane, of a minimum thickness of 0.15 mm (6 mil) in sheets large enough to minimize the number of joints. New materials only.

2.1.7 Sealant: Penetrating and impermeable water- or silicone-based coating applied according to the product data sheet, which traps asbestos fibres on the surface of a material to prevent their dispersal into the air if the material is disturbed. Use a white pigment agent. Fiberlock ABC or approved equivalent products are acceptable.

2.1.8 Sprayer: Portable, airless, manual, garden-type device, capable of discharging a jet of fine mist or droplets, on which the flow can be adapted to the type of work being performed.

2.1.9 Warning signs: Such signs shall read as follows (the size of the lettering is identified in parentheses):

ASBESTOS (50 mm)

DANGER (40 mm)

DO NOT BREATHE DUST (15 mm)

PROTECTIVE EQUIPMENT MUST BE WORN (15 mm)

NO ADMITTANCE (15 mm)

INHALING ASBESTOS DUST MAY BE HARMFUL TO YOUR HEALTH (10 mm)

2.1.10 Wetting Agent: Non-ionic, non-sudsing surfactant which, when added to water, causes it to penetrate the surface of asbestos-containing materials to be wetted. Fiberlock Penewet or approved equivalent products are acceptable.

2.2 WORK ENCLOSURE

2.2.1 Isolate the Asbestos Work Area with an enclosure. The walls of the enclosure must be constructed in the following manner:

1º For a small enclosure: affix polyethylene sheeting to the floor and ceiling with duct tape.

2.2.2 If the work enclosure consists of the entire room, protect all furniture and items that may be exposed with polyethylene sheets.

2.3 CHANGE ROOM

2.3.1 The change room must be in an area separate from the Asbestos Work Area. The change room is a place where workers can store their personal belongings and decontaminate themselves after leaving the Asbestos Work Area. The main requirements of this room are as follows:

1º Equip the room with hangers or individual lockers for workers to store their personal belongings;

a) The storage area of each locker must be at least 0.14 m^3 (5 ft^3), and there must be a clearance of at least 600 mm (2 ft) in front of each row of lockers.

2º Provide a source of drinking water.

3º Minimum lighting level of 250 lux.

4º Minimum room temperature of 20 °C.

PART 3 – EXECUTION

3.1 CLEAN SITE PREPARATION

3.1.1 Conduct an inspection of existing damage before the start of drill hole work and submit a report of site condition describing this damage to the Asbestos Professional.

3.1.2 The Owner is responsible for removing from the Asbestos Work Area all furniture, shelving and other material stored in the Asbestos Work Area that can be moved without disturbing asbestos.

3.1.3 Clean and protect any furniture or mechanical or electrical equipment that must remain in the Asbestos Work Area.

3.1.4 Coordinate with the Owner the shut-down of the HVAC, electrical and sprinkler systems;

1° Isolate the HVAC system that services the Asbestos Work Area from the rest of the building to prevent asbestos fibres from dispersing into Occupied Areas during the work. Seal all connections and joints of the air return system that run through the work area.

2° Thoroughly identify all the systems (air return grilles, mixing chambers, supply air grilles, dampers, etc.) that cannot be deactivated, and properly protect them with a plywood panel or a metal cover, sealed with duct tape.

3.1.5 Coordinate the location of the work enclosure with the Owner. Construct the work enclosure as specified in Section 2.2 – WORK ENCLOSURE of this section of specifications.

3.1.6 Cordon off the Asbestos Work Area using barricade tape marked "Danger" when performing work using power tools equipped with a source dust collector connected to a HEPA vacuum.

3.1.7 Post warning signs at all entrances to the Asbestos Work Area as described in Section 2.1.9 of this section of specifications.

3.1.8 Protect the floor, furniture and equipment in the Asbestos Work Area using impervious polyethylene sheeting.

3.2 DRILL HOLE WORK IN THE PRESENCE OF ASBESTOS

3.2.1 General

1º Workers must wear proper personal protective equipment, including a respirator and protective coveralls, at all times during the work.

2º Avoid producing dust as much as possible during the work.

3º Clean water from the floor as work progresses to prevent water accumulation.

4º Package asbestos waste as work progresses and transport it to the dedicated container according to Section 3.3 - REMOVAL OF ASBESTOS WASTE of this section of specifications;

a) Do not throw or drop asbestos waste containers.

b) Place all asbestos waste likely to puncture waste bags in rigid containers, such as barrels (cardboard, plastic or metal).

3.2.2 Use power tools equipped with a source dust collection system connected to a HEPA vacuum;

1º Wet the materials using a sprayer.

2º Execute the work thoroughly at the required locations using the proper tools, while referring to Section 1.1 – Scope of Work of this section of specifications.

3º Clean all surfaces in the Asbestos Work Area with a HEPA vacuum or damp cloth.

3.2.3 Work Enclosure Method

1º Wet the materials using a sprayer.

2º Execute the work thoroughly at the required locations using the proper tools, while referring to Section 1.1 – SCOPE OF WORK of this section of specifications.

3º Scrub all exposed surfaces with a metal or hard bristle brush after removal of asbestos-containing material and clean them with a HEPA vacuum or a damp cloth to remove all residue. Keep surfaces wet for the duration of this task.

4º When the work is complete:

a) Clean the surface of the polyethylene sheets as well as any other surface in the Asbestos Work Area, notably those of equipment, floors, walls, partitions, air ducts and any other similar article that was not covered by polyethylene.

b) Clean or double bag the equipment used in the Asbestos Work Area before removing it from the work area.

c) Filter the wash water;

i. If necessary, allow the water to settle in bins before filtering it.

ii. If it is not filtered, treat the wash water as asbestos waste.

5º Dismantling the worksite:

a) Wear a non-powered, half-face air purifying respirator with a P100 filter and protective coveralls for the duration of dismantling work.

b) In the Asbestos Work Area, remove contaminated polyethylene sheeting and duct tape while taking care not to damage the underlying finishes. Roll the polyethylene sheets from the partitions toward the centre of the Asbestos Work Area.

c) Place the polyethylene sheeting, duct tape, cleaning material, protective coveralls, and any other contaminated waste into asbestos waste containers.

d) Dismantle the work enclosure.

3.3 REMOVAL OF ASBESTOS WASTE

3.3.1 Transport waste containers out of the Asbestos Work Area as follows:

1º Assemble all of the asbestos waste containers near the exit of the work area.

2º Clean one container at a time with a damp cloth, immediately put it in a second container (commonly referred to as “double bagging”) and seal the second container.

3º Clean the second container by wet wiping and remove it from the Asbestos Work Area.

3.4 RE-ESTABLISHMENT OF SYSTEMS AND EQUIPMENT

3.4.1 At the completion of work, clean the surfaces adjacent to the Asbestos Work Area using a damp cloth or HEPA vacuum and repair all damage not identified in the pre-work visit.

3.4.2 Reinstall equipment, furniture, tools as well as any stored material that was removed at the beginning of work.

3.4.3 Restart all systems that were shut down for the duration of the work.

END OF SECTION