



## Technical Specifications

**PROJECT:**

**320-3603 – ADDITION OF ADMISSION FUNCTIONS:  
INTERIOR FENCE MODIFICATIONS**

## Federal Training Center

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<b>TABLE DES MATIÈRES</b>		<b>PAGES</b>
Section 01 00 50	General Instructions	3 pages
Section 01 35 13	Special Project Procedures for Correctional Service Canada Security Requirements	7 pages
Section 01 35 30	Health and safety	2 pages
Section 01 74 21	Construction/Demolition Waste Management and Disposal	1 page
Section 02 41 16	Structure Demolition	2 pages
Section 03 30 00	Cast-in-place Concrete	4 pages
Section 26 05 04	Electrical and Control Work	2 pages
Section 31 23 33	Excavating, trenching and backfilling	4 pages
Section 32 31 13	Chain-link Fences and Gates	9 pages
 <b>ANNEXES</b>		
ANNEXE A	Motorized operator Technical sheets	2 pages
ANNEXE B	Motorized operator particular specifications	1 page

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**PART 1 - GENERAL****1.1 REFERENCES**

- .1 National Building Code of Canada (NBC) 2015 including all amendments up to the date of bid closing.

**1.2 DESCRIPTION OF THE WORK**

- .1 The project includes the following work. The list below is not necessarily exhaustive and in no way releases the Contractor from the obligation of carrying out the project in its entirety according to generally accepted practices as well as the intentions and general principles as described in these specifications and drawings.
  - .1 Demolish and dispose of specific fence sections of 6' and 8';
  - .2 Provide and install different sections of new fences of 8';
  - .3 Provide and install the single and double swing gates;
  - .4 Provide and install the motorized sliding gates and verify that the gates are operating well;
  - .6 Restore the work sites to their original conditions.
- .2 The work excluded from the present contract are :
  - .1 Installing the conduits for the electrical and control wire connection
  - .2 Modifications to the asphalt surfaces.

**1.3 SECURITY SCREENING**

- .1 All workers shall undergo security screening in order to be granted a security classification as required by the Correctional Service of Canada and Public Works and Government Services Canada.
- .2 Section 01 35 13 provides a detailed description of the procedures involved in the security screening.
- .3 At the start of work, a special job-site meeting will be held with institution representatives to define the instructions governing security and site operation in a correctional environment.

**1.4 CODES**

- .1 The specifications will require that the work and materials comply with the National Building Code of Canada (NBC) and all other applicable provincial or local codes. The strictest requirements shall apply in case of contradiction or discrepancy.
- .2 The work shall be performed in a manner that meets or exceeds the following requirements:
  - .1 Contract documents;
  - .2 Specified standards and codes as well as other documents cited as references.

**1.5 REQUIRED DOCUMENTS**

- .1 A copy of the following documents shall be kept at the job site:
    - .1 Contract drawings;
    - .2 Specifications;
    - .3 Amendments;
    - .4 Amended shop drawings;
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- .5 Modification orders;
- .6 Other contract amendments;
- .7 On-site test reports;
- .8 Approved work schedule;
- .9 Manufacturer installation and start-up instructions.

## **1.6 WORK SCHEDULE**

- .1 The successful bidder shall initiate preparatory work immediately upon receiving notice that the contract has been awarded. The work covered by this document, including measures to correct construction deficiencies, must be completed within the schedule specified herein. Failure to comply with the schedule shall be dealt with as provided for in the Standard Acquisition Clauses and Conditions (SACC) Manual, Public Works and Government Services Canada (PWGSC).
- .2 Within ten (10) business days of contract award, submit shop drawings, technical data sheets, samples, and security screening applications for approval.
- .3 Within five (5) business days of contract award, in a format acceptable to the Project Manager, submit a work schedule for the various project phases and the completion date, **which must be at the latest on December 15<sup>th</sup> 2017**. The following points, without being limited, must be indicated:
  - .1 Dates for submitting shop drawings, lists of materials, technical data sheets, samples, and security screening applications for approval;
  - .2 Approval of documents submitted;
  - .3 Start-up meeting and submittal of detailed schedule;
  - .4 Delivery dates for the following pieces of equipment and materials: material composing the fence, the swinging gates and the motorized gates.
  - .4 Construction start-up;
  - .5 Completion dates for the work described in each section of the specifications.
  - .6 Final completion date with respect to the completion date stipulated in the contract documents.
  - .7 Provide the exploitation and maintenance manuals.
- .4 Changes to milestones in the submitted schedule shall be at the discretion of the CSC Project Manager. The schedule shall be updated by the Contractor with the cooperation and approval of the CSC Project Manager.

## **1.7 ACCEPTANCE OF EQUIVALENTS**

- .1 No equivalence or substitution will be accepted.

## **1.8 NOISY WORK ENVIRONMENT**

- .1 No radios or "boom boxes" shall be tolerated at the job site.

## **1.9 JOB-SITE MEETINGS**

- .1 Job-site meetings shall be held at times and places subject to the approval of the CSC Project Manager.
  - .2 All participants shall be informed of meetings being called.
  - .3 The Contractor shall organize job-site meetings, set their dates and times, and ensure that minutes are drafted and distributed.
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### **1.10 CONSTRUCTION SITE STAKING**

- .1 The elevations shall be established and the site fully staked based on control points and elevations indicated on the plans and in the specifications.
- .2 The Contractor shall assume full responsibility for staking the site and ensure complete implementation according to the location, lines, and grades indicated.
- .3 The Contractor shall provide the material required for staking.
- .4 The Contractor shall provide the materials required, such as rules and models, to facilitate the inspection of the staking work.
- .5 The Contractor shall provide stakes and the like required to carry out staking work.

### **1.11 EXISTING SYSTEMS**

- .1 Should installations be discovered during the course of work, the Ministry representative shall be immediately informed and a written report containing the observations provided to him.

### **1.12 ADDITIONAL DRAWINGS**

- .1 The Ministry representative may provide supplemental drawings for clarification. Such supplemental drawings shall be considered to have the same meaning and scope as the contract documents.

### **1.13 OPERATING MANUEL**

- .1 The Contractor shall submit, for approval, one (1) copy of an operating manual containing the following items:
  - .1 Table of contents
  - .2 List of suppliers and their contact information
  - .3 Warranties
  - .4 Approved shop drawings
  - .5 Operating and maintenance guides

## **PART 2 - PRODUCTS**

### **2.1 NOT USED**

## **PART 3 - EXECUTION**

### **3.1 NOT USED**

**END OF SECTION**

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**PART 1 - GENERAL****1.1 PURPOSE**

- .1 To ensure that both the construction project and the institutional operations may proceed without undue disruption or hindrance and that the security of the Institution is maintained at all times.

**1.2 DEFINITIONS**

- .1 "Contraband" means:
  - .1 An intoxicant, including alcoholic beverages, drugs and narcotics,
  - .2 A weapon or a component thereof, ammunition for a weapon, and anything that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling a person, when possessed without prior authorization,
  - .3 An explosive or a bomb or a component thereof,
  - .4 Currency over any applicable prescribed limit \$25,00,
  - .5 Any item not described in paragraphs (a) to (d) that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization.
- .2 "Unauthorized Smoking Items" means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing or snuffing tobacco, cigarette making machines, matches and lighters.
- .3 "Commercial Vehicle" means any motor vehicle used for the shipment of material, equipment and tools required for the construction project.
- .4 "CSC" means Correctional Service Canada.
- .5 "Director" means Director or Warden of the Institution as applicable or their representative.
- .6 "Construction employees" means persons working for the general contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies.
- .7 "Perimeter" means the fenced or walled area of the institution that restrains the movement of the inmates.
- .8 "Construction zone" means the area as shown on the contract drawings where the contractor will be allowed to work. This area may or may not be isolated from the security area of the institution.

**1.3 REFERENCES**

- .1 Laws, norms and regulations valid in Quebec:
  - .1 Canada Labour Code - Part II, Canadian Occupational Safety and Health regulations
  - .2 Construction Safety Code (L.R.Q., S-2.1, r.6)
  - .3 Act Respecting Occupational Health and Safety, RSQ Ch. S2.1

**1.4 PRELIMINARY PROCEEDINGS**

- .1 Prior to the commencement of work, the contractor shall meet with the Ministry Representative to:
    - .1 Discuss the nature and extent of all activities involved in the Project.
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- .2 Establish mutually acceptable security procedures in accordance with this instruction and the institution's particular requirements.
- .2 The contractor will:
  - .1 Ensure that all construction employees are aware of the CSC security requirements.
  - .2 Ensure that a copy of the CSC security requirements is always prominently on display at the job site.
  - .3 Co-operate with institutional personnel in ensuring that security requirements are observed by all construction employees.

## **1.5 CONSTRUCTION EMPLOYEES**

- .1 Submit to the Ministry Representative a list of the names with date of birth of all construction employees to be employed on the construction site and a security clearance form joined by a photo identification for each employee.
- .2 Allow two (2) weeks for processing of security clearances. Employees will not be admitted to the Institution without a valid security clearance in place and a recent picture identification such as a provincial driver's license. Security clearances obtained from other CSC institutions are not valid at the institution where the project is taking place.
- .3 The Director may require that facial photographs may be taken of construction employees and these photographs may be displayed at appropriate locations in the institution or in an electronic database for identification purposes. The Director may require that Photo ID cards be provided for all construction workers. ID cards will then be left at the designated entrance to be picked upon arrival at the institution and shall be displayed prominently on the construction employees clothing at all time while employees are at the institution.
- .4 Entry to Institutional Property will be refused to any person there may be reason to believe may be a security risk.
- .5 Any person employed on the construction site will be subject to immediate removal from Institutional Property if they:
  - .1 Appear to be under the influence of alcohol, drugs or narcotics.
  - .2 Behave in an unusual or disorderly manner.
  - .3 Are in possession of contraband.

## **1.6 VÉHICULES**

- .1 All unattended vehicles on CSC property shall have windows closed; doors and trunks shall be locked and keys removed. The keys shall be securely in the possession of the Departmental Representative or an employee of the company that owns the vehicle.
  - .2 The director may limit at any time the number and type of vehicles allowed within the Institution.
  - .3 Drivers of delivery vehicles for material required by the project might require security clearances and must remain with their vehicle the entire time that the vehicle is in the Institution. The director may require that these vehicles be escorted by Institutional staff or Commissionaires while in the Institution.
  - .4 If the Director permits trailers to be left inside the secure perimeter of the Institution, these trailer doors will be locked at all times. All windows will be securely locked when left unoccupied. All trailer windows shall be covered with expanded metal mesh. All storage trailers inside and outside the perimeter must be locked when not in use.
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**1.7 PARKING**

- .1 The parking area(s) to be used by construction employees will be designated by the Director. Parking in other locations will be prohibited and vehicles may be subject to a towing.

**1.8 SHIPMENTS**

- .1 All shipments of project material, equipment and tools shall be addressed in the Contractor's name to avoid confusion with the institution's own shipments. The contractor must have his own employees on site to receive any deliveries or shipments. CSC staff will **NOT** accept receipt of deliveries or shipments of any material equipment or tools for the contractor.

**1.9 TELEPHONES**

- .1 There will be no installation of telephones, Facsimile machines and computers with Internet connections permitted within the perimeter of the institution unless prior approval of the Director is received.
- .2 Wireless cellular and digital telephones, including but not limited to devices for telephone messaging, pagers, BlackBerries, telephone used as 2-way radios, are not permitted within the perimeter of the Institution unless approved by the Director. If authorized, the user will not permit their use by any inmate.
- .3 The Director may approve but limit the use of two way radios.

**1.10 WORK HOURS**

- .1 Work hours within the Institution are: Monday to Friday 7 a.m. to 4 p.m.
- .2 Work will not be permitted during weekends and statutory holidays without the permission of the Director. A minimum of seven days advance notice will be required to obtain the required permission. In case of emergencies or other special circumstances, this advance notice may be waived by the Director.
- .3 If the contractor must cancel one or more days of work, the Ministry representative must be noticed a minimum of 24 hours in advance. Costs to Canada for such events may be attributed to the contractor. See the table below for the rates.

**16.1 Taux horaires fermes tout compris – Commissionnaires non classés**

Tableau 1 -- Tous les emplacements				
Niveau	Points	Heures normales	Heures supplémentaires	Jours fériés travaillés
Niveau de base	0 - 15	24,83 \$ /	36,04 \$	58,44 \$



### **1.11 OVERTIME WORK**

- .1 No overtime work will be allowed without permission of the Director. Give a minimum forty-eight (48) hours advance notice when overtime work on the construction project is necessary and approved. If overtime work is required because of an emergency such the completion of a concrete pour or work to make the construction safe and secure, the contractor shall advise the Ministry representative as soon as this condition is known and follow the directions given by the Director. Costs to Canada for such events may be attributed to the contractor.
- .2 When overtime work, weekend statutory holiday work is required and approved by the Director, extra staff members may be posted by the Director or his designate, to maintain the security surveillance. The actual cost of this extra staff may be attributed to the contractor.

### **1.12 OUTILS ET ÉQUIPEMENTS**

- .1 Maintain on site a complete list of all tools and equipment to be used during the construction project. Make this inventory available for inspection when required.
    - .1 « Prohibited" tools :
      - .1 The use of RAMSET cartridge hammers is strictly forbidden in the institution.
      - .2 Oxyacetylene torches shall be stored under lock and key at all times. Oxygen canisters shall be stored in a separate location from the torches, and shall also remain under lock and key at all times. Inventory must be done at the end of each day.
      - .3 The percussion hammers, ropes and ladders are forbidden except in areas where the inmates do not have access.
  - .2 Throughout the construction project maintain an up-to-date list of tools and equipment specified above.
  - .3 Keep all tools and equipment under constant supervision, particularly power-driven and cartridge-driven tools, cartridges, files, saw blades, rod saws, wire, rope, ladders and any sort of jacking device.
  - .4 Store all tools and equipment in approved secure locations.
  - .5 Lock all tool boxes when not in use. Keys to remain in the possession of the employees of the contractor.
  - .6 Scaffolding shall be secured and locked when not erected and when erected, shall be secured in a manner agreed upon with the director.
  - .7 All missing or lost tools or equipment shall be reported immediately to the Director.
  - .8 The Director will ensure that the security staff members carry out checks of the Contractor's tools and equipment against the list provided by the Contractor. These checks may be carried out at the following intervals:
    - .1 At the beginning and conclusion of every construction project.
    - .2 Weekly, when the construction project extends longer than a one week period.
  - .9 The contractor must ensure that all tools and equipments are taken away from the construction zone daily.
  - .10 Certain tools/equipment such as cartridges and hacksaw blades are highly controlled items. The contractor will be given at the beginning of the day, a quantity that will permit one day's work. Used blades/cartridges will be returned to the Director's representative at the end of each day.
  - .11 If propane or natural gas is used for heating the construction, the institution will require that an employee of the contractor supervise the construction site during non-working hours.
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**1.13 CLÉS ET CADENAS**

- .1 All security hardware required to lock the construction zones are provided by the CSC. The Commissionaires in charge of site surveillance will have the required keys to unlock them.
- .2 The security locks and keys required to lock the new gates is provided by others.

**1.14 PRESCRIPTION DRUGS**

- .1 Employees of the contractor who are required to take prescription drugs during the workday shall obtain approval of the Director to bring a one day supply only into the Institution.

**1.15 SMOKING RESTRICTIONS**

- .1 Contractors and construction employees are not permitted to smoke inside correctional facilities or outdoors within the perimeter of a correctional facility and must not possess unauthorized smoking items within the perimeter of a correctional facility.
- .2 Contractors and construction employees who are in violation of this policy will be requested to immediately cease smoking or dispose of any unauthorized smoking items and, if they persist, will be directed to leave the institution.
- .3 Smoking is only permitted outside the perimeter of a correctional facility in an area to be designated by the Director.

**1.16 CONTREBAND**

- .1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are prohibited on institutional property.
- .2 The discovery of contraband on the construction site and the identification of the person(s) responsible for the contraband shall be reported immediately to the Director.
- .3 Contractors should be vigilant with both their staff and the staff of their sub-contractors and suppliers that the discovery of contraband may result in cancellation of the security clearance of the affected employee. Serious infractions may result in the removal of the company from the Institution for the duration of the construction.
- .4 Presence of arms and ammunition in vehicles of contractors, sub-contractors and suppliers or employees of these will result in the immediate cancellation of security clearances for the driver of the vehicle.

**1.17 SEARCHES**

- .1 All vehicles and persons entering institutional property may be subject to search.
- .2 When the Director suspects, on reasonable grounds, that an employee of the Contractor is in possession of contraband or unauthorized items, he may order that person to be searched.
- .3 All employees entering the Institution may be subject to screening of personal effects for traces of contraband drug residue.

**1.18 ACCESS TO AND REMOVAL FROM INSTITUTIONAL PROPERTY**

- .1 Construction personnel and commercial vehicles will not be admitted to the institution after normal working hours, unless approved by the Director.
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**1.19 MOVEMENT OF VEHICLES**

- .1 Escorted commercial vehicles will be allowed to enter or leave the institution through the vehicle access gate during the following hours:
  - .1 07:45 AM to 11:30 AM.
  - .2 12:45 PM to 3:15 PM.
- .2 The contractor shall advise the Ministry representative twenty four (24) hours in advance to the arrival on the site of heavy equipment such as concrete trucks, cranes, etc.
- .3 Vehicles being loaded with soil or other debris, or any vehicle considered impossible to search, must be under continuous supervision by CSC staff or Commissionaires working under the authority of the Director.
- .4 Commercial vehicles will only be allowed access to institutional property when their contents are certified by the Contractor or his representative as being strictly necessary to the execution of the construction project.
- .5 Vehicles shall be refused access to institutional property if, in the opinion of the Director, they contain any article which may jeopardize the security of the institution.
- .6 Private vehicles of construction employees will not be allowed within the security perimeter of medium or maximum security institutions without the authorization of the Director.
- .7 With prior approval of the Director, a vehicle may be used in the morning and evening to transport a group of employees to the work site. This vehicle will not remain within the Institution the remainder of the day.
- .8 With the approval of the Director, certain equipment may be permitted to remain on the construction site overnight or over the weekend. This equipment must be securely locked, with 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 INSTITUTIONAL PROPERTY**

- .1 Subject to the requirements of good security, the Director will permit the Contractor and his employees as much freedom of action and movement as is possible.
- .2 However, notwithstanding paragraph above, the Director may:
  - .1 Prohibit or restrict access to any part of the institution.
  - .2 Require that in certain areas of the institution, either during the entire construction project or at certain intervals, construction employees only be allowed access when escorted by a member of the CSC security staff or a commissionaire.
- .3 During the lunch and coffee/health breaks, all construction employees will remain within the construction site. Construction employees are not permitted to eat in the officer's lounge or the dining room of the institution.

**1.21 SURVEILLANCE AND INSPECTION**

- .1 Construction activities and all related movement of personnel and vehicles will be subject to surveillance and inspection by CSC security staff members to ensure that established security requirements are met.
  - .2 CSC staff members will ensure that an understanding of the need to carry out surveillance and inspections, as specified above, is established among construction employees and maintained throughout the construction project.
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**1.22 STOPPAGE OF WORK**

- .1 The director may order at any time that the contractor, his employees, sub-contractors and their employees to not enter or to leave the work site immediately due to a security situation occurring within the Institution. The contractor's site supervisor shall note the name of the CSC staff member giving this instruction, the time of the request and obey the order as quickly as possible.
- .2 The contractor shall advise the Ministry Representative of this interruption of the work within 24 hours.

**1.23 CONTACT WITH INMATES**

- .1 Unless specifically authorized, it is forbidden to come into contact with inmates, to talk with them, to receive objects from them or to give them objects. Any construction employee doing any of the above will be removed from the site and his security clearance revoked.
- .2 It is to be noted that cameras are not allowed on CSC property, unless approved by the director.
- .3 Notwithstanding the above paragraph, if the director approves of the usage of cameras, it is strictly forbidden to take pictures of inmates, of CSC staff members or of any part of the Institution other than those required as part of this contract.

**1.24 COMPLETION OF CONSTRUCTION PROJECT**

- .1 Upon completion of the construction project or, when applicable, the takeover of a facility, the Contractor shall remove all remaining construction material, tools and equipment that are not specified to remain in the Institution as part of the construction contract.

**PART 2 - PRODUCTS****2.1 NOT USED****PART 3 - EXECUTION****3.1 NOT USED**

**END OF SECTION**

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## **PART 1 GENERAL INFORMATION**

### **1.1 SECTION CONTENT**

- .1 The Contractor shall manage its activities so that the health and safety of the public, work site staff, and protection of the environment always have precedence over questions of cost and the work schedule.

### **1.2 REFERENCES**

- .1 Canada Labour Code, part II, Canada Occupational Health and Safety Regulations
- .2 Canadian Standards Association (CSA).
- .3 Workplace Hazardous Materials Information System (WHMIS)/Health Canada.
  - .1 Safety data sheet (SDS).
- .4 Occupational Health and Safety Act, R.S.Q. Chapter S-2.1 [2002].
- .5 Safety Code for the construction industry, S-2.1, r.6 [2001].

### **1.3 RISK ASSESSMENT**

- .1 The Contractor shall identify all risks related to the various tasks on site.
- .2 The Contractor shall plan and organize their work to promote eliminating hazards at the source or collective protection, and minimize the use of individual protection equipment. When individual protection equipment is required in situations of falling hazards, the workers must use a safety harness in compliance with the CAN/CSA-Z-259.10-M90 standard. The safety belt must not be used as a falling protection.
- .3 Any equipment, tool, or means of protection that cannot be installed or used without compromising the health and safety of the workers shall be considered inappropriate for the work.
- .4 All mechanical equipment must be inspected before its delivery on site. Before using mechanical equipment, the Contractor shall send a certificate of conformity signed by an approved mechanic to the Departmental Representative. At any time, if the Departmental Representative suspects a defect or a risk of accident, they can order the immediate shutdown of the machine and require a second inspection performed by a specialist of their choice.

### **1.4 REQUIREMENTS OF REGULATORY BODY**

- .1 Comply with all rules, regulations, and applicable standards when executing the work.
- .2 Follow the prescribed standards and rules in order to ensure a normal course of events in the work on sites contaminated by toxic products.
- .3 The publication date of the standards listed in the *Safety Code for the construction industry* notwithstanding, always use its most recent and applicable version during work.

### **1.5 RESPONSIBILITIES**

- .1 Regardless the size of the job site or the number of workers on site, always have a designated, competent supervisor who is responsible for health and safety. Take all necessary measures to ensure the health and safety of people and property on and near the job site that could be affected by the execution of the work.
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- .2 Take all necessary measures to ensure the application of and compliance with all health and safety requirements indicated in the contract documents, federal and provincial regulations, the applicable standards and the prevention program specific to the job site and immediately comply with any order or notice of correction issued by the Occupational Health and Safety Committee.
- .3 Take all necessary measures to keep the site clean and in good order during the work.

#### **1.6 COMMUNICATION AND SIGNAGE**

- .1 Take all the actions necessary to ensure effective communication of the health and safety information on the job site. As soon as they arrive on the job site, all workers must be informed of the specifics of the prevention program, their obligations and their rights.
- .2 The Contractor must insist on the workers' right to refuse to execute work if they believe this work could endanger their health, safety, physical integrity or that of other people present on the job site.  
The Contractor shall keep an updated log with the information sent and the signature of all the workers who received this information on the job site.

#### **1.7 UNFORESEEN EVENTS**

- .1 When a source of danger not specified in the specifications and not identified during the preliminary inspection of the job site occurs during the execution of the work, the Contractor shall immediately stop the work, set up temporary protection measures for the workers and the public, and warn the Departmental Representative verbally and in writing. The Contractor shall afterwards make the necessary changes to the prevention program for the work to resume safely.

**END OF SECTION**

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## **PART 1 - GENERAL**

### **1.1 WASTE MANAGEMENT OBJECTIVES**

- .1 Carry out solid construction waste control.
- .2 Protect the environment and prevent pollution and environmental impact.

### **1.2 RELATED SECTIONS**

- .1 Section 02 41 16 – Structure demolition
- .2 Section 03 30 00 – Cast-in-place concrete
- .3 Section 26 05 04 – Electrical and control work
- .4 Section 31 23 33 – Excavating, trenching and backfilling
- .5 Section 32 31 13 – Chain-link fences and gates

### **1.3 SUBMITTALS**

- .1 Upon completion of the work, send a copy of the waste disposal report to Ministry Representative.

### **1.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Divert unused metal materials to an appropriate recycling facility approved by Ministry Representative.
- .2 The Contractor is responsible for choosing waste treatment sites.
- .3 Do not bury rubbish or waste materials.
- .4 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner or any other waste material into storm or sanitary sewers or waterways. These must be disposed of in accordance with the *Canadian Environmental Protection Act* and the *Québec Residual Materials Management Policy (1998-2008)*.

## **PART 2 - PRODUCTS**

### **2.1 NOT APPLICABLE**

## **PART 3 - EXECUTION**

### **3.1 CLEANING**

- .1 Remove tools and waste materials on completion of work, and leave area in clean and orderly condition.
- .2 Clean up work area as work progresses.
- .3 Source separate waste materials to be reused/recycled into specified areas.

**END OF SECTION**

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**PART 1 - GENERAL****1.1 SECTION CONTENT**

- .1 The contractor/subcontractor must provide all material, equipment, labour and services required to fully execute the demolition work.
- .2 This work includes but is not limited to the following interior demolition work:
  - .1 Removal of various existing sections of chain link fencing, including the removal of concrete footings, when required. See the instructions in the plans and specifications.

**1.2 RELATED SECTIONS**

- .1 Section 01 74 21 – Construction/demolition waste management and disposal
- .2 Section 32 31 13 – Chain-link fences and gates

**1.3 REFERENCES**

- .1 Quebec laws, regulations and standards in force:
  - .1 Occupational Health and Safety Act
  - .2 Construction Safety Code (R.S.Q., S-2.1, r.6)
  - .3 Occupational Health and Safety Regulations
- .2 Canadian Standards Association (CSA)
  - .1 CSA S350- M1980 (R1998), Code of Practice for Safety in Demolition of Structures.

**1.4 TEMPORARY PROTECTION**

- .1 Take the necessary measures to prevent the movement, collapse or any other damage to adjacent structures, pipes, sidewalks, road surfaces, earthworks and adjacent buildings.

**1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Sort and recycle waste in accordance with section 01 74 21 Construction/demolition waste management and disposal

**PART 2 - PRODUCTS****2.1 NOT APPLICABLE**

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### **PART 3 - EXECUTION**

#### **3.1 PRELIMINARY WORK**

- .1 Inspect the worksite and confirm the structures that are to be removed with a departmental representative.
- .2 Locate and protect utility and building systems. If required, protect systems crossing the worksite to keep them in working condition.

#### **3.2 SECURITY**

- .1 Observe and enforce the safety requirements set out in part 8 of the 2015 National Building Code of Canada or mandated by the provincial government, the organization responsible for regulating workplace accidents (CSST) or municipal authorities with respect to construction work. The strictest requirements must apply if there is any difference between the Code requirements and those of the organizations listed above.

#### **3.3 DEMOLITION AND RECOVERY**

- .1 Carry out the demolition work of the involved elements following approval from a departmental representative.

#### **3.4 SORTING AND DISPOSAL**

- .1 Unless otherwise specified, dispose of materials removed in appropriate facilities in accordance with the requirements in section 01 74 21 Construction/demolition waste management and disposal.

#### **3.5 CLEANING**

- .1 At the end of each workday, ensure that the demolition work area is safe. Ensure that there are no materials that can be used as a projectile or potential weapon.
- .2 Maintain the area in a clean and orderly condition at all times.

**END OF SECTION**

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## **PART 1 - GENERAL**

### **1.1 SECTION CONTENT**

- .1 This section describes the requirements for the supply, placing, finishing, protection and setting of cast-in-place concrete for concrete footings on fence posts, as well as operator concrete bases

### **1.2 RELATED SECTIONS**

- .1 Section 01 74 21 – Construction/demolition waste management and disposal
- .2 Section 26 05 04 – Electrical and control work
- .3 Section 31 23 33 – Excavating, trenching and backfilling
- .4 Section 32 31 13 – Chain-link fencing and gates

### **1.3 REFERENCES**

- .1 Quebec laws, regulations and standards in force:
  - .1 *An Act Respecting Occupational Health and Safety*
  - .2 *Safety Code for the construction industry* (R.S.Q., S-2.1, r.6)
  - .3 *Regulation respecting occupational health and safety*
- .2 Canadian Standards Association (CSA)
  - .1 CAN/CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.

### **1.4 SUBMITTALS**

- .2 Submit two (2) copies of the Material Safety Data Sheets required in accordance and compliance with the Workplace Hazardous Materials Information System (WHMIS).

### **1.5 QUALITY ASSURANCE**

- .1 At least two (2) weeks prior to commencing the concreting work, submit the proposed quality control methods for the following aspects to the Departmental Representative for approval:
  - 1. Hot weather concreting;
  - 2. Cold weather concreting;
  - 3. Curing.

### **1.6 TEMPORARY BARRIERS**

- .1 Take the necessary measures to prevent any damage to adjacent structures, mains, sidewalks, road surfaces, earthworks and adjacent buildings.
-

**PART 2 - PRODUCTS****2.1 MATERIALS**

- .1 Concrete mixtures and materials: CAN/CSA-A23.1-04 compliant, F-1 grade.
- .2 Fine aggregate: normal volume mass, in accordance with clause 4.2.3 of standard CSA-A23.1-04/A23.2-04. The aggregate may consist of either natural or manufactured sand, with a minimum 20% natural sand content.
- .3 Coarse aggregate: normal volume mass, in accordance with clause 4.2.3 of standard CSA-A23.1-04/A23.2-04; clean, durable particles, free of dust or deleterious materials, containing less than 10% flat or elongated particles. Aggregates must not be composed of fine-grained limestone or crystalline limestone. Particle size: 20 mm.
- .4 Compressive strength: at least 30 MPa at 28 days.
- .5 Entrained air and admixtures in compliance with standard CAN/CSA-A23.1.
- .6 Mixing water in accordance with standard CAN/CSA-A23.1-04/A23.2-04.

**2.2 MIX PROPORTIONING**

- .1 The concrete mixtures and materials used for fencing must be CAN/CSA-A23.1-04 compliant, F-1 exposure grade (30 MPa at 28 days) with a maximum granule size of 20 mm.
- .2 Assume responsibility for the proportioning of each concrete type required, taking into consideration the requirements set out in section 2.1 of this specification, and the following criteria, in accordance with variant 1 in Table 5 of standard CSA-A23.1-04/A23.2-04 (clause 4.1.2).
- .3 Obtain approval from the Departmental Representative for any admixture used in concrete mixtures (superplasticizer and required air-entraining agent, or other admixtures required according to the Specialty Contractor for a designated specific use). The use of calcium chloride is prohibited.
- .5 If using admixtures, follow the manufacturer's instructions. The Specialty Contractor is responsible for ensuring that admixtures are compatible with one another, and with the materials added to the mixture.
- .7 Record the type and quantity of any admixtures used on the concrete delivery order.
- .8 The use of an admixture must not in any way weaken the durability of the concrete or its resistance to freezing and thawing.

**2.3 REINFORCING STEEL**

- .1 Toothed round reinforcing bars, in accordance with standard CSA G30.18, 400 MPa steel grade.

**PART 3 - EXECUTION****3.1 PREPARATION**

- .1 Obtain written authorization from the Departmental Representative prior to commencing concreting work and provide a minimum 24 hours' advance notice.
  - .2 The concrete pumping must be approved by the Departmental Representative and can only be done following approval of the materials and mixture.
-

- .3 Ensure correct placement of the steel reinforcements and embedded pieces, as set out in the plan and specification, and ensure that they do not shift when installing the concrete.
- .4 Concreting is prohibited in rainy or snowy conditions unless the Departmental Representative has given their approval that satisfactory measures were taken to store the concrete during transportation and installation.
- .5 In the event that the Departmental Representative grants approval for concreting when the outside temperature is below 5°C or above 25°C, the Specialty Contractor shall in no way be absolved of their full responsibility regarding the resistance and durability of the concrete installed.

### **3.2 CONCRETE MANUFACTURING AND DELIVERY**

- .1 Supply ready-mixed concrete, manufactured in a concrete plant, transported and unloaded at the worksite in accordance with clause 5.2 of standard CSA-A23.1-04/A23.2-04, or supply concrete manufactured at the job site in accordance with all of the requirements in that same clause. In the case of the latter option, submit the entire technical process to the Departmental Representative for approval.
- .2 The ready-mixed concrete manufacturer is only responsible for the proportioning thereof and must personally, and at their expense, take all necessary measures to ensure their product's quality and uniformity.
- .3 Ensure that the concrete supplier includes a delivery slip with each load of concrete and submits a copy of the slip to the Ministry representative. The following information shall appear on the slip: full legal name and address of supplier, truck number, name of Specialty Contractor, project title and location, grade of concrete, cumulative quantity, unloading start time, unloading end time, maximum aggregate size, required slump and entrained air, types of admixtures used, cement quantity and type, and water quantity.
- .4 Water can only be added to the mixture following the initial mixing by strictly adhering to clause 5.2.4.3.2 of standard CAN-A23.1-04/A23.2-04, but the maximum quantity that can be used is 6 l/m<sup>3</sup>. Submit any expected addition to the Departmental Representative for approval and monitoring. Indicate on the delivery slip the quantity of any water added during unloading.
- .5 Schedule the manufacturing of the concrete and deliveries to the jobsite so that each casting can be completed without interruption. Each batch of concrete must be fully poured into the casings or holes less than two (2) hours after the concrete proportioning begins.
- .6 Never remix concrete or mortar that has already begun to set.
- .7 The temperature of the concrete during unloading must fall within the limits in Table 14 of standard CSA-A23.1-04/A23.2-04 and be controlled as per clause 5.2.4.4 of that same standard. Use the required protective measures for this purpose.
- .8 The use of aluminium is prohibited for all materials intended for mixing, transporting or placing the concrete.

### **3.3 POURING**

- .1 Pour the concrete in accordance with the requirements under standard CSA-A23.1-04/A23.2-04.
  - .2 Consolidate the concrete by using mechanical vibrators whose model and dimensions are approved by the Departmental Representative.
  - .3 Select a type and sufficient number of vibrators, and use them in accordance with clause 7.2.5 of standard CSA-A23.1-04/A23.2-04.
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- .4 Immediately before concreting on top of cured concrete surfaces, saturate surfaces with water.
- .5 Apply the concrete without interruption or in layers, to a thickness so that each new layer adheres to subjacent layers before the subjacent layers have set, to prevent the formation of cold joints.
- .6 To install concrete footings for fence posts, bring the concrete to a height of 100 mm below ground level and smooth to a sloped surface of approximately 1 degree to divert water away from the posts.

### **3.4 CONCRETE CURING**

- .1 Concrete curing is carried out based on the requirements of standard CSAA23.1-04/A23.2-04, clause 7.4.
- .2 The use of curing compounds is prohibited.
- .3 Keep unformed slabs and other surfaces continuously moist for not less than 7 days.
- .4 In cold weather, the water curing ends 12 hours before the protection period ends.
- .5 For the duration of the curing process, ensure that the concrete is not subjected to any overstressing and that it is sufficiently protected against violent shocks, excessive vibration, adverse weather and other disturbances.
- .6 Assume all costs associated with the supply, installation and maintenance of all temporary structures and equipment required to cure and protect the concrete during hot or cold weather, as well as power supplied to this equipment, which form part of the contractual work.

### **3.5 PROTECTING CONCRETE**

- .1 In hot weather, the concrete is protected in accordance with clause 7.4.2.4 of standard CSA A23.1-04/A23.2-04.
- .2 Concrete components containing silica fume are protected against exsiccation according to clause 7.4.2.2 of standard CSA A23.1-04/A23.2-04.
- .3 The other components are protected against exsiccation in accordance with Appendix D of standard CSA A23.1-04/A23.2-04.
- .4 In cold weather, the concrete is protected in accordance with standard CSA A23.1-04/A23.2-04, clause 7.4.2.5.
- .5 Methods for protecting concrete in cold temperatures are described in detail in chapter 15.4.3.13 of the "Cahier des charges et devis généraux, 2003 edition. The payment methods described in that chapter of the CCDG do not apply to this contract.

### **3.5 CLEANING OF CONCRETE TRUCKS**

- .1 The contractor must provide an appropriate container to allow the cleaning of the concrete trucks. In no cases, the cleanup water can be poured directly on the ground on site. The contractor will be responsible for disposal of said water.

**END OF SECTION**

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**PART 1 - GENERAL****1.1 SECTION CONTENT**

- .1 Connection of control supply to the motorized gate operators.
  - .1 The existing conduits with wiring will come about 12" out of the ground at planned placement for the motorized operators.
- .2 Coordinating with SCC to connect the operator's electrical power supply.
- .3 Placing of conduits between the operators and their manual key switch.

**1.2 RELATED SECTIONS**

- .1 Section 01 74 21 – Construction/demolition waste management and disposal
- .2 Section 03 30 00 – Cast-in-place concrete
- .3 Section 31 23 33 – Excavating, trenching and backfilling
- .4 Section 32 31 13 – Chain-link fencing and gates

**1.3 REFERENCES**

- .1 Quebec laws, regulations and standards in force:
  - .1 *An Act Respecting Occupational Health and Safety*
  - .2 *Safety Code for the construction industry* (R.S.Q., S-2.1, r.6)
  - .3 *Regulation respecting occupational health and safety*
- .2 Canadian Standards Association (CSA), Québec version (C22.10-07)
- .3 Insulated Cable Engineers Association, Inc. (ICEA)

**1.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Sort and divert waste as described in section 01 74 21 Construction/demolition waste management and disposal.
- .2 Divert unused metal materials and cables to a recycling facility approved by the Departmental Representative.

**1.5 HEALTH AND SAFETY**

- .1 Comply with the professional health and safety rules in construction, in accordance with the General Conditions.

**1.6 WARRANTY**

- .1 The 12-month warranty period set out in the General Conditions applies to work described in this section.

**PART 2 - PRODUCTS****2.1 LINES**

- .1 1" Grey PVC pipe for gate control connection of operator to the key switch.
  - .2 Existing grey PVC pipe for operator connection, with the following dimensions:
    - .1 2" diameter pipe for electrical conduits;
-

- .2 2" diameter pipe for control cables;

## **2.2 WIRING**

- .1 Wiring connecting key switch to gate control:
  - .1 One AWM 2 pair 18 AWG stranded FT4 cable per key switch;
- .2 Existing wiring for gate control:
  - .1 One AWM 6 pair 18 AWG stranded FT4 cable per gate;
  - .2 Connected to a delta panel.
- .3 Existing wiring for the electrical feed:
  - .1 Type of wiring to be determined based on the distances to cover and in accordance with CSA standards C22.10-07;
  - .2 Operating on 600V.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION OF CABLES IN CONDUITS BETWEEN OPERATORS AND KEY SWITCH**

- .1 Following the excavation and cleaning of the trench, place conduits on a sand or filtered soil layer of minimum 75mm in thickness.
- .2 Ensure that conduits run continuously from the gates operator to the post with key switch.
- .3 It is prohibited to run spliced cables through the conduits.
- .4 Plan for a extension joint under the new operator concrete slabs.
- .5 Install all cables running through the same pipe at the same time. Pass a thin nylon rope in each conduit at the same time as the cables.
- .6 To reduce pulling tension, use lubricants that are CSA approved and compatible with the cable's outer casing.
- .7 To facilitate matching of colour-coded multi-core command cables, always unravel them in the same direction during installation.
- .8 Before running cables into conduits before they are properly connected, seal the ends of conduits with moisture seal tape.
- .9 Once cables are installed, seal all conduit ends using a conduit-sealing product.
- .10 Cover the conduits with a 75mm minimum layer of sand or filtered soil.
- .11 Place a ¾" thick sheet of marine plywood over the pipes to protect it.
- .12 Backfill what's left of the trench with material devoid of large rock pieces, paving or asphalt, slag or any other coarse, sharp or corrosive material, to ensure the integrity of the buried cables or conduits.

### **3.2 PREPARING FOR THE CONNECTION OF MOTORIZED OPERATORS.**

- .1 After framing and poring the concrete slab, modify height of the PVC pipe to reach required height.
- .2 Coordinate with SCC project manager for installation of junction boxes on slab.
- .3 Place and anchor the operator on slab.
- .4 Connect the existing wiring to the operator according to manufacturer's instructions.

**END OF SECTION**

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## **PART 1 - GENERAL**

### **1.1 SECTION CONTENT**

- .1 The work in this section includes the following:
  - .1 Digging for the fence post concrete footings described in section 32 31 13;
  - .2 Digging a trench in order to run motorized gate conduits to the key switch post.
  - .3 Excavating and preparation for operator bases.

### **1.2 RELATED SECTIONS**

- .1 Section 01 74 21 – Construction/demolition waste management and disposal
- .2 Section 02 41 16 – Demolition of construction
- .3 Section 26 05 04 – Electrical and control work
- .4 Section 03 30 00 – Cast-in-place concrete
- .5 Section 32 31 13 – Chain-link fences and gates

### **1.3 DEFINITIONS**

- .1 Type of excavation:
  - .1 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation including dense tills, hardpan, frozen materials, partially cemented materials and existing foundations and roadways that can be ripped and excavated with heavy construction equipment.
  - .2 Rock excavation: excavation of material from solid masses of igneous, sedimentary or metamorphic rock which, prior to its removal, was integral with its parent mass, and boulders or rock fragments having individual volume in excess of 1 m<sup>3</sup> and which can only be properly excavated once they have been broken by explosives or impact devices. Hardpan, indurated clay, till, frozen soil and stony soil are excluded from this category.
- .2 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.
- .3 Waste: surplus material or excavated materials that cannot be used for the present work.

### **1.4 REFERENCES**

- .1 Quebec laws, regulations and standards in force:
  - .1 Occupational Health and Safety Act;
  - .2 Construction Safety Code (R.S.Q., S-2.1, r.6);
  - .3 Occupational Health and Safety Regulations.

### **1.5 TEMPORARY PROTECTION**

- .1 Take the necessary measures to prevent any damage to adjacent structures, pipes, sidewalks, road surfaces, earthworks and to adjacent buildings, among others.

### **1.6 PROTECTION OF EXISTING STRUCTURES**

- .1 Protect the bottom of excavations against any softening and should this occur, remove the softened soil and replace it with compacted type 2 backfill.
  - .2 Protect the bottom of excavations against frost.
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- .3 Take the necessary measures to eliminate the dust produced.
- .4 Protect existing facilities, buildings and services and the existing material located on the worksite in an appropriate manner so that they are not damaged during the work.
- .5 Never stockpile excavated material where it could impede the work, site drainage or the institution's operations.
- .6 Buried utilities and structures:
  - .1 Size, depth and location of existing utilities and structures as indicated in the drawings are for guidance only. Completeness and accuracy are not guaranteed.
  - .2 Prior to commencing any excavation work, consult the detection report provided by the Department representative to determine the location of all buried installations.
  - .3 Maintain and protect from damage water, sewer, gas, electric, telephone lines and other utilities and structures encountered in the excavation zone.
- .7 Existing buildings and surface features:
  - .1 Conduct, with Department representative, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, and paved roadways that must remain in place and may be damaged by the work.
  - .2 While performing the work, protect existing buildings and surface features that may be damaged. In the case of damage, immediately inform the Department representative and repair the damaged structures upon request. The damage may be repaired internally; however, the Contractor will still be charged for the cost of the repairs.
  - .3 If it is necessary to cut roots or branches in order to perform the excavation work, this work cannot be performed without the Department representative's approval.
- .8 Ensure the protection of layout benchmarks and geodesic monuments on the worksite.
- .9 Take any necessary precautions to prevent any damage to property and bodily injury.
- .10 Install protective barriers around all excavations that need to stay open outside of operating hours.

## **1.7 HEALTH AND SAFETY**

- .1 Comply with municipal requirements and the Province of Quebec's Construction Safety Code (S-2.1, r.6) regarding safety standards for excavations and worker protection.

## **1.8 WASTE MANAGEMENT AND DISPOSAL**

- .1 Comply with the criteria set out in section 01 74 21.

## **1.9 CHOICE OF EXCAVATION METHODS**

- .1 The Contractor is solely responsible for the choice of excavation methods used. These methods must be submitted in advance to the Department representative for approval.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Type 1 backfill: 20-0 gravel  
Clean crushed gravel or stone, hard, resistant and free of shale, clay and any friable, organic or deleterious materials;
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- .2 Type 2 backfill: Class A sand  
Compactable soil, consisting essentially of granular materials, hard, resistant and non-plastic, such as MG-112 sand, gravel or crushed stone. The soil must be free of shale, clay and any friable, organic, deleterious or contaminated materials. The soil must be frost proof. The soil must not contain rocks greater than 100 mm in diameter.
- .3 Type 3 backfill: regular Class B soil  
All compactable and frost-proof materials may be used except for organic soils. Soil components must be mineral in nature and free of rocks of which any one dimension is greater than 150 mm, slag, ash, waste, sod or other harmful materials.

### **PART 3 - EXECUTION**

#### **3.1 PRELIMINARY WORK**

- .1 At the beginning of work, remove obstacles, snow and ice from all surfaces to be excavated or backfilled within the limits indicated and/or needed to perform the work.
- .2 Carefully cut pavements and sidewalks along the specified boundaries of excavations with a saw so that surfaces break neatly and squarely.
- .3 If needed, the Contractor shall construct an appropriate work platform to transport heavy machinery to the worksite.

#### **3.2 STOCKPILING**

- .1 Put aside the backfilling materials at areas stipulated by the Department representative. Stockpile granular material in order to prevent segregation.
- .2 Protect the backfilling material against contamination.

#### **3.3 DEWATERING AND HEAVE PREVENTION**

- .1 Keep excavations free of water while work is in progress.
- .2 Protect open excavations against flooding and damage due to surface run-off.

#### **3.4 EXCAVATION**

- .1 Notify the Department representative at least one week prior to the start of excavation work and note the land's natural profile where required in the representative's presence.
  - .2 Execute the excavation work according to the layout, profiles, levels, cuts and dimensions indicated on the drawings in order to install and construct the requested structures.
  - .3 Pay special attention to underground infrastructures (existing tunnels, water supply and sewer systems, thrust blocks and other conduits).
    - .1 During the trench excavation and digging for the concrete bases in proximity of critical locations, the contractor must take any required dispositions that will ensure the absolute integrity of existing underground cables. If necessary, adapt the digging and excavation techniques used in order to minimise the risks of damage.
  - .4 Dig according to precise lines and levels to minimize the amount of backfill needed.
  - .5 Excavations must not in any way interfere with the load bearing capacity of adjacent footings.
  - .6 Excavated and stockpiled materials must be deposited at a sufficient distance from the trenches.
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- .7 Limit the work executed with heavy equipment to the immediate vicinity of trenches that have not been backfilled.
- .8 The bottom of excavations must be free of loose, soft or organic matter.
- .9 Once the excavations have been completed in an area, have them approved by the Ministry Representative.
- .10 Whenever digging was executed too deep, fill the unauthorized excavations with type 2 backfill.

### **3.5 DISPOSAL OF EXCAVATED MATERIALS**

- .1 The Contractor shall load, transport and dispose of all waste material in compliance with the specifications in 01 74 21 – Construction/demolition waste management and disposal. This includes materials from the demolition of pavement or old fences to be removed.

### **3.6 BACKFILLING AND COMPACTION MATERIALS**

- .1 Compaction densities are percentages of maximum densities obtained from ASTM D698 and ASTM D1557.
- .2 Use backfill materials consistent with the types defined in section 2.1. The Contractor must have the choice of backfill material approved before proceeding.
- .3 The limits specified in the drawings for the various layers of backfill are the minimum limits of backfill after compaction.
- .4 Backfill around executed work to the levels indicated in the plans with the various layers of backfill material as specified.
- .5 After backfilling, execute rough grading of all of the land in accordance with the levels and slopes required so that surface run-off can flow away from fence posts and the topsoil and sod can be laid in compliance with the required slopes and levels.

### **3.7 BACKFILLING**

- .1 The surfaces to be backfilled must be free from debris, snow, ice, water and frozen soil. The backfill material must not contain frozen pieces, ice, snow or debris.
- .2 Do not backfill around or on top of cast-in-place concrete structures within 24 hours of the concreting.
- .3 Spread the backfill material in uniform layers not exceeding 150 mm in compacted thickness up to grades indicated. Compact each layer before spreading the next layer.

### **3.8 CLEANING**

- .1 Upon completion of work, remove surplus materials and debris, trim slopes, and correct defects noted by the Department representative.
- .2 Replace the topsoil as directed by the Department representative.
- .3 Reinstate road surfaces affected by work to it's previous condition and elevation, respecting the original thickness of the surfaces.
- .4 Clean and reinstate areas damaged during work as directed by the Department representative.
- .5 Sow Herbio traffic (or equivalent) type grass, where the grass has been removed or damaged.

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**END OF SECTION**

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**PART 1 - GENERAL****1.1 SECTION CONTENT**

- .1 The work in this section includes, among other things without being limited to, providing and installation the following elements.
  - .1 The construction of new chain-link fencing and gates using new materials. The types of fencing and gates concerned are as follows:
    - .1 Type of fence:
      - .1 2400 mm high interior zoning fences.
    - .2 Types of fence gates:
      - .1 Pedestrian swing gates;
      - .2 Vehicle swing gates;
      - .3 Motorized vehicle sliding gates.
  - .2 The scope of the work is described in the bid documents.

**1.2 RELATED SECTIONS**

- .1 Section 01 74 21 – Construction/demolition waste management and disposal
- .2 Section 02 41 16 – Structure demolition
- .3 Section 26 05 04 – Electrical and control work
- .4 Section 03 30 00 – Cast-in-place concrete
- .5 Section 31 23 33 – Excavating, trenching and backfilling

**1.3 REFERENCES**

- .1 Quebec laws, regulations and standards in force:
    - .1 *An Act Respecting Occupational Health and Safety*
    - .2 *Safety Code for the construction industry* (R.S.Q., S-2.1, r.6)
    - .3 *Regulation respecting occupational health and safety*
  - .2 American Society for Testing and Materials International, (ASTM) latest revisions.
    - .1 ASTM A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
    - .2 ASTM A90/A90M, Standard Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
    - .3 ASTM A121-99, Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.
    - .4 ASTM C 618-03, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
    - .5 ASTM F1664-01, Standard Specification for Poly(Vinyl Chloride) (PVC) – Coated Steel Tension Wire used with Chain-Link Fence
  - .3 Canadian General Standards Board (CGSB), latest revisions.
    - .1 CAN/CGSB-138.1, Fabric for Chain Link Fence.
    - .2 CAN/CGSB-138.2, Steel Framework for Chain Link Fence.
    - .3 CAN/CGSB-138.3, Installation of Chain Link Fence.
    - .4 CAN/CGSB-138.4, Gates for Chain Link Fence.
    - .5 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
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- .4 Canadian Standards Association (CSA)/CSA International
  - .1 CAN/CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Tests for Concrete.
  - .2 CAN/CSA-C49.1, Round Wire, Concentric Lay, Overhead Electrical Conductors.
  - .3 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .4 CAN/CSA-A3000-F98, Compendium de matériaux cimentaires.
- .5 Health Canada - Workplace Hazardous Materials Information System (WHMIS).
  - .1 Material Safety Data Sheets (MSDS).
- .6 The Master Painters Institute (MPI) - Architectural Painting Specification Manual.
  - .1 MPI #8, Alkyd, Exterior Flat.
  - .2 MPI #18, Organic Zinc Rich Primer.
  - .3 MPI #134, Primer, Galvanized, Water Based.

#### **1.4 SUBMITTAL OF DOCUMENTS AND SAMPLES**

- .1 Submit the required documents and samples in accordance with the general requirements
  - .2 Submit the shop drawings clearly indicating the layout and dimensions of the fences and gates, post placement, the dimensions of the footings, as well as details of the component parts and materials, including all special devices.
  - .3 The shop drawings must indicate the materials to be used as well as the construction, fastening or anchoring methods, and must include diagrammatic sketches, details of connectors, relevant explanatory notes and all other information and explanatory notes required to perform the work. Cross-reference the specifications and preliminary drawings.
  - .4 The following information must appear on the documents submitted:
    - .1 Date;
    - .2 Project name and number;
    - .3 Name and address of the following individuals:
      - .1 Subcontractor;
      - .2 Supplier;
      - .3 Manufacturer;
      - .4 Contractor's stamp, signed by the authorized representative, certifying that the document submitted is approved, that the measures implemented have been verified and it complies with the requirements of the contractual documents;
  - .5 Relevant details for the work portions involved:
    - .1 Manufacturing materials and details;
    - .2 Placement or configuration, with dimensions, including on-site measurements, as well as gaps and clearances;
    - .3 Installation or adjustment details;
    - .4 Performance characteristics;
    - .5 Reference standards;
    - .6 Operational weight;
    - .7 Wiring diagrams;
    - .8 Single-line diagrams and schematics;
    - .9 Connectors to adjacent structures;
    - .10 Gate control sequences.
  - .6 Submit one (1) electronic copy of the shop drawings set out in the technical specifications sections, and in accordance with the Departmental Representative's reasonable requirements.
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- .7 If shop drawings are not required in the case of a standard manufactured product being used, submit one (1) electronic copy of the data sheets or manufacturer's documentation set out in the technical specifications sections and required by the Departmental Representative.
- .8 Submit one (1) electronic copy of the test reports set out in the technical specifications section and/or required by the Departmental Representative.
- .9 Submit one (1) electronic copy of the operation and maintenance sheets set out in the technical specifications sections and required by the Departmental Representative.

## **1.5 PERFORMANCE CRITERIA**

- .1 The fences must be erected in a straight line, from one corner post to the next, to ensure a clear field of vision on both sides of the fences.

## **1.6 TRANSPORTING, STORING AND HANDLING**

- .1 Transport and store the materials so as to prevent scratches or other damage to the galvanized finish of components.

## **1.7 TEMPORARY BARRIERS**

- .1 Take the necessary measures to prevent any damage to adjacent structures, underground cable work, sidewalks, road surfaces, earthworks and adjacent buildings.

## **1.8 HEALTH AND SAFETY**

- .1 Comply with professional health and safety rules in construction, in accordance with the general conditions.

## **1.9 WASTE MANAGEMENT AND DISPOSAL**

- .1 Comply with the criteria set out in section 01 74 21.
- .2 Divert unused metal materials to a metals recycling facility approved by the Departmental Representative.
- .3 Divert other unused materials to a local facility approved by the Departmental Representative.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Use new materials in accordance with the following specifications:
    - .1 All stainless steel components must have a 17% chrome content.
    - .2 All galvanized steel components must have a 610 g/m<sup>2</sup> zinc content.
    - .3 See 2.4 Dimensions for the heights of the various components.
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## 2.2 CHAIN LINK FABRIC

- .1 Galvanized diamond pattern chain link:
  - .1 In accordance with standard CAN/CGSB-138.1, Class 2.
  - .2 The chain link must comply with the following specifications:
    - .1 **Diameter of metal wire:** minimum 4.8 mm (6 Gauge);
    - .2 **Mesh size:** 50.8 mm;
    - .3 **Mesh height:** 2400mm;
    - .4 **Average weight of zinc-rich coating:** minimum 610 g/m<sup>2</sup>;
    - .5 **Breaking load:** minimum 10,000 N;
    - .6 **Top edges:** 3 full twists on ends;
    - .7 **Bottom edges:** knuckled.
  - .3 The chain link must be seamless along its entire height and installed on the side of the posts facing the institution.
  - .4 The chain link must be stretched prior to installation. See 3.2 Fence installations to verify the required tension following installation.

## 2.3 METALLIC FRAMEWORK

- .1 The metallic framework must comply with standard CAN/CGSB-138.2-96 as well as the following specifications:
    - .1 Tube posts and rails:
      - .1 "Schedule 40" steel pipe with a minimum zinc coating weight of 610 g/m<sup>2</sup>.
      - .2 Post spacing must not exceed 2500 mm.
      - .3 Intermediate posts must have a minimum outside diameter of 73 mm and a density of 8.6 kg/m.
      - .4 The tension posts must have a minimum outside diameter of 114.3 mm and a density of 15.92 kg/m. They must not be spaced more than 60 m apart.
      - .5 The corner and gate posts must have a minimum outside diameter of 114.3 mm and a density of 15.92kg/m.
      - .6 The top and bottom rails must have a minimum outside diameter of 42.2 mm and a density of 3.4 kg/m.
      - .7 Intermediate rails are not to be used.
    - .2 Post caps:
      - .1 Hollow 300 MPa caps, with a diameter adapted to that of the posts.
      - .2 Waterproof post caps, secured firmly to the posts and supporting the top rail.
    - .3 Tension bar:
      - .1 Rounded-edge galvanized steel bars with a minimum dimension of 5 mm x 20 mm that must span the entire height of the fence.
    - .4 Tension bar clips (bands):
      - .1 Minimum 3 mm x 20 mm half round galvanized steel, fitted to the post diameter using 10 mm diameter galvanized fixing bolts. The nuts must face the exterior of the inmate yards and be firmly secured. The clips spacing must not exceed 300 mm.
      - .2 Press-forged fence stretchers.
    - .5 Concertina barbed wire:
      - .1 In accordance with standard CAN/CGSB-138.2.
      - .2 Galvanized steel band, 20 mm x 0.5 mm, around a 2.5 mm diameter galvanized steel core.
      - .3 Once installed, a nominal outside diameter of 710 mm and a minimum outside diameter of 635 mm.
-

- .4 Must include barbs that measure 20 mm, end to end. The center of barb clusters must be spaced approximately 45 mm apart.
  - .5 A pattern formed by attaching loops of helical coils to one another, at three points on the circumference, with galvanized clamps.
  - .6 Loop spacing must not exceed 230 mm.
  - .7 Fastened to the top of the fencing by two stretched barbed wires and secured to the post arms. Barbed wire composed of 12-gauge galvanized strand wire, with 4 point barbs spaced 130 mm apart.
  - .8 Submit product data sheet for approval by an authorized Departmental Representative.
  - .6 Barbed wire coil support arms:
    - .1 Galvanized steel arms must be installed on the posts to fix the top rails and extension bars where a barbed wire spiral must be installed. Ensure they are watertight.
    - .2 300 MPa galvanized steel pipes, with diameter adapted to that of the posts. Close off the end with a cap welded to the support arm and weld the base to the top cap on the posts.
  - .7 Fastening device:
    - .1 Pintles, pintle strap hinges, latches, bolt catches, etc.: galvanized steel with a minimum 610 g/m<sup>2</sup> zinc coating.
    - .2 If pull cables are used with corner, end, gate or tension posts, they must be made of galvanized steel.
  - .8 All gate types must meet the following specifications:
    - .1 CAN/CGSB-138.4 compliant.
    - .2 Factory-built gates based on set specifications.
    - .3 Manufactured using electric-welded joints, and hot-dip galvanizing immersion following welding.
    - .4 All components must be galvanized.
    - .5 The chain link used on gates and fences must be identical.
    - .6 Construct frames/angles so they are square, plumb and waterproof.
    - .7 Stretch out the chain link fencing and secure it to the framework using the appropriate tension bars and clamps, with tie wires spaced every 300 mm apart.
    - .8 Chain link fencing is fixed to the gates so that the twisted edge is at the top.
    - .9 See 2.4 Dimensions for gate widths.
    - .10 The space between the bottom rail of the gate and the ground must not exceed 125 mm. If gates are installed on a fence equipped with an in-ground gate, the latter must be seamless.
    - .11 Industrial commercial Grade 1 security equipment must be used and be designed to offer the appropriate level of protection and durability.
    - .12 Gates equipped with strap hinges, latches and bolt catches made of galvanized malleable iron, to which a BEST padlock can be secured, must be workable from either side of the gate.
    - .13 A vertical-locking central support will be installed to secure the doors when closed. If door height exceeds 2000 mm, the bolt shall secure the top and bottom of the gates in place. Bolts must be locked with a padlock accessible and operable from both sides of fence.
  - .9 Pedestrian swing gates:
    - .1 Gates with a 1200 mm pivot minimum.
    - .2 Gates must provide a free space allowance of minimally 1200 mm wide by 2100 mm high.
-



- .3 The frames must be built of galvanized pipe with an outside diameter of 42.2 mm, weighing 3.4 kg/m, welded and drained.
  - .4 Galvanized pipe braces, with an outside diameter of 42.2 mm, installed diagonally, corner to corner on the gate section.
  - .10 Double vehicle swing gates:
    - .1 Double swing gates of minimum 2000 mm, equipped with vertical-locking central support, to secure them when in closed position.
    - .2 Gates must provide a free space allowance of minimum 4000 mm wide x 4500 mm high.
    - .3 Frames must be built of welded, drained, galvanized pipe weighing 8.6 kg/m with an outside diameter of 60.3 mm.
    - .4 Galvanized pipe braces, with an outside diameter of 42.2 mm, installed diagonally, corner to corner on the gate section.
    - .5 Both operating and snow conditions must be considered prior to determining the gates' pivot direction. See plans for the proposed pivot direction.
    - .6 The gate must be fitted with three commercial quality hinges. The centre latch will be secured using a security padlock, accessible from either side of gate.
  - .11 Motorized vehicle sliding gates of traction chain type:
    - .1 Gates must provide a free space allowance of minimum 4000 mm W x 4500 mm H.
    - .2 Frames must be built of galvanized pipe weighing 8.6 kg/m, welded and drained, with an outside diameter of 60.3 mm.
    - .3 Galvanized pipe braces, with an outside diameter of 42.2 mm, installed diagonally, corner to corner on the gate sections.
    - .4 The gate's motorised speed must be 150 mm/s.
    - .5 The gate must be equipped with all necessary equipment and accessories to ensure proper functioning of the door.
    - .6 All equipment, mechanisms and fittings for the new gates must be of traction chain type in cantilever with a double rail. They must match those that are already installed on site.
    - .7 The drive mechanism and track must be protected against any bad weather and heated in order to function properly under any weather conditions.
  - .12 Accessories for motorized sliding gates:
    - .1 Pivin and Drapeau operator, model BCSI. See A and B annexes for the technical sheet and specifications. No equivalence will be accepted.
      - .1 The motors must be placed low to the ground in order to facilitate maintenance. Each operator must be protected by a vandal resistant case and must be locked by a padlock (by others). These caissons must be able to withstand all weather conditions.
      - .2 Plan for a metal casing under operator to isolate conduits.
      - .3 Provide 10 ERONE remotes with system.
    - .2 Install a movement detector of brand OMRON on each gate. The model must correspond to those already installed on site.
    - .3 Key switch of brand STANLEY BEST and model 1W7K4626 W series.
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## **2.4 DIMENSIONS**

- .1 Fence height:
  - .1 2400 mm.
- .2 Gate width:
  - .1 1200 mm for the pedestrian swing gates;
  - .2 2000 mm or 2300mm for each wing of the double vehicle swing gates;
  - .3 5000 mm for the motorized vehicle sliding gates.
- .3 Minimum outside diameter of the metallic framework components:
  - .1 143.3 mm for corner, end and gate posts;
  - .2 114.3 mm for stretchers;
  - .3 73 mm for intermediate posts;
  - .4 42.2 mm for rails and braces.
- .4 Dimensions of concrete footings:
  - .1 1800 mm deep and 400 mm in diameter for line, tension, corner or terminal posts;
  - .2 2100 mm deep and 400 mm in diameter for end posts of doors only.

## **2.5 CONCRETE**

- .1 Concrete mixes and materials for fencing: meets standard CAN/CSA-A23.1-04, F-1 exposure grade.
- .2 Diameter of coarse aggregate: 20 mm.
- .3 Compressive strength: at least 30 MPa at 28 days.
- .3 Entrained air and admixtures meet standard CAN/CSA-A23.1.
- .4 Mixing water in accordance with standard CAN/CSA-A23.1-04/A23.2-04.

## **2.6 REINFORCING STEEL**

- .1 Crenellated round reinforcing bars, in accordance with standard CSA G30.18, 400 MPa steel grade.

## **2.7 HARDWARE**

- .1 Galvanized steel fastenings and hardware meet standard CAN/CGSB-138.2.
- .2 All hardware must be graded for "ultra robust" use.

## **2.8 BRACING**

- .1 Install all necessary bracing to ensure fencing stability, especially at ends and on both sides of the gates.

## **2.9 FINISHING**

- .1 In general, all steel must undergo hot-dip galvanized immersion following factory manufacturing and welding. However, for all welding that needs to be performed on-site, the surfaces must be touched up with two layers of zinc-rich organic paint.
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### **PART 3 - EXECUTION**

#### **3.1 PLACEMENT CONDITIONS**

- .1 Pay special attention to underground infrastructures (existing tunnels and water supply, sewers, thrust blocks and other conduits).
- .2 Install the fences square, level, and uniformly aligned as per the drawing details
- .3 Erect the fencing along the perimeter indicated in the plans.
- .4 Special attention must be paid to variations in ground level to ensure that no space exists between earthworks and the fence's bottom. If a significant longitudinal difference exists in ground level, tier fence installation is permitted, provided that the fence's minimum height is maintained.
- .5 The barbed wire spirals must be installed in a way to prevent inmates from moving between the spirals, as illustrated in the plans.
- .6 The 3.7 mm diameter (9 gauge) galvanized steel tie wires must be spaced at 300 mm intervals to attach the chain link to the top and bottom rails, and to the intermediate posts.
- .7 Should nuts and bolts be required, they must face away from the institution, be firmly tightened and secured with a welding point.
- .8 All posts that do not require barbed wire must be equipped with galvanized steel caps.
- .9 All materials and equipment must be installed to withstand local weather conditions, especially wind and wet snowfall.

#### **3.2 FENCE INSTALLATION**

- .1 Chain link fences must be installed in accordance with clause 32 31 13 of the National Master Specification (NMS) and standard CAN/CGSB-138.3-96.
  - .2 To insert posts, dig holes according to the dimensions indicated in section 2.4 Dimensions and on the approved shop drawings.
  - .3 Pour concrete into the holes, then lower the posts to the required depth.
    - .1 Pour concrete to a height of 100 mm below ground level and smooth to a sloped surface to divert water away from the posts.
    - .2 Position the posts so that they are upright, aligned, and at the required height, until the concrete sets.
    - .3 Any visible tops of concrete footings must either be smoothed over with a trowel finish, or levelled below pavement level.
    - .4 Install overhang connectors and post caps.
  - .4 Allow concrete to harden for a minimum of 5 days before installing the chain link fence.
  - .5 Install a corner post if a change in direction exceeds 10 degrees.
  - .6 Install end posts at the ends of the fence and near buildings.
  - .7 Install gate posts on both sides of the openings intended for gates.
  - .9 Install the top and bottom rails between posts, attaching them securely; fix the overhang connectors and caps.
  - .10 Install the braces diagonally from one corner to the other on the fence section. Spacers are used to brace the main posts (corner, gate, end). Corner posts must be braced in both directions.
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- .11 Unroll the fence chain link, stretching it out tightly to the manufacturer's recommended tension, and attach it to the end, corner, gate and brace posts using a tension bar affixed to each post with clamps at 300 mm intervals. The tension must be verified by conducting tensile tests. A perpendicular tension of 12 kg applied to the midpoint of any chain link panel (midpoint of posts/rails) must not produce a vertical movement that exceeds 30 mm.
  - .1 The knuckled edge must be on the bottom;
  - .2 The twisted edge is at the top.
- .12 Secure the chain link to the top and bottom rails using tie wires at 300 mm intervals (every 6 links). The chain link must be installed on the inmate side.
  - .1 The tie wires must be twisted at least twice.
- .13 Install the barbed wire and attach it securely to each extension bar, as per the preceding specifications.
- .14 The barbed wire spiral must be secured and wrapped to form 230 mm spires on each barbed wire.
- .15 Take the gates and place the hinges so that when the gates are in the open position, they fall back against the fence where the hinges are positioned.

### **3.3 GATE INSTALLATION**

- .1 Install the gates in the designated locations, as specified in the plans and by the Departmental Representative.
- .2 Level the ground between the gate posts and position the bottom end of the gate according to the design criteria.
- .3 Install padlock latches on the gates, accessible from both sides of the fence.

### **3.4 GRADING**

- .1 Remove debris and level the ground that spans the outline of the fence to be installed, to achieve a gentle, uniform slope between posts.

### **3.5 FINAL TOUCHES**

- .1 Use a wire brush to clean damaged surfaces, and remove any loosened or cracked surface layers. Apply two layers of zinc-rich organic paint to damaged surfaces.
  - .1 Prior to painting, any damaged surfaces must be treated in accordance with the manufacturer's instructions for applying zinc-rich paint.

### **3.6 CLEANING**

- .1 Clean and grade any ground surfaces that were disturbed during the work.
  - .1 Dispose of any excess materials and replace any damaged grass areas with fresh sod, in accordance with the Departmental Representative's instructions.

**END OF SECTION**

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