CSC –Joliette Establishment Rehabilitation of Peripheral Gravel Path

Technical Specifications for tender
(30725-92342)

Stantec

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Technical Specifications –
For tender

Prepared for:
Correctional Service Canada

Prepared by:
Stantec Consulting Ltd.

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Sign-off Sheet

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Prepared by _____ 2019-02-27
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MODIFICATION AND ISSUE REGISTER		
Revision #	**Date**	**Modification and/or Issue Description**
0	2019-03-01	Issued for tender *"This document shall not be used for construction purposes"*

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

DIVISION 01 – GENERAL REQUIREMENTS

DIVISION 02 – EXISTING CONDITIONS

DIVISION 31 – EARTHWORK

DIVISION 32 – EXTERIOR IMPROVEMENTS

DIVISION 33 – UTILITIES

END OF SECTION

CIVIL

PLAN NO.	TITLE	REV.
C01	CIVIL ENGINEERING – MAIN YARD – DEMOLITION AND PROPOSED PLAN	0
C02	CIVIL ENGINEERING – MAIN YARD AND PARKING LOT – DEMOLITION AND PROPOSED PLAN (CONTINUED)	0
C03	CIVIL ENGINEERING – MAIN YARD AND PARKING LOT – DETAILS	0
C04	CIVIL ENGINEERING – MAIN YARD – WORKS PHASING AND CONSTRUCTION FENCES LOCALIZATION DRAWING	0
C05	CIVIL ENGINEERING – MAIN YARD AND PARKING LOT – FRAMES, COVERS AND GRATES REPLACEMENT AND DOUBLE BARBED WIRE WORKS	0

ELECTRIC

PLAN NO.	TITLE	REV.
EL01	ELECTRICITY ENGINEERING – MAIN YARD – DEMOLITION AND PROPOSED PLAN	0

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 The work covered by this contract includes the rehabilitation the main yard perimeter as well as modification work on the existing island in the exterior parking at Joliette Establishment.

.2 The project mainly includes the following items:

.1 Construction of an interior paved path;

.2 Construction of an exterior paved path;

.3 Partial rehabilitation of existing gravel path;

.4 Partial rehabilitation of the security fence foundation wall;

.5 Construction of drainage trench including sumps and manholes;

.6 Connection to existing storm sewer;

.7 Ground leveling and grassing;

.8 Demolition and construction of a new curb in the parking lot;

.9 Demolition of an existing curb and the reconstruction of the access road;

.10 Installation of a new 1.2 m high fence;

.11 Replacement of an existing barrier with a new one;

.12 Addition of a new double barbed wire on the fences of the site;

.13 Site restoration.

1.3 DEFINITIONS

.1 Wherever the following words and terms are used in this specification, they shall be deemed to have the following meanings, unless the context otherwise requires:

.1 Laboratory: an individual or a legal entity who, for its technical competence, is mandated by the Ministerial Representative to carry out qualitative tests on the materials and to check their installation;

.2 Infrastructure line: the level of the land or fill that is to be shaped to accommodate granular materials;

.3 Sewer: sanitary sewer, storm sewer and combined sewer systems;

.4 Aqueduct: pipes and accessories network that transports drinking water from one place to another;

.5 AWWA: American Water Works Association;

.6 ASTM: American Society for Testing and Materials;

.7 CSA: Canadian Standards Association;

.8 ASA: American Standards Association;

.9 BNQ: Bureau de normalisation du Québec;

.10 ULC: Under-Writers' Laboratories of Canada;

.11 FM: Factory Mutual;

.12 M.P.: Modified Proctor density test, according to standard CAN/BNQ 2501-255/2013 "Soils - Determination of the Water-Density Relation - Modified Effort Compaction Test (2700 kN.m/m³)";

.13 AASTHO: American Association of State Highway and Transportation Officials;

.14 CGSB: Canadian Government Specification Board;

.15 ACLE: Association Canadienne des Laboratoires d'essai;

.16 CGSB: Canadian General Standards Board;

.17 Aggregates: mixture of natural and / or manufactured elements of different constitutions, sizes, and shapes;

.18 Bitumen: bituminous binder, used hot in the preparation of asphalt;

.19 Slope: x: y (horizontal: vertical);

.20 CCDG: "Cahier des charges et devis généraux" from the Ministère des Transports du Québec, last edition, including the "Cahier des clauses générales" and most recent addendum;

.21 CSA A23.1/A23.2: standard CSA A23.1-09 / A23.2-09 "Concrete materials and methods of concrete construction/Test methods and standard practices for concrete";

.22 ACNOR: Canadian Standards Association;

.23 NQ: standard from the Bureau de normalisation du Québec (BNQ);

.24 MDDELCC: Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques.

.2 Whenever one of the defined terms is used in this specification to refer to a standard, it should be understood that reference is made to the most recent revision of this standard.

1.4 REFERENCE DOCUMENTS

.1 Bureau de normalisation du Québec (B.N.Q.)

.1 BNQ 1809-300/2018: Construction - Water and Sewer Pipes - General Technical Clauses.

1.5 GEOTECHNICAL STUDY

.1 A geotechnical study will be provided upon request. The contractor will be required to note the presence of rock either on the surface on buried on the surface or shallow.

1.6 COORDINATING WORK

.1 During construction, the Owner may allow other contractors or workers to travel or work near the areas covered by this mandate.

.2 The Contractor shall coordinate its own work as well as his signs so they do not conflict with other contractors or workers and carry out the instructions of the Ministerial Representative.

1.7 SUBCONTRACTING

.1 The Contractor is responsible for coordinating with his subcontractors and between his different subcontractors. There will be no direct correspondence between the Ministerial Representative and the Contractor's subcontractors. No claims relating to coordination between the Contractor and his subcontractors shall be accepted.

1.8 LAWS AND REGULATIONS

.1 The Contractor shall comply with all federal laws, orders, regulations and decrees in respect of work performed on federal property.

.2 The Contractor shall comply with all laws, orders, regulations and decrees of the federal and provincial governments in respect of work performed on provincial property.

1.9 WORK SEQUENCE

.1 During construction, coordinate the progress schedule according to the occupancy by the Owner.

.2 Execute work by phases, so that the Owner can use the premises continuously during construction. Maintain the site traffic lanes available at all times.

.3 Maintain access for the firefighters as well as a means to fight fires.

.4 Delays in completion of the work are 4 weeks (28 calendar days) from the authorization to start the work.

.5 To meet deadlines, the Contractor must provide the necessary working teams.

.6 Carrying out the work must be fully completed before the winter. No work shall be performed during this period.

1.10 CONTRACTOR USE OF PREMISES

.1 The use of the premises is restricted to areas needed for the work or storage and access to allow:

.1 The occupation of the premises by the Owner

.2 The performance of work by other contractors;

.3 The use of the premises by the public;

.2 Coordinate use of premises as directed by the Ministerial Representative.

.3 Find an additional area for work or storage required for execution of work under this contract and pay the cost.

.4 Removing or modify existing structures to prevent damage to the parts that must remain in place.

.5 Repair or replace, as directed by the Ministerial Representative, for connection to the existing structure or an adjacent structure, or to harmonize with them, those parts of the existing structure that have been changed during construction.

.6 Once the work is completed, the existing structure must be returned to its original or better condition.

.7 The parking area is identified on drawing C04. This area will be reserved for the parking of machinery and service trucks to remain on site for the resumption of work the following day. Where required, the Contractor shall provide for the installation of crushed stone of required thickness to support the vehicles to be parked at that location. At the end of the work, the Contractor shall also ensure the removal of any temporary construction completed for the parking, and the restoration of the premises as they were prior to the work.

.8 The site office area will be identified on site. This area will be reserved for the installation of the site offices as described in this specification. Where required, the Contractor shall provide for the installation of crushed stone of required thickness to support the construction trailers to be installed there. At the end of the work, the Contractor shall also ensure the removal of any temporary construction completed for the site offices, and the restoration of the premises as they were prior to the work.

1.11 OWNER OCCUPANCY

.1 The Owner will occupy the premises for the duration of the construction and will continue normal operations during this period.

.2 The parking lot will be open during the work and the Contractor shall provide adequate access.

.3 The main yard will be closed for duration of work in this area. The worksite area shall be delineated by a fence in accordance with the requirements of section 01 56 00. However, the Contractor shall maintain access for security guards to the existing fence surrounding the yard at all times.

.4 Cooperate with the Owner of the facility for the scheduling of work, so as to reduce conflict and facilitate the operation of premises.

1.12 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work in minimal disruption to the operation of the building occupants, the public and the normal use of the premises. Make arrangements with the Ministerial Representative to facilitate the work.

1.13 EXISTING SERVICES

.1 The position of the underground utilities shown on the plans was established as a result of a compilation of all available data. Before undertaking excavation work, the Contractor shall notify existing utilities in order to obtain the most recent "as-executed" plans of the buried services and to obtain the on-site location of the various pipes such as water mains, sewers, conductors and / or conduits for streetlights, Bell cable or other telecommunications companies, Hydro-Québec, Énergir (formerly Gaz Métro), TNPL, TQM, etc. The Contractor shall obtain written confirmation of the location of the services and provide a copy to the Ministerial Representative.

.2 The Contractor shall inquire about specific terms and conditions of the said companies, which he must respect in order to be able to work in the vicinity of their infrastructures. The costs to comply with these constraints, as well as to obtain permits, if required, must be included in the bid.

.3 The Contractor is responsible for following all procedures to locate and clear these services and for any damages caused to the utilities.

.4 The position of the underground services owned by CSC shown on the plans was established following a compilation of all available data. One to two weeks prior to excavation in the works area, the Ministerial Representative will locate the CSC-owned services. Following this localization, modifications can be made to the layout of the proposed pipes without changing the layout of the pipeline system. The Contractor shall work with the Ministerial Representative to make these changes.

.5 The Contractor is responsible for clearing all services owned by CSC as shown on plans and / or located by the Ministerial Representative.

.6 The repair of damage to services owned by CSC shown on plans and / or located by Ministerial Representative is at the Contractor's expense.

.7 Prior to cutting services to utilities, notify the Ministerial Representative at least 48 hours before the scheduled time of interruption, and the utility companies involved, and obtain the necessary permits.

.8 If performing a tap on existing utility lines or connections to these lines, give the Ministerial Representative prior notice of 48 hours before the planned interruption of electrical and mechanical services. Ensure that the duration of interruptions is as short as possible. Perform the work hours set by local authorities in minimizing interference with pedestrian and vehicular traffic.

.9 Provide alternative routes for the movement of personnel, pedestrians and vehicles.

.10 Before work begins, define the extent and location of utility lines that are in the work area and notify the Ministerial Representative.

.11 Submit for approval by the Ministerial Representative a schedule for the shutdown or closure of facilities or assets of books, including the interruption of communications services or electricity supply. Respect the agreed timetable and inform the parties affected by these drawbacks.

.12 Provide temporary utilities, as directed by the Ministerial Representative, so that critical systems are maintained to the building.

.13 Install gateway site for crossing trenches, to maintain a normal car and pedestrian traffic.

.14 Where utility lines not listed are discovered, immediately notify the Ministerial Representative and write them down.

.15 Protect, move or maintain utility lines that are functional. If pipes are found during construction to be non-functional, seal them in a manner authorized by the competent authorities.

.16 Record the location of utility lines which are maintained moved or abandoned by a detailed and accurate record for future localisation.

.17 Construct barriers in accordance with Section 01 56 00 – Structures access and temporary protection.

1.14 EXISTING ROAD SIGNS

.1 The Contractor shall remove and reinstall, where necessary, the signs shown or not on the plans but identifiable during the site visit.

.2 All costs associated to this work must be included in the bid.

1.15 USE OF EXISTING VALVES AND HYDRANTS

.1 The operation of valves and hydrants on the existing water supply system is done by the Contractor under the supervision of the Ministerial Representative.

.2 In the event that the use of hydrants cannot be authorized, the Contractor must obtain water from a place designated by the Owner. The Contractor must therefore take these facts into account in his bid and will not be able to base any claim on these grounds.

.3 The Contractor shall use only the hydrants authorized by the Owner. In addition, the Contractor shall be liable for any damage caused to valves and hydrants resulting from misuse by the Contractor or his subcontractors.

.4 The Contractor shall ensure that free access to the hydrants is maintained at all times and shall avoid any waste of water.

1.16 REQUIRED DOCUMENTS

.1 Maintain on site a copy of each of the following documents:

.1 Contract Drawings;

.2 Technical specifications;

.3 Addenda;

.4 Reviewed shop drawings;

.5 List of non reviewed shop drawings;

.6 Change orders;

.7 Other changes to the contract;

.8 Reports of tests conducted on site;

.9 Copy of approved implementation schedule;

.10 Health and safety plan and other documents relating to safety;

.11 Schedule;

.12 Other documents indicated.

1.17 TEMPORARY QUANTITY FOR PAVING REPAIR WORK

.1 The Contractor shall provide for a provisional price for asphalt surface repairs. The Contractor must provide for an area of 50 m2 of ESG-10 PG-58-28 bituminous mix. The repairs will be requested by the client during the execution of the works. In the event of a change in quantity, the price of the contract will be revised following an agreement between the parties.

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 SECTIONS

.1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 ACCESS AND EGRESS

.1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

.2 Design, construct and maintain the stone access road as indicated in the plans in accordance with municipal, provincial or other regulations.

.3 Access to the site is indicated on the plans. The Contractor shall perform the construction of the temporary access in the existing fence as indicated in the plans in accordance with municipal, provincial or other regulations, and ensure the maintenance.

.4 Site access must be in accordance with Section 01 35 13 - Security Requirements.

1.3 USE OF SITE AND FACILITIES

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

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

.3 Where security is reduced by work, provide temporary means to maintain security.

.4 Provide and maintain sanitary facilities and allow access for Ministerial Representative.

.5 The work carried out at the Regional Reception Centre (zone of maximum security) must always allow traffic on the way to the perimeter and access to the entrance of the CRR. Provide temporary planning in accordingly.

1.4 EXISTING SERVICES

.1 Advise the Ministerial Representative and the utility companies from any interruption of services and obtain the required authorisation.

.2 Notify the Ministerial Representative at least 48 hours before stitching on existing networks. Ensure that the duration of interruptions is as short as possible. Make interruptions after normal working hours, preferably on weekends.

.3 Ensure the movement of personnel, pedestrians and vehicles.

.4 Build protective barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.5 SPECIAL REQUIREMENTS

.1 Sequencing work based on achieving the following constraints:

.1 The circulation must be maintained at all times on the access roads and the perimeter road.

.2 Work must be executed as specified in Section 01 35 13 – Safety requirements.

.2 Submit a work schedule according to the method of work scheduling - Bar (GANTT).

.3 Ensure that staff working on site is aware of and comply with regulations, including regulations for fire safety, traffic and safety.

.4 Staying within the works and roads.

.5 The vehicle access to the site of the entrepreneur is limited to the planned construction trailers and parking areas.

.6 Ensure that materials/equipment is delivered outside peak hours, between 7:15 am and 8:15 am and between 3:30 pm and 4:15 pm, unless otherwise directed by the Ministerial Representative.

1.6 SECURITY

.1 In addition to the section 01 35 13.

.2 Provide temporary means to maintain security if it was reduced because of the work covered by this contract.

.3 Security clearances:

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

.2 Obtain the required authorization from the Ministry, as indicated, for those who must be present on the work site.

.3 Within the secure area, the workers and staff members will be monitored daily at the beginning of the work period, and we will give a pass they must carry with them at all times and return at the end of the work period after checkout.

.4 The Contractor personnel must pass a security check before they go on site to perform the work. The form to be filled will be provided to the contractor and should be given at least seven days before the scheduled start of work.

1.7 BUILDING SMOKING ENVIRONMENT

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

1.8 SEQUENCING OF WORK

.1 Within the secure zone, the Contractor must schedule and plan its work according to the different phases indicated on the phases and location of construction fences plan.

.2 Works in Phase 3 will be carried out under escort. The Contractor must coordinate its work with the client and site safety officers. The duration of the work for this phase must be of a maximum of one working day.

.3 The work planned in the parking lot and the site access roads must be carried out in the evening after 17:00 or on weekends. The Contractor must coordinate its work with the client.

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 SECTIONS

.1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 ADMINISTRATIVE ARRANGEMENTS

.1 Submit promptly and in orderly sequence to not cause delay in work, to the Ministerial Representative submittals listed for review. Failure to submit in ample time is not considered sufficient reason for extension of contract time and thus 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 Ministerial 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 the Ministerial 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 the Ministerial Representative's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by the Ministerial Representative's 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 Submit drawings stamped and signed by a professional engineer member of Ordre des ingénieurs du Québec.

.3 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.

.4 Allow 10 days for Ministerial Representative's review of each submission.

.5 Adjustments made on shop drawings by Ministerial Departmental are not intended to change contract price. If adjustments affect value of work, state such in writing to Ministerial Representative prior to proceeding with work.

.6 Make changes in shop drawings as Ministerial Representative may require, consistent with contract documents. When resubmitting, notify Ministerial Representative in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter containing:

.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 Intended use;

.6 Other pertinent data.

.8 Submissions must 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.

.9 After Ministerial Representative's review, distribute copies.

.10 Submit PDF copies of shop drawings for each requirement requested in specification Sections and as Ministerial Representative may reasonably request.

.11 Submit six (6) paper copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Ministerial Representative where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit six (6) paper copies of test reports for requirements requested in specification Sections and as requested by Ministerial Representative.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within 3 years of date of contract award for project.

.13 Submit six (6) paper copies of certificates for requirements requested in specification Sections and as requested by Ministerial 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.

.14 Submit PDF copies of manufacturers instructions for requirements requested in specification Sections and as requested by Ministerial 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.

.15 Submit PDF copies of manufacturer's field reports for requirements requested in specification Sections and as requested by Ministerial Representative.

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

.17 Submit PDF copies of operation and maintenance data for requirements requested in specification Sections and as requested by Ministerial Representative.

.18 Delete information not applicable to project.

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

.20 If upon review by Ministerial Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned 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.

1.4 SAMPLES

.1 Submit for review two (2) samples, as requested in respective specification sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Ministerial Representative's business address.

.3 Notify Ministerial Representative in writing, at time of submission of deviations in samples from requirements of contract documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Ministerial Representative are not intended to change contract price. If adjustments affect value of work, state such in writing to Ministerial Representative prior to proceeding with work.

.6 Make changes in samples Ministerial Representative may require, consistent with contract documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of contract, submit Workers' Compensation Board status.

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 SECTIONS

.1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

.2 Ensure that both the construction project and 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 Intoxicants, including alcohol, drugs or narcotics and non-prescription drugs;

.2 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 Explosive or a bomb or a component thereof,

.4 Currency over any applicable prescribed limit ($25.00),

.5 Any other item 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 "Ministerial Representative" means the Public Works and Government Services Canada (PWGSC) or the Correctional Service Canada (CSC) project manager depending on project.

.8 "Perimeter" means the fenced or walled area of the institution that restrains the movement of the inmates.

.9 "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 PRELIMINARY PROCEEDINGS

.1 Prior to the commencement of work, the contractor shall meet with the Director to:

.1 Discuss the nature and extent of all activities involved in the Project.

.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.

1.4 CONSTRUCTION EMPLOYEES

.1 Submit to the Director 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 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.

1.5 VEHICULES

.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 owner 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 shall not require security clearances but 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.

1.6 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 removal.

1.7 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.

1.8 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.

.2 The Director will ensure that approved telephones, Facsimile machine and computers with Internet connections are located where they are not accessible to inmates. All computers will have an approved password protection that will stop an Internet connection to unauthorized personnel.

.3 Wireless cellular, intelligent and digital telephones, including but not limited to devices for telephone messaging, pagers, telephone used as 2-way radios, and MP3 players, are not permitted within the perimeter of the Institution unless approved by the Director. If wireless cellular telephones are permitted, the user will not permit their use by any inmate.

.4 The Director may approve but limit the use of two way radios.

1.9 WORK HOURS

.1 Work hours within the Institution are: Monday to Friday from 07:30 to 16:00 daily. Work may be permitted until 17:00 if they have no chance of causing damage to existing facilities. The management of working hours will be coordinated on meeting.

.2 Work will not be permitted inside the security perimeter 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 waved by the Director.

1.10 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 Director 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.

1.11 TOOLS AND EQUIPMENT

.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.

.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 (jacks, cylinders, etc.).

.4 Store all tools and equipment in approved secure locations.

.5 Lock all tool boxes when not in use. Employees of the contractor shall keep the keys with them at all times. Set and lock scaffolding unorganized: when erected, scaffolding must be secured safely to the satisfaction of the representative of the institution

.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 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.

.10 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.

1.12 KEYS

.1 Security Hardware Keys

.1 The Contractor shall arrange with the security hardware supplier/installer to have the keys for the security hardware to be delivered directly to Institution, specifically the Security Maintenance Officer (SMO).

.2 The SMO will provide a receipt to the Contractor for security hardware keys.

.3 The Contractor will provide a copy of the above-mentioned receipt to the Departmental Representative.

.2 Other Keys

.1 The Contractor will use standard construction cylinders for locks for his use during the construction period.

.2 The Contractor will issue instructions to his employees and sub-trades, as necessary, to ensure safe custody of the construction set of keys.

.3 Upon completion of each phase of the construction, the CSC representative will, in conjunction with the lock manufacturer:

.1 Prepare an operational keying schedule;

.2 Accept the operational keys and cylinders directly from the lock manufacturer;

.3 Arrange for removal and return of the construction cores and install the operational core in all locks.

.4 Upon putting operational security keys into use, the CSC construction escort shall obtain these keys as they are required from the SMO and open doors as required by the Contractor. The Contractor shall issue instructions to his employees advising them that all security keys shall always remain with the CSC construction escort.

1.13 SECURITY HARDWARE

.1 Safety devices on existing fences (detection cables and fiber optic cables) must remain functional at all times. The Contractor must ensure the protection of safety devices at all times.

.2 Turn over all removed security hardware to the Director of the Institution for disposal or for safekeeping until required for re-installation.

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 CONTRABAND

.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.

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 a.m. to 11:00 a.m.

.2 1:00 p.m. to 3:30 p.m.

Construction vehicles shall not leave the Institution until an inmate count is completed.

.2 The contractor shall advise the Director 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.

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 Ministerial 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.

SPECIAL NOTE: If the project involves the Corcan workforce and inmates, check with the institution's policy on contact with inmates.

.2 It is strictly forbidden to take pictures of inmates or of CSC staff members. Moreover, it is strictly forbidden to photograph any part of the Institution other than those required as part of this contract.

1.24 EMERGENCY AND SECURITY

.1 For greater safety on construction sites, the Contractor and its subcontractors must provide in writing to the Ministerial Representative the name and telephone number of an official who may be contacted in the event of an emergency twenty- four hours a day and seven days a week, for the duration of the contract. The Contractor shall notify the Ministerial Representative in writing of any changes, if applicable.

1.25 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

.1 Not used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 SECTION CONTENT

.1 the Contractor shall manage its activities so that the health and safety of the public, construction 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 DOCUMENTS/SAMPLES TO SUBMIT

.1 Send the prevention program specific to the construction site as described in clause 1.8 to the Departmental Representative and the CNESST, at least 10 days before beginning the work. If necessary, the Contractor shall then update its prevention program to reflect any changes to the initial plans. Following the receipt of the prevention program and at any time during the work, the Departmental Representative can ask for its modification to adapt it to the work on site. The Contractor shall make the required changes before the work starts.

.2 Send a copy of any federal or provincial inspector's inspection reports, notice of corrections or recommendations to the Departmental Representative within 24 hours.

.3 Send any investigation report concerning any accident resulting in an injury or highlighting any potential hazard for health and safety to the Departmental Representative within 24 hours.

.4 Send the data sheet for all controlled products to the Departmental Representative at least three days before they are used on site.

.5 Send the copies of the training certificates required to apply the prevention program, if required for the requested work, to the Departmental Representative, including:

.1 General health and safety course on work sites

.2 Safety officer certificate

.3 First-aid and CPR on work sites

.4 Work subject to asbestos conditions

.5 Work in enclosed spaces

.6 Locking/securing procedures

.7 Wearing and adjusting individual protection equipment

.8 Forklift safe use

.9 Work platform lift

.10 Any other training required by regulations or the prevention program

.6 Medical examinations: When medical examinations are required by law, regulation, directive, specification, or by a prevention program, the Contractor shall:

.1 Before mobilization, send the medical examination certificate for all surveillance personnel and any other employee at the beginning of construction concerned by the first paragraph of this article to the Departmental Representative.

.2 Subsequently, send all medical examination certificates of any new incoming worker concerned by the first paragraph of this article progressively and without delay.

.7 Notice of work start: The notice of work start must be sent to the Commission de la santé et de la sécurité du travail before the work starts and copied to the Departmental Representative. A copy of this notice must also be available and visible on site at all times. During demobilization, the notice of end of work must be sent to the CNESST with a copy to the Departmental Representative.

.8 Engineer's plans and certificates of compliance: The Contractor shall send to the CNESST and the Departmental Representative an engineer's signed and sealed copy of all the plans and certificates of compliances required under the *Safety Code for the construction industry* (S-2.1, r.6), of any other law, rules or any clause from the specifications or the contract. A copy of those documents must be available at all times on the work site.

.9 Certificate of conformity delivered by the CNESST: The certificate of conformity is a document delivered by the CNESST and confirms that the Contractor complies with the CNESST requirements, that it has paid all the amounts due in relation to the awarded contract. This document must be sent to the Departmental Representative at the end of the work.

1.4 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.

1.5 MEETINGS

.1 A decision-making representative of the Contractor shall attend all meetings about health and safety issues on the job site.

1.6 REGULATORY BODY REQUIREMENTS

.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.

1.7 HEALTH AND SAFETY MANAGEMENT

.1 Accept and assume all tasks and obligations normally assigned to the project manager in accordance with the *Occupational Health and Safety Act* (R.S.Q., chapter S2.1) and the *Safety Code for the construction industry* (S-2.1, r.6).

.2 Develop a prevention program specific to the work based on the identification of the risks and implement this program from the beginning of the work to the last stage of demobilization. The prevention program must take into account the information in clause 1.7. It must be sent to all of the people involved in compliance with clause 1.2. The prevention program shall include as a minimum:

.1 The company's health and safety policy;

.2 The description of the work, the total cost of the work, the schedule with its manpower curve;

.3 A flowchart of the health and safety's responsibilities;

.4 The physical and material organization of the job site;

.5 The first aid kit standards;

.6 The identification of the risks on the job site;

.7 The identification of the risks related to the work to be executed, including the prevention program and terms of its implementation;

.8 The required training;

.9 The procedure in case of an accident/injury;

.10 A written commitment from all stakeholders to comply with this prevention program;

.11 A job site inspection schedule based on the preventive measures.

1.8 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.

.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.

1.9 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. 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.

.2 The following information and documents must be displayed in an easily accessible location for the workers:

.1 Notice of work start;

.2 Identification of the project manager;

.3 The company's OSH policy;

.4 The prevention program specific to the job site;

.5 The emergency plan (if required);

.6 Data sheets for all controlled products used on the job site;

.7 Minutes of the construction site committee meeting;

.8 Names of the site committee representatives (if required);

.9 Names of first-aiders;

.10 Intervention and correction reports published by the CNESST.

1.10 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 immediate 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.

1.11 CAULKING GUNS AND OTHER CARTRIDGE DEVICES

.1 Caulking guns or any other cartridge devices are prohibited.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 REFERENCES

.1 Definitions:

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Ministerial Representative.

.3 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.

.4 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.5 Include in Environmental Protection Plan:

.1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.

.2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.

.3 Names and qualifications of persons responsible for training site personnel.

.4 Descriptions of environmental protection personnel training program.

.5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations and EPA 832/R-92-005, Chapter 3.

.6 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.

.8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

.9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.

.12 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.13 Wastewater Management Plan identifying methods and procedures for management or discharge of wastewaters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

.14 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

.15 Pesticide treatment plan to be included and updated, as required.

.6 A plan for the management and disposal of contaminated soils, which defines how they will be stored, analyzed, transported, disposed type BC soil as defined in Section 31 23 13 and the way will be managed type AB soil as defined in Section 31 23 13 (storage, transport, placing embankment, drainage, etc.).

1.4 FIRES

.1 Fires and burning of rubbish on site is not permitted.

.2 Provide supervision, attendance and fire protection measures as directed.

1.5 DRAINAGE

.1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.

.3 Provide temporary drainage and pumping required to keep excavations and site free from water.

.4 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.

.5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

.6 Ensure, through sampling and chemical analyzes that the environmental quality of water discharged into a watercourse or sewer system meets the standards or regulations. The Contractor shall also obtain all permits or licenses required by the competent authorities prior to any discharge of water.

1.6 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties as indicated.

.2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.

.1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas designated by Ministerial Representative.

.6 Trees or shrubs damaged during construction shall be pruned and repaired at the Contractor's expense by units acceptable to the Ministerial Representative.

.7 If damage is too great, damaged trees, or shrubs must be replaced at no additional cost by units previously approved by the Ministerial Representative.

1.7 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract.

.2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

.1 Provide temporary enclosures where indicated and directed by Ministerial Representative.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.8 EROSION AND SEDIMENTATION CONTROL

.1 The Contractor shall prevent the soil loss during construction due to stormwater runoff and wind erosion.

.2 Prevent topsoil loss.

.3 Prevent contamination of storm sewers and / or water bodies with dust or particulates.

.4 The Contractor shall follow the methods and procedures specified in Section 31 23 11 - Excavation and Backfilling - Underground and Underwater Utilities.

1.9 NOTIFICATION

.1 Ministerial Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Ministerial Representative of proposed corrective action and take such action for approval by Ministerial Representative.

.1 Take action only after receipt of written approval by the Ministerial Representative.

.3 Ministerial Representative will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

.3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.4 Waste Management: separate waste materials for reuse / reuse and recycling in accordance with Section 01 74 21 - Management and Disposal of construction / demolition.

.1 Remove bins and recycling bins from site and dispose of materials at appropriate facilities.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Ministerial Representative for purpose of inspecting and/or testing portions of work. Cost of such services will be borne by Ministerial Representative except in the following cases:

.1 Inspection and testing required by various laws, ordinances, rules, regulations or public policy.

.2 Inspection and testing performed solely for the convenience of the contractor.

.3 Testing, development and balancing of handling systems, electrical and mechanical systems and systems.

.4 Factory tests and compliance certificates.

.5 All tests to be performed by the contractor under the supervision of the Ministerial Representative.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are identified during testing and/or inspections, the designated agency will require further inspection and/or additional testing to define the precise nature and extent of these defects. The contractor shall correct the defects as directed by the Ministerial Representative, at no additional cost to the Ministerial Representative, and pay the cost of retesting after the corrections are made.

1.3 CONTRACTOR RESPONSIBILITIY

.1 Advise the Ministerial Representative well in advance so to schedule the laboratory for testing.

.2 Assume the cost of exposing or re-doing work that has been covered before being inspected and approved by the Ministerial Representative.

.3 Send all samples of materials to be tested to the designated testing laboratory.

.4 Additional tests: When inspections or tests conducted by the testing laboratory revealed non-compliance with the requirements of the contract, the contractor must pay the cost of additional tests or inspections that Ministerial Representative requires to verify if the corrections are acceptable.

1.4 ACCESS TO WORKSITE

.1 Allow inspection/testing agencies access to worksite, as well as offsite manufacturing and fabrication plants.

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

1.5 PROCEDURES

.1 Notify appropriate agency and Ministerial 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 Ministerial Representative as failing to conform to contract documents. Replace or re-execute in accordance with contract documents.

.2 If in opinion of Ministerial Representative, it is not expedient to correct defective Work or Work not performed in accordance with contract documents, owner 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 Ministerial Representative.

1.7 REPORTS

.1 Submit 4 copies of inspection and test reports to Ministerial Representative.

.2 Provide copies to subcontractor of work being inspected or tested and to manufacturer or fabricator of material being inspected or tested.

1.8 TESTS AND MIX DESIGNS

.1 Provide test results and mix designs as requested.

.2 The cost of tests and mix designs not specifically required under the contract documents or local regulations for the worksite shall be subject to the approval of the Ministerial Representative.

1.9 MOCK-UPS

.1 Prepare mock-ups for work specifically requested in the specifications. The requirements of this section apply to all sections of the specifications in which we are asked to provide mock-ups.

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

.3 Prepare mock-ups for Ministerial 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 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 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 SECTIONS

.1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 PRECEDENCE

.1 For Federal Government Projects, Division 01 Sections take precedence over technical specifications in other divisions of this Project Manual.

1.3 CONTENT OF SECTION

.1 This section includes specific environmental and sustainable development requirements for building materials, products and systems needed to ensure that this project complies with green design processes and clients' sustainable development plan.

1.4 SUBMITTALS

.1 Provide submittals for work in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submittals required:

.1 Name, qualifications, and experience of the person responsible for the design and compliance with the environmental protection plan to be submitted to the Ministerial Representative for approval.

.2 Compliance Report indicating requirement to purchase energy efficient and environmentally benign products.

.3 Compliance report with requirements concerning the use of materials, equipment and construction methods that will reduce energy consumption, water consumption and the possibility of formation of potentially toxic derivatives, the use of materials and recycled materials and reuse / recycling of materials and equipment recovered.

.4 Energy Report: to indicate EnerGuide ratings of new equipment and appliances.

1.5 ENVIRONMENTAL PROTECTION

.1 Follow methods and procedures specified in section 01 35 43 – Environmental Procedures.

.2 Take measures to prevent soil loss by storm water runoff and wind erosion.

.3 Prevent stockpiled topsoil loss.

1.6 REDUCING SITE DISTURBANCES

.1 Minimize disturbances to watershed using site water management measures to ensure that watersheds and groundwater will be preserved.

.2 Construct and erect erosion barriers to locations indicated and as directed by Ministerial Representative.

.3 Take measures to avoid soil compaction.

.4 Re-grade and plant vegetation in accordance with Section 31 14 11 – Earthwork and Levelling.

1.7 GENERAL CONSTRUCTION MATERIALS/PRACTICES

.1 Materials and Resources

.1 Use uncontaminated demolition materials for fill and hardcore and/or granular base.

.2 Incorporate reused building materials as indicated.

.2 Storage and Collection of Recyclables

.1 Provide separate storage/handling facilities for consumer recyclables including used paper, newspaper, newsprint, cardboard, glass, metal, and plastic.

.3 Construction Waste Management

.1 Follow recommendations and requirements of this projects construction, renovation, and demolition (CRD) waste management plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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 SECTIONS

.1 This section is of a general nature and provides information that could relate to all other sections of the contract documents.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)

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

.2 Ministère des Transports, de la Mobilité durable et de l'Électrification des transports (MTMDET – Quebec's Ministry of Transport, Sustainable Mobility and Transport Electrification) – Ouvrages routiers

.1 Tome V – Signalisation routière

.3 Quebec's Highway Safety Code

1.3 SUBMITTALS

.1 Provide submittals for work in accordance with Section 01 33 00 - Submittal Procedures.

1.4 MATERIAL INSTALLATION AND REMOVAL

.1 The construction facility location will be provided at the first work meeting.

.2 Prepare a plan showing the proposed construction facility location that will be fenced, including the number of trailers, access roads to the fenced area and details of installation of the fence.

.3 Indicate areas to be covered with gravel to prevent mud.

.4 Provide, establish, or develop the site facilities necessary for carrying out the work as soon as possible.

.5 Remove equipment from the site when no longer needed.

.6 Rehabilitate the site used for construction facilities to its original or better condition.

1.5 HOISTING

.1 Provide and install winches and cranes needed to move workers, materials, and equipment, as well as ensure maintenance and operation. Make financial arrangements with sub-contractors for the use of lifting equipment.

.2 The winches and cranes must be operated by a skilled worker.

1.6 SITE STORAGE/LOADING

.1 Ensure that work is performed within the limits specified in the contract documents. Do not clutter the site unreasonably with material or equipment.

.2 Do not overload or permit overloading any part of the work so as not to compromise its integrity.

.3 Ensure that the equipment is locked at all times. CSC is not responsible in case of loss or theft.

1.7 WORKSITE PARKING

.1 Parking on worksite will be permitted for construction equipment only, in the area provided for site facilities. Contractor's employees will be required to use the main parking lot outside the secure area.

.2 It is not permitted to park the machinery inside the secure perimeter at the end of a working day. The Contractor must park the machinery outside the perimeter in the intended area and more than 6 m from the fences.

.3 Before leaving the worksite, the Contractor must ensure that the machinery is inactive and impossible to start.

.4 Provide and maintain suitable access routes to the site.

.5 Clean traffic lanes if construction equipment uses them.

1.8 CONNECTIONS

.1 The contractor must connect on existing network under control of CSC representative.

.2 The water will be available in an hydrant near the work offices (30 m). Electricity will be available on electrical panel in building A-12.

.3 A « teck » wire (approximatively 20 m) must be furnished by the contractor to do electrical connections and must not be installed in parallel with the existing circuit-breaker.

.4 All connections must respect best practice and meet current building codes and standards.

1.9 OFFICES

.1 Provide an office that is ventilated, heated to a temperature of 22 degrees Celsius, with lighting providing a level of illumination of 750 lux and of sufficient size to allow for site meetings, and equipped with a table for spreading out drawings.

.2 Provide a complete and identified first aid kit, and store in an easily accessible location.

.3 If necessary, sub-contractors must install their own office. Indicate where.

.4 Furnish the office with two desks with drawers, 0.75 m x 2.0 m, two office chairs on casters, table plans to 0.9 m x 2.0 m, a stool, shelf 300 mm wide, with a total length of 6 m, a three-drawer filing cabinet, a drawing rack and a clothing rack with shelf.

.5 Supply a scanner and a photocopier for the purpose of the project. The scanner must be able to scan letter and legal size sheets. The copier must also be equipped with two paper trays with automatic paper feeder for letter, legal and tabloid. The supply of paper and ink, maintenance and the cost of local and long distance telephone calls are included.

.6 Install an office telephone line and a line for the computer with high speed Internet service at a download speed of 1.5 Mbps and a transfer rate of 300 Mb/s.

.7 Keep the office clean, daily.

.8 Ensure that the offices are locked at all time and the windows protected by a grating. CSC is not responsible for theft or vandalism.

1.10 EQUIPMENT, TOOLS AND MATERIALS STORAGE

.1 Provide lockable, weather resistant, storage for equipment and tools and keep it clean and in good order.

.2 In order to store any material and equipment, only a marine-type container, locked at all times, is permitted inside the perimeter in the intended area.

.3 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.11 SECURITY

.1 No security will be provided by the Ministerial Representative on the site. The Contractor shall be responsible for the safety of his materials and equipment throughout the duration of the work until the temporary reception.

.2 No claim for damages shall be receivable by the Ministerial Representative.

.3 The Contractor is advised that CSC is responsible for monitoring the entire site for operational reasons. The Contractor must coordinate its work with CSC's monitoring activities.

1.12 SANITARY FACILITIES

.1 Provide sanitary facilities for workers in accordance the regulations.

.2 Display required notices and take all precautions required by local health authorities. Maintain the premises clean.

1.13 MAINTENANCE AND PROTECTION OF TRAFFIC

.1 Prior to the beginning and during the work, take the necessary measures to facilitate and direct the movement of vehicles on the road to be constructed and the necessary detour roads during construction, without affecting the movement of emergency vehicles and the site security operations.

.2 Maintain and protect traffic on the pathways involved in construction work by a signal line at any place where there is a risk of accident or damage to the works being implemented.

.3 Comply with laws and regulations governing traffic control and use of pavement on which it is necessary to perform the work or transport materials.

.4 If necessary, upgrade access roads and temporary diversion roads to maintain traffic.

.5 For each phase of work, submit for approval to the Ministerial Representative at least 7 days before starting work, plans for signage along with a work plan.

.6 The work plan outlines the equipment and vehicles use, work hours, description of personnel, as well as measures to manage and maintain circulation.

.7 The plans show the location of signage installed and work areas in accordance with current standards.

.8 Prepare for the protection and diversion of traffic, providing supervisors and flagmen, barricades, lighting around and in front of the equipment and the work area. Supply and maintain signs, danger signs and appropriate management.

.9 Protect the traveling public against harm to persons and property.

.10 Maintain minimal interference to traffic when using the rolling stock of the contractor to transport materials / equipment entering or leaving the site.

.11 Ensure that existing roads and load limits permitted in the past are adequate. Repair roads damaged due to construction.

.12 Construct access roads and temporary roads required.

.13 Maintain site trail site with a slope and adequate width, avoiding sharp curves, blind corners and dangerous intersections.

.14 Provide light fixtures, signs, barricades, delineators and distinctive markings required for safe passage in accordance with the standards of reference.

.15 Maintain all traffic control devices, and verify the signals daily, to ensure they are legible, in good condition and in the proper location. Clean, repair and replace the signals as directed or required.

.16 Remove or cover signs that do not apply to existing situations.

.17 No materials or equipment shall be stored temporarily or permanently on the access road or on the perimeter road.

.18 Take the necessary steps for dust control in order to ensure safe operations at all times. Ensure the cleanliness of the roads.

.19 If the contractor does not comply with these clauses, a Ministerial Representative, after giving 24 hours notice, may perform the cleaning by a third party with costs to the absorbed by the Contractor.

.20 The location, slope, width and layout of access roads and temporary roads are subject to approval by the Ministerial Representative.

.21 Provide snow removal operations during the construction period until acceptance of the works.

.22 Once completed, dismantle the temporary roads designated by the Ministerial Representative.

1.14 GRUBBING

.1 To allow the machinery's turning and parking in the designated area, the Contractor must provide the necessary grubbing in order to build the workspace.

1.15 CLEAN-UP

.1 Remove construction debris daily.

.2 Keep hard surfaces free of dust and mud.

.3 Recuperate material during the demolition work.

.4 Stack stored new or salvaged material not in construction facilities.

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 SECTIONS

.1 This section is of a general nature and provides information that could relate to all other sections of the contract documents.

1.2 MATERIAL INSTALLATION AND REMOVAL

.1 Provide, install, or arrange temporary barriers and enclosures to enable work to be carried out as soon as possible.

.2 Dismantle and dispose of equipment when no longer required.

1.3 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around deep excavations.

.2 Provide as required by governing authorities.

1.4 ACCESS TO SITE

.1 The work concerning the site access roads shall be carried out in accordance with the requirements of section 01 14 00 -Work Restrictions, section 1.3 - Access and Egress.

1.5 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect public.

1.6 ACCESS ROUTES FOR EMERGENCY VEHICLES

.1 Maintain access to property for use by emergency vehicles.

1.7 PROTECTION OF SURROUNDING PUBLIC AND PRIVATE PROPERTIES

.1 Protect surrounding private and public property from damage during performance of work.

.2 Where appropriate, assume full responsibility for damage caused.

1.8 SURFACE PROTECTION

.1 During the entire period of work, protect the equipment and the finished or partially finished surfaces of the structure.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Ministerial Representative locations and installation schedule 3 days prior to installation.

.4 Assume full responsibility for damage incurred due to lack of or improper protection.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.10 CONSTRUCTION FENCE ON JERSEY BLOCK

.1 Supply and install jersey block construction fencing and any temporary protective equipment required to secure the site and prevent access to the inmates during the entire period of work.

.2 Supply and install these elements in accordance with the requirements of the competent authorities.

PART 2 PRODUCTS

2.1 CONSTRUCTION FENCE ON JERSEY BLOCK

.1 The fence must be installed and anchored on interlocking jerseys.

.2 Each fence section must be 4.0 m in length.

.3 The fence shall be 2.44 m high with three 75 mm posts anchored in the jersey.

.4 The space between the posts of the interlocked jerseys shall not exceed 75 mm.

.5 The average wire mesh for the construction fence must be galvanized after weaving quality 2 (minimum of 610 g / m^2 of zinc).

.6 Wire constituting the mesh must be of gauge 9.

.7 If required, provide sections with 3.28 m long doors with 100 mm posts.

.8 A single barbed wire must be installed on the top of the fence. The linear barbed wire is made of gauge 12 stainless steel. The barbed wire is 400 mm diameter stainless steel, Concertina Razor Wire. Acceptable product Maze of Razor Ribbon or approved equivalent.

PART 3 EXECUTION

3.1 FENCE INSTALLATION

.1 Erect the fence along the established route in accordance with the details indicated on the plans.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 This section is of a general nature and provides information that could relate to all other section of the contract documents.

1.2 REFERENCES

.1 Within text of each specifications section, reference may be made to reference standards.

.2 If there is question as to whether products or systems are in conformance with applicable standards, Ministerial Representative reserves right to have such products or systems tested to prove or disprove conformance.

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 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.

.3 Should disputes arise as to quality or fitness of products, decision rests strictly with Ministerial Representative based upon requirements of contract documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 AVAILABILITY

.1 In event of failure to notify Ministerial Representative at commencement of work and should it subsequently appear that work may be delayed for such reason, Ministerial 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 a 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 Cementitious products shall be kept dry and clean. Store on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.5 Replace damaged products at no cost and to satisfaction of Ministerial Representative.

1.6 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of work.

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 Ministerial Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Ministerial Representative will establish a course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Ministerial 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 Ministerial 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. Ministerial 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 Ministerial 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 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of work identified as defective or unacceptable. Co-ordinate 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.

1.11 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 pedestrian and vehicular traffic.

.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 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 SECTIONS

.1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 DEFINITIONS

.1 Benchmark: a permanent point, generally a rod driven into the ground, medallions or any other reference point.

.2 Control Point: a temporary point, generally a reference point established by the contractor for the implementation and verification work.

1.3 QUALIFICATIONS OF SURVEYOR

.1 Qualified registered land surveyor, licensed to practice in place of work, acceptable to Ministerial Representative.

1.4 SURVEY REFERENCE POINTS

.1 Benchmarks and control points are the entire responsibility of the contractor

.2 Existing base horizontal and vertical control points are designated on drawings.

.3 The Ministerial Representative will not place any points.

.4 Before undertaking the fieldwork, identify and confirm the location of points, and protect them. Establish, implement and maintain permanent points throughout the construction.

.5 Make no changes or relocations without prior written notice to Ministerial Representative.

.6 Report to Ministerial Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.7 The replacement of a benchmark that was lost or destroyed by the contractor is at the expense of the contractor and should not be done by an agency authorized to perform the replacement.

1.5 SURVEY REQUIREMENTS

.1 Establish four (4) permanent benchmarks on site, referenced to established benchmarks by survey control points. Record locations, with horizontal and vertical data in project record documents.

.2 Provide the Ministerial Representative the horizontal and vertical coordinates of all points installed for the project.

.3 The Ministerial Representative may at any time request a new point be installed as a means to verify work.

.4 For roads, install control points every ten (10) meters so the Ministerial Representative of the Department can easily validate compliance work.

.5 Top and bottom points, without exception, must be identified on-site.

.6 Identify ditch inverts.

1.6 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of work and notify Ministerial Representative of findings.

.2 Unless otherwise directed, remove abandoned service. Cap or otherwise seal lines at cut-off points as directed by Ministerial Representative.

.3 Make a clear statement of abandoned, removed and left in place lines and give it to the Ministerial Representative.

1.7 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Ministerial Representative of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Ministerial Representative.

1.8 RECORDS

.1 Maintain a complete, accurate log of control and survey work as it progresses.

.2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of work.

.3 Keep records of the various surveys carried out, update regularly and provide a copy to the Ministerial Representative when requested.

.4 A final survey, compiling all the numbers in the registry, must be delivered to the Ministerial Representative within a maximum of four (4) weeks following receipt of the final.

1.9 PHOTOGRAPHIC REPORT

.1 Prior to commencement of work, the Contractor shall have a specialist responsible for taking quality photographs of the worksite and adjacent lands.

.2 Prior to commencement of work, the Contractor shall obtain all necessary permits to enter on site all equipment required for the work. The Contractor must obtain and complete all application forms for equipment entry. Once the documents have been completed, the Contractor must forward them to CSC.

.3 The Contractor shall provide to the Ministerial Representative a photographic report that includes a view and description of all buildings, structures, trees, fences, condition of the premises and any items that may become subject to a claim for damages.

.4 No excavation work is permitted until two (2) copies of the color photographic report have been provided to the Ministerial Representative. The Contractor shall retain the original photographic report for his personal use. These costs must be included in the bid.

1.10 SUBMITTALS

.1 In accordance with section 01 33 00 – Submittal Procedures.

.2 Submit name and address of surveyor to Ministerial Representative.

.3 On request of Ministerial Representative, submit documentation to verify accuracy of field engineering work.

.4 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed work that conform to the contract documents.

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 SECTIONS

.1 This section is of a general nature and provides information that could relate to all other section of the contract documents.

1.2 SITE CLEANLINESS

.1 Maintain the site in tidy condition, free from accumulation of waste and debris, including that caused by other entities.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Ministerial Representative. Do not burn waste materials on site.

.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 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.6 Dispose of waste materials and debris off site at designated dumping areas.

.7 Store hazardous waste in appropriate containers and remove from premises at end of each working day.

1.3 FINAL CLEANING

.1 At the point of substantial completion remove surplus products, tools and construction equipment not required for performance of remaining work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Prior to final review remove surplus products, tools, construction machinery and equipment.

.4 Remove waste products and debris including that caused by Owner or other Contractors when located in work area.

.5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Ministerial Representative. Do not burn waste materials on site.

.6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.7 Remove dirt and other disfiguration from exterior surfaces.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse or recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

PART 2 EXECUTION

2.1 CONTRACTOR'S RESPONSABILITIES

.1 Ensure the cleanliness of the work site and do all that is necessary to guarantee the site is safe and clean.

.2 In the case of non-compliance, the Ministerial Representative will request corrective measure to be completed immediately or risk a stop work order.

.3 Claims for financial compensation will not be accepted for work related to non-compliance and for operations related to this section.

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 WASTE MANAGEMENT GOALS

.1 Prior to start of work conduct meeting with Ministerial Representative to review and discuss CSC's Waste Management Plan and Goals.

.2 CSC's Waste Management Goal: 75 percent of total Project Waste to be diverted from landfill sites. Provide Ministerial Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.

.3 Accomplish maximum control of solid construction waste.

.4 Preserve environment and prevent pollution and environment damage.

1.3 DEFINITIONS

.1 Class III: non-hazardous waste - construction renovation and demolition waste.

.2 Cost/Revenue Analysis Workplan (CRAW): based on information from WRW, and intended as financial tracking tool for determining economic status of waste management practices.

.3 Demolition Waste Audit (DWA): relates to actual waste generated from project.

.4 Inert Fill: inert waste - exclusively asphalt and concrete.

.5 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

.6 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.

.7 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

.8 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

.9 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:

.1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.

.2 Returning reusable items including pallets or unused products to vendors.

.10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

.11 Separate condition: refers to waste sorted into individual types.

.12 Source separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

.13 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

.14 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials.

1.4 DOCUMENTS

.1 Maintain at job site, one copy of following documents:

.1 Waste Reduction Workplan.

.2 Material Source Separation Plan.

1.5 SUBMITTALS

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

.2 Prepare and submit following prior to project start-up:

.1 Submit 2 copies of completed Waste Reduction Workplan (WRW)

.2 Submit 2 copies of Materials Source Separation Program (MSSP) description.

.3 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project using deconstruction/disassembly material audit form.

.1 Failure to submit could result in hold back of final payment.

.2 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled, co-mingled and separated off-site or disposed of.

.3 For each material reused, sold or recycled from the project, include the quantity in tonnes identifying type, size and the destination.

.4 For each material landfilled or incinerated from the project, include the quantity in tonnes and identity of landfill, incinerator or transfer station.

1.6 WASTE REDUCTION WORKPLAN (WRW)

.1 Prepare WRW prior to project start-up.

.2 WRW should include but not be limited to:

.1 Destination of materials listed.

.2 Deconstruction/disassembly techniques and sequencing.

.3 Schedule for deconstruction/disassembly.

.4 Location.

.5 Security.

.6 Protection.

.7 Clear labelling of storage areas.

.8 Details on materials handling and removal procedures.

.9 Quantities for materials to be salvaged for reuse or recycled and materials sent to landfill.

.3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.

.4 Describe management of waste.

.5 Post WRW or summary where workers at site are able to review content.

.6 Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers.

.7 Monitor and report on waste reduction by documenting total volume and cost of actual waste removed from project.

1.7 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)

.1 Prepare MSSP and have ready for use prior to project start-up.

.2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Ministerial Representative.

.3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.

.4 Provide containers to deposit reusable and recyclable materials.

.5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.6 Locate separated materials in areas which minimize material damage.

.7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.

.1 Transport to approved and authorized recycling facility to users of material for recycling.

.8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.

.1 Ship materials to a site operating under Certificate of Approval.

.2 Materials must be immediately separated into required categories for reuse or recycling.

1.8 WASTE TREATMENT SITES

.1 Provide the Ministerial Representative, a list of treatment sites to which waste will be transported for recycling. The list must be given to the Ministerial Representative before starting work.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 GENERAL

.1 Do work in compliance with WRW.

.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 DEBRIS AND EXCAVATION SURPLUSES DISPOSAL

.1 The loading, transportation, and disposal of debris outside the boundaries of the worksite will be at the Contractor's expense and shall be in accordance with applicable current laws, regulations, policies, codes, standards, and best practices.

.2 The loading, transportation, and disposal of excavation surplus, not reusable as backfill on the site, at the location determined by the Ministerial Representative within the boundaries of the Owner's premises shall be at the expense of the Contractor and shall comply with applicable and current laws, regulations, policies, codes, standards, and best practices.

.3 In the event that the Ministerial Representative determines that the excavation surplus disposal sites located within the boundaries of the Owner's land are not capable of receiving more excavation surplus, the loading, transportation and disposal of the surplus excavation, not reusable as backfill on the site, shall be payable at the unit price indicated on the submission form.

3.3 CLEANING

.1 Remove tools and waste materials on completion of work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

3.4 WASTE REDUCTION WORKPLAN (WRW)

.1 Schedule B:

Material Category	Person(s) Responsible	Total Quantity of Waste (unit)	Reused Amount (unit)		Recycled Amount (unit)		Material(s) Destination
			Projected	Actual	Projected	Actual	

3.5 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Government Chief Responsibility for the Environment:

Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques
850, boulevard Vanier
Laval (Québec) H7C 2M7
450 661-2008

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 This section is general in nature and refers to information that can be connected to each section of the tender documents.

1.2 GENERAL REQUIREMENTS RELATED TO MATERIALS AND PRODUCTS

.1 Conform to the requirements of section 01 61 00 – Common Product Requirements.

.2 The instructions must be prepared by competent persons with the knowledge required for the operation and maintenance of the products described.

.3 Two (2) weeks prior to substantial completion, submit to the Ministerial Representative four (4) final copies of operating and maintenance manuals, in English and French, when required.

.4 Upon request, provide documents confirming the type, source and quality of products supplied.

.5 Defective products will be rejected, even if they have previously been inspected and they must be replaced at no additional cost.

.6 Assume the cost of transporting products.

1.3 FORMAT

.1 Organize data as an instructional manual.

.2 Use vinyl, hard covered binders, with 3 “D” rings, 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 process flow, 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.

.9 Provide 1:1 scaled CAO files in dwg format on CD.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of contents for each volume: provide title of project;

.1 Date of submission.

.2 Name, addresses, and telephone numbers of consultant 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.

.6 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

1.5 AS-BUILT DOCUMENTS AND SAMPLES

.1 Maintain, in addition to requirements in section General Conditions, at site for Ministerial 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 Ministerial Representative.

1.6 EQUIPMENT

.1 Include manufacturer's printed operation and maintenance instructions.

.2 Additional requirements: as specified in individual specification sections.

1.7 LIST OF WORKS

.1 At each well and / or excavation trenches, make a precise statement of all accessories (elbow, tee, valve, service connection, plug, etc.), existing and abandoned pipes, all underground structures to allow the location of these elements after backfilling.

.2 Give the Ministerial Representative three (3) hard copies and three (3) CDs of the statement.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 1 GENERAL

1.1 SECTION CONTENTS

.1 The present section explains methods and procedures for demolishing, salvaging, recycling and removing site-work items designated to be removed in whole or in part, and for the backfilling of trenches after excavation works.

1.2 RELATED SECTIONS

.1 The specialized Contractor is responsible for obtaining a copy of all the sections of these specifications even if they do not appear to pertain to his speciality. If he does not, it shall be understood that he agrees to the clauses and requirements of all sections in these specifications. The specialized Contractor must consult the table of contents of these specifications to have knowledge of the complete list of the specifications sections.

1.3 REFERENCES

.1 Canadian Council of Ministers of the Environment (CCME)

.1 PN1327, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.

.2 Department of Justice Canada (Jus)

.1 Canadian Environmental Assessment Act (CEAA), 2012, ch.19, art. 52

.2 Canadian Environmental Protection Act, 1999 (CEPA), c. 33

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.4 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDGA), c. 34

1.4 DEFINITIONS

.1 Demolition: rapid destruction of building following removal of hazardous materials.

.2 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: asbestos PCB's, CFC's, HCFC's poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive

substances, or other material that can endanger human health or well being or environment if handled improperly.

.3 Waste Management Coordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

.4 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from WA.

1.5 SUBMITTALS

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

.2 Coordinate submittal requirements and provide submittals required by Section 01 47 15 - Sustainable Requirements: Construction.

.3 Product Data: submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 47 15 - Sustainable Requirements: Construction.

.4 Waste Reduction Workplan: prior to beginning of work on site submit detailed Waste Reduction Workplan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.6 QUALITY ASSURANCE

.1 Regulatory Requirements: ensure work is performed in compliance with CEPA, CEAA, TDGA, and applicable Provincial/Territorial regulations.

.2 Health and Safety: Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.3 Sustainable Requirements: Construction: in accordance with Section 01 47 15 - Sustainable Requirements: Construction.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Perform work in accordance with Section 01 35 43 - Environmental Procedures.

.2 Store and manage hazardous materials in accordance with Section 01 47 15 - Sustainable Requirements: Construction.

.3 Storage and Protection

.1 Protect in accordance with Section 30 00 00.01 - Earthworks.

.2 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Ministerial Representative and at no cost to Ministerial Representative.

.3 Remove and store materials to be salvaged, in manner to prevent damage.

.4 Store and protect in accordance with requirements for maximum preservation of material.

.5 Handle salvaged materials as new materials.

.4 Waste Management and Disposal

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Divert excess materials from landfill to site approved by Ministerial Representative.

.3 Separate for reuse and recycling and place in designated containers steel, metal, plastic waste in accordance with Waste Management Plan.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with CEPA, Regional and Municipal regulations.

.6 Label location of salvaged material's storage areas and provide barriers and security devices.

.7 Ensure emptied containers are sealed and stored safely.

.8 Separate materials which cannot be salvaged for reuse or recycled including wood, metal, concrete and asphalt, and gypsum.

.9 Remove materials that cannot be salvaged for reuse or recycling and dispose of in accordance with applicable codes at licensed facilities.

1.8 SITE CONDITIONS

.1 Site Environmental Requirements

.1 Perform work in accordance with Section 01 35 43 - Environmental Procedures.

.2 Ensure that selective demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.

.3 Do not dispose of waste of volatile materials including but not limited to, mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.

.1 Ensure proper disposal procedures are maintained throughout the project.

.4 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.

.5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.

.6 Protect trees, plants and foliage on site and adjacent properties where indicated.

.2 Existing Conditions

.1 Remove contaminated or hazardous materials from site, prior to start of demolition work, and dispose of at designated disposal facilities in safe manner in accordance with TDGA and other applicable regulatory requirements.

1.9 SCHEDULING

.1 Employ necessary means to meet project time lines without compromising specified minimum rates of material diversion.

.1 Notify Ministerial Representative in writing when unforeseen delays occur.

PART 2 PRODUCTS

2.1 SUSTAINABLE REQUIREMENTS

.1 Materials and resources in accordance with Section 01 47 15 - Sustainable Requirements: Construction.

2.2 EQUIPMENT

.1 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

PART 3 EXECUTION

3.1 PREPARATION

.1 Inspect site with Ministerial Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.3 Notify and obtain approval of utility companies before starting demolition.

3.2 REMOVAL OF HAZARDOUS WASTES

.1 Remove contaminated or dangerous materials defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.

3.3 REMOVAL OPERATIONS

.1 Remove items as indicated.

.2 Do not disturb items designated to remain in place.

.3 Removal of pavements, sidewalks, curbs and gutters:

.1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by Ministerial Representative.

.2 Protect adjacent joints and load transfer devices.

.3 Protect underlying and adjacent granular materials to working area.

.4 Removal of road granular base and sub-base infrastructure

.1 Determine areas to remain in place in the presence of the Ministerial Representative.

.2 Perform required transitions between new and existing foundations.

.3 Protect granular materials underlying or adjacent to the work area.

.5 Removal and scraping of grassed areas

.1 Determine areas to remain in place.

.2 Protect soils that are adjacent or located under removed surfaces or structures.

.3 Off-site disposal of spoil and unusable material at appropriate site.

.6 Fence removal

.1 Remove and dispose of fences in approved landfill site.

.7 Barrier removal

.1 Remove and dispose of barriers and/or pieces of barriers to be removed in approved landfill site.

.2 Protect the structures adjacent to removed structures.

.3 Dispose of unusable materials offsite in a suitable site.

.8 Barbed wire removal

.1 Remove and dispose of barbed wire and/or barbed wire pieces to be removed.

.2 Protect structures adjacent to removed structures.

.3 Dispose of unusable materials offsite in an approved site.

.9 Salvage

.1 Stockpile salvaged materials.

.10 Disposal of Material

.1 Dispose of materials not designated for salvage or reuse on site at authorized facilities approved in Waste Reduction Workplan.

.11 Backfill

.1 Backfill in areas as indicated and in accordance with Section 31 23 11 – Excavation and Backfilling – Underground and Underwater Utilities.

3.4 STOCKPILING

.1 Label stockpiles, indicating material type and quantity.

.2 Designate appropriate security resources/measures to prevent vandalism, damage and theft.

.3 Locate stockpiled materials convenient for use in new construction to eliminate double handling wherever possible.

.4 Stockpile materials designated for alternate disposal in a location which enables easy removal from site and or their inspection by interested parties for their reuse, and which does not impede disassembly, processing, or hauling procedures.

3.5 REMOVAL FROM SITE

.1 Remove stockpiled material as directed by Ministerial Representative, when it interferes with project operations.

.2 Remove stockpiles of similar materials by an alternate disposal option once collection of materials is complete.

.3 Transport material designated for alternate disposal to an approved facility in accordance with applicable regulations.

.1 Written authorization from Ministerial Representative is required when other facilities or receiving organizations are utilized other than those listed in Waste Reduction Workplan.

.4 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.

.1 Disposal Facilities: approved and listed in Waste Reduction Workplan.

.2 Written authorization from Ministerial Representative is required when materials are sent to other disposal facilities than those listed in Waste Reduction Workplan.

3.6 RESTORATION

.1 Restore areas and existing landscapes outside areas of demolition to pre-existing or better than original condition.

3.7 CLEANING

.1 Upon completion of work, remove all debris, clean and broom all surfaces and leave work site clean.

.2 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

END OF SECTION

PART 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 GENERAL

1.1 CONTENT

.1 This section covers the specification for the different types of aggregate material used in the project.

1.2 RELATED SECTIONS

.1 The specialized Contractor is responsible for obtaining a copy of all the sections of these specifications even if they do not appear to pertain to his speciality. If he does not, it shall be understood that he agrees to the clauses and requirements of all sections in these specifications. The specialized Contractor must consult the table of contents of these specifications to have knowledge of the complete list of the specifications sections.

1.3 REFERENCES

.1 Bureau de normalisation du Québec (BNQ)

.1 BNQ 2560-114/2014 - Travaux de génie civil – Granulats.

.2 NQ 2560-600/2002 - Granulats – Matériaux recyclés fabriqués à partir de résidus de béton, d'enrobés bitumineux et de briques – Classification et caractéristiques.

1.4 SAMPLES

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

.2 Pay cost of sampling and testing of aggregates which fail to meet specified requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Divert unused granular materials from landfill to local facility as approved by Ministerial Representative.

PART 2 PRODUCTS

2.1 MATERIALS

.1 Foundation material MG20 and MG20b must have the following particle size:

Screen	MG20 % pass	MG20b % pass
31.5 mm	100	100
20 mm	90 -100	90 -100
14 mm	68 – 93	68 – 93
5 mm	35 - 60	35 -60
1.25 mm	15 – 38	15 – 38
315 µm	5 – 17	5 – 17
80 µm	2.0 – 7.0	5.0 – 11.0

.2 The material for the sub-foundation is of type MG 112 and must conform to standard BNQ 2560-114/2014, Part II – Fondation, sous-fondation, couche de roulement et accotement.

.3 Lower foundation granular materials are of type MG 56 and shall conform to standard BNQ 2560-114 / 2014, Part II - Fondation, sous-fondation, couche de roulement et accotement.

.4 Type CG 14 materials shall conform to the requirements of standard BNQ 2560-114 / 2014, Part III - Coussin, enrobage, couche anticontaminante et couche filtrante.

.5 Stone dust materials 0-5 mm shall meet the following requirements:

.1 Granulometry:

Screen	0-5 % pass
112 mm	100
10 mm	100
5 mm	75 - 100
160 µm	4 - 25
80 µm	9 - 15

.2 Requirements:

Class	A
Abrasion resistance	-
Petrographic number, max.	200
Durability, max. loss %	20
Plasticity of fines, fraction passing 80 µm Liquid limit, max.	25
Plasticity index, max.	6

.3 The aggregate must be obtained from crushing the stone. It must be free of soil, frozen material, and foreign materials, such as clay, organic matter, waste, etc.

.6 The gravel for hot asphalt must conform to the specifications of standard BNQ 2560-114/29014, Part V.

2.2 SOURCE QUALITY CONTROL

.1 An attestation of conformity must be submitted to the Ministerial Representative for each reserve of crushed gravel.

PART 3 EXECUTION

3.1 PREPARATION

.1 Handling

.1 Handle and transport aggregates to avoid segregation, contamination and degradation.

.2 Stockpiling

.1 Stockpile aggregates on site in locations as indicated, unless directed otherwise by the Ministerial Representative. Do not stockpile on completed pavement surfaces.

.2 Stockpile aggregates in sufficient quantities to meet Project schedules.

.3 Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.

.4 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into Work.

.5 Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.

.6 Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Ministerial Representative within 48 hrs of rejection.

.7 Stockpile material in 1.5 m high piles.

.8 Do not cone piles or spill material over edges of piles.

.9 Do not use conveying stackers.

3.2 CLEANING

.1 Leave aggregate stockpiles in tidy, well drained condition, free of standing surface water.

.2 Leave any unused aggregates in neat compact stockpiles as directed by Ministerial Representative.

.3 For temporary or permanent abandonment of aggregate source, restore source to condition meeting requirements of authority having jurisdiction.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 The Contractor is responsible for obtaining copies of all sections of these specifications even if they do not seem relevant to its specialty; otherwise, the Contractor will be deemed to have accepted all clauses and provisions of all sections of these specifications.

1.2 OUTLINE OF WORK

.1 Ensure work supervision and provide all labour, equipment, tools, materials, transport and the other necessary services to perform all work described and specified in the present section and the contract documents, including but not limited to: preparation of site, excavation, backfilling with approved granular materials and compaction of the specified surfaces in preparation for the various infrastructures for paving, concrete sidewalk curb, turfing, etc.

1.3 REGULATIONS

.1 Provide shoring and bracing of excavations, protect slopes and embankments, and carry out all work in compliance with the strictest prevailing provincial and municipal regulations.

1.4 TESTS AND INSPECTIONS

.1 Tests on materials and backfill compaction measurements shall be carried out by a Laboratory designated by the Ministerial Representative.

.2 No later than one week before the filling or backfilling, provide the designated Laboratory with a 25-kg sample of the fill material proposed for the execution of the work.

.3 Do not start filling or backfilling work until the Ministerial Representative has approved the material proposed for the execution of the work.

.4 No later than 48 hours before the start of filling or backfilling work using approved materials, notify the Ministerial Representative of the upcoming execution of this work, so that the designated organization can carry out compaction tests.

1.5 UNDERGROUND UTILITY NETWORKS

.1 Before starting the work, determine the location of all underground utility lines located on or near the worksite.

.2 If need be, arrange with the proper authorities to move underground utility lines that interfere with the execution of the work, and assume the cost of this move.

1.6 PROTECTION

.1 Protect excavations against frost.

.2 Keep excavations clean, free of stagnant water and loose materials.

.3 When the soil's volume can vary significantly due to fluctuations in moisture content, cover and protect it to the satisfaction of the Ministerial Representative.

.4 Protect elements, both natural and man-made, that must remain intact. Unless otherwise indicated or unless they are located in the work zone, protect trees from damage.

.5 Protect all utility lines that must remain in place.

PART 2 PRODUCTS

2.1 BACKFILL MATERIAL

.1 Backfill materials must be approved by the Ministerial Representative prior to their use and must comply with section 31 23 11 - Excavation and Backfilling - Underground and underwater utilities.

2.2 SOURCE OF MATERIALS

.1 The Contractor must provide the address of the supplier of the backfill materials.

PART 3 EXECUTION

3.1 EXCAVATION

.1 For slabs and other paved surfaces, dig to the level of the infrastructure. Remove topsoil, organic materials, debris and other loose or harmful materials encountered at this level.

3.2 BACKFILLING

.1 Carry out backfilling work in compliance with the strictest specifications in section 31 23 11 - Excavation and Backfilling - Underground and underwater utilities and the following specifications:

.1 Each layer of backfill shall be compacted separately to the required density. Materials must be poured onto the backfill platform and pushed forward by bulldozers. It is forbidden to unload transportation vehicles along an embankment and to allow materials to roll down a slope.

.2 All embankment materials must be deposited and spread over the full width required by the embankment's theoretical slope, in even layers with a maximum 300 mm thickness after compaction. The diameter of the gravel shall not exceed 2/3 of the thickness of the layer, except in the case of the final 300 mm layer beneath the infrastructure line, where the stone's size must be less than 100 mm.

3.3 LEVELING WORK

.1 Carry out leveling work ensuring that water does not run towards the buildings, walls and paved surfaces, but that it is directed towards catch basins and other evacuation structures approved by the Ministerial Representative. Level the ground, giving it a progressive slope between various points indicated on the drawings.

.2 Except where otherwise indicated, the ratio of embankment slopes shall not be less than 1 V : 3 H.

3.4 FILL OR SURPLUS MATERIALS

.1 Supply all fill materials other than approved and reusable surplus excavation material required for the execution of backfilling and leveling work, taking into account admissible tolerances, plus or minus, for general earthwork.

.2 Earthwork and leveling work include the loading, transportation and disposal of surplus materials within the limits of the Institution.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 The Contractor is responsible for obtaining copies of all sections of these specifications even if they do not seem relevant to its specialty; otherwise, the Contractor will be deemed to have accepted all clauses and provisions of all sections of these specifications.

1.2 SCOPE OF WORK

.1 Ensure the supervision of work and supply all manpower, equipment, tools, materials, transportation and other services needed to carry out and complete all work described and specified in this section and contract documents including, but not limited to: excavation, stabilization, backfilling using approved granular materials and compaction of excavation materials for installation of drinking water and fire systems, valves, fire hydrants, flushing hydrants, feeder mains, intake, sewer systems, manholes, sewers and culverts, etc.

.2 The excavation and backfilling work described in this section refers to the excavation and backfilling of the trench for underground and underwater utilities as well as for large-scale excavation and backfilling work.

.3 Excavations and backfilling include all necessary work to bring the infrastructure to the longitudinal and transverse profiles indicated on drawings or required by Ministerial Representative.

.4 According to the nature of removed materials, the excavation is of 1st or 2nd class.

1.3 REFERENCES

.1 Bureau de normalisation du Québec (BNQ)

.1 CAN/BNQ 2501-255/2013: Soils – Determination of the Water Content-Dry Density Relation – Modified Compaction Effort Test (2,700 kN-m/m³).

.2 BNQ 2560-114/2014: Civil Engineering Work – Aggregates.

.2 Ministère des Transports, de la Mobilité durable et de l'Électrification des transports (MTMDET – Quebec's Ministery of Transport, Sustainable Mobility and Transport Electrification)

.1 Cahier des charges et devis généraux du Québec - Infrastructures routières, Construction et reparation, latest edition.

.2 Cahiers des Normes, Ouvrages Routiers, Tome VII "Matériaux" (Standards, Roadwork, Vol. VII "Materials"), latest edition.

.1 Standard 2101 - Aggregates

.2 Standard 13101 – Geotextiles

.3 American Society for Testing and Materials (ASTM)

.1 ASTM C117, Standard Test Method for Material Finer Than 75 µm (No.200) Sieve in Mineral Aggregates by Washing.

.2 ASTM C136/C136M, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.3 ASTM D422, Standard Test Method for Particle Size Analysis of Soils.

.4 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft lbf/ft^3) (600 kN-m/m^3).

.5 ASTM D1557, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft lbf/ft^3) (2,700 kN-m/m^3).

.6 ASTM D4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1-88 – Sieves, Testing, Woven Wire, Inch Series;

.2 CAN/CGSB-8.2-M88 – Sieves, Testing, Woven Wire, Metric

.5 Canadian Standards Association (CSA)

.1 CSA-A3000-13 – Cementitious Materials Compendium;

.2 CSA A23.1-14/A23.2.14 – Concrete materials and methods of concrete construction / Test methods and standard practices for concrete.

1.4 DEFINITIONS

.1 Additional excavation: any excavation work requested in writing by the Ministerial Representative in addition to that called for in the specifications.

.2 Backfill materials: material placed over the surround or protective layer up to the level of the infrastructure, the definitive ground level or the natural soil.

.3 Recycled fill material: material considered inert obtained from alternate sources and engineered to meet requirements of fill areas.

.4 Backfilling: operation, which consists in filling the trench and/or excavation using bedding, surround or fill material.

.5 Bedding material: bed for the pipe's installation.

.6 Surround: material between the top of the bed and the underside of the fill.

.7 Off-site borrow material: material from a source outside the worksite, which is required to fill excavations, build embankments, or other work.

.8 Reusable excavation material: material identified by the Ministerial Representative as suitable for specific fill applications. This material can be obtained from any excavation on the worksite.

.9 Classes of excavated material: two classes of excavated material are recognized, i.e., rock excavation (1st class excavation) and common excavation (2nd class excavation).

.10 1st class excavation: excavation of solid masses of igneous, sedimentary or metamorphic rock which, prior to excavation, were an integral part of a larger rock mass, as well as blocks or fragments of rock whose volume exceeds one cubic meter (1 m^3) and which cannot be removed by a mechanical excavator with a bucket of 0,95 m^3 to 1,15 m^3. Compact clay, hardened clay, and glacial till are not considered to be rock excavation.

.11 2nd class excavation: excavation of material of whatever nature other than that covered by the definition of excavation 1st class, including dense till, compact clay, frozen materials and partly cemented materials, which can be ripped and excavated using heavy equipment. Stripping is considered to be 2nd class excavation.

.12 Unclassified excavation: excavation of deposits of whatever character encountered in the work.

.13 Stripping: removal of organic material initially covering the ground, including land clearing materials.

.14 Topsoil:

.1 any material likely to favor the growth of vegetation and capable of being used as complementary soil for landscaping or seeding. Furthermore, if it is present on the site, this material must be excavated where specified on the work site. Finally, this material is unsuitable for use as fill.

.2 Material reasonably free from subsoil, clay lumps, brush, objectionable weeds and other litter, and free from cobbles, stumps, roots and other objectionable material larger than 25 millimetres in any dimension.

.15 Digging of trenches: 1st or 2nd class excavation required for the construction of a trench for laying pipes and their accessories.

.16 Unshrinkable fill: controlled density mix consisting of cement and aggregates.

.17 Waste material: excavation materials unsuitable for reuse (trees, shrubs, bushes, branches, brush, stumps, dead wood and other vegetation waste and materials containing demolition debris) or surplus materials, which cannot be reused.

.18 Unsuitable materials

.1 Weak, compressible materials located under excavated areas.

.2 Frost susceptible materials located under excavated areas.

.3 Frost susceptible materials:

.1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318 and gradation within limits specified when tested to ASTM C136/C136M and ASTM D422; sieve sizes to CAN/CGSB.8.2-M88.

.2 Table

Sieve designation	% passing
2.00 mm	100
0.10 mm	45 - 100
0.02 mm	10 - 80
0.005 mm	0 - 45

.3 Coarse grained soils containing more than 20% by mass passing 0.075 mm sieve.

.19 Unshrinkable fill: very weak mixture of Portland cement, concrete aggregates and water that resists settlement when placed in utility trenches, and readily excavated.

1.5 ELEMENTS TO BE SUBMITTED

.1 Refer to Section 01 33 00 – Submittal Procedures (see General Requirements).

.2 Prior to the start of excavation work, the Contractor shall submit to the Ministerial Representative, for verification and approval details of dewatering and heave protection methods as required before undertaking the work.

.3 At least four (4) weeks prior to the start of the work, notify the Ministerial Representative of the proposed suppliers of aggregates and fill materials and allow access for sampling purposes.

.4 Submit granulometric analyses as well as the physical and mechanical properties of the granular materials, which the Contractor plans to use. These tests shall be carried out by a recognized laboratory approved by the Ministerial Representative.

.5 Submit to a testing laboratory, for analysis, 25 kg samples of each type of backfill material prescribed as well as samples of the types of excavated materials for granulometric analysis and Proctor test. In the case of large gravel or pieces of stone, submit 70 kg samples. No backfilling is to be carried out prior to the approval of materials by the laboratory.

.6 Furthermore, at the request of the Ministerial Representative, tests may be conducted on materials required on site, to ensure they are consistent with samples submitted to the laboratory.

.7 Any non-compliant material shall be replaced by materials approved by the Ministerial Representative and the work shall be redone at the Contractor's expense.

.8 Provide the Ministerial Representative with a laboratory analysis confirming that the aggregates to be used as fill do not contain pyrite.

1.6 QUALITY ASSURANCE

.1 Qualification Statement: submit proof of insurance coverage for professional liability.

.2 Submit design and supporting data at least two weeks prior to starting work.

.3 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in the Province of Quebec, Canada.

.4 Keep design and supporting data on site.

.5 Engage services of qualified professional engineer, registered or licensed in the Province of Quebec, Canada, where the work is to be carried out, to design and inspect shoring, bracing and underpinning required for the work.

.6 Do not use soil material until written report of soil test results are reviewed and approved by the Ministerial Representative.

1.7 EXISTING UTILITIES

.1 Refer to Article "Location of Existing Utilities" in Section 31 00 00 – Civil – General.

1.8 PROTECTION OF EXISTING UNDERGROUND UTILITIES

.1 Existing underground utilities and structures

.1 Before undertaking any excavation work, the Contractor has both the responsibility and the obligation to contact the organism Info-Excavation in order for the companies concerned to identify the location of underground utilities and services present on the worksite.

.2 Information relating to public utilities is based on available documents. It is provided to the Contractor for guidance purposes only and should not be considered to be complete or accurate.

.3 Should private or public structures or utilities be found, whether or not they appear on the plans or are indicated on the contract property, crossing or close to projected excavation work, above or below ground, it is the Contractor's responsibility to obtain from the owners of these services and/or public utility organizations and companies all required information on the existence, nature, location, size, depth, etc. of these utilities or services.

.4 The Contractor must, himself, and at his expense, conclude agreements with the companies concerned with regards to the procedure and program of the work to be carried out. He must transmit this program to the Ministerial Representative at least forty-eight (48) hours before work is to start near the structures that must be protected.

.5 The Contractor must take all measures required to protect these structures against breakage and frost and/or provide the support needed to prevent collapse throughout the execution of the work which, even once it has been completed, must in no way affect the stability, quality and safety of existing structures. The Contractor alone is responsible for any and all damages incurred as a result of his work. All work to protect and support existing utilities or structures, including digging, is at the Contractor's expense.

.6 Digging must be carried out to determine the exact location, depth, and dimensions of the underground services encountered, whether or not they appear on the plans. Excavation in the ground, whether frozen or not, is done by hand on each side of the existing underground services, over a distance of 1,.5 m and below, to the underside of the services involved. No additional remuneration will be granted for this work. The use of explosives is prohibited in this instance.

.7 Obtain appropriate directives from the Ministerial Representative before moving or removing the utilities or structures identified in the excavation zone.

.8 Note the location of the underground utilities retained, moved or abandoned.

.9 The Contractor must repair the site where he worked to its original conditions and this on the entire working limits.

.2 Buildings and elements present on the site

.1 In the presence of the Ministerial Representative, confirm the condition of buildings, trees and other vegetation, lawns, fencing, service poles, cables, pavement, benchmarks and boundaries that could be affected by the work.

.2 While work is being carried out, buildings, trees and other elements present on the site must be protected. In the event of damage, the elements affected must be immediately restored to the satisfaction of the Ministerial Representative.

1.9 CONDITION OF THE WORKSITE

.1 Take into account the location of existing buildings and underground pipes, whether or not they appear on the plans.

.2 Take into account any special conditions existing on the site.

.3 Take into account the level of the groundwater table and its impact on excavation conditions.

.4 In the event that contaminated materials are detected during construction, these excavated materials must be managed in compliance with prevailing environmental and municipal regulations. Moreover, excavated materials containing demolition debris must be managed as "dry materials".

1.10 SHORING AND BRACING OF EXCAVATIONS AND STRUCTURES

.1 Shore and brace excavations to avoid slides, in compliance with construction safety codes, local regulations as well as the recommendations of the geotechnical study.

.2 During excavation work, the Contractor must build the embankment(s) required and/or supply and install all steel sheeting, temporary support walls, cofferdams, bracing or other support required to successfully carry out excavation work. The Contractor is fully responsible for the above-mentioned items.

.3 All excavations in the vicinity of existing structures must be limited, and adequate shoring and bracing of existing excavations and exposed structures must be provided.

.4 The Contractor is solely responsible for the choice of excavation methods used.

.5 The Contractor is fully responsible for any damage to buildings, existing installations and services or any bodily injury resulting from the absence or precariousness of the temporary structures and/or improper leveling of the embankment.

.6 The Contractor must provide a plan of these structures signed and sealed by an engineer who is a member of the "Ordre des ingénieurs du Québec".

1.11 PROTECTIVE MEASURES

.1 Protect the bottom of excavations against any softening and should this occur, remove the softened soil and replace it with compacted MG-20b type granular materials.

.2 Protect the bottom of excavations against frost.

.3 Excavation and backfilling work must be carried out in compliance with the construction safety code and recommendations of the geotechnical study.

.4 Ensure the protection of vertical benchmarks, layout benchmarks, survey markers and geodesic monuments.

.5 Never stockpile excavated material where it could interfere with the work, drainage or the stability of excavation slopes.

.6 The Contractor is, at all times, responsible for protecting stockpiled materials, which he will store on the site or other location reserved for this purpose, In the case of debris and excavation surplus, he must determine their granulometric qualities and other physical characteristics, to determine whether they can be reused as priority fill materials. In the event of inadequate protection, loading, transportation and disposal of this material at a location determined by the Ministerial Representative within the limits of the Institution will be at the Contractor's expense.

.7 At all times, the Contractor is required to take the necessary measures to keep dust generated by his work to a minimum.

.8 At the end of each work day, all excavations must be secured to the satisfaction of the Ministerial Representative.

1.12 INSPECTION AND TESTS

.1 The analysis and testing of materials and compaction are carried out by a specialized testing laboratory designated by the Ministerial Representative.

.2 The Ministerial Representative assumes the cost of the inspection and laboratory analyses. If, because of non-compliance, these tests must be repeated, costs shall then be assumed by the Contractor.

.3 Granulometric analysis: fill materials are analyzed to determine their suitability for the projected use and their compliance with specifications.

.4 Density analysis: tests are conducted on compacted materials in compliance with the CAN/BNQ 2501-255/2013: Soils – Determination of the Water Content-Dry Density Relation – Modified Compaction Effort Test (2,700 kN.m/m³).

.5 Compaction tests:

.1 The Ministerial Representative reserves the right to have compaction tests carried out to determine if the required compactness has been achieved. The Contractor must collaborate on the execution of these tests and can base no claim on work stoppage or other loss of time resulting from the execution of these tests.

.6 Testing frequency is defined by the Ministerial Representative.

.7 This same laboratory must provide the Ministerial Representative with progressive reports confirming that the required tests have been conducted as required by the plans and specifications. Moreover, the laboratory must provide the Ministerial Representative with a final report confirming that all fill complies with the plans and specifications, and no concrete or pavement can be placed until this report has been provided.

.8 Should the Contractor use a fill material other than the one sampled, all fill materials will have to be removed and replaced at his expense.

1.13 DENSITY OF COMPACTED MATERIAL

.1 When compacted, fill material must have a moisture content as close to the optimum determined by the laboratory using the maximum dry density test in keeping with the CAN/BNQ 2501-255/2013 standard. Sprinkle water on overly dry soil, taking care to avoid saturation.

.2 The density of the compacted material is expressed as a percentage of the Modified Proctor maximum dry density.

1.14 GROUNDWATER TABLE

.1 Limit the depth of the excavation to avoid problems relating to the stability of the bottom.

.2 The Contractor is entirely responsible for the excavation measures required and adequate pumping to reduce the level of the groundwater table where required, as well as the control of the groundwater table while work is in progress, and all other additional work required by conditions encountered along the way.

.3 All costs related to measures covered by the previous article must be included in the bid and no request for additional funds or schedule delay will be considered, should the Contractor have failed to take these into account.

.4 Groundwater infiltrations are possible in the excavations according to information obtained from geotechnical and soil characterization studies (see Appendix) and supporting geophysical surveys (see Appendix).

.5 Maintain groundwater water level 300 mm below bottom of excavation during the work.

1.15 STORMWATER MANAGEMENT / EROSION AND SEDIMENTATION CONTROL

.1 Implement the following measures to prevent runoff from contaminating sewage water.

.1 Use all means necessary to clear evacuated or discharged stormwater of solid or floating particles and mud, and to prevent contaminants in runoff from entering the sewer system.

.2 Grade site to reduce runoff and channel water away from building; retain water for irrigation.

.1 Keep paved surfaces to a minimum to allow runoff to seep into ground.

.2 Grade site to channel and control stormwater runoff.

1.16 CONCEALED ELEMENTS

.1 The Contractor formally agrees to conceal no element such as pipes or other, without first obtaining backfilling authorization from the Ministerial Representative.

1.17 EXCAVATION SURPLUS

.1 No additional compensation shall be paid for removal of excavation volumes greater than those specified in the theoretical section.

PART 2 PRODUCTS

2.1 BEDDING AND SURROUND MATERIALS FOR PIPES AND UNDERGROUND STRUCTURES

.1 The bedding and surround of underground structures or the anticontamination layer are produced using MG-20b calibre granular or CG-14, in compliance with requirements in section 31 05 16 – Aggregate materials.

2.2 RECYCLED MATERIALS

.1 The recycled materials must be in compliance with the requirements of section 31 05 16 – Aggregate materials.

.2 Use of recycled materials is governed by all the other technical requirements set out in these specifications with respect to compactness, thickness of layers, etc.

2.3 GRANULAR MATERIALS

.1 The granular materials must satisfy the requirements of section 31 05 16 – Aggregate materials.

2.4 BACKFILL MATERIALS

.1 Backfill materials must be approved by the Ministerial Representative prior to their use. They are from site excavation or borrow material (Class B) for use beneath the roadway infrastructure line.

.2 All compactable materials can be used, except for organic soil. Soil components must be mineral in nature. The use of these materials depends on their condition, the height of the embankments to be built and weather conditions. If required by the plans and specifications, the condition of the materials must be improved using an appropriate treatment.

.3 Materials must be free of foreign bodies such as brick fragments, roots, trees, lawn, ash, fly ash, frozen soil, snow, ice, etc.

.4 Backfilling of excavations over the pipe surround and beneath the level of the infrastructure must use excavation surplus deemed acceptable by the Ministerial Representative or granular borrow materials free of organic matter, with a maximum size of 150 mm on its largest face, placed and compacted in successive layers no thicker than 300 mm to a minimum of 90 % of Modified Proctor density to 150 mm beneath the infrastructure line. The last 150 mm will be compacted to 95 % of Modified Proctor.

.5 Excavation materials from existing fill and granular deposits may be reused for backfilling excavations; use with care; use appropriate equipment. Refer to the geotechnical and soil characterization studies (see Appendix).

2.5 STONE FILL

.1 Unless otherwise indicated in the plans and specifications or by the Ministerial Representative, use rock from excavations to build embankments.

.2 Boulders not to exceed 300 mm in the longest dimension. Materials to be spread over the entire width of the theoretical slope of the embankment, in uniform layers, to a maximum thickness of 1 m, except for the last 3 m under the substructure where thickness is 500 mm maximum.

.3 Embankments are not paid directly since materials used for their construction are paid at point of origin as materials from excavation, borrow pits or quarries.

2.6 BORROWED MATERIALS

.1 When borrowed materials are brought on site, the environmental quality of this material must comply with MDDELCC Management Grid for Excavated Contaminated Soils, Regulation Respecting Contaminated Soil Storage and Contaminated Soil Transfer Stations and CCME guidelines.

2.7 UNSHRINKABLE FILL

.1 The unshrinkable fill must be provided by a dosage plant certified by the Association Béton-Québec (Quebec Concrete Association) in keeping with the BNQ 2621-905/2012 – Ready to use concrete – Certification Program (developed from the requirements of Chapters 4, 5 and 8 of the CSA A23.1-14/A23.2.14. The hardened material must allow for easy excavation at all times.

.2 Generalities

.1 The unshrinkable fill is a mixture of coarse aggregate and fine aggregate with very little cement, which has a very high fluidity and whose production is controlled in the factory.

.2 The embankment compressive strength must be between 0.3 and 1.0 MPa at 28 days in order to allow the excavation when required.

.3 The following uses specifications are for reference only:

.1 Maximum compressive strength: 1.0 MPa;

.2 Maximum content of Portland cement type GU or GUb: 25 kg/m^3.

.3 Caliber of coarse aggregate: MG-20;

.4 Minimum proportion aggregates > 5 mm from the combined aggregate (cement + fine aggregate + coarse aggregate): 50%;

.5 Minimum density according to the requirements of the CAN / CSA-A23.2-6C: 2300 kg/m^3.

.4 Unshrinkable fill must be used for coating and filling trenches, when conventional methods cannot be used because of the conditions on site;

.5 Using an unshrinkable fill as backfill method must be accepted by the Ministerial Representative. The proposed formula mixture should be subject to approval of the Ministerial Representative before the backfilling.

.3 Granular material

.1 The Characteristics of the fine and coarse granular material shall comply with the requirements of the BNQ 2560-114/2014.

.4 Cement

.1 Cement shall be Portland cement type Gu and GUb.

.5 Mixing water

.1 Mixing water should be clear and free of harmful quantities of alkalis, acids, oils, organic matter, suspension solids, or other harmful substance.

.6 Additive

.1 Entrained air additives, when used to improve handling, must comply with the requirements of ASTM C 260.

PART 3 EXECUTION

3.1 SITE PREPARATION

.1 Within set limits, remove obstacles, ice and snow from the surface of the excavation zone.

.2 Before undertaking excavation work, carefully cut pavement, sidewalks and curbs along limits of the proposed excavation, allowing the surface to break off cleanly and evenly. Materials removed must be disposed of off-site, in keeping with the article "Disposal of waste materials" in this section.

.3 Roads and access ramps must be built on the worksite, as needed, and maintained by the Contractor throughout the duration of excavation work.

3.2 EXCAVATION EQUIPMENT

.1 Excavation equipment must be suited to the projected work and sized to carry it out effectively.

3.3 THEORETICAL EXCAVATION AND FILL LINES

.1 A typical theoretical section of a trench excavation will comply with both BNQ and CNESST standards.

.1 Water supply lines (sewer system).

.1 For sewer work, the bottom width of the trench complies with BNQ 1809-300/2018 standard and in no case lower than 900 mm.

.2 The theoretical walls of the excavation shall have slopes of the following ratios:

.1 In earth: from trench bottom up to 1.22 m, slope of sides: 1 H : 10 V. From this elevation to surface, slope of sides 1 H : 1V.

.2 In rock: 1 H : 10 V or according to the CNESST, whichever is most stringent.

.3 Regardless of the type of soil, the depth of the trench shall be determined by the depth of the top of the pipe plus the latter's outer diameter, plus the thickness of the bed.

.2 Underground structures (manhole, sump, etc.)

.1 Dimensions of the excavation floor for the installation of underground structures shall be equal to the outer dimensions of said structures plus 600 mm along the entire outer perimeter of the element.

.2 The theoretical slopes of the excavation shall be the same as for a pipe.

.3 Height of excavation is be determined by the depth of the accessory to be installed and bedding thickness.

.2 It is understood that the Contractor shall, at all times, comply with the "Code de sécurité pour les travaux de construction" (Safety Code for Construction Work) in effect in the province of Québec.

3.4 1ST CLASS EXCAVATION

.1 General

.1 1st class excavation includes removal of dynamited rock, concrete structures and strongly cemented masonry that require explosives and cobbles equal to or greater than 1 m³. 1st class excavation also includes removal of massive rock formations and shale, which can only be adequately extracted after first being broken up with explosives or a ripper.

.2 Cobble beds in clay, the weathered schist, "hardpan" resistant ground and frozen ground do not constitute 1st class excavation even if extraction cannot be done adequately using a general-purpose excavator.

.3 Confine rock cutting within the theoretical limits indicated by the Ministerial Representative. Slope inclinations are 5 V : 2 H (5.0 m vertically over 2.0 m horizontally). Strike off rock points jutting out from the cut walls; remove broken or cracked rock fragments.

.4 At the bottom of the rock cut, strike off points jutting out more than 80 mm above the required level. Fill in depressions under the substructure up to the required level with MG-20 stone fill or MG-112 granular borrow material. This backfilling is at the Contractor's expense.

.5 The Contractor cannot claim compensation if the composition, hardness or type of rock formation encountered makes extraction more expensive than expected.

.2 Disposal of 1st class excavated material

.1 Dispose of 1st class excavated materials in conformity with the requirements of Article "Disposal of Surplus Excavation".

3.5 BLASTING

.1 Blasting is not permitted for work. Only excavation by mechanical fragmentation is permitted for the excavation of the rock in place.

3.6 2ND CLASS EXCAVATION

.1 2nd class excavation includes all excavations, which are described as 1st class excavation in the preceding article.

.2 Advise the Ministerial Representative at least one week prior to the start of excavation work and, in his presence, note the land's natural profile where required.

.3 Dig trenches along the theoretical lines, cross-sections, layouts, levels and dimensions indicated.

.4 Completely excavate all topsoil and organic matter. This material cannot be used as fill and must be removed from the worksite. However, if the material complies with the requirements of the section on Sodding, it could be reused as topsoil where the restoration of the ground's surface calls for this type of material.

.5 Construction debris such as bricks, wood, old pavement, sidewalks, curbs, approach or median noses, riprap, stone walls, fences, etc., may be encountered during excavation. These materials must be managed as "dry materials". Refer to article "Disposal of waste materials" of this section.

.6 Build temporary structures at the required location, depth and height.

.7 Dig trenches needed for laying underground pipes. Flatten and shape the bottom of the trenches and eliminate any irregularities, clumps or ruts.

.8 Smooth the bottom of the trench depending on the type of bed stipulated and firm it up by tamping down or other means, which the Ministerial Representative deems satisfactory to ensure a foundation capable of supporting a pipe in position.

.9 For the installation of different underground elements, ensure a minimum of 600 mm (24 in.) between the surfaces of the structures and the walls of the excavation.

.10 The bottom of the excavations must be level, consist of dry, undisturbed soil, and free or organic or loose matter. Reworked soil must be removed by hand.

.11 Fill unneeded excavations at no additional cost, as follows: The excavation shall be filled using excavation materials deemed to be reusable, free of stones measuring more than 150 mm (6 in.) in diameter, frozen material or organic matter. Voids will be filled using a finer material. The Contractor shall compact materials to 90 % of the Modified Proctor in successive layers with a maximum thickness of 200 mm (8 in.), until the level required to restore and/or shape the infrastructure of existing or projected elements. If excavation surplus is deemed to be non-reusable, the Contractor shall use borrow materials approved by the Ministerial Representative. Compacted fill shall be installed along the entire width of the excavation.

.12 Once the excavations have been completed, ask the Ministerial Representative to inspect their depth and dimensions. No filling can be carried out without the authorization of the Ministerial Representative.

.13 Take all precautions needed to prevent damage to existing services.

.14 If excavation and backfilling work is to be carried out in winter, the bottom of excavations must be protected against frost.

.15 Given the sensitive nature of underlying deposits at the site, take all necessary precautions to minimize disturbance of the bottom of excavations. Refer to the geotechnical study and the environmental characterization (see Appendix).

3.7 TRENCH OPENING LIMITS

.1 Unless written authorization has been obtained from the Ministerial Representative, do not dig more than 10 linear meters of trench. At the end of the workday, no trench must remain open. Backfill trenches or cover with a sufficiently heavy steel plate that cannot be easily moved to ensure the safety of the Institution.

.2 However, the Ministerial Representative may, at any time, require the Contractor to reduce this length, whether for reasons of public safety, protection of existing structures or for any other reason deemed sufficient by the Ministerial Representative.

.3 Leave open a minimum length of 7.5 m to enable inspection of the work.

3.8 TRENCH UNDERPINNING

.1 If, due to instability of the excavated walls, it becomes necessary to use excavation box, the sheeting steel piles or wood underpinning, to support the trench walls and to avoid damage or accidents, the Contractor must carry out this work without additional compensation. If the Ministerial Representative judges it necessary, for the protection of the existing works or to prevent neighboring landslip, he can require that wood underpinning is left in the trench. The sheeting steel piles must always be removed.

.2 At any time, the Contractor is the only person in charge of the support of the trench walls and it must be in conformity to the requirements of the Ministère du Travail related to excavation work and contained in the publication entitled: " Security standards on the Building sites of Construction" or any other more recent publication of this Ministry relative to this work.

3.9 EXCAVATION NEAR EXISTING WALLS

.1 When work for water supply pipes is planned near existing walls, minimize as far as possible the extent of the excavation to avoid destabilizing the foundations of the walls. Once the pipe has been installed, fill in and compact excavation.

.2 Any damage done to walls shall be repaired at the Contractor's expense.

3.10 DEWATERING

.1 Three weeks before the start of work, the Contractor shall submit, in writing, to the Ministerial Representative the method it intends to implement for excavation, shoring, dewatering and backfilling for all work relating to underground pipes and water supply pipes.

.2 The Contractor may choose the methodology it intends to use to carry out the work.

.3 The Contractor must plan for all pumping work required to keep excavations dry. A pumping system must be installed when required and its capacity must be sufficient to drain surface water or water from infiltrations or leaks from the sewer pipes, water mains or other artificial elements. Precautions must be taken when the soil is silty or sandy, to avoid taking in fine particles. If need be, the Contractor must dig channels away from the foundations to carry water towards the manholes or ditches, so as to properly drain the soil prior to backfilling. To this end, the Contractor must refer to the geotechnical study. The water must be channelled far from the foundations to a location where it cannot be harmful.

.4 Before the start of pumping work, the Contractor must confirm the condition and capacity of ditches and storm or combined sewers into which the water is pumped. He is responsible for flooding and all property damage caused by the pumping of this water. The clean-up of accumulations of soil or other debris resulting from the pumping into existing pipes shall be at the Contractor's expense.

.5 Install and operate the dewatering system so as to avoid lowering the level of the groundwater table outside the excavation to a point that could damage or threaten adjacent structures, underground installations, sidewalks, pavement and other elements or property.

.6 The Contractor shall, at his expense, put up, install and operate all equipment needed to keep excavations dry during construction.

.7 In the event of an emergency (including breakdowns) an adequate pumping system in good working order must be available at all times. Moreover, workers capable of operating this system must also be available at all times.

.8 If there is a risk of soil liquefaction or heaving, avoid excavating beneath the groundwater table. To avoid pipeline upheaval or excavation bottom heave, lower the level of the groundwater table or use other appropriate means.

.9 Protect open-cut excavations against flooding and other damages, which could result from runoff.

.10 All surface or groundwater, whether they are from natural sources, precipitation, melting snow, ice, infiltration, leaks or outflow from sewer pipes or other artificial element, must be drained, at the Contractor's expense. The Contractor is entirely responsible for water control, which must comply with prevailing municipal and provincial environmental regulations.

.11 The Contractor cannot, at any time, discharge pumped water into existing domestic sewers, nor use the pumps of pumping stations, existing or under construction, to eliminate surface water or water infiltrations in excavations.

.12 If the Contractor uses domestic sewers under construction for disposing of infiltration water, these domestic sewers cannot be connected to the existing network until work has been completed and the Contractor is not to make the connection until the Engineer has inspected and approved these new pipes.

.13 Avoid transfer or compaction of soil near excavations or near existing buildings, facilities and utilities or those under construction.

.14 The Contractor is solely responsible for harm to persons or damage to existing buildings, facilities and utilities due to the absence or failure of shoring structures and cofferdams or through the use of poorly designed embankment slopes, whether such harm or damage results from improper installation, poor maintenance or removal.

3.11 PREPARATION OF THE EXCAVATION FLOOR

.1 Any excavation in the ground, within 150 mm of the finished level is removed manually or mechanically, taking great care to avoid disturbing the natural bottom, unless the Ministerial Representative has directed otherwise. When excavating in clay, the teeth of the excavation bucket shall be continuous, with no space in between.

.2 Laying pipes on the bottom of a muddy or flooded trench is prohibited. The Contractor must dewater and prepare the trench, ensuring that it is firm and solid before installing the pipe bed. If needed, the Ministerial Representative can require that the infrastructure be compacted anew before laying the bed for the pipes. In cold weather, the bottom of the trench must also be protected against frost.

3.12 UNSTABLE SUB-BASE

.1 Every time materials constituting the floor of an excavation, which has been brought to the level indicated on the drawings or the Ministerial Representative, are found to be too soft or, for whatever other reason, inadequate for supporting a pipe or other element to be built, the Contractor must excavate to a greater depth and build a special base, as required by the Engineer.

.2 Various additional work required for stabilizing the pipe bed are as follows (at the Ministerial Representative's choice):

.1 Geogrid.

.2 Additional excavation, transportation and leveling.

.3 Reinforced geotextile.

.4 Unshrinkable fill.

.5 Concrete and steel reinforcements in place.

.6 Crushed stone, crushed gravel, sand, etc.

.3 If the Ministerial Representative considers that the condition of the soil, which is soft or unsuitable for whatever reason, is due to unavoidable conditions, special base work can then be carried out by the Contractor, as instructed by the Ministerial Representative.

.4 In the event that the Ministerial Representative considers that the condition of materials, which are soft or unsuitable for whatever reason, results from the Contractor's failure to adequately protect, handle and drain the worksite, or other negligence on the part of the Contractor, the latter shall, at his expense, excavate to the additional depth required of him, and fill the excavation in a satisfactory manner to the required level, even if unshrinkable fill or crushed stone is to be used, or if on the orders of the Ministerial Representative, other means are to be used to properly support the structure.

3.13 BEDDING AND SURROUND OF PIPES AND UNDERGROUND STRUCTURES

.1 Supply and placement of bedding and wrapping for pipes and other underground structures includes loading, transportation and disposal of surplus excavation at a location determined by the Ministerial Representative within the limits of the Institution.

.2 Pipe of polyvinyl chloride (PVC), high-density polyethylene (HDPE)

.1 The bed shall be produced using MG-20-type crushed stone with a minimum thickness of 150 mm (trench in granular material) or 200 mm (trench in rock) compacted to a density equal to or higher than 90 % of that obtained with the Modified Proctor test.

.2 An underground pipeline shall be surrounded up to half the diameter of the pipe using MG-20 crushed stone, in successive layers compacted to 90 % of Modified Proctor to a maximum thickness of 200 mm along the entire width of the trench.

.3 Fill shall be installed simultaneously on each side of the pipe or structure to cancel out pressure exercised by the ground.

.4 Filling of the trench from mid-diameter to 300 mm over the pipe shall be done in layers of no more than 200 mm prior to compacting using MG-20 crushed stone compacted to 90 % of Modified Proctor along the entire width of the trench.

.5 When the height of the fill over the pipe exceeds 2 m, the 300 mm thick zone immediately over the pipe is non-densified.

.6 The only densifying equipment permitted are rammers, plate vibrators and vibrating drum rollers whose total applied pressure does not exceed 50 kN on the first metre over the pipe.

.7 In the case where the use of clear stone is authorized to control incoming water, the clear stone must be confined to a type II geotextile in accordance with MTMDET standard 13101 placed on the bottom of the trench, with edges folded over the clear stone.

.3 Underground structure

.1 For an underground structure, the bedding shall also be of MG-20 crushed stone compacted to 90 % of Modified Proctor and shall have a minimum thickness of 300 mm.

.2 The surround of an underground structure shall use MG-20 type crushed stone over a width of 600 mm, placed in successive layers compacted for a maximum thickness of 300 mm to 90 % of Modified Proctor to obtain a minimum fill of 150 mm over the roof slab or to the level of the infrastructure.

.4 Geotextile for bottom of the trench

.1 Where required by the Ministerial Representative, before installing the bedding stone for water system pipes, the Contractor shall place, on the bottom of the trench, a type II geotextile in accordance with MTMDET standard 13101 whose width is equal to that of the trench.

3.14 MAINTENANCE OF THE FILL SURFACE

.1 The Contractor is required to keep the fill surface of trenches in good condition until the work has been accepted. Moreover, he is responsible, at all times, for accidents and damage caused to individuals, public or private property as well as vehicles. He is required to correct any sagging that might develop in the pavement and carry out all other work needed for the structure to be put into service or which might be required by the Ministerial Representative.

.2 In an emergency, or if the Contractor has failed to carry out repairs deemed necessary and requested via a 48-hour written notice from the Ministerial Representative, the latter can have said work carried out by a third party, at the Contractor's expense.

3.15 BACKFILLING OF PIPES AND EXCAVATIONS

.1 Do not start backfilling until the Ministerial Representative and the laboratory have inspected the premises and given their authorization, and until backfill materials have been accepted by the laboratory and the Ministerial Representative.

.2 Before proceeding with the backfilling of excavations, the Contractor must remove all supports from excavation walls or existing structures, as well as forms, debris, waste, etc.

.3 In the case of shored excavations, remove coverings as backfilling work progresses. Do not remove shoring until backfill has reach its height. Backfill shall be placed and compacted to fill all voids left by the withdrawal of the coverings.

.4 All surfaces to be filled must be free of debris, snow, ice, water or frozen soil.

.5 Backfill shall consist of materials from debris, excavations, discharge ditches or borrow sources and placed beneath the infrastructure line according to the plans and specifications, as well as longitudinal and cross-sectional profiles, which are part of the contract, whether or not they have been modified by the Ministerial Representative during the course of the work, in compliance with the requirements of the contract documents.

.6 Materials used must comply with the requirements of the "Fill Materials" article for the proposed use.

.7 Fill shall be installed simultaneously on each side of the pipe or structure to cancel out pressure exercised by the ground.

.8 Filling off-road excavations must be done in the following manner:

.1 For the first meter over the pipe or other structure, the use of compacting equipment exerting more than 50 000 N of pressure is prohibited. Compacting equipment can be plate vibrators or trench rollers.

.2 The filling of the excavation shall use excavation surplus deemed to be reusable and free of stones measuring more than 150 mm in diameter, frozen material or organic matter. Voids must be filled using a finer material. The Contractor shall compact materials to 90 % of Modified Proctor, to obtain a density equal to that of the neighboring non-reworked soil, in successive layers with a maximum thickness of 300 mm, to the level required to restore and/or build the infrastructure of existing and/or projected elements. In the event that materials are deemed to be non-reusable, the Contractor shall use borrow materials accepted by the Ministerial Representative. The fill shall be compacted along the entire width of the excavation.

.3 The fill of the 1,0 m layer over the surround stipulated for polyvinyl chloride (PVC) pipes must be free of any material of more than 100 mm and of an angular nature.

.4 The excavation material shall be handled so as to protect, aerate and dry it, making it suitable for filling the trench. All measures required to avoid the contamination of the excavated material and preserve its integrity for backfilling the trench shall be at the Contractor's expense.

.5 The density is verified on site by a laboratory retained by the Ministerial Representative. The Contractor must plan for sufficient work stoppage time to allow the laboratory to conduct density tests, whether on the pipe bedding, fill or bases.

.6 The fill surface shall be brought to and kept at the level of the existing ground when there is no existing or proposed base, with the exception of the above-mentioned pipes.

.9 Filling the excavation beneath an existing roadway must be carried out in the following manner:

.1 For the first meter over the pipe or other structure, the use of compacting equipment exerting more than 50 000 N of pressure is prohibited. Compacting equipment can be plate vibrators or trench rollers.

.2 Barring specific directives in the contract, the filling of trenches in an existing base before the start of the work must be carried out using Class A granular material compacted to a density equal to or higher than 90 % M.P., in successive layers with a maximum thickness of 300 mm, to the level required to restore and/or construct the infrastructure of existing and/or projected elements. If the materials are deemed to be non-reusable, the Contractor shall use borrow materials accepted by the Ministerial Representative. Compacted fill shall be installed along the entire width of the excavation.

.3 The 150 mm surround layer beneath the infrastructure line shall be compacted to 95 % of Modified Proctor. The Contractor shall not spread the next layer without first obtaining the required compactness.

.4 For excavations located in paved zones to be preserved, the excavation and backfilling Contractor shall maintain a 45° transition zone on the sides of the trenches for any thickness of pavement infrastructure.

.5 New foundations and pavement must be redone in keeping with the specifications in the call for tender documents.

.10 All usable 2nd Class excavation materials belong to CSC and must be used where indicated by the Ministerial Representative.

.11 If the Contractor is responsible for the loss of reusable materials, he shall be required to replace said materials, at his expense, with an equivalent volume of material acceptable to the Ministerial Representative.

.12 The Contractor shall also store excavated materials, which cannot be used immediately but will be used at a later time.

.13 In the case of excavated materials that must be set aside for later use, the cost of the double handling shall be included in the bid.

.14 If excavated materials cannot be used, the Contractor shall dispose of them in compliance with the requirements of the article "Disposal of Excavation Surplus".

.15 Prior to the construction of embankments, it is necessary to take into account the removal of topsoil. Furthermore, dips and voids, whether natural or resulting from the removal of obstacles, must be filled to the level of neighboring ground, using materials of the same nature. The surface of the soil in place must be free of snow, ice and mud.

.16 When excavated materials and excavations shown on the plans and profiles do not provide enough adequate material for the construction of embankments called for by the contract, materials from borrow pits beyond the road's right-of-way shall be used.

3.16 COMPACTION

.1 General

.1 The compaction of materials seeks to increase their load-bearing capacity and prevent future settlement. Compacting operations shall be carried out at an ambient temperature above 0 °C in the case of cohesive soil, and it must be above - 6 °C in the case of granular soil, with the latter compacted before materials have reached a temperature below 0 °C.

.2 If the required compaction density is not achieved, the Contractor shall remove the excavation fill and restart compaction work using heavier equipment or increasing the number of passes. Repeat until the required compaction density has been reached.

.2 Compaction equipment

.1 Compaction equipment must make it possible to achieve the stipulated material densities. Replace or reinforce equipment if such is not the case.

.3 Compaction control

.1 Compaction control is ensured by the laboratory retained by the Ministerial Representative. The Contractor must notify the Ministerial Representative twenty-four (24) hours in advance to have the required tests carried out.

.4 Compaction levels

.1 This article deals with the level of compaction required for the natural soil and embankments. Embankments must be erected in successive layers, compacted separately and evenly.

.1 Compaction of the natural soil:

.1 The bottom cut and natural soil stripped of topsoil must be densified to a depth of 150 mm, to 90 % of Modified Proctor maximum dry density. If the bottom cut or the natural soil coincide with the infrastructure line, the first 150 mm beneath the infrastructure line must be densified to 95 % of Modified Proctor.

.2 Compaction of soil fill:

.1 Fill materials are densified to 90 % of Modified Proctor maximum dry density, except for the last 150 mm beneath the infrastructure line, which are densified to 95 % of Modified Proctor.

.3 Compaction of stone fill:

.1 The fill must have a minimum density of 90 % of Modified Proctor maximum dry density, except for the last 150 mm below the infrastructure line, which shall be densified to 95 %.

.5 Optimal water content

.1 Add or dewater as needed to maintain the materials' required water content and thus achieve the stipulated compaction.

.2 The Contractor must strive to obtain, on the worksite, a water content allowing him to achieve the required density.

.3 The Contractor shall supply the equipment needed to accelerate the drying of overly moist soil or moisten overly dry soil.

.4 If the soil is too moist to allow even compaction to the required density, the Ministerial Representative may require that the soil be mixed with dry soil or dried by aeration or scarification.

.5 If, on the other hand, the water content is inadequate, the Ministerial Representative can require watering to obtain a suitable content. The equipment required for this work is a 4,500-liter mobile tank fitted with a pressure or gravity release mechanism. The operator must be able to adjust the water distribution rate to ensure even distribution throughout the layer to be densified prior to compacting. If the surface is smooth, the Contractor shall use a scarifier or harrow to favor water penetration.

.6 Density loss and reworking of the soil

.1 In the event that, before the end of the contract, the natural soil or a layer of materials already compacted according to specifications, should lose density due to the movement of equipment, poor weather, freeze-thaw cycle or any other reason, the Contractor shall be required to re-compact the soil to the required density, at his expense.

3.17 UNSHRINKABLE FILL

.1 Where work passes through utilities, unshrinkable fill may be used by the Contractor to replace any backfill material. Unshrinkable fill may be used for the embedding and / or seating of an underground pipeline or bulkhead.

.2 Implementation of unshrinkable fill shall meet the following requirements:

.1 High speed mixing of mix prior to placement to avoid segregation;

.2 Unloading at maximum speed, depending on site conditions;

.3 Backfilling of excavation from low point to high point;

.4 Use of flexible horn (trunk), pump and bucket is prohibited;

.5 Avoid moving backfill at any time after initial consolidation, or after fifteen (15) to twenty (20) minutes.

.3 No foundation and / or pavement structure shall be placed on unshrinkable fill before six (6) hours have elapsed after it is placed.

.4 Any unshrinkable fill affected by the action of freeze, before and / or after its placement, shall be removed and replaced.

3.18 DISPOSAL OF WASTE MATERIALS

.1 The work is governed by a waste management plan. See Section 01 74 21 – Management and Disposal of Construction/Demolition Waste (see General Requirements).

.2 All materials already buried in the ground, whether piping, valves, valve boxes, manholes, sumps, etc., belong to CSC. The Contractor must carefully recover all these still usable materials. He must, at his expense, transport them and place them in an area designated by the Ministerial Representative, unless it is planned to reuse them in the contract.

.3 The loading, transportation and disposal of waste materials are at the expense of the Contractor.

.4 Dry materials

.1 All materials from 2nd class excavation such as crushed or shredded residue, which are non-petruscible and contain no hazardous waste such as scrap wood, rubble, waste plaster, and concrete, masonry and paving refuse, shall be transported and disposed off at a dry material dump that complies with prevailing laws, regulations, policies, codes, standards and best practices. The Contractor must provide the Ministerial Representative with proof that the selected dumpsite meets the requirements of this article as well as receipts issued by the dumpsite upon reception of the material. The cost of sorting, handling and disposing of these materials shall be assume/ by the Contractor.

.2 Materials from the deforestation and clearing of the zone affected by the work (such as trees, shrubs, bushes, branches, brush, stumps, dead wood, and other vegetation waste and materials containing demolition debris) or from the demolition of existing pavement, curbs, and sidewalks or existing underground installations, shall be disposed of at a site that complies with prevailing laws,

regulations, policies, codes, standards and best practices. The cost of sorting, handling and disposing of these materials shall be assumed by the Contractor.

.5 Unusable materials

.1 All materials from 2nd class excavation and deemed unusable by the Ministerial Representative, such as putrid matter, topsoil, loam, etc., shall be transported to a suitable location chosen by the Contractor and approved by the Ministerial Representative. Rotting materials from debris will also be loaded into closed truck boxes. The cost of sorting, handling and disposing of these materials shall be assumed by the Contractor. These materials must be disposed off at a site that complies with prevailing laws, regulations, policies, codes, standards and best practices.

.2 If deemed necessary by the Ministerial Representative, the Contractor shall, for filling trenches, replace unusable materials with acceptable materials.

3.19 DISPOSAL OF EXCAVATION SURPLUS

.1 Excavation surplus refused by the Ministerial Representative for the project's backfilling purposes can be disposed off at a site selected by the Contractor and approved by the Ministerial Representative, and located at least 75 m (250 ft.) from a road's right-of-way or the shoreline of a water course or at a location determined by the Ministerial Representative within the limits of the Institution. Materials must be placed so as not to be visible from a public road or obstruct the flow of water. Once disposal has been completed, the materials must be leveled to the satisfaction of the owner(s) of the land. The Contractor must obtain a letter of authorization from each of the owners of the land covered by these provisions. A copy of this agreement must be provided to the Ministerial Representative before material is transported.

.2 Disposal work referred to above to comply with the laws and ordinances, regulations and orders of the federal government applicable to disposal work performed on federal land and which, in case of conflict, take precedence over the requirements referred to above.

.3 Disposal and management of excavated soil shall meet the requirements of section 31 23 13 - Environmental Management of Excavated Surpluses.

.4 All expenses related to any use whatsoever of the above-mentioned disposal and/or landfill site, including the obtention of any permit and/or authorization, as well as the loading, transportation and disposal, shall be at the Contractor's expense.

.5 All sites for the storage and disposal of debris (excavation surplus excluding any refuse) considered within the framework of this contract must first be approved by the Ministerial Representative no later than the first worksite meeting. None of these materials can be disposed of until this approval has been obtained.

.6 All excavation surplus and 1st and 2nd class debris not required by the Ministerial Representative become the property of the Contractor.

.7 The Contractor shall ensure that these materials are not disposed of in a flood zone and, prior to the start of the work, shall provide the landowner(s) with a permit.

.8 The Contractor is solely responsible for consequences resulting from the filling of one or more properties and possible claims or lawsuits from the property owners concerned, with regards to the leveling, the quality of debris materials, damages to trees, terraces, etc. The disposal of excavation surplus must not impede the natural drainage of the site.

3.20 RESTORATION WORK

.1 Once work on the project has been completed, remove surplus materials and debris, trim slopes and correct defects identified by the Ministerial Representative.

.2 Clean and restore areas damaged by the work, as directed by the Ministerial Representative.

.3 Unless otherwise indicated, the ratio of embankment slopes will not be less than 1 V : 3 H.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 The Contractor is responsible for obtaining copies of all sections of these specifications even if they do not seem relevant to its specialty; otherwise, the Contractor will be deemed to have accepted all clauses and provisions of all sections of these specifications.

1.2 SCOPE OF WORK

.1 The work shall include, but not be limited to, supplying the materials and manpower required for the execution, according to good engineering practices, of the environmental management and disposal of excavation surplus, in compliance with the prevailing regulations.

.2 Excavation, loading, transportation and disposal of excavation surplus to a location determined by the Departmental Representative within the limits of the Institution based on the analytical results of the environmental characterization report.

.3 Eliminate excavated contaminated soil at sites authorized by the MDDELCC.

.4 The surveying of work areas, boundaries and excavation bottoms and backfilled areas.

1.3 REFERENCES

.1 No environmental characterization studies of existing soils have been carried out for this project.

1.4 ABBREVIATIONS AND DEFINITIONS

.1 Waste: Refers to any material to be excavated by the Contractor, which corresponds to definitions contained in the burial and incineration of waste or residual matters or the Regulation respecting hazardous materials, administered by the MDDELCC.

.2 Soil to be excavated: Refers to any soil that must be excavated by the Contractor at locations and depths determined by the Ministerial Representative.

.3 A-B Soil: Refers to soil whose contamination concentrations fall within the A-B range as defined by the generic criteria of the MDDELCC's Soil Protection and Contaminated Sites Rehabilitation Policy.

.4 B-C Soil: Refers to soil whose contamination concentrations fall within the B-C range as defined by the generic criteria of the MDDELCC's Soil Protection and Contaminated Sites Rehabilitation Policy.

.5 >C soil and < to Regulation respecting the burial of contaminated soils standards: Refers to soil whose contamination concentrations exceed generic C criteria as defined by the MDDELCC's Soil Protection and Contaminated Sites Rehabilitation Policy and falls below the standards of the Regulation respecting the burial of contaminated soils.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 EXECUTION

3.1 REUSE OR DISPOSAL OF EXCAVATION SURPLUS

.1 Excavated materials below criteria A and excavated materials within the A-B range can be reused as backfilling materials in the original excavation.

.2 Excavated materials within the A-B range that could not be reused as backfilling materials in this project must be disposed of at a site according to the guidelines of MDDELCC's Soil Protection and Contaminated Sites Rehabilitation Policy and authorized by the MDDELCC or at a location determined by Departmental Representative within the limits of the Institution if these excavated materials are compatible (concentration, contaminants, geotechnical) with receptor site.

.3 Excavated materials within the B-C range must be disposed of at a site according to the guidelines of the MDDELCC's Soil Protection and Contaminated Sites Rehabilitation Policy and authorized by the MDDELCC or at a location determined by Departmental Representative within the limits of the Institution if these excavated materials are compatible (concentration, contaminants, geotechnical) with receptor site.

.4 Excavated materials above criteria C and lower than standards of Regulation respecting the burial of contaminated soils must be placed in a site according with the guidelines of the policy soil Protection and contaminated Sites Rehabilitation of MDDELCC and authorized by the MDDELCC.

.5 Excavated materials above the standards of Regulation respecting the burial of contaminated soils must be placed at a site authorized by the MDDELCC.

.6 In the event that other contaminated materials are discovered during construction, the excavated materials must be managed and disposed in accordance with the environmental and municipal regulations.

.7 Reusable contaminated soils and compatible with the use of the site should be reused as backfilling materials in the original excavation before non-contaminated soils.

3.2 LEGISLATION

.1 The Contractor must carry out all soil and groundwater restoration work in compliance with the following guides, guidelines, standards and regulations:

.1 MDDELCC's Soil Protection and Contaminated Sites Rehabilitation Policy.

.2 MDDELCC's guides and guidelines.

.3 Regulation for the burial of contaminated soils.

.4 Regulation for storage and contaminated soil transfer centers.

3.3 EXCAVATION OF CONTAMINATED SOIL

.1 Should contaminated soil be encountered, the Contactor shall conduct excavation work in a methodical fashion, which provides the control required for environmental follow-up. He shall carry out selective excavations, as directed by the Ministerial Representative.

.2 The Contractor must consider that the Departmental Representative must be present throughout the duration of excavation work and that the latter can, at any time, stop work in a sector to carry out observations, samplings and analyses. The Contractor shall provide all collaboration required for the smooth execution of the work, to ensure that all contaminated soil is removed and disposed of in an adequate manner. In this regard, it is possible for changes to occur and for the elevations of contaminated soil to be excavated be modified as excavation work progresses.

3.4 MANAGEMENT OF EXCAVATED MATERIALS

.1 When required, excavated soil shall be temporarily stored on polyethylene tarps. Soil shall also be covered with a polyethylene tarp. Tarps must be of "Extra Strong" calibre, 6 mils thick and well anchored.

.2 Debris must never be piled more than 1 m in height within the perimeter, to ensure the Institution's visibility and security, except occasionally within a single work day.

.3 Within the perimeter, it is important to note that the work site should be used for temporary storage of excavated soil piles.

3.5 SAFETY

.1 The Contractor must, at his own expense, prevent excavations from collapsing. To this end, he must maintain stable slopes required for the proper execution of the work and the protection of workers on the jobsite.

.2 The Contractor shall take measures needed to ensure that the piles of materials as well as the work do not impeded traffic and transportation. He must use a work method that allows him to confine contaminated soil to specific areas, in order to limit the risk of contaminating clean zones.

3.6 DISPOSAL OR TREATMENT OF CONTAMINATED SOIL

.1 Contaminated soil, which cannot be reused as backfilling materials within the limits of the Institution's land, shall be shipped for disposal or treatment to an authorized site by MDDELCC. Weight tickets given to the driver by the treatment or disposal site shall be handed to the Departmental Representative.

.2 Truck boxes shall be fitted with removable hoops and watertight tarps firmly secured to the walls.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 The Contractor is responsible for obtaining a copy of all sections of this document even if it appears to be irrelevant to his specialty, failing which it will be acknowledged that he accepts the clauses and requirements of all sections of this present specification.

1.2 SCOPE OF WORK

.1 Supervise the work and provide all labor, equipment, tools, materials, transportation and other services necessary to carry out and complete all work described and specified in this section and in the contractual documents including, but not limited to: providing, installing and compacting the granular materials necessary for the construction of one or more granular base layers, all of which must conform to the lines, thickness, levels and profiles indicated on Contractual drawings or as specified by the Ministerial Representative.

.2 Pavement infrastructure includes the construction of new paved areas and the rehabilitation of existing bases in the excavation areas for the connection of the proposed storm sewer system.

1.3 REFERENCES

.1 Bureau de normalisation du Québec (BNQ)

.1 NQ 2560-114/2002 Travaux de génie civil – Granulats.

.2 CAN/BNQ 2501-255/2013 : Sols - Détermination de la relation teneur en eau-masse volumique sèche - Essai avec énergie de compactage modifiée (2700 kN.m/m^3).

.2 Ministère des Transports, de la Mobilité durable et de l'Électrification des transports (MTMDET – Quebec's Ministry of Transport, Sustainable Mobility and Transport Electrification)

.1 LC 22-002 – Détermination du facteur de correction de la teneur en eau des sols et des matériaux granulaires à l'aide d'un nucléo-densimètre

.2 LC 22-003 – Détermination de la compacité des sols et des matériaux granulaires à l'aide d'un nucléo-densimètre

.3 Cahier des charges et devis généraux (CCDG), latest edition.

.1 Section 11.10.3 – Renforcement de l'infrastructure à l'aide d'un géotextile

.2 Section 12.2 – Sous-fondation de chaussée

.3 Section 12.3 – Fondation de chaussée

.4 Cahiers des Normes, Ouvrages Routiers, Tome VII "Matériaux", latest edition.

.1 Standard 2101 - Granulats

.2 Standard 13101 – Géotextiles

1.4 INSPECTION AND TESTING

.1 The materials and compaction analysis and tests are carried out by an expertise and testing Laboratory designated by the Ministerial Representative.

.2 The Ministerial Representative shall pay the of inspection and analysis costs of this Laboratory. If, due to non-conformities, tests are to be resumed, the costs will be paid by the Contractor.

.3 The Ministerial Representative reserves the right to carry out compaction tests to verify that the requested compactness has been achieved. The Contractor shall cooperate in the performance of such tests and shall not be entitled to any claim for termination of work or other loss of time resulting from the performance of such tests.

.4 Frequency of testing is defined by the Ministerial Representative.

.5 Notify Ministerial Representative and Laboratory at least 24 hours prior to laying of granular base. During the various layers of the base, a Laboratory representative must take samples and be present during the work.

.6 If the Contractor uses fill material other than the one sampled, all backfill material shall be removed and replaced at his own expense.

1.5 SUBMITTALS

.1 Submit granulometric data sheets of various granular materials and their provenance to the Ministerial Representative for approval at least two (2) weeks prior to commencement of work.

.2 Submit geotextile technical sheets to Ministerial Representative for approval at least two (2) weeks prior to commencement of work.

1.6 DELIVERY NOTES

.1 Each shipment delivered on site is accompanied by a duplicate delivery note. The Ministerial Representative must sign one of these tickets as a receipt for the Contractor and keep the other copy.

PART 2 PRODUCTS

2.1 GRANULAR MATERIALS

.1 Paved path

.1 The granular material used for the base is of MG20 type and shall meet the requirements of section 31 05 16 – Aggregate Materials of this specification.

.2 Paved storage area

.1 The granular material used for the base is of MG20 type and must meet the requirements of section 31 05 16 – Aggregate Materials of this specification.

.3 Gravel path

.1 The granular material used for the base is of MG20 type and shall meet the requirements of section 31 05 16 – Aggregate Materials of this specification.

.2 The granular material used for path finishing is 0-5 mm stone dust type and must meet the requirements of section 31 05 16 – Aggregate Materials of this specification.

.4 Existing pavement rehabilitation and access road widening

.1 The granular material used for the sub-base is of MG112 type and shall meet the requirements of section 31 05 16 – Aggregate Materials of this specification.

.2 The granular material used for the lower base is of MG56 type and shall meet the requirements of section 31 05 16 – Aggregate Materials of this specification.

.3 The granular material used for the top base is of MG20 type and shall meet the requirements of section 31 05 16 – Aggregate Materials of this specification.

2.2 GEOTEXTILE

.1 The geotextile to be installed as an anticontamination layer under the paved trail base is a non-woven synthetic fiber type III fiber according to MTMDET Standard 13101.

PART 3 EXECUTION

3.1 GENERALITIES

.1 Bases construction shall be carried out after the thawing period when snowmelt water is completely removed from the soil.

.2 The Contractor shall at all times take the necessary measures to minimize dust emissions that may be caused by his work.

3.2 ALIGNMENTS AND LEVELS

.1 All work shall be carried out in accordance with the alignments and levels indicated on the plans and details.

.2 Except where otherwise indicated on plans, final elevations of surface repairs shall be the same as elevations of connection to the existing surface.

.3 In the event that obstructions or other unforeseen contingencies in the plans interfere with the work to the extent of requiring changes, the Ministerial Representative may require that the work be modified or moved accordingly.

3.3 INFRASTRUCTURE PREPARATION

.1 This section discusses the work to be done to give the surface of the infrastructure the shape determined by the long and cross sections before proceeding with the construction of the pavement structure.

.2 The Contractor shall excavate and remove existing bases, pavements, sidewalks and curbs where the work is being carried out. All materials must be disposed off site, as described in section 31 23 11 - Excavation and Backfill - Underground Services.

.3 The preparation of the platform, where the bases of the various exterior structures shall be constructed, shall be made in accordance with the relevant requirements of section 31 23 11 - Excavation and Backfill - Underground Services.

.4 The preparation of the infrastructure includes the earthwork necessary to obtain a platform on which to build the base of the road improvements, in the form determined by the plans and details. The platform must be profiled to allow drainage of the bases to the collection points. The infrastructure must be smooth, free of ruts and depressions. The topsoil in the right-of-way of the roads shall be excavated.

.5 The surface to be prepared must be thoroughly drained beforehand and for the entire duration of the preparation. If there are small inequalities, less than 50 mm apart with the required profile, it is sufficient to completely level the surface with a grader and then consolidate it with the appropriate compaction tooling. If the surface to be prepared is

rugged or undulating, the Contractor shall begin by scarifying this surface to the level of the bottom of the depressions and recommence the compaction operations.

.6 If a solid and stable surface can not be obtained due to the presence of damaged materials in the infrastructure, these materials must be dried by harrowing or excavation.

.7 The borrowing required to fill such excavations shall be of acceptable quality by the Ministerial Representative.

.8 Before laying base or sub-base materials, the surface shall be verified by the Ministerial Representative. The laying of the base or sub-base can not begin until the Ministerial Representative has accepted the infrastructure.

.9 Subsequently, compact the natural soil to a minimum thickness of 300 mm in such a way that the compactness of the infrastructure soils attains at least 95% of its maximum dry density obtained in the Modified Proctor test.

.10 All infrastructure surfaces that are not accessible by heavy compaction equipment will be perfectly compacted with smaller equipment or vibrating plate.

.11 Any soft or unstable site shall be excavated and replaced with more stable backfill materials of similar particle size to the adjacent materials.

.12 After compaction and profiling of the platform, the Contractor shall proceed as soon as possible to the construction of the bases so that the surface is not exposed to atmospheric agents for too long and is altered.

3.4 GEOTEXTILE INSTALLATION

.1 Geotextile laying shall be carried out in accordance with the requirements of CCDG Article 11.10.3.3 (latest edition).

.2 Geotextiles may only be installed after inspection and approval of the infrastructure by the Ministerial Representative.

.3 Install geotextiles to obtain a flat, smooth surface with no creases, buckles or stressed areas.

.4 A minimum of 600 mm wide overlap is required between two sections of geotextiles.

.5 Prevent membrane from moving or damaging before and during layering of granular material overlay.

.6 Install the granular base on the geotextile in the same work day as the laying of the geotextile.

.7 Movement of vehicles and equipment is prohibited on geotextile.

.8 If a geotextile section is damaged or deteriorated, remove and replace it to the satisfaction of the Ministerial Representative.

.9 Conduct site clean-up and dispose of waste / scrap material generated by this work in accordance with section 01 74 21 - Construction / Demolition Waste Management and Disposal.

3.5 PAVEMENT SUB-BASE AND BASE

.1 Implementation

.1 The pavement subgrade shall be installed in accordance with the requirements of CCDG section 12.2.3 (latest edition).

.2 Implementation of the pavement base shall be in accordance with the requirements of CCDG section 12.3.3 (latest edition).

.3 Install base materials only after infrastructure has been inspected and approved by Ministerial Representative.

.4 Spread base only on clean, unfrozen, compacted surface free of snow or ice.

.5 Before the base is laid, the surface of the infrastructure shall be free of ruts or other depressions and shall not deviate by more than 10 mm from the longitudinal and transverse levels and profiles shown on the plans.

.6 Proceed to construction of bases in successive layers up to 300 mm thick. The specified granular material is spread over the entire width of the infrastructure or sub-base in uniform thickness, without segregation, in accordance with the design section of the pavement. The surface is then leveled and, if necessary, moistened or dried in order to obtain the required compaction.

.7 Each of the layers shall be compacted separately in accordance with the provisions of the article "Compaction". Areas that are difficult to access must be manually packed with special compaction machines or vibrators.

.8 At the connection between existing and planned roadway structures, a transition shall be made in the different base layers with a slope of 1 V: 1 H.

.2 Unstable or contaminated area

.1 In the event of weak parts yielding under the roller or the mud or soil of the infrastructure mingling with the base, these unstable or contaminated materials must be removed and the parts of the base reconstituted after the infrastructure is upgraded.

.3 Base cleaning

.1 Where paving is to be carried out long after the base works, it shall be decontaminated. Work includes the removal and transportation of materials considered by the Ministerial Representative to be contaminated, shaped and compacted by the existing base.

.4 Compacting

.1 Compaction control shall be carried out by the Laboratory selected by the Ministerial Representative. The Contractor must notify the Ministerial Representative twenty-four (24) hours in advance to obtain the required tests.

.2 The compaction equipment used shall be capable of achieving the specified material densities. Replace or reinforce equipment if this is not the case.

.3 Compact the different base layers according to the following levels:

.1 Sub-base: minimum 95% of the maximum dry density obtained by the "Modified Proctor" test.

.2 Base: minimum 95% of the maximum dry density obtained by the "Modified Proctor" test.

.3 Stone dust: minimum of 90% of the maximum dry density obtained by the "Modified Proctor" test.

.4 Hard to reach areas must be manually packed with special compactors or vibrators.

.5 Add water or dry as needed to maintain the water content of the materials at the required level and thus achieve the specified level of compaction.

.6 If the natural soil or a layer of material, already compacted according to the specifications, is subjected to a loss of density due to the circulation of equipment, weather, freeze-thaw or any other cause, the Contractor shall, at his own expense, remake the compaction to the required density.

.5 Protection

.1 Maintain the finished surface of each of the base layers in accordance with the requirements of this section until the next layer is laid.

3.6 WASTE MATERIALS

.1 Disposal of waste materials shall be in accordance with section 01 74 21 - Construction and Demolition Waste Management and Disposal.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 The Contractor is responsible for obtaining a copy of all sections of this document even if it appears to be irrelevant to his specialty, failing which it will be acknowledged that he accepts the clauses and requirements of all sections of this present specification.

1.2 SCOPE OF WORK

.1 Supervise the work and provide all labor, equipment, tools, materials, transportation and other services necessary to carry out and complete all work described and specified in this section and in the contractual documents including, but not limited to: placement of the bituminous concrete layers kneaded in a coating station and placed on a granular surface and on the base layer, all of which must conform to the lines, thickness, levels and profiles indicated on Contractual drawings or as specified by the Ministerial Representative.

.2 Bituminous pavement work includes the construction of new paved areas and the repair of asphalt surfaces in excavation areas for the connection of the proposed storm sewer system.

1.3 REFERENCES

.1 Ministère des Transports, de la Mobilité durable et de l'Électrification des transports (MTMDET – Quebec's Ministry of Transport, Sustainable Mobility and Transport Electrification)

.1 Cahier des charges et devis généraux (CCDG), latest edition

.1 Section 13 - Revêtement de chaussée en enrobé.

.2 Cahiers des Normes, Ouvrages routiers, Tome VII "Matériaux"

.1 Norme 2101 - Granulats.

.2 Norme 4101 - Bitumes.

.3 Norme 4105 - Émulsions de bitume.

.4 Norme 4202 - Enrobés à chaud formulés selon la méthode de formulation du Laboratoire de chaussées.

.2 Bureau de normalisation du Québec (BNQ)

.1 BNQ 2560-114 Travaux en génie civil – Granulats (latest edition).

1.4 INSPECTION AND TESTING

.1 The materials and compaction analysis and tests are carried out by an expertise and testing Laboratory designated by the Ministerial Representative.

.2 The Ministerial Representative shall pay the of inspection and analysis costs of this Laboratory. If, due to non-conformities, tests are to be resumed, the costs will be paid by the Contractor.

.3 The Ministerial Representative reserves the right to have compaction tests performed in order to verify whether the requested compaction is achieved. The contractor must collaborate in the performance of these tests and may not base any claim for a work stoppage or other lost time on the performance of these tests.

.4 Frequency of testing is defined by the Ministerial Representative.

.5 Notify Ministerial Representative and Laboratory at least 24 hours prior to laying of granular base. During the various layers of the base, a Laboratory representative must take samples and be present during the work.

1.5 SUBMITTALS

.1 Submit manufacturer's test data and certification that asphalt cement meets requirements of this section.

.2 Two (2) weeks before the beginning of the work, submit to the Ministerial Representative for approval the mixing formula for the asphalt mix and the results for that mixture.

1.6 DELIVERY NOTES

.1 Each shipment delivered on site is accompanied by a duplicate delivery note. The Ministerial Representative must sign one of these tickets as a receipt for the Contractor and keep the other copy.

PART 2 PRODUCTS

2.1 AGGREGATE

.1 Aggregates used in the manufacture of bituminous mix shall comply with BNQ 2560-114 - Civil works - Aggregates.

2.2 HOT MIX AND HOT-SET ASPHALT

.1 Bitumen

.1 The bitumen performance class is PG-58-34.

.2 The bitumen must comply to MTMDET standard 4102.

.2 Asphalt concrete

.1 Hot mix asphalt must be as specified in MTMDET standard 4202.

.2 Asphalt mixtures are:

.1 ESG-10 type for single and wearing layers.

.2 GB20 type for base layer.

.3 Equipment for the manufacture and installation of asphalt shall conform to the requirements of section 13.3.3 - Equipment of the CCDG (latest edition).

.4 Used asphalt mixes shall meet the requirements for rut resistance specified in Table 4202-1 of MTMDET standard 4202.

2.3 COUPLING BINDER

.1 The coupling binder is of RS-1 type and must comply to MTMDET standard 4105.

.2 Material for binder application shall meet the requirements of section 13.2.3 - Equipment of the CCDG (latest edition).

PART 3 EXECUTION

3.1 GENERAL

.1 The asphalt pavements shall be produced after a thaw period, when the water coming from snowmelt on the ground is completely drained from the soil. The asphalt mixes shall be prepared and placed under favourable weather conditions at an ambient temperature allowing production of a flexible pavement conforming to these specifications. It is forbidden to operate when the mixture of the aggregates affects the mix temperature or the speed of operations, or when the base is soaked or covered with puddles or mud. The temperature of the surface to be covered shall be at least 5°C with a rising trend. When the surface temperature falls below 7°C, no surface course shall be placed without written permission from the Ministerial Representative. At all times, the mix shall be compacted until it reaches the specified density. No surface blending is put in place after October 15th without permission from the Ministerial Representative.

.2 At all times, the contractor shall take the necessary measures to minimize the dust emissions that may be caused by its work.

3.2 PREPARATION

.1 Granular surface preparation shall be carried out in accordance with the requirements described in section 13.1 - Surface Preparation of the CCDG (latest edition).

.2 Granular surface must be clean and dry prior to placement of asphalt.

.3 The paved surface of the base coat shall be dry and cleaned prior to placement of the coupling binder and wear layer.

3.3 INSTALLATION

.1 The asphalt layers shall have the following thicknesses:

.1 Paved path: ESG-10 single layer, 50 mm thick.

.2 Paved storage area: ESG-10 single layer, 50 mm thick.

.3 Access road widening: as the existing, or at least a GB-20 base layer, 50 mm thick, and an ESG-10 wearing layer, 40 mm thick.

.4 Existing pavement rehabilitation: as the existing, or at least a GB-20 base layer, 45 mm thick and an ESG-10 wearing layer, 35 mm thick.

.2 Implementation of asphalt mixes shall comply with the technical requirements described in section 13.3.4 - Implementation of the CCDG (latest edition).

3.4 COUPLING BINDER

.1 A coupling binder layer shall be applied to the base coat prior to any asphalt wear layer being applied.

.2 Binder application work shall be carried out in accordance with the requirements of Section 13.3.4 - Implementation of the CCDG (latest edition).

.3 Where the new paving is in contact with concrete surfaces, coat these surfaces with a coupling binder prior to paving.

.4 At each joint with existing pavement, coat the sides of the pavement with a coupling binder prior to paving.

3.5 COMPACTING

.1 All asphalt layers shall be compacted at 92% of the maximum density established in accordance with standard LC 26-320.

3.6 STRUCTURE ADJUSTEMENT

.1 All stacks for access to underground structures in paved areas shall be adjusted to the final paving level. Stacks for access to underground structures in the lawn will be adjusted to grass levels.

.2 Manholes and sumps shall be adjusted 6 mm lower than the final paving level.

.3 For all previous adjustments, the Contractor shall supply and install all leveling rings, extension cords and other accessories required to carry out such work in accordance with good engineering practices and to the satisfaction of the Ministerial Representative.

3.7 WORK IN EXISTING PAVEMENT

.1 When working in existing pavements, the Contractor shall saw the paving on each side of the trench to be excavated, along straight lines and using a wheel machinery, with a suitable tool, to avoid damage to the pavement to preserve; the use of crawler machinery is at all times prohibited on existing pavement. If the Contractor fails to comply with such a requirement, the Ministerial Representative may require the Contractor to repair the paving at the expense of the Contractor. The Contractor shall also take all necessary precautions to protect existing sidewalks and curbs; he shall be liable for all damages to existing works and shall, at his own expense, make all repairs deemed necessary.

3.8 WASTE MATERIALS

.1 Disposal of waste materials shall be in accordance with section 01 74 21 - Construction and Demolition Waste Management and Disposal.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 The Contractor is responsible for obtaining a copy of all sections of this document even if it appears to be irrelevant to his specialty, failing which it will be acknowledged that he accepts the clauses and requirements of all sections of this present specification.

1.2 SCOPE OF WORK

.1 Supervise the work and provide all labor, equipment, tools, materials, transportation and other services necessary to carry out and complete all work described and specified in this section and in the contractual documents including, but not limited to: construction of concrete cement curbs, reconstruction of cement concrete sidewalks, excavation, preparation of infrastructure, supply and laying of granular materials according to alignments, levels, dimensions and standard sections shown on the plans or as specified by the Ministerial Representative.

1.3 REFERENCES

.1 For all standards and reference documents, the latest applicable version must be used.

.2 Bureau de normalisation du Québec

.1 NQ 2501-255/2013: Sols - Détermination de la relation teneur en eau-masse volumique sèche - Essai avec énergie de compactage modifiée (2700 kN.m/m^3).

.2 NQ 2560-114/2014: Travaux de génie civil – Granulats.

.3 NQ 2621-900/2002: Bétons de masse volumique normale et constituants.

.4 NQ 1809-500/2006: Travaux de construction – Trottoirs et bordures en béton.

.3 Canadian Standards Association (CSA)

.1 CAN/CSA A23.1/A23.2: Concrete materials and methods of concrete construction / Test methods and standard practices for concrete.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-19.13-M82: Sealing Compound, One Component, Elastomeric, Chemical Curing.

.5 Ministère des Transports, de la Mobilité durable et de l'Électrification des transports (MTMDET – Quebec's Ministry of Transport, Sustainable Mobility and Transport Electrification)

.1 Cahier des charges et devis généraux (CCDG), latest edition.

.2 Cahiers des Normes, Ouvrages Routiers, Tome VII "Matériaux", latest edition.

.1 Norme 3101 - Bétons de masse volumique normale.

.2 Norme 5101 - Armature pour les ouvrages de béton.

1.4 SUBMITTALS

.1 Submit mixing dosage form and results to the Ministerial Representative for approval at least two (2) weeks prior to commencement of work.

.2 Submit to the Ministerial Representative for approval the origin of granular materials for foundations.

PART 2 PRODUCTS

2.1 CONCRETE

.1 Unless otherwise specified, concrete used for sidewalk, curb, center mall and wing-wall shall have at 28 days a compressive strength equal to or greater than 32 MPa and the WATER / CEMENT ratio should be less than 0.45. The air content must be between 5 and 8% for concrete with a maximum nominal aggregate size of 20 mm. The subsidence must be at 80 mm, ± 20 mm.

.2 The produced concrete shall have a peeling rate of less than 0.5 kg/m^2, evaluated according to the peeling test described in NQ 2621-900 / 2002.

.3 For all other concrete characteristics and other classes of concrete, the Contractor shall refer to Table 3101-1 of MTMDET Standard 3101.

.4 Concrete must be manufactured in a certified NQ 2621-900 assay station, based on the NQ 2621-905 certification protocol.

.5 Site testing shall be in accordance with CSA Standards.

.6 All CSA standards including A23.1 and A23.2 related to concrete, concrete forming and pouring, formwork, reinforcing steel, site testing, and rejection or acceptance of concrete pour, are considered an integral part of this section. The Contractor is required to know these standards and to comply with them in all concreting work.

2.2 BASE GRANULAR MATERIALS

.1 Granular materials for the sidewalks and curbs base shall be 20 mm net stone or MG-20 crushed stone in accordance with NQ 2560 114/2014 of the Bureau de normalisation du Québec.

2.3 CONCRETE GRANULAR MATERIALS

.1 Cement, sand or fine aggregate, and large aggregates used in the manufacture of concrete shall conform to CSA-A23.1 or its most recent revision. No light aggregate is tolerated in the concrete.

2.4 CEMENT

.1 Portland cements (GU type)

.1 Portland cements shall conform to the requirements of CAN / CSA-A5 or ASTM (Type I) and the type of cement to be used shall be based on the uses defined in Table 3101-1 of MTMDET Standard 3101.

.2 Composite hydraulic cements

.1 Type 10 E-SF hydraulic cement shall conform to CAN / CSA-A362 and shall be used according to the uses defined in Table 3101-1 of MTMDET 3101.

.3 Quick setting cement (HE type)

.1 Quick setting cement shall conform to CSA A5 or ASTM (Type III) standards.

2.5 CONCRETE SAND (FINE AGGREGATES)

.1 The sand used shall be free of impurities and shall not contain more than 1% by weight of clay and shall comply with the requirements of NQ 2560 114/2014 of the Bureau de normalisation du Québec.

.2 Sand particle size shall be within the following limits:

Screen	% pass
5 mm	95 to 100
2.5 mm	80 to 100
1.25 mm	50 to 90
630 µm	25 to 65
315 µm	10 to 35
160 µm	2 to 10
80 µm	Less than 3

.3 The fineness module must be between 2.3 and 3.1. The sand must additionally comply with NQ 2560-114 / 2014 and contain less than 1.0% by weight of particles likely to cause burst cones on the surface of the concrete (pop-outs).

2.6 CRUSHED STONE

.1 Large aggregates are crushed stone from a hard, durable stone. This stone is clear, free of dust, flat stones, schistose rock, and soft particles. In addition, it must be free of any foreign and deleterious material. The different particles of the large aggregate are well graded and acceptable as to their shape, for each mixture of concrete mentioned in the drawings and the specifications. The large aggregate must conform to NQ 2560-114 and contain less than 2.0% by weight of particles likely to cause burst cones on the surface of the concrete (pop-outs).

2.7 CEMENT-GRANULATE REACTIVITY

.1 Any aggregate used in the concrete of a structure exposed to frequent moorings, a humid atmosphere or the application of de-icing salts or other alkaline solutions shall not exhibit excessive swelling with the alkalis of the mixture.

.2 The test to evaluate the reactivity potential of an aggregate shall be carried out in accordance with NQ 2560-114 / 2014.

.3 The aggregate evaluation results obtained by means of the concrete prism swelling test may be validated or invalidated by inspection of concrete structures made with the same aggregate as used during the laboratory test.

.4 Aggregates showing alkali-carbonate reactivity shall not be used in concrete.

2.8 WATER

.1 Water used for concrete mixtures shall be clean, potable, free from harmful materials (oil, acid, vegetable, and organic matter) and conform to NQ 2621-900 / 2002. Salt water should never be used.

2.9 ADDITIVES

.1 Air occlusion agent

.1 Air occlusion agents shall comply with NQ 2621-900 / 2002. The air occlusion agent should be used in solution. The solution must be stirred to maintain its homogeneity.

.2 Accelerating or retarding agents and water reducers

.1 Accelerating or retarding agents and water reducers shall comply with NQ 2621-900 / 2002. All additives should be used in solution. The solution must be stirred to maintain its homogeneity.

.2 The use of chlorides is prohibited in all concretes containing reinforcing steels.

.3 Cement Additions

.1 The use of SF (silica fume) cementitious additions shall be in accordance with NQ 2621-900 / 2002.

.4 Superplasticizers

.1 Superplasticizers shall conform to CAN3.A266.6M "Superplasticizing Ad Mixtures for Concrete" and CAN3.A266.5M "Guidelines for the Use of Superplasticizing Ad Mixtures in Concrete".

2.10 MATERIALS FOR CONCRETE CURING

.1 Concrete curing materials must meet the requirements of MTMDET 3501 "Curing Materials".

2.11 FORMWORK

.1 All formworks are constructed of sound and CSA compliant materials.

2.12 CONCRETE REINFORCEMENT

.1 Concrete reinforcement shall comply with the latest Quebec Construction Code and the Recommended Standards Manual of the Quebec Reinforcement Steel Institute (Institut d'acier d'armature du Québec).

.2 Except as otherwise prescribed, carry out rebar work in accordance with CSA-A23.1-M00.

.3 Rebar are Canadian made and meet CSA G30.18-M92 Nuance 400W.

2.13 WIRE MESH

.1 When required in sidewalks, mesh conforms to ASTM A185 or ASTM A497 / A 497M and is 152 X 152 MW 18.7 X MW 18.7 with a diameter of 4.88 mm and shade 400 W.

2.14 CONCRETE QUALITY CONTROL

.1 The Laboratory retained by the Ministerial Representative shall verify the mixing formulas, the technical data sheets of the concrete components and the technical data sheets of the curing products and carry out tests on the concrete at the site and in the laboratory.

.2 Compliance certificate

.1 The Contractor shall provide to the Ministerial Representative a compliance certificate attesting that the materials used in his product meet the requirements of this specification for each type of mixture used in the contract.

.2 This compliance certificate must be signed by the concrete supplier's quality control officer and submitted at least 3 days before the supply of the mixture. This certificate must contain all the information required to comply with MTMDET standard 3101:

.1 The fresh concrete density, at the specified air content and subsidence, in kg/m^3 of the mixture.

.2 The cement mass, in kg/m^3 of the mixture.

.3 The water mass, in kg/m^3 of the mixture.

.4 The fine aggregates and large aggregates mass in kg/m^3 of the mixture (saturated, dry surface).

.5 The water / cement mass ratio, considering that the aggregates are in a saturated, dry surface.

.6 Compression resistance and subsidence of mixture.

.7 A report from a recognized laboratory setting out the characteristics of the entrained air bubble system, ie air content and air bubble spacing factor and volume area (MTMDET 3101). The cement concrete must have an air bubble spacing factor of not more than 230 microns on average, with no result exceeding 260 microns. The measurement will be performed according to ASTM C 457 "Standard Test Method for Microscopical Determination of Parameters of the Air-Void System in Hardened Concrete".

.8 Type of cement, provenance, and name of cement plant.

.9 The characteristics of fine aggregates and large aggregates, as specified in MTMDET NQ 2560-114, and their provenance.

.10 Particle size, dry-pounded mass, gross relative density (saturated, dry surface) and percent absorption of fine aggregates and coarse aggregates, fineness module and fine grained color index.

.11 Types of additives, product names, manufacturer, used quantities and anticipated effects.

.12 A report from a Laboratory or a recognized organization establishing the potential for alkali-aggregate reactivity in accordance with CSA A23.2-14A and the resistance to peeling according to the peeling test described in NQ 2621-900 / 2002;

.13 Concrete manufacturing equipment.

.3 Test results for the air bubble and alkali-aggregate reactivity factor (NQ 2560-114) are valid for three calendar years, provided that a certificate from a geologist attests annually that the petrography of the aggregates is the same as in the swelling tests on concrete prisms. Test results for other characteristics are valid for one year.

.3 Delivered concrete quality control

.1 All tests on concrete shall be carried out in accordance with the requirements of NQ 2621 900/2002.

.2 The Laboratory shall sample the concrete for standardized compression strength tests at the rate of 3 cylinders for each 75 m^3 of installed concrete for each specified concrete class. At least 3 cylinders are taken for each concreting day.

.3 For compressive concrete strength standardized tests, test cylinders of 100 x 200 mm are used. The results of standardized tests for the acceptance of concrete on cylinders of 100 x 200 mm correspond to the average strength of 2 cylinders at 28 days. A third cylinder is subjected to the 7-day compressive strength test.

.4 For sidewalks and curbs concrete or other concrete subjected to frequent freeze and thaw cycles in the presence of moisture or de-icing salts, air content tests of fresh concrete shall be carried out on each load of concrete delivered on site.

PART 3 EXECUTION

3.1 GENERALITIES

.1 The Contractor shall construct sidewalks and curbs in accordance with the plans and details requirements of the contract documents.

.2 All work shall be carried out in accordance with the alignments and levels indicated on the plans and details.

.3 In the event that obstructions or other unforeseen contingencies in the plans interfere with the work to the extent of requiring changes, the Ministerial Representative may require that the work be modified or moved accordingly.

.4 Curbs, sidewalks and other concrete structures shall be constructed in accordance with CSA A23.1. The concrete of these structures must be metered in accordance with the requirements for class C-2.

.5 Produced concrete must have a peeling rate of less than 0.5 kg/m^2, evaluated according to the peeling test described in NQ 2621-900 / 2002.

.6 For sidewalks and curbs, no repairs are accepted; when their surface is damaged or pop-outs are found on more than 1% of the surface, the applicable structures must be demolished and rebuilt.

3.2 INFRASTRUCTURE PREPARATION

.1 Carry out infrastructure preparation in accordance with requirements of sections 31 14 11 – Earthwork and leveling, 32 11 16 - Granular sub-base and 31 23 13 – Environmental management of excavation surpluses.

.2 When making embankments, allow for overlaps of at least 500 mm outside the boundaries of concrete structures where applicable.

.3 Carefully compact the bottom of the excavation and profile according to the required levels.

.4 Remove improper material from infrastructure to depth as determined by Ministerial Representative and backfill with appropriate fill material accepted by Laboratory.

.5 The permissible deviation of the infrastructure's finished surfaces shall be 15 mm measured at any point on a 3 m rule.

.6 During excavation, the Contractor shall protect the roots of the trees to be kept as required by the Landscape architecture section.

.7 Bed surface

.1 The Contractor shall prepare the bed surface according to plans and profiles and shall mechanically compact the infrastructure up to the equivalent of 95% of P.M.

.2 The bed surface shall be uniform, free from depression. This surface is properly clean and all vegetation is removed to leave a smooth, dry surface.

.3 At the entrances and descents for the disabled, the bed surface under the sidewalk or curb shall be lowered to provide a uniform thickness of stone base and cement concrete at these locations.

.8 Bed stability

.1 The Contractor is fully responsible for the bed stability. He must take all necessary precautions when preparing the sidewalk and curb so that these structures are permanently supported.

3.3 GRANULAR BASE

.1 Prior to spreading the granular base materials, have the infrastructure approved by the Ministerial Representative.

.2 Apply the granular base materials in accordance with specified alignments, widths, and depths.

.3 Under the curbs and sidewalks, the Contractor shall place a minimum of 150-mm-thick base, of 20 mm net stone or MG-20 type crushed stone, compacted to 95% of the modified Proctor Index (unless otherwise indicated in the contract drawings).

.4 The Contractor shall use the vibrating plate over the top of the clean stone, and the stone shall be watered before pouring the concrete.

.5 The finished granular surface shall be less than 12 mm apart from the profile and 10 mm apart on the cross-section, measured using a 3 m rule.

3.4 SLIPFORMING CURB

.1 No slipforming curb is permitted for this contract. Only enclosed and cast-in-place curbs shall be constructed.

3.5 FORMWORK

.1 Prior to mounting the formwork, the Contractor shall bring the granular base to the required levels, alignment, and degree of compaction.

.2 Formwork shall be in contact with the granular base.

.3 Formwork, wood, or steel shall be supported in place, in accordance with alignment and levels.

.4 Sufficient support shall be provided to the formwork to prevent movement.

.5 Formwork shall be clean and well-oiled prior to installation.

.6 Immediately prior to pouring concrete, formwork shall be thoroughly inspected for level, alignment and strength. The necessary adjustments and repairs must be completed before the concrete is poured.

.7 Formwork shall remain in place for at least 24 hours after concrete installation in the warm season and at least 48 hours in the cold season or as directed by the Engineer. After this time, the formwork must be carefully removed so as not to damage the concrete.

.8 Formwork shall be made of milled wood, rigid plywood or steel of equal rigidity and approved design. In the curved parts, the formworks may be thinner to enable them to fold along an arc of a circle. After installation, the formwork must be cleaned and oiled.

.9 Formwork should be clean and well-oiled prior to installation. They must follow the profile and alignment of the existing watercourse and be corrected if a depression of 6 mm or more is noted. The supports must be strong and numerous enough to secure the formwork vertically and horizontally and allow them to withstand, without deformation, the concrete pressure. The type of support must be able to prevent the shape from collapsing during casting. Should the formwork be moved during the laying of the concrete, the Contractor shall stop the concrete casting until the formwork has been properly repositioned and secured.

.10 The formwork's inner wall shall be coated with mineral oil or other known substance prior to the fitting of the framework. The Contractor cannot coat the forms of oil after the reinforcing steels have been fixed in place. The Ministerial Representative requires the removal and cleaning of all oil-coated steels.

.11 Immediately prior to pouring concrete, formwork shall be thoroughly inspected for level, alignment and strength. The necessary adjustments and repairs must be completed before the concrete is poured.

.12 The Contractor shall respect the dimensions of the work and shall not at any time use the walls of the trench as formwork, whether for a sewer floor or for any other construction.

.13 A key is built at each joint. A water stopper is installed at each joint. The surface of the joint is cleaned of any debris and foreign matter. During winter, the joints are preheated to the standards required for concrete casting.

.14 Under no circumstances shall formwork be removed without authorization from the Ministerial Representative. This authorization does not release the Contractor in any way.

3.6 STEEL REINFORCEMENT FOR CONCRETE SIDEWALK

.1 Where reinforcing steel bars are required by the Ministerial Representative, the steel shall conform to the "Concrete Reinforcement" section. The location of these bars is as indicated on the model plates or as required by the Ministerial Representative.

.2 Folding shall be carried out by means of suitable equipment and in accordance with the plans and instructions given by the Ministerial Representative.

.3 The bars or mesh cannot be heated for bending or straightening, and steel bars cannot be welded.

.4 All reinforcement shall be accurately positioned and securely attached to remain in the position shown on the plan before, during and after the concrete placement.

.5 Protection of reinforcing mesh and bars is:

.1 Invert: 75 mm of the faces

.2 Walls and arches: 40 mm of the faces

.6 The Contractor shall deposit the reinforcing steel as soon as it is delivered to the worksite on sufficiently high pieces of wood and placed so that the steels can not touch the ground. He must also protect them from excessive oxidation. The Ministerial Representative may require the Contractor, at the Contractor's expense, to clean the steels with sand if the cleanliness of the steels does not meet CSA standards.

3.7 CONCRETING

.1 Notify at least twenty-four (24) hours in advance of concreting and receive approval by the Director on the granular base, formwork, and reinforcement. Also, obtain approval from the Ministerial Representative for the proposed concrete protection method during concreting and subsequent setting.

.2 Cast, consolidate and finish concrete to ensure consistency.

.3 The rate of concrete placement shall not exceed the acceptable rate of completion for the various placing and finishing operations.

.4 Where cement placement is interrupted for more than forty-five (45) minutes, a transverse expansion joint shall be installed before continuing casting.

.5 Watercourses (height of sidewalk or curb with respect to paving) shall have a constant height of 150 mm unless otherwise indicated.

.6 Connection to an existing curb or sidewalk shall be carried out with an expansion joint.

.7 If the ambient temperature becomes less than 5 °C during work, the water and aggregates must be heated, and the necessary precautions shall be taken by the Contractor to protect the concrete from frost until it has reached a compressive strength of at least 7 MPa.

.8 Fresh concrete is laid about 10 mm higher than the final surface of the sidewalk and / or curb, to allow for good levelling.

.9 No concrete is laid on a frozen base.

3.8 CONCRETE FINISHING

.1 The installation and finishing of all sidewalks and curbs shall be carried out in a manner acceptable to the Ministerial Representative. The tools used should also be approved by the Ministerial Representative.

.2 After casting, the concrete should be leveled or flush to the proper level and then flattened with an aluminum or magnesium trowel to eliminate high and low points.

.3 The surface shall then be finished to obtain the same finish as the concrete surfaces adjacent to the reconstruction to the satisfaction of the Ministerial Representative.

.4 The surface finish should be made while it is sufficiently malleable to achieve the desired levels and texture.

.5 Be careful not to attract laitance to the surface.

.6 Applying water, cement, or a combination of both to the concrete surface will not be permitted for finishing.

.7 Localized defects shall be repaired with concrete.

.8 The presence of footprints or other marks in the finished sidewalk will require saw cutting, removal, and replacement of the section.

.9 Flanges and joints should be rounded with a suitable 5 mm radius tool.

3.9 SIDEWALK SEAL JOINTS

.1 Seal joints are made according to the plan (location and type of seals) using a specially designed tool.

.2 The Contractor shall install release seal joints at all critical locations, such as a pole, sump, fountain post, start or end of radius, on either side of the entrances, at the end of a casting, or every 9 meters for sidewalks and curbs. These same joints will also be required along rigid structures such as wall, other existing sidewalk, etc.

.3 Connection to an existing sidewalk (construction joint) is made by drilling the number of holes shown on the plans into the existing structure and inserting smooth bars according to the specified diameter and length on the detail plans. The rods are inserted after injecting a mortar without any recess in the holes. A 12.5 mm bituminous fiber and a

12.5 mm wooden board will have to separate the two structures. In the case of a curb connection, the same method applies by using two smooth bars.

3.10 ISOLATION SEAL JOINTS

.1 Isolation seal joints are required to separate sidewalks from adjacent structures and obstructions such as manholes, sumps, building foundations, canopy foundations, or any other permanent structure. The isolation joints are such as the seals of disconnection, without the reinforcement studs.

3.11 CONTRACTION JOINTS

.1 When rebuilding sidewalks, contraction joints shall be provided where contraction joints are present in adjacent sidewalks. Existing alignment must be followed.

3.12 CURB SEAL JOINTS

.1 Separation joints shall be perpendicular to the center line of the curb and shall extend over its entire thickness and width. When concrete pouring is interrupted for more than one hour, the Contractor shall make a separating joint.

.2 The Contractor shall make separation joints at all critical points of a curb, such as a pole, sump, fountain post, start or end of radius, at the end of a casting, or every 9 meters for the curbs. These joints are made by means of a bituminous board and smooth rods. Recess joints must be made every 3 linear meters.

.3 The curb's edges are rounded using appropriate tools. The expansion joints shall include two steel rods 15 mm in diameter and 0.6 m in length. On one side of the joint, the rods are anchored in the concrete and on the other side, fibrous capsules surround the rods so that the latter does not adhere to the steel rods.

.4 Connection with an existing curb (construction joint) is made by drilling two holes 17 mm in diameter by 300 mm in length. The rods are inserted after injecting a mortar without any recess in the holes.

3.13 PROTECTION AGAINST WEATHER

.1 The Contractor shall keep on site for the duration of the work a sufficient quantity of membranes such as polyethylene sheeting, to adequately cover sidewalks or curbs cast during the day in case of rain or other inclement weather.

3.14 CONCRETE CURING AND PROTECTION

.1 The concrete that has just been installed shall be protected from frost, high temperatures, excessive drying and loss of moisture for a sufficient period of time to ensure that the concrete meets the requirements (article 21 of standard CSA-A23.1).

.2 Pedestrian traffic on the sidewalk and cars on entrances is prohibited within 48 hours of placing concrete.

.3 Contractor shall provide and maintain barricades and signals to prevent traffic on insufficiently cured concrete.

.4 Contractor shall be responsible for any deterioration of the concrete caused during the time when traffic on the sidewalk is prohibited.

.5 Apply the curing agent evenly to form a continuous film according to the manufacturer's specifications.

.6 Curing during the initial setting, that being obtaining a strength equivalent to 35% of the specified resistance at 28 days, shall be by vaporization of water and application of a curing membrane. It is also possible to use a cloth soaked in water to ensure evaporative cooling.

.7 The curing agent is applied mechanically using a mixer-sprayer to obtain a homogeneous mixture and ensure uniform application over the entire surface.

.8 Fast drying protection

.1 Immediately after finishing operations and when concrete is sufficiently cured, the surface of the sidewalk and / or curb shall be protected and kept moist continuously in accordance with CAN / CSA-A23.1 for 72 consecutive hours or spray with a curing product, as described in the article "Concrete curing materials". The Contractor shall obtain sufficient tarpaulins or impermeable paper to completely cover all sections of sidewalk and / or curb over the previous 8 hours. A minimum of 30 days after concreting is required prior to application of de-icing salts.

.2 All exposed concrete surfaces must be cured and protected to prevent moisture loss and to protect against rapid changes in temperature.

.3 When jute is used for the cure, place two previously wetted layers on the concrete surfaces and keep them moist continuously throughout the curing period.

.4 Water addition to worksite is done in accordance with CSA-A23.1.

.9 Extreme temperature protection

.1 High temperatures

.1 For curing at high temperatures, during periods of low humidity or dry wind, a drizzle must be evaporated following the concrete placement to prevent the formation of shrinkage cracks. The vaporization must be continuous until the conditions permit the application of a liquid curing membrane or any other curing product. The Ministerial Representative will determine when the use of a spray drizzle will be required.

.2 Low temperatures

.1 For protection against low temperatures, the Contractor shall be responsible for the concrete quality and strength. Any concrete damaged by the action of the cold must be removed and replaced at the expense of the Contractor.

.2 In cold weather, from 5 °C or less, concrete must be protected from frost for at least 7 days by means of insulating blankets or straw covered with plastic wrap. Never use a curing product on concrete that will be exposed to frost within one month of placement.

3.15 TRAFFIC

.1 The Contractor shall, in carrying out his work, take all feasible means to facilitate traffic by installing, if necessary, footbridges over fresh concrete, etc. and shall comply with the Ministerial Representative's instructions on this matter.

3.16 TOLERANCES

.1 Monolithic sidewalks

.1 Permissible deviations of finished surfaces are 6 mm measured using a 3 m rule.

.2 Minimum pavement thickness shall be specified thickness minus 8 mm. If the thickness difference is greater than 8 mm, the sidewalk must be removed and rebuilt.

.3 Curb sections identified as unacceptable by the Ministerial Representative shall be cut with a saw, removed and replaced by the Contractor over their full width.

.2 Curbs

.1 Permissible deviations of finished surfaces are 3 mm measured using a 3 m rule parallel to the center line of the structure. The alignment of the structure must not be more than 3 mm apart.

3.17 BACKFILLING

.1 Allow the concrete to harden for seven days before backfilling.

.2 Backfill to the indicated levels using the material indicated by the Ministerial Representative, compact and profile according to the contour lines indicated or as directed by the Ministerial Representative.

.3 Except where otherwise indicated, if slopes are required, slopes shall not be less than 1 V: 3 H.

END OF SECTION

PART 1 GENERAL

1.1 CONTENT OF THE SECTION

.1 Materials and installation methods relating to wire fences and the concrete foundation wall repair.

1.2 RELATED SECTIONS

.1 The Contractor is responsible for obtaining copies of all sections of these specifications even if they do not seem relevant to its specialty; otherwise, the Contractor will be deemed to have accepted all clauses and provisions of all sections of these specifications.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.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, Standard Specification for Metallic-Coated Carbon Steel Barbed Wire.

.4 ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.5 ASTM C618 REV A, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.

.6 ASTM F1664, Standard Specification for Poly(Vinyl Chloride) (PVC) and Other Conforming Organic Polymer-Coated Steel Tension Wire Used with Chain-Link Fence.

.7 ASTM A123/A123M, Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

.2 Canadian General Standards Board

.1 CAN/CGSB-138.1-96: Fabric for chain link fence.

.2 CAN/CGSB-138.2-96: Steel framework for chain link fence.

.3 CAN/CGSB-138.3-96: Installation of chain link fence.

.4 CAN/CGSB-138.4-96: Gates for chain link fence.

.5 CAN/CGSB-1.181-99, Ready-mixed organic zinc-rich coating.

.3 Canadian Standards Association (CSA)

.1 CSA A23.1-14/A23.2-14, Concrete materials and methods of concrete construction/Test methods and standard practices for concrete.

.2 CSA A3000-13, Cementitious materials compendium

.4 Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual - [latest edition].

.5 U.S. Environmental Protection Agency (EPA) / Office of Water

.1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.4 SUBMITTALS PROCEDURES

.1 Submit shop drawings according with Section 01 33 00 Submittal procedures.

.2 Submit the required specifications, and instructions and the manufacturer's documentation for mixtures of concrete, fences, poles and barriers. The technical sheets should indicate the product characteristics, performance criteria, dimensions, finish and limitations.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials and equipment with care and according to the manufacturer's instructions.

.2 Delivery and acceptance requirements: deliver materials and equipment to site in original factory packaging, labeled with the name and address of the manufacturer.

.3 Storage and handling

.1 Store materials according with manufacturer's recommendations.

.2 Replace damaged materials and equipment damaged with new materials and equipment.

PART 2 PRODUCTS

2.1 CONCRETE REPAIR MATERIALS

.1 The various repair and treatment products for the concrete foundation wall repairs are specified in Section 3.3 Foundation wall repair of this section.

2.2 CONCRETE

.1 Materials

.1 Cement: complies with CSA-A5 / A8 / A362-98.

.2 Water: complies with CSA-A23.1-00.

.3 Large aggregates and fine aggregates: in accordance with CSA-A23.1-00.

.4 Air Trainer: in accordance with ASTM C260-06.

.5 Chemical admixtures: in accordance with ASTM C494 / C494M-05a.

.6 Pozzolanic mineral admixtures: in accordance with ASTM C1017 / C1017M-03.

.2 Concrete dosage

.1 Concrete: prepare concrete of normal density in accordance with CSA-A23.2-00 (1st choice) to obtain the following mixture:

.1 Use Portland cement type 10.

.2 Minimum compressive strength of 32 MPa at 28 days.

.3 Exposure class: C-2.

.4 Nominal size of coarse aggregate: 20 mm.

.5 Sagging at the moment and at the point of discharge: 80 mm with a tolerance of ± 30 mm.

.6 Air content: 5 to 8%.

.7 Chemical admixtures: according to ASTM C494 / C494M-05a.

2.3 FENCES

.1 The existing fence is 2.4 m high.

.2 The new wire fence is 1.2 m high.

2.4 WIRING

.1 According to CAN/CGSB-138.1-96 standard.

.2 Upper edge with twisted ends (triple strand twist ending with dots on each mesh) and lower edge with simple twist.

.3 Medium wiring, galvanized after weaving quality 2 (minimum of 610 g/m^2 of zinc).

.4 String for mesh gauge 9.

2.5 FRAME

.1 The frame shall comply with CAN/CGSB-138.2-96 standard.

.2 Intermediate and terminal posts, top rails and spacers must be galvanized (550 g/m^2), type F, threadless end according to ASTM A53/A53M.

.3 Intermediate posts

.1 Intermediate posts shall be installed with regular spacings between the terminal posts.

.2 They should be 60.3 mm in outer diameter and 3.91 mm thick.

.4 Terminal posts

.1 Terminal posts include end posts, barriers, corner and reinforcement.

.2 They should be 88.9 mm in outer diameter and 5.49 mm thick.

.3 They should be provided with bars and tension clamps, and other accessories required for installation.

.5 Top rails

.1 Top rails should be 42.4 mm in outer diameter and 3.56 mm thick.

.2 They should be provided with all accessories and fittings required for installation.

.6 Caps

.1 Galvanized cast iron or aluminum caps shall be provided with end posts, barriers gates and post barriers. They must be weatherproof.

.2 Intermediate posts must have intermediate arms for barbed wire in galvanized steel or aluminum, such as the existing one.

.7 Tension wire

.1 5 mm diameter wire.

.2 Galvanized (minimum of 610 g/m^2 zinc).

.8 Fasteners

.1 Ties (ligatures and links) for fixing the wiring to the posts, the top rail, the spacers and tension wire must be manufactured with galvanized steel wire of 3.5 mm diameter according to CAN/CGSB-138.2-96.

.9 Accessories

.1 Accessories such as flanges, tension rods, bolts, nuts, etc., must be galvanized steel. Galvanizing shall comply with ASTM A123/A123M and A53/A53M.

.10 Wire mesh fencing: complies with CAN / CGSB 138.1 96.

.1 Upper lip with twisted ends (triple torsion of strands terminating in pins on each mesh) and lower selvedge with single twist.

.2 Medium mesh, galvanized after weaving, grade 2 (minimum 610 g/m^2 zinc).

.3 Thread of 9 gauge.

2.6 DOUBLE BARBED WIRE

.1 12-gauge stainless steel linear barbed wire.

.2 Stainless steel barbed wire 400 mm diameter, Concertina Razor Wire. Acceptable product Razor Ribbon Maze or approved equivalent.

.3 45 degree galvanized steel support.

2.7 BARRIER

.1 General

.1 The barriers shall be provided with hinges, latch and malleable cast iron galvanized iron, padlockable and opening on one side or the other. Barriers must be equipped with a stop chain to be used when the gate is open.

.2 Double barriers must be equipped with a chain hook to keep them open, and a central support with vertical latch to keep them in the closed position. The hinges must allow the barrier to rotate 180 degrees to reach the fence if necessary. Barrier latches must be suitable for a padlock that can be operated from both the inside and the outside. Intermediate barrier rails, if required, shall be galvanized steel pipe with an outer diameter of 33.3 mm.

.2 Barrier frames

.1 Hot-dip galvanized steel pipe in accordance with CAN / CGSB 138.4-96 and mechanical properties equivalent to ASTM A-36. The thickness of its wall is 2.54 mm. In all cases, the conduit or open joint tube is prohibited. The diameters of the elements must comply with tables 32 31 13-1 and 32 31 13-2 of this section.

.2 The barriers shall be manufactured as indicated with electrically welded joints, and be hot dip galvanized after welding.

.3 The ends of the upper and lower edges of the fence wire should be folded, as specified in section 2.4 of this specification.

.3 Terminal posts

.1 For barriers, the posts are made of a galvanized standard butt welded pipe, classification 40, 1,070 mm longer than the height of the wiring.

.4 Spacers

.1 The barrier spacers shall be made of galvanized steel tube with an outside diameter of 43 mm and a wall thickness of 2.54 mm.

.5 The barrier shall be a sliding type from Clôtures Sentinelle Ltd. or approved equivalent, installed as specified on the detail of the barrier.

.1 The barrier will be manufactured in the workshop, at the heights and openings indicated on the plans.

.6 Latches and lug: galvanized malleable iron that can be padlocked from both inside and outside.

.7 Hinges: the hinges will be made of galvanized steel.

.8 Stopper: galvanized steel pipe of indicated dimensions.

.9 Table 32 31 13-2: Barrier

Barrier Type and Opening (m)	Outside Diameter of Frame Elements (mm)	Wall Thickness of Frame Elements (mm)	Outside Diameter of Barrier Posts (mm) (1)
Two panels, 6.0	42.9	2.5	88.9
One panel, 4.5	42.9	2.5	88.9
Two panels, 9.0	48.3	2.5	114.3
One panel, 7.5	48.3	2.5	114.3
Two panels, 15.0	48.3	2.5	168.3

(1) Requirements for barrier posts are also shown in Table 32 31 13-1. The most restrictive dimension always applies.

PART 3 EXECUTION

3.1 REVIEW

.1 In the presence of the Ministerial Representative, carry out an inspection of the existing fence to identify any defects, existing elements (finish, dimensions, condition, etc.) in order to validate the items to be replaced and modified.

.2 Inform the Ministerial Representative of proposed repair method for closure and constraints, if applicable.

.3 Determine, in consultation with the Ministerial Representative, the exact locations of repairs to be made to the fence and the foundation wall.

.4 The Ministerial Representative will confirm the location of the accesses available to carry out repairs outside the secure fence.

3.2 FENCE INSTALLATION

.1 Erect the fence along the established route in accordance with the details indicated on the plans.

.2 Install a corner post when the change of direction exceeds 10 degrees.

.3 Allow concrete to cure at least two (2) days before placing wiring on fences.

.4 Install spacers between end and barrier posts and the nearest intermediate post, and place them in the middle of the panel, parallel to the ground surface and at the indicated inclination.

.1 Install spacers identically on each side of corner and reinforcement posts.

3.3 BARRIER INSTALLATION

.1 Install barriers as indicated on plans.

.2 Level the ground between barrier posts and place the lower end of the barrier at approximately 50 mm from the ground.

.3 In the case of a double-panel barrier, determine the location of the central support.

.1 Anchor support in concrete as directed.

.2 Bring concrete to the top of the ground level and spread it domed to prevent any accumulation of water around the support.

.4 Install barrier stops at indicated locations.

3.4 BARBED WIRE INSTALLATION

.1 Install barbed wire along the established route in accordance with the details indicated on the plans.

3.5 FENCE REPAIR

.1 Within the boundary shown on the plan (approximate location), four intermediate post barbed arms are disconnected from existing intermediate posts.

.2 The Contractor shall properly reinstall them on existing intermediate posts. Replace damaged parts.

.3 If necessary, cut intermediate pole to proper elevation in order to relocate upper cross members horizontally. The Contractor must obtain authorization from the Ministerial Representative prior to any cut. Carry out steel treatment to protect it after cutting.

3.6 FOUNDATION WALL REPAIR

.1 Two repair methods are described below. The choice of repair method shall be determined by the Ministerial Representative according to the degradation of each site to be repaired.

.2 The Contractor shall proceed to the wall repairs without removing the existing fence and adapt his repair method accordingly.

.3 For large repairs:

.1 Perform spot repair at specified site locations 500 mm from top of wall.

.2 Make a saw line 20 mm deep at the boundaries of the area to be repaired.

.3 Demolish the surface to be repaired on both sides of the wall in a controlled and appropriate manner.

.4 Clean concrete surface with metal brush to remove any detachable concrete parts.

.5 Clean existing and exposed steel with a wire brush to remove any traces of rust, if present.

.6 Carry out anti-corrosion treatment on exposed frames using "Sika Sikatop Armatec 110 Epocem" or approved equivalent.

.7 Inject exposed cracks with polyurethane.

.8 Secure areas to be repaired and ensure formwork is leakproof.

.9 Existing concrete surface must be saturated with superficially dry water (SSS).

.10 Place "Sika Sikacrete 008 SCC" self-placing concrete or approved equivalent.

.11 Perform appropriate maturing according to manufacturer's specifications.

.12 Formwork removal and backfilling on both sides of the wall as specified in section 31 23 11 - Excavation and backfilling – Underground and underwater utilities.

.4 For small surface cracks repairs:

.1 Carry out spot repair at specified site locations 300 mm from top of wall.

.2 Make a saw line 20 mm deep at the boundaries of the area to be repaired.

.3 Demolish the surface to be repaired on both sides of the wall in a controlled and appropriate manner.

.4 Clean concrete surface with metal brush to remove any detachable concrete parts.

.5 Inject exposed cracks with polyurethane.

.6 Repair the concrete surface using "Sika Sikatop 122 Plus". Prepare the surface according to the manufacturer's specifications.

.7 Perform appropriate maturing according to manufacturer's specifications.

.8 Perform backfill on both sides of the wall as specified in section 31 23 11 - Excavation and backfilling - Underground and underwater facilities.

3.7 TOUCH UP

.1 Clean damaged surfaces with a wire brush to remove the coating layers that are loose or cracked. Apply two (2) zinc rich organic paint layers to damaged surfaces.

.1 Before painting damaged surfaces, treat them according with the manufacturer's instructions for the application of zinc rich paint.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 The Contractor is responsible for obtaining copies of all sections of these specifications even if they do not seem relevant to its specialty; otherwise, the Contractor will be deemed to have accepted all clauses and provisions of all sections of these specifications.

1.2 SCOPE OF WORK

.1 Ensure supervision of the work and supply all manpower, equipment, tools, materials, transportation and other services required to carry out and complete the work described and specified in this section and contract documents, including but not limited to: the excavation and backfilling of specified areas and the application of topsoil in preparation for tree planting, sodding and hydraulic seeding.

1.3 REFERENCES

.1 Bureau de normalisation du Québec (B.N.Q.)

.1 NQ 0605-100: Landscaping using vegetation.

1.4 ELEMENTS TO BE SUBMITTED

.1 Advise the Ministerial Representative of the proposed source of topsoil and provide access allowing said representative to conduct the analysis of materials, the acceptance of the topsoil will depend on the results of soil analyses and the inspection, Work shall not start until the topsoil has been approved by the Ministerial Representative.

.2 Topsoil tests and analyses shall be carried out by a laboratory with the Ministerial Representative assuming the cost of these.

.3 Analyze the topsoil prior to stripping and stockpiling to determine its contents of clay, sand, mud, phosphorous, potassium (NPK), magnesium (Mg), soluble salts, growth inhibitors, and soil sterilizers as well as its pH.

.1 Provide the Ministerial Representative with a copy of the soil analysis report as well as recommended soil improvements.

1.5 WORK SCHEDULE

.1 Topsoil shall be spread and finish earthwork carried out at the appropriate time for undertaking sodding work under the best possible conditions, within ten (10) days following the end of the initial spreading work.

PART 2 PRODUCTS

2.1 SOIL

.1 Loam: loose soil, neither too rich in clay nor too poor in sand, whose organic content varies between 4% and 5% for sandy loam and between 2% and 3% for clayey soil, the maximum admissible humus being 20%. This soil's pH must be between 5.5 and 7.0, The soil must also be free of subsoil, roots, vegetation, debris, toxic matter and stones more than 50 mm in diameter.

.2 Black soil (humus): consisting of decaying products, sufficiently supple and homogeneous, free of colloidal residue, wood, sulfur and iron, containing less than 60% of organic materials by weight, and having a maximum water content of 15%, The size of the shredded particles must be equal to or smaller than 6 mm.

2.2 SOIL IMPROVEMENT MATERIALS

.1 Fertilizer: commercial, synthetic, granular with a fast-acting source of phosphorous, containing no more than 35% soluble nitrogen.

.1 Composition:

.1 For sodding: 10-25-10 fertilizer.

.2 For shrub and bush planting: 10-52-16 fertilizer.

.2 Compost: commercial AA or B-type screened commercial mix whose components have fully decomposed.

.2 Ground agricultural lime with a carbonate content of at least 85%.

.1 Granulometric requirements: passing percentage by weight: 90% passing through a sieve with openings of 1 mm; 50% passing through a sieve with openings of 125 µm.

.2 Using the quantity of lime needed, as determined by the soil analysis, to obtain the required degree of acidity (pH).

.3 Bone meal: raw or steamed bone meal, finely ground, containing at least 3% nitrogen and 20 % phosphoric acid.

.4 Coarse sand: hard, granular sand, complying with the CSA A62-56-M1976 standard, well cleaned and free of any impurities, chemical product or organic matter.

2.3 MIX OF SCREENED TOPSOIL

.1 Mix for tree pits and areas to be sodded and seeded:

.1 Two parts loam.

.2 One part black soil.

.3 One part coarse sand.

.4 3% to 7% organic matter.

.2 Mixture for planting pits for shrubs, perennials and grasses:

.1 Two parts loam;

.2 Three parts black earth;

.3 One part compost;

.4 One part coarse sand;

.5 10% to 15% organic material

2.4 CHARACTERISTICS OF MIXES

.1 The cation exchange capacity (C.E.C.) must be between 10 and 20.

.2 The chemical verification of the soil shall be carried out using the "Walkey Black" oxidation method.

.3 The acidity level (pH) must be 6.5.

.4 Include the following chemical element in the proportions shown:

Chemical elements	Proportion
Phosphorous (P)	100 ppm
Potassium (K)	125 ppm
Magnesium (Mg)	200 ppm
Calcium (Ca)	2,000 ppm

.5 Fall within the following grading range:

Screen	Passing %
10 mm	100
5 mm	98 to 100
1.25 mm	90 to 97
630 µm	65 to 90
315 µm	25 to 65
160 µm	15 to 25
80 µm	5 to 15

.6 Water retention capacity: maximum 20%.

PART 3 EXECUTION

3.1 PREPARATION OF EXISTING AREA

.1 Level the ground, filling dips and creating a slope favoring the flow of water. Remove soil that has been contaminated by toxic materials. Remove debris as instructed by the Ministerial Representative.

.2 Loosen to a depth of 100 mm the entire area covered by the foundation layer to be covered in topsoil, Repeat the operation wherever the transportation material and spreading of the soil have compacted said foundation layer.

.3 Clear the surface of debris, roots, vegetation branches and stones more than 50 mm in diameter.

3.2 SPREADING OF THE TOPSOIL

.1 Areas to be sodded and/or seeded

.1 Have the Ministerial Representative inspect and approve the condition of the foundation layer before starting to spread the topsoil.

.2 Where planting and seeding work is to be carried out (as specified by the Ministerial Representative and the plans), spread the topsoil on the approved and non-frozen foundation layer in even layers containing an adequate amount of water.

.3 Spread the topsoil according to instructions, to a thickness of at least 150 mm on the areas to be sodded.

.4 Where slabs of sod are to be laid, spread the topsail leaving a thickness of 15 mm for the surface layer.

.5 Manually spread topsoil where it is not possible to use mechanical equipment.

.6 Unless otherwise indicated in the plans, spread topsoil to minimum thickness of 300 mm for ornamental grass trenches, 400 mm for shrubs and 1 m for trees.

.7 Take into account 25% settling of soil volume when placing the soil, to comply with projected levels.

3.3 SOIL IMPROVEMENT MATERIALS

.1 Incorporate soil improvement materials in prescribed quantities based on the results of soil sample analyses.

.2 Ensure the penetration of the compost and soil improvement materials into the full thickness of the topsoil layer before incorporating the fertilizer.

3.4 SPREADING OF THE FERTILIZER

.1 Spread the fertilizer at least one week after the application of lime.

.2 Spread the fertilizer evenly over the entire surface of the topsoil, in quantities based on results of sample analyses.

.3 Ensure the penetration of the fertilizer into the entire topsoil layer.

3.5 FINISH EARTHWORK

.1 Level and move the soil so as to eliminate any irregularities and dips, ensuring the flow of surface water. Apply a layer of loosened loam, breaking it up and raking it.

.2 Use a 50 kg roller measuring at least 900 mm wide to firm up the layer of topsoil over which the sod is to be laid, making it smoother, more even, with a fine, loose texture, to the satisfaction of the Ministerial Representative.

3.6 RESTORATION OF STOCKPILING AREAS

.1 Restore the condition of the stockpiling areas used for the work, to the satisfaction of the Ministerial Representative.

3.7 SURPLUS MATERIALS

.1 Excavation surplus refused by the Ministerial Representative for the project's backfilling purposes (except for contaminated materials, demotion materials and special waste) can be disposed of on a site chosen by the Contractor and approved by the Ministerial Representative, and located at least 75 m from a road's right of way or a waterway's shoreline and/or at location determined by the Ministerial Representative within the limits of the Institution. Materials must be placed so as not to be visible from a public road or obstruct the flow of water. Once disposal has been completed, materials must be leveled to the satisfaction of the land's owner(s). The Contractor must obtain a letter of authorization from each owner of the land used for the disposal of materials.

.2 Disposal work referred to above to comply with the laws and ordinances, regulations and orders of the federal government applicable to disposal work performed on federal land and which, in case of conflict, take precedence over the requirements referred to above.

.3 Disposal work referred to above to comply with the laws and ordinances, regulations and orders of the federal and provincial governments applicable to disposal work performed on provincial land and which, in case of conflict, take precedence over the requirements referred to above.

.4 All expenses relating to the use of a disposal and/or landfill site, including the cost of any permit and/or authorization, as well as loading, transportation and disposal costs are at the Contractor's expense.

END OF SECTION

PART 1 GENERAL

1.1 RELATED SECTIONS

.1 The Contractor is responsible for obtaining copies of all sections of these specifications even if they do not seem relevant to its specialty; otherwise, the Contractor will be deemed to have accepted all clauses and provisions of all sections of these specifications.

1.2 REFERENCES

.1 Bureau de normalisation du Québec (B.N.Q.), latest edition

.1 NQ 0605 - 100: Landscaping using vegetation.

1.3 SCOPE OF WORK

.1 The Contractor will ensure, in compliance with plans and other documents, the supervision of the work and supply all manpower, equipment, tools, materials, transportation and other services required to carry out and complete all work described and specified in this section and contract documents including, but not limited to: the supply and application of seeds, mulch, the application and preparation of the mix, and maintenance work related to hydraulic seeding of the specified areas.

1.4 TECHNICAL SHEETS

.1 Provide technical sheets for the following products:

.1 Seed.

.2 Mulch.

.3 Adhesives.

.4 Fertilizer.

.2 Transmit the following information, in writing, to the Ministerial Representative, 7 days prior to the start of the work:

.1 Capacity of the seeder tank in liters.

.2 Quantity of product per tank based on the seeder tank capacity.

.3 The number of loads required per hectare to apply the seed dose to a given hectare.

1.5 WORK SCHEDULE

.1 Establish the hydroseeding schedule to coincide with preparation work on the surfaces to be treated.

.2 Plan hydroseeding between the dates recommended in the article "Seeding Period".

1.6 DELIVERY AND STORAGE

.1 Deliver and store seeds in their original containers, which must carry the following information:

.1 Composition of the seed mix.

.2 Year of production.

.3 Net mass.

.4 The date and place of packaging.

.5 Germination percentage.

.6 Supplier's name and address.

PART 2 PRODUCTS

2.1 SEEDS

.1 Seeds: complying with the Government of Canada's Seeds Act and Regulations. The bags of seed grass must be sealed by the company and must be opened in the presence of the Ministerial Representative, who attends to the proportional seed mixture.

.1 Mix for gentle slopes (lower than 1V: 3H), mechanical application rate of 220 kg/ha:

.1 47% Creeping red fescue.

.2 20% Hard fescue.

.3 15% Canada blue grass.

.4 5% Colonial bentgrass.

.5 5% White clover.

.6 5% Garden bird's-foot trefoil.

.7 3% Alsike clover /Red clover UC.

.2 Mix for steep slopes (over 1V: 3H), riparian strip (10 m from high water mark), application rate 255 kg/ha:

.1 25% Creeping red fescue.

.2 20% Reed fescue.

.3 15% Canada blue grass.

.4 15% Ryegrass.

.5 10% Crested wheat grass.

.6 5% Canada wild rye.

.7 5% Virginia switchgrass.

.8 5% Colonial bentgrass.

2.2 MULCH

.1 Mulch: produced specifically for spreading using a hydraulic seeder, non-toxic, water-activated and giving the mix a green color, free of germination and growth inhibitors, and offering the following characteristics:

.1 Type I:

.1 Chemical wood pulp fiber.

.2 Organic materials content: 95%, ± 0.5%.

.3 pH level: 6,0.

.4 Water absorption capacity: 900%.

.2 Type II: for use on land with a slope whose ratio is below 1V : 3H.

.1 Made from newsprint, raw cotton fibre and straw, supplemented with tackifier at seeding.

.2 Application rate:

.1 1,200 kg/ha for the fiber mix.

.2 120 kg/ha for the adhesive.

2.3 STRAW

.1 Straw: natural weed-free straw for use with a mechanical seeding process. Mattress-type mulch consisting of straw and coconut could also be accepted.

2.4 SOIL

.1 Soil: mix for the area to be seeded, complying with the requirements of Section 32 91 21 - Topsoil and Finish Earthwork.

2.5 WATER

.1 Water: free of impurities that could impede germination and growth.

2.6 FERTILIZER

.1 Complying with the Canadian government's Fertilizers Act and Regulations as well as prevailing municipal regulations.

.2 Fertilizer with proportion of 1-3-1, supply a maximum of 25 kg/ha of nitrate (N), 75 kg/ha of phosphorus (P_2O_5) and 25 kg/ha of potassium (K_2O).

PART 3 EXECUTION

3.1 EXECUTION QUALITY

.1 Do not spray products on the structures, signs, guardrails, fences, plants, utilities, and other surfaces, which are not to be treated.

.2 Immediately remove products sprayed onto the structures and other surfaces, which are not to be treated, to the satisfaction of the Ministerial Representative.

.3 Do not carry out work under unfavorable conditions, for example, in winds of more than 10 km/hr, or when the ground is frozen, covered in snow, ice, or stagnant water.

.4 Keep seeded areas traffic free until the vegetation is well established.

3.2 SOWING PERIOD

.1 The most favourable sowing periods are from August 15th to October 15th and from the end of thawing period to June 15th.

3.3 PREPARATION OF SURFACES

.1 The ground is leveled according to the levels indicated by Ministerial Representative or 150 mm below the finished surface. The Contractor shall comply with the required slopes.

.2 Carry out the final grading of the surfaces to be sown in order to eliminate hollows and bumps. Make sure that surfaces have no noxious and waste materials. Make sure to loosen designated surfaces.

.3 Apply a 150 mm layer of topsoil in compliance with Section 32 91 21 - Topsoil and Finish Earthwork.

.4 Using stakes and paint, mark the boundaries approved by the Ministerial Representative for the different mixes on the site.

.5 Ensure that areas to be seeded are moistened to a depth of 150 mm before starting to seed.

.6 Have the preparation of the surfaces and thickness of the topsoil approved by the Ministerial Representative before starting to seed.

3.4 FERTILIZATION PROGRAM

.1 Fertilize during the establishment period until final acceptance, according to a program approved by the Ministerial Representative, at a rate of 3 applications per year.

3.5 APPLICATION OF THE SLURRY MIX

.1 Spread a slurry mix consisting of the following components. (Quantities shown are for 1 hectare):

.1 Seeds: according to application rate specified in the "Products" section,

.2 Mulch: type I or II, depending on slope,

.3 Adhesive: at least 900 L,

.4 Water: in the quantity recommended by the manufacturer.

.2 Spread the slurry mix evenly, directing the spray at the optimal angle for ensuring the seeds' adherence to the surfaces and their germination.

.3 Spread the slurry where the mix's application is not even.

.4 Removed sprayed product from structures and surfaces, which are not to be treated.

.5 Keep seeded areas traffic free, to the satisfaction of the Ministerial Representative.

.6 Remove protective barriers, as directed by the Ministerial Representative.

3.6 MAINTENANCE DURING ESTABLISHMENT PERIOD

.1 Carry out the following maintenance work between the seeding date and the date on which the Ministerial Representative accepts the work.

.1 Repair and reseed bare, damaged, or insufficiently covered surface, allowing the seeding to become well established before acceptance of the work.

.2 Ten (10) weeks following germination and when the vegetation's blades have reached maturity, fertilize the seeded areas in compliance with the established fertilizing schedule. Spread half the required fertilizer in one direction and the other half perpendicularly. Water well to ensure the fertilizer's penetration into the soil.

.3 Water seeded zones to maintain the optimal moisture level required to ensure germination and continued growth. Set watering equipment to ensure that the soil is not washed away.

.4 Weed mechanically, using methods that comply with prevailing regulations.

3.7 ACCEPTANCE OF WORK

.1 Seeded areas will be accepted by the Ministerial Representative if the following conditions are respected:

.1 The vegetation is well established and uniform,

.2 Seeded areas are free of erosion, bare or dead patches as well as ruts and weeds,

.3 Seeded areas have been fertilized.

.2 Areas seeded in the fall will be definitively accepted the following spring, one month after the start of the growth period, provided conditions for acceptance have been met.

END OF SECTION

PART 1 GENERAL

1.1 CONTENT

.1 The requirements of this section are for the construction of new sewer manholes, sumps, drainage trenches and storm sewers.

1.2 RELATED SECTIONS

.1 Section 01 11 01 – General Information on Work.

.2 Section 31 14 11 – Earthwork and Leveling.

.3 Section 31 23 11 – Excavation and Backfilling – Underground and Underwater Utilities.

.4 Section 31 23 13 – Environmental Management of Excavation Surpluses.

1.3 REFERENCES

.1 Bureau de normalisation du Québec (BNQ)

.1 BNQ 1809-300/2018, Travaux de construction – Conduites d'eau potable et d'égout – Clauses techniques générales.

.2 BNQ 2622-420/2009, Regards d'égout, puisards et chambres des vannes et postes de pompage préfabriqués en béton armé.

.3 BNQ 2560-114/2014, Civil Engineering Work – Aggregates.

.4 NQ 3221-500/2003, Cadres, grilles, tampons, trappes de puisard et bouches à clé - Moulages en fonte grise ou en fonte ductile pour travaux de génie civil - Caractéristiques et méthodes d'essais.

.2 Ministère des Transports, de la Mobilité durable et de l'Électrification des transports (MTMDET – Quebec's Ministry of Transport, Sustainable Mobility and Transport Electrification)

.1 Cahiers des Normes, Ouvrages Routiers, Tome II "Construction routière", latest edition.

.3 Canadian Standards Association (CSA International)

.1 CSA-G30.18-09, Carbon steel bars for concrete reinforcement.

1.4 SUBMITTALS

.1 Submit the documents and samples required in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit, for approval by the Ministerial Representative, shop drawings and / or technical sheets, accordingly, of the following:

.1 Manhole, sump.

.2 Sewer line.

.3 Drainage trench drain.

.4 Frame, lid and cover.

.5 Geotextile membrane.

.6 Connections to existing pipe.

.7 Rigid insulation.

.3 At least four (4) weeks before starting work, submit the results of tests conducted by the manufacturer and the certificate attesting that the materials meet the requirements. Include, where necessary, drawings, documents and shop drawings provided by the manufacturer.

PART 2 PRODUCTS

2.1 POLYVINYL CHLORIDE (PVC) PIPE

.1 Polyvinyl chloride (PVC) pipes for gravity applications shall comply with the requirements of standard BNQ 3624-130, type DR-28, for diameters of 100 to 150 mm and standard BNQ 3624-135, type DR-35, for diameters of 200 mm or more.

.2 Connectors shall be of the "wide-mouthed" type and consist of a section with a solid wall and rubber gasket installed in the plant and securely blocked to keep it from moving.

2.2 PRECAST CONCRETE MANHOLES

.1 Manholes and catch basin manholes shall be of reinforced concrete in compliance with the NQ 2622-420/2009 standard. Unless otherwise indicated in the plans, manholes shall have rubber gaskets complying with BNQ 2622-420/2009 and ASTM C443M standards.

.2 The nominal diameter shown on the plan must be respected.

.3 Provide all structures on a section of extension to 300 mm in height under the lid section to facilitate future adjustments of the frame.

.4 According to the BNQ 1809-300/2018 standard connection to conduct a new or existing pipe must be made;

.5 Manholes on storm sewers shall be of the same type as those described above, the bottom featuring a semi-circular canal (gutter) as described in the preceding point. However, watertight gaskets shall be Flex-Lok type or approved equivalent. If the angle makes the use of a gasket impossible, a flexible watertight joint shall be produced using activated oakum. No rigid joint shall be accepted.

.6 The manufacturer shall hold a certificate of compliance with the ASTM C-443M standard for joint gaskets, issued by a Laboratory recognized by the Ministère des Transports, de la Mobilité durable et de l'Électrification des transports (MTMDET – Quebec Department of Transport).

.7 Concrete used in the construction of these manholes shall have a compressive strength of 40 MPa at 28 days, and these manholes shall be built in compliance with the BNQ 2622-420/2009 and ASTM C478M standards. In all cases, the strictest standard shall prevail. The surfaces of the manhole shall be those obtained upon removal of forms. The use of a surface coating or finishing mortar is not allowed.

.8 Manhole elements likely to be located 600 mm or less from the profile of the street shall meet the requirements of tests with de-icing salts to determine resistance to freeze/thaw cycles, as described in the "Cahier des charges et devis généraux" issued by the Ministère des Transports, de la Mobilité durable et de l'Électrification des transports (MTMDET — Quebec Department of Transport). This compliance must be attested to by a Laboratory accredited by the MTMDET.

.9 All horizontal and vertical joints, which are not watertight, shall be immediately repaired by a specialized firm, which shall produce a special report confirming said repairs along with a two (2) years guarantee. This specialized firm must be approved by the Owner. Only flexible repair methods such as activated oakum, acrelamide or polyurethane injection are allowed. Any other flexible repair method shall be subject to an equivalence application. No rigid repair shall be permitted.

.10 Rungs and ladders shall be installed in the stairway as described in the article below.

2.3 IRON FRAMES AND LIDS FOR PRECAST CONCRETE MANHOLE

.1 Lid is 775 mm in diameter.

.2 Cast iron and shaping for frames, guides and covers shall comply with the NQ 3221-500/2003 standard. Parts shall be flawlessly moulded with no cracks, scars, blisters or other defects. The warping tolerance in all directions shall be less than 1 mm. All parts whose weight is less than 95% of the weight indicated by the manufacturer shall be rejected. All cast-iron parts shall bear the manufacturer's name or trademark. All unidentified parts shall be refused.

.3 Frames, covers and grates for manholes and catch basin manholes shall be capable of withstanding heavy traffic.

.4 Roadway

.1 The frame and cover shall be of the adjustable type with guide rings and no other standard type shall be installed without the authorization of the Departmental Representative.

.2 In the case of manholes located in paved areas, the frame and cover shall be produced from class 65-45-12 ductile cast iron, without anti-tipping brackets, while the conic guide shall be produced of grey cast iron in self-adjusting model.

.3 The frame shall not rest directly over the guide channel. There shall be a space of at least 40 mm between the underside of the frame and the top of the guide channel. To this end, it is necessary to raise one side of the adjustable part and tamp down the bituminous mix between the supporting rim and the top of the concrete section of the manhole or catch basin manhole. Repeat the process on the other side to obtain even support under the entire rim, and exceed the level of surrounding pavement by 50 mm before running the roller.

.5 Off road

.1 Frames and lid must be from the same manufacturer and be "Standard".

.2 In the case of all manholes located above grade, the frame shall be of class 30 grey cast iron of the S-402 type while the cover shall be of class 65-45-12 ductile cast iron of S-402 type, and the grate of CB-526 type.

.3 Provide raisers for to facilitate future adjustments of at least 50 mm.

.6 The lids must be identified in accordance with BNQ Standard 1809-300/2018 and indicate clearly the type of matching network (sanitary or storm).

.7 The pad must be bolted to the frame and the frame must be bolted to the precast concrete head.

.8 Adjustment

.1 To adjust manholes and chambers to the proposed elevation, the Contractor shall use heads whose heights shall vary from 200 to 475 mm. Heads shall have a continuous groove on the top face, to accommodate the installation of a strip of butyl as well as a lip to hold the frame or levelling ring.

.2 A standard ring measuring 300 mm in height shall be installed beneath the head, when the height of the manhole allows. No ring of a height other than 300 mm shall be installed directly beneath the head of the manhole.

.3 Stacking rings shall be installed in heights of 300, 600, 900, 1,200 and 1,800 mm.

.9 Adjustment rings must be cast iron.

.10 Rubber seals must comply with BNQ Standard 2622-420/2009.

2.4 RUNGS AND LADDERS

.1 Materials used in the production of ladders and rungs are cold worked. Ladder bars are produced of 15 M deformed reinforcing steel with a spacing of 300 mm c/c at ± 25 mm and rungs made of 20 M deformed reinforcing steel with a spacing of no more than 300 mm. The steel shall be galvanized. The ladder shall be secured to the wall using bolts screwed into anchors set in the concrete at the time of pouring.

.2 The middle of the top bar shall never be more than 660 mm below the final elevation from the cover. Wall clearance shall be 150 mm from the recess.

2.5 DRAINAGE TRENCH DRAIN

.1 Drains for drainage trenches are HDPE compliant with standard ASTM D3350. The drains have an internal diameter of 300 mm, with a single annular wall inside and outside and must have a resistance of 210 kPa. The drains are manufactured in accordance with standard BNQ 3624-110.

2.6 PREFABRICATED HDPE SUMPS

.1 High-density polyethylene (HDPE) sumps shall meet the requirements of the following standards:

.1 Pipes shall be of high density polyethylene, of the "chimney" type, made of pipe with a corrugated inner and outer wall, not perforated, with minimum rigidity of 210 kPa pre-molded with a nominal diameter of 300 mm.

.2 Grids are made of polyethylene with a nominal diameter of 300 mm and are bolted to the sump wall.

2.7 GRANULAR MATERIALS

.1 Granular materials and compaction of pipe and trench backfill according to the provisions of Section 31 23 11 – Excavation and Backfilling – Underground and Underwater Utilities.

2.8 SEWER SERVICE CONNECTION

.1 For connections to the system, the Contractor shall submit a shop drawing for approval by the Ministerial Representative. The connections are made using an "Inserta-Tees" type connection saddle.

PART 3 EXECUTION

3.1 GENERAL

.1 Before any work on the drainage networks, make survey of inverts, dimensions of pipes in each manhole / catch basin impacted and their diameter to confirm the data shown on plans.

.2 Construct the works in accordance with the plans.

.3 Perform the work gradually, progress with the laying of pipe.

.1 Never advance more than one catch basin beyond the last pipe section in place.

.4 Ensure that manhole and catch basin openings are closed immediately after installation to prevent being filled with debris or someone falling in.

.5 Clean and dry pipes and connectors prior to their installation and remove all defective material from the site, to the Departmental Representative's satisfaction.

.6 Have pipes, connectors, manholes, catch basin manholes, and catch basins approved by the Departmental Representative prior to their installation.

.7 Retain and protect existing structures.

3.2 EXCAVATION AND BACKFILL

.1 Excavate and backfill in accordance with Section 31 23 11 – Excavation and Backfilling – Underground and Underwater Utilities and as indicated.

.2 Dry excavation properly and remove any unstable materials and any foreign matter before making the bedding.

.3 Building a stable base of 150 mm or more using granular material (MG 20b) following the specifications of the plans.

.4 For manholes, place a coating made of MG 20b or CG 14 material over 600 mm around the backfill compacted to 90% of the PM by a maximum thickness of 300 mm. Respecting the specifications to the plan.

.5 For storm sewer lines, install asphalt to specifications and details on plans.

.6 Backfill up to infrastructure line according to the specifications.

3.3 PIPE INSTALLATION

.1 Carry out all installation work for manholes, sumps, ducts and drainage trenches to the satisfaction of the Ministerial Representative and in accordance with the requirements of BNQ 1809-300.

3.4 PIPE INSULATION

.1 Thermal insulation of all sewer pipes installed at a depth of less than 1,5 m is required.

.2 Place the insulation over the compacted granular surround material covering the pipe as described in the detail provided.

.3 Place the sheets lengthwise and parallel to the pipe's middle line, staggering the transversal joints.

.4 Sheets shall be butt jointed and secured to prevent movement.

.5 Thermal insulation is required at the intersection of a sewer and aqueduct, as detailed in the plan.

3.5 CONNECTION TO EXISTING PIPES OR UNDERGROUND STRUCTURES

.1 Projected pipes

.1 The Contractor shall carry out the connection of all projected pipes to existing pipes or underground structures. To this end, he shall first locate and clear existing pipes or underground structures and determine their exact profile and diameter to ensure that that parts needed for connecting work are available on site when the work is to be carried out. He shall then empty existing pipes, pierce existing underground structures, provide the special connectors required and produce all watertight joints needed to connect the proposed pipes to existing pipes or underground structures.

.1 Connections without rubber gaskets: For sanitary pipes of more than 610 mm and storm sewers, all pipe connections to existing sewer manholes shall be carried out using a form, outside the manhole, into which a minimum 15 cm thickness of unshrinkable mortar shall be placed. It is necessary to ensure that the excavation remains dry until the concrete has set.

.2 Interior finish of sewer manholes: The interior finish of existing sewer manholes calls for concreting the bottom of the sewer manholes so as to adopt the form of sewer pipes in place by forming a semi-circular channel up to half the pipe's diameter. This correction immediately follows the progression of the work. The channel shall be smooth and even, with radii as long as available space allows, with no sharp turns shall be allowed.

.2 Projected underground structures (manholes, catch basins, etc.)

.1 The Contractor shall carry out the connection of all projected or existing pipes to projected underground structures. To this end, he shall first locate and clear existing pipes to determine their exact profile and diameter. He shall then supply the special connectors required by the pipes and produce all watertight joints needed for the connection to projected underground structures

3.6 SERVICE INTERSECTIONS

.1 Wherever underground municipal services or public utilities intersect, a minimum clearance of 200 mm shall be maintained except in the case of municipal service entrances where this value can be reduced to 150 mm. The minimal clearance shall be increased to 500 mm in the event that a sewer pipe is built parallel to another municipal service or public utility.

.2 Where proposed pipes intersect or a proposed pipe crosses under an existing service, the Contractor shall fill the space between the two services using a Class A granular material compacted to 95 % M.P. Furthermore, the last space beneath the top service, which cannot be correctly filled with compacted Class A material, shall be filled with unshrinkable fill to prevent compaction.

3.7 REPAIRS

.1 All work to be redone or repaired shall be carried out at the Contractor's expense before the Departmental Representative recommends the provisional acceptance of the work.

.2 If major repairs are required following tests described in the aforementioned articles, the Departmental Representative shall require that a special CCTV inspection be carried out, at the Contractor's expense, where repairs were made.

.3 When the floors and rises have been located, a maximum tolerance of 10 % of the nominal diameter shall be accepted. Should the floors or rises exceed this tolerance, the Contractor shall be required to redo the defective part of the sewer, rendering it acceptable.

3.8 INSPECTION AND TESTING

.1 Conduct a television inspection and deformation testing of storm sewer pipes and manholes, and drainage trench prior to the provisional acceptance of work in accordance with the requirements and specifications of BNQ 1809-300.

.2 Inspection must be done by a specialized laboratory and an inspection report must be provided to the Ministerial Representative prior to the provisional acceptance of the work.

3.9 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