

CORRECTIONAL SERVICE CANADA (CSC)

Projet No 550-2-301-3102

**PETROLEUM PRODUCTS STORAGE
SYSTEMS COMPLIANCE**

**ARCHAMBAULT INSTITUTION – MINIMUM SECURITY
244, montée Gagnon, Ste-Anne-Des-Plaines**

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END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 35 12 – Special Project Procedures for Correctional Service Canada Security Requirements.

1.2 REFERENCES

- .1 Canadian Environmental Protection Act.
 - .1 SOR-2008, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008);
 - .2 CCME PN 1327-2008, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.
- .2 Canadian Standard Association (CSA International).
 - .1 CSA-B139-09, Installation Code for Oil-Burning Equipment.
- .3 Health Canada, Workplace Hazardous Materials Information Systems.
 - .1 Material Safety Data Sheets (MSDSs).
- .4 National Fire Code of Canada (2010).
- .5 National Building Code of Canada (2010).
- .6 Loi sur le bâtiment.
 - .1 Construction Code (2007).

1.3 DESCRIPTION OF WORK

- .1 The project includes the following work. The list below is not necessarily exhaustive and in no way releases the Contractor from the obligation of carrying out the project in its entirety according to generally accepted practices as well as the intentions and general principles as described in these specifications and drawings.
- .2 Distribution Post
 - .1 Replace two collection wells;
 - .2 Replace concrete slabs above both reservoirs with new ones.
- .3 Thermal Power Plant
 - .1 Remove the slab above the access well for the underground reservoir;
 - .2 Remove the polyethylene underground pipes from within the tertiary conduits;
 - .3 Place new double walled, polyethylene, supply and return pipes in the tertiary conduits;

- .4 Install a new transition box where the new underground piping will connect with new aboveground steel piping;
- .5 Install new aboveground pipes on the ground floor between the pump assembly and the new transition box;
- .6 Replace the valves on the indoor pump assembly;
- .7 Repair the flowmeter inside;
- .8 Remake the collection wells of the underground reservoir;
- .9 Remake the slabs for the service box level;
- .10 Add a detection probe in the new transition box;
- .11 Paint all the new and existing indoor piping and properly identify each pipe.

1.4 SITE INSPECTION BY BIDDERS

- .1 For security reasons at the penitentiary, the site inspection shall be conducted at a set time that will be specified in the tender documents. The meeting place will be the main entrance of the institution concerned.
- .2 The Contractor shall examine the site and conditions that could have an impact on the work prior to submitting his proposal. Submitting a bid indicates that the bidder accepts the terms and conditions of the solicitation and agrees to be bound by them.

1.5 SECURITY SCREENING

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

1.6 CODES

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

- .1 Contract documents;
- .2 Specified standards and codes as well as other documents cited as references.

1.7 REQUIRED DOCUMENTS

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

1.8 WORK SCHEDULE

- .1 The successful bidder shall initiate work immediately upon receiving notice that the contract has been awarded. The work covered by this document, including measures to correct construction deficiencies, must be completed within the schedule specified herein.
- .2 Within 10 business days of contract award, submit a work schedule for the various project phases and the completion date, which must be within 5 weeks of contract award.
- .3 Within 10 business days of contract award, submit shop drawings, technical data sheets, samples, and security screening applications for approval.
- .4 The work sequence is as follows:
 - .1 Start-up meeting and schedule submission, shop drawings, technical data sheets, samples, and security screening applications for approval;
 - .2 Approval of documents submitted;
 - .3 Construction start-up;
 - .4 End of Work;
 - .5 Submission of operating and maintenance manuals for approval.
- .5 Provisional acceptance:
 - .1 Training of maintenance and operating personnel;
 - .2 Correction of deficiencies;
 - .3 Final approval.

- .6 Within ten 10 business days of contract award, the Contractor shall provide, in a format acceptable to the Project Manager, a work schedule indicating:
 - .1 Contract award;
 - .2 Shop drawings, lists of materials, and samples;
 - .3 Mobilization;
 - .4 Excavation;
 - .5 Filling;
 - .6 Pipes, pumps and reservoirs;
 - .7 Commissioning tests;
 - .8 Late delivery materials;
 - .9 Delivery dates;
 - .10 Training.
- .7 Update the work calendar once per week, that reflects and changes in activities, the work achieved and the work currently in progress.

1.9 CONTRACTORS USE OF THE SITE

- .1 The institution must remain fully operational during construction. With this end in view, the CSC Project Manager or the institution's head of security can require the Contractor to halt work immediately on a temporary basis to prevent institution activities from being compromised.
- .2 Use of premises; limited access to the job site. Work and affected engineering structures outside the construction site must be carried out by a crew accompanied by an escort provided by CSC (see section 01 35 13).
- .3 The Contractor shall perform the work so as to disturb the occupants as little as possible and, to the degree possible, ensure that normal use can be made of the facilities. The Contractor shall also cooperate with the CSC Project Manager to facilitate performance of the work.
- .4 Existing services in the buildings must be maintained during the project.
- .5 No vehicle or mobile construction equipment shall remain on institution premises outside of working hours. All construction vehicles must be parked in the lot in front of the postern (main entrance). Refer to section 01 35 13.

1.10 NOISY ENVIRONMENT AND CELLPHONE USE

- .1 No radios or "boom boxes" shall be tolerated at the job site (see section 01 35 13).
- .2 Cell telephones are prohibited within the perimeter of the penitentiary (see section 01 35 13).

1.11 JOB SITE MEETINGS

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

1.12 LOCATION OF EQUIPMENT AND VARIOUS PIECES OF EQUIPMENT

- .1 The location of various devices and pieces of equipment as well as the electrical outlets indicated on the drawings and in the specifications must be considered approximate.
- .2 The Contractor shall install equipment and devices as well as distribution networks so as to limit hindrances and keep the largest amount of useful space possible while complying with manufacturer recommendations related to safety, access, and maintenance.
- .3 The Contractor shall inform the Project Manager of the installation date and request approval for the designated location.
- .4 When so requested by the Project Manager, the Contractor shall provide location plans indicating the relative positions of equipment and networks.

1.13 DRILLING AND SEALING

- .1 The Engineer's approval shall be obtained before cutting or drilling in bearing members or inserting sleeves.
- .2 Drilling and sealing shall be performed so as to ensure that connections are exact and with no play.
- .3 Holes and openings must be clean, straight, and smooth.
- .4 When the addition of a new structure requires modifications to an existing one, all required drilling, sealing, and other repairs shall be carried out to restore the existing structure to its condition prior to the work.

1.14 EXISTING SYSTEMS

- .1 When connections must be made to existing systems, the work shall be carried out at times determined by local authorities and performed so as to minimize disruption of pedestrian and vehicular traffic.
- .2 A work schedule shall be submitted to the CSC Project Manager for approval at least 48 hours prior to any existing services or system being interrupted. The approved schedule shall be followed; the individuals affected shall be informed beforehand.

- .3 Should installations be discovered during the course of work, the Engineer shall be immediately informed and a written report containing the observations provided to him.
- .4 All conduits for disused services within a radius of 2 m from any structure shall be removed. Conduits that have been cut shall be capped or otherwise plugged, as directed by the Engineer.
- .5 There shall be a record of the location of conduits that have been maintained in service, deviated, or abandoned.

1.15 MODIFICATIONS, ADDITIONS, OR RENOVATION OF EXISTING BUILDINGS

- .1 The Contractor shall perform the work so as to disturb the occupants as little as possible and, to the degree possible, ensure that normal use can be made of the facilities. The Contractor shall also cooperate with the CSC Project Manager to facilitate performance of the work.
- .2 At no time shall the safety measures be relaxed because of the work to be carried out under this contract. The Contractor shall take the steps required to ensure the level of safety required.
- .3 The Contractor shall use only those elevators, freight elevators, conveyors, and escalators reserved for his or her use to move materials and personnel. Before the Contractor uses an elevator, the cabin walls shall be protected as directed by the Engineer. The Contractor accepts liability for any damage to such devices, for their safe and proper use, and for any overloading of the existing equipment.
- .4 When work is to be carried out in occupied spaces, the Contractor shall provide and install whatever is required to protect the furnishings, equipment, and finish work; install dust barriers, partitions, and temporary notices; and clean the area at the end of each work day.

1.16 SUPPLEMENTAL DRAWINGS

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

1.17 REMAINS AND ANTIQUES

- .1 Remains, antiques, and other items of historical or scientific interest, such as cornerstones and their contents, commemorative plaques, and other objects bearing inscriptions discovered during the project.
- .2 The CSC Project Manager shall be informed immediately; authorization in writing is required before work can be resumed.

- .3 Remains, antiques, and other items of historical or scientific interest are the property of the Crown.

1.18 RESTRICTIONS RELATED TO TOBACCO USE

- .1 Restrictions regarding the use of tobacco inside buildings shall be complied with.

1.19 PERSONNEL TRAINING

- .1 The Contractor shall provide 2 periods of training.

1.20 OPERATING MANUAL

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

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Submit to the Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to the Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify the Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- .9 Contractor's responsibility for deviations in submission from Documents is not relieved by the Departmental Representative.
- .10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Allow 10 days for the Departmental Representative's review of each submission.

- .4 Adjustments made on shop drawings by the Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Departmental Representative prior to proceeding with Work.
- .5 Make changes in shop drawings as the Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify the Departmental Representative in writing of revisions other than those requested.
- .6 Accompany submissions with transmittal letter, in 2 copies, 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 Other pertinent data.
- .7 Submissions include:
 - .1 Date and revision dates;
 - .2 Project title and number;
 - .3 Name and address of:
 - .1 Subcontractor;
 - .2 Supplier;
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication;
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances;
 - .3 Setting or erection details;
 - .4 Performance characteristics;
 - .5 Standards;
 - .6 Relationship to adjacent work.
- .8 After the Departmental Representative's review, distribute copies.
- .9 Submit one electronic copy of shop drawings for each requirement requested in specification Sections and as the Departmental Representative may reasonably request.
- .10 Submit 1 electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by the Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

- .11 Submit 1 electronic copy of test reports for requirements requested in specification Sections and as requested by the Departmental 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.
- .12 Submit 1 electronic copy of certificates for requirements requested in specification Sections and as requested by the Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
- .13 Submit 1 electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by the Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .14 Submit 1 electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by the Departmental Representative.
- .15 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Submit 1 electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by the Departmental Representative.
- .17 Delete information not applicable to project.
- .18 Supplement standard information to provide details applicable to project.
- .19 If upon review by the Departmental 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.
- .20 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

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

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 "Contraband" means:
 - .1 an intoxicant, including alcoholic beverages, drugs and narcotics;
 - .2 a weapon or a component thereof, ammunition for a weapon, and anything that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling a person, when possessed without prior authorization;
 - .3 an explosive or a bomb or a component thereof;
 - .4 currency over any applicable prescribed limit [XX.00\$], and;
 - .5 any item not described in paragraphs (a) to (d) that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization.
- .2 "Unauthorized Smoking Items" means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing or snuffing tobacco, cigarette making machines, matches and lighters.
- .3 "Commercial Vehicle" means any motor vehicle used for the shipment of material, equipment and tools required for the construction project.
- .4 "CSC" means Correctional Service Canada.
- .5 "Director" means Director or Warden of the Institution as applicable or their representative.
- .6 "Construction employees" means persons working for the general contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies.
- .7 "Departmental 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.

1.2 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 Co-operate with institutional personnel in ensuring that security requirements are observed by all construction employees.

1.3 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.

1.4 VEHICLES

- .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.

1.5 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.

1.6 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.

1.7 TELEPHONES

- .1 There will be no installation of telephones, Facsimile machines and computers with Internet connections permitted within the perimeter of the institution unless prior approval of the Director is received.
- .2 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 and digital telephones, including but not limited to devices for telephone messaging, pagers, BlackBerries, telephone used as 2-way radios, are not permitted within the perimeter of the Institution unless approved by the Director. If 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.

1.8 WORK HOURS

- .1 Work hours within the Institution are: Monday to Friday 07h00 hrs. to 16h00 hrs.
- .2 Work will not be permitted during weekends and statutory holidays without the permission of the Director. A minimum of seven days advance notice will be required to obtain the required permission. In case of emergencies or other special circumstances, this advance notice may be waived by the Director.

1.9 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.

1.10 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.
- .4 Store all tools and equipment in approved secure locations.
- .5 Lock all tool boxes when not in use. Keys to remain in the possession of the employees of the contractor.
- .6 Scaffolding shall be secured and locked when not erected and when erected, shall be secured in a manner agreed upon with the director.
- .7 All missing or lost tools or equipment shall be reported immediately to the Director.
- .8 The Director will ensure that the security staff members carry out checks of the Contractor's tools and equipment against the list provided by the Contractor. These checks may be carried out at the following intervals:
 - .1 At the beginning and conclusion of every construction project;
 - .2 Weekly, when the construction project extends longer than a one week period.
- .9 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.

1.11 SECURITY HARDWARE

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

1.12 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.

1.13 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.

1.14 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.

1.15 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.

1.16 ACCESS TO INSTITUTIONAL PROPERTY

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

1.17 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.] [0745 hrs.] to [11:00 a.m.] [1100 hrs.];
 - .2 [1:00 p.m.] [1300hrs.] to [3:30 p.m.] [1530 hrs.].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.

1.18 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.

1.19 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.

1.20 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.

The contractor shall advise the Departmental Representative of this interruption of the work within 24 hours.

1.21 CONTACT WITH INMATES

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

1.22 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.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 Submittal Procedures.
- .2 Section 01 35 13 – Special Project Procedures for Correctional Service Canada Security Requirements.

1.2 CONTENTS OF THE SECTION

- .1 The contractor must conduct activities so that the health and safety of workers, as well as environmental safety is a priority over costs and scheduling of work.

1.3 REFERENCES

- .1 Working Canadian Code, part 2, Canada Occupational Health and Safety Regulations.
- .2 Canadian Standard Association (CSA International).
- .3 Health Canada, Workplace Hazardous Materials Information Systems.
 - .1 Material Safety Data Sheets (MSDSs).
- .4 Occupational Health and Safety Act, L.R.Q. Chapter S-2.1 (2002).
- .5 Safety Code for the Construction Industry, S-2-1, r.6 (2001).

1.4 SUBMITTALS

- .1 Submit all documents and samples in conformity with the section 01 00 50 – General instructions.
- .2 10 days before construction start, transmit to the CSC representative and to the Commission de la santé et de la sécurité du travail (CSST) the health and safety program specific to the construction activity as described in the section 1.8. If necessary, the general contractor must update his prevention program to reflect any changes to the initial plans. Following the reception of the prevention program and at any time during the work, the CSC representative can ask for its modification to adapt it to the work on site. The general contractor will have to proceed with the required modifications before work start.
- .3 Transmit to the CSC representative a copy of any federal or provincial inspector's inspection reports, notice of corrections or recommendations within 24 hours of their reception.
- .4 Transmit to the CSC representative any investigation report concerning any accident with injury or pointing out any potential hazard for health and safety within 24 hours of their reception.

- .5 Transmit to the CSC representative the data sheet for all controlled product at least three (3) days before they are used on site.
- .6 Transmit to the CSC representative a copy of the formation certificates required for the application of the prevention program including.
 - .1 General health and safety course on work sites;
 - .2 Security agent 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 adjustment of individual protection equipments;
 - .8 Forklift truck safe use;
 - .9 Working platform lift;
 - .10 and any other formation required by regulations or by the prevention program.
- .7 Medical examinations : when required by law, regulation, directive, specification or by a prevention program, the general contractor must:
 - .1 Before mobilisation, transmit to the CSC representative the medical examination certificate for all surveillance employees and any other employee attending the first site meeting concerned by this article's first paragraph;
 - .2 Afterwards, transmit as one goes along and without any delays all medical examination certificates of any new incoming worker concerned by this article's first paragraph.
- .8 Emergency plan : the emergency plan, as described in the article 1.7.3, must be transmitted to the CSC representative with the prevention program.
- .9 Notice of work start : the notice of work start must be transmitted to Commission de la santé et de la sécurité du travail before the work start and copied to the CSC representative. A copy of this notice must be available and visible on site at all time. During demobilisation, the notice of end of work must be transmitted to the CSST with a copy to the CSC representative.
- .10 Engineer's plans and notice of conformity : the general contractor must transmit to the CSST and to the CSC representative an engineer' signed and sealed copy of all the plans and notice of conformity required in virtue of 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 time on the work site.
- .11 Certificate of conformity delivered by the CSST : the certificate of conformity is a document delivered by the CSST and confirms that the general contractor complies with the CSST requirements, that he has paid all amount due in relation with the awarded contract. This document must be transmitted to the CSC representative at the end of work.

1.5 EVALUATION OF THE RISKS

- .1 The general contractor must identify all related risks to the various tasks on site.
- .2 The general contractor must plan and organize his work in order to favour the elimination of the danger at the source or the collective protection and minimize the use of individual protection equipments. When the use of individual protection equipment is required in situations of falling hazards, the workers must use a safety harness in conformity with the norm CAN/CSA-Z-259.10-M90. The safety belt must not be used as a falling protection.
- .3 Any equipment, tool or mean of protection that cannot be installed or used without compromising the health and safety of the workers is considered inadequate for the work.
- .4 All mechanical equipments must be inspected before their delivery on site. Before using a mechanical equipment, the general contractor must transmit to the CSC representative a certificate of conformity signed by an approved mechanic. At any time, if the CSC representative suspects a defect or a risk of accident, he can order the immediate shutdown of the machine and require a second inspection performed by a specialist of his choice.

1.6 MEETINGS

- .1 A decision-making representative of the general contractor must attend all meetings about job site health and safety issues.

1.7 RULING AGENCY REQUIREMENTS

- .1 Comply with all rules, regulations and applicable norms for the execution of the work.
- .2 Follow the prescribed norms and rules in order to assure a normal course of events in the work progress in situations of contaminated grounds by toxic products.
- .3 Despite the publication date of the indicated norms in the Safety Code for the construction industry, always use its most recent and applicable version during work.

1.8 HEALTH AND SAFETY MANAGEMENT

- .1 Accept and assume all tasks and obligations normally assigned to the master-builder in accordance with the Loi sur la santé et la sécurité du travail (L.R.Q., chapitre S-2.1) and the Safety Code for the construction industry (S-2.1, r.6).
- .2 Develop a prevention program specific for the work based on identification of the risks and put this program in application from the beginning of work to its demobilization. The prevention program must take into account the information in the article 1.7. It must be transmitted to all person involved in conformity with the article 1.2. The prevention program must include:

- .1 The business policy regarding health and safety;
 - .2 The description of the work, the total cost of the work, the schedule with its workforce chart;
 - .3 A flowchart of the health and safety's responsibilities;
 - .4 The physical and material organization of the job site;
 - .5 The first-aid norms;
 - .6 The identified risks on the job site;
 - .7 The identification of the risks related to the work to be executed, including the prevention program and their applicability modality;
 - .8 The required formation;
 - .9 The procedures in situation of accident/injuries;
 - .10 A written commitment from all stakeholders to comply with this prevention program;
 - .11 A job site inspection schedule based on the prevention measures.
- .3 The general contractor must develop an efficient emergency plan, in relation with the job site characteristics and conditions. The emergency plan must be transmitted to all involved stakeholders, in conformity with the article 1.2. The emergency plan must include:
- .1 The evacuation procedure;
 - .2 The identification of the ressources (police, firefighter, ambulance, etc.);
 - .3 The identification of the persons in charge of the job site;
 - .4 The identification of the first-aiders;
 - .5 The required formation for the persons in charge of its application;
 - .6 And any other information necessary related to the job site characteristics.

1.9 RESPONSABILITIES

- .1 No matter what is the size of the job site or the number of workers on site, always have an identified competent supervisor responsible of the health and safety. Take all necessary measures to assure the health and safety of peoples and goods on and in the proximity of the job site that could be affected by the execution of the work.
- .2 Take all necessary measures to assure the application and the respect of all health and safety requirements indicated in the contractual documents, the federal and provincial regulations, the applicable norms and the prevention program specific for the job site and comply immediately to any prescription or notice of correction issued by the CSST.
- .3 Take all necessary measures to maintain the job site clean and in good order during the work.

1.10 COMMUNICATION AND SIGNAGE

- .1 Take all necessary measures to assure an efficient 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 particularities of the prevention program, of their obligations and rights.

- .2 The general contractor must insist on the worker's right to refuse to execute a work if they believe this work could imperil their health, their safety, their own physical integrity or the one of the other persons on the job site. The general contractor must maintain on the job site an updated register with the information transmitted and the signature of all the workers who received this formation.
- .3 The following information and documents must be displayed in an easily accessible place for the workers:
 - .1 Notice of work start;
 - .2 Identification of the master-builder;
 - .3 The business policy regarding health and safety at work;
 - .4 The prevention program specific to the job site;
 - .5 The emergency plan;
 - .6 Data sheet of all controlled products used on the job site;
 - .7 Minutes of meeting of the construction site committee;
 - .8 Name of the first-aiders;
 - .9 Intervention and correction reports published by the CSST.

1.11 UNFORSEENS

- .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 general contractor must immediately stop the work, set up temporary protection measures for the workers and the public and warn the CSC representative verbally and by writing. The general contractor must afterwards proceed with the necessary modifications to the prevention program for the work to resume safely.

1.12 CAULKING GUNS AND OTHER CARTRIDGE DEVICES

- .1 Caulking guns or any other cartridge devices are forbidden on the CSC property. See SECTION 01 35 13.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 74 11 – Cleaning.
- .3 Section 01 74 21 – Construction and Demolition, Waste Management and Elimination.

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 FIRES

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

1.4 DRAINAGE

- .1 Provide temporary drainage and pumping required to keep excavations and site free from water.
- .2 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

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

1.6 NOTIFICATION

- .1 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
 - .1 Take action only after receipt of written approval by Departmental Representative.
- .2 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .3 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Execution

2.1 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for [reuse] [and] [recycling] in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

2.2 MITIGATION MEASURES

- .1 Project Activities:
 - .1 Use high quality material according to regulations in effect. Proceed to inspect the material (machines and equipments) before starting them on the site. Maintain the material in perfect working order. Verify atmospheric emissions of the equipment daily, checking for any that must be repaired immediately or removed from the site;
 - .2 Perform work in such a way that optimizes the use and circulation of machinery and materials;
 - .3 Do not leave motors idling uselessly;
 - .4 Limit excavation to strict minimum areas and depths to avoid creating dust;
 - .5 Teach machinery operators to avoid useless or sudden movements which create dust, when not performing tasks;
 - .6 Use closed or covered trucks for transport of fine materials;
 - .7 Clean the area as quickly as possible after work , including any temporary storage areas;

- .8 If work reveals the presence of a suspected special status species, such as an endangered animal, work will cease and the proper authorities will be notified to take protective measures;
 - .9 Take necessary measures to notify all personnel of the presence of work and circulation of machinery;
 - .10 Confine the circulation of machinery to existing paths and dedicated routes in the work area;
 - .11 Always maintain access paths in good condition;
 - .12 Outline and use an adequate system of communication between machinery operators to reduce the chance of accidents;
 - .13 Respect the Security Code for Construction, managed by the Committee for Health and Safety at Work;
 - .14 Ensure worker safety by marking the work site, using protective barriers and appropriate signage;
 - .15 Installation and take-down of all temporary gas reservoirs must respect the Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations;
 - .16 Ensure that all workers are informed about the environmental security measures.
- .2 Leaks and Spills (Precautions):
- .1 Proceed to inspect the material before their introduction onto the work site. Maintain the material in perfect working condition. Verify the presence of any leaks on the material which must be repaired immediately or removed from the construction site;
 - .2 Identify and use a temporary storage site and isolate the site for material, and if need be, storage of gas, oil and/or other petroleum products or contaminants;
 - .3 Perform general maintenance on material under constant surveillance, as well as any manipulation of gas, oil, petroleum products or contaminants, to avoid spills or accidents;
 - .4 Provide ongoing recovery of cuttings and waste products (soil, petroleum, containers) and absorbent materials spill;
 - .5 Set up an emergency action plan in the case of any accidental spills of petroleum products or contaminants. Identify individuals and authorities responsible and the steps to follow in an environmental emergency;
 - .6 Prevent seepage of precipitations in the cuttings and scrap (earth, petroleum products, reservoirs, other materials and trash), put these items in temporary storage covered by waterproof tarpaulins during pauses of work and at the end of every work day.
- .3 Management of Contaminated Soils:
- .1 If soil with suspected contamination or hazardous materials is discovered (clues such as odor, colour, etc.), stop excavation work immediately and notify the Department Representative without delay;

- .2 Limit the area and depth of the excavation based on the extent of contamination identified;
- .3 Put all suspected contaminated soils in a pile so the Department Representative can take samples to test;
- .4 After Department Representative's authorization, arrange and dispose of the contaminated soils by their contamination severity and by any regulations in effect;
- .5 Assure that the contaminated soils are protected from rain and water by covering them with waterproof tarpaulins during any pauses of work and at the end of each work day;
- .6 Clean the equipment that came into contact with the contaminated soil or hazardous materials before using them in non-contaminated environments;
- .7 Transport the contaminated soil inside closed or covered containers, and limit the speed of vehicles transporting it to reduce any risk of spillage.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 35 12 – Special Project Procedures for Correctional Service Canada Security Requirements.

1.2 REFERENCES

- .1 Canadian Environmental Protection Act:
 - .1 SOR-2008, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008);
 - .2 CCME PN 1327-2008, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.
- .2 Canadian Standard Association (CSA International):
 - .1 CSA-B139-09, Installation Code for Oil-Burning Equipment.
- .3 Health Canada, Workplace Hazardous Materials Information Systems:
 - .1 Material Safety Data Sheets (MSDSs).
- .4 National Fire Code of Canada (2010).
- .5 National Building Code of Canada (2010).
- .6 Loi sur le bâtiment:
 - .1 Construction Code (2007).

1.3 SUBMITTALS

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

1.4 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.5 SPILL KIT

- .1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.
- .2 Provide a spill kit on site with absorbent materials for all possible potential petroleum product spills. Keep the kit in the mechanic room or inside an area under surveillance.

1.6 DIESEL

- .1 Before starting work, the Contractor must fill, using the existing pipes, both auxiliary reservoirs filled until the pump stop level. This is to ensure functionality of the generator during the work.

1.7 TEMPORARY POWER AND LIGHT

- .1 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
- .2 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of the Contractor.
- .3 Maximum power supply of 120 V, 1 phase, 60 Hz is available and will be provided for construction use at no cost. Connect to existing power supply in accordance with Canadian Electrical Code.
- .4 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Departmental Representative provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract.

1.8 FIRE PROTECTION

- .1 Provide and maintain a 80 BC portable fire extinguisher during performance of Work at the site, and store in a safe area under surveillance.
- .2 Burning rubbish and construction waste materials is not permitted on site.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on site, unless approved by the Departmental Representative.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Dispose of waste materials and debris off site.
- .6 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.2 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and 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.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by the Departmental Representative. Do not burn waste materials on site, unless approved by the Departmental Representative.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

- .7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- .9 Clean lighting reflectors, lenses, and other lighting surfaces.
- .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .11 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .13 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .14 Remove dirt and other disfiguration from exterior surfaces.
- .15 Sweep and wash clean paved areas.
- .16 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .17 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 00 50 – General Instructions.
- .2 Section 01 33 00 – Submittal Procedures.
- .3 Section 02 81 01 – Hazardous Materials.

1.2 REFERENCES

- .1 SOR-2008, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008).

1.3 DEFINITIONS

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
- .2 Inert Fill: inert waste - exclusively asphalt and concrete.
- .3 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.
- .4 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.
- .5 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .6 Separate Condition: refers to waste sorted into individual types.
- .7 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by the Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.

- .3 Protect structural components not removed for demolition from movement or damage.
- .4 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .5 Protect surface drainage, mechanical and electrical from damage and blockage.
- .6 Separate and store materials produced during dismantling of structures in designated areas.

1.5 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil, or paint thinner into waterways, storm, or sanitary sewers.

1.6 REMOVAL OF EQUIPMENT CONNECTED TO STORAGE SYSTEM

- .1 Eliminate and remove cleaning liquid for fuel or diesel pipes, according to laws, directives and regulations on storage systems for petroleum products and allied petroleum products, according to section 02 81 01 – Hazardous Materials.

1.7 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures established by existing facility and provide temporary security measures approved by the Departmental Representative.

1.8 SCHEDULING

- .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

Part 2 Execution

2.1 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.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 00 50 – General Instructions.
- .2 Section 01 33 00 – Submittal Procedures.
- .3 Section 01 45 00 – Quality Control.
- .4 Section 01 79 00 – Training and Demonstration.
- .5 Section 01 91 13 – Commissioning, General Requirements.

1.2 REFERENCES

- .1 Canadian Environmental Protection Act (CEPA):
 - .1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations;
 - .2 CCME PN 1327-2008, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.
- .2 Canadian Standard Association (CSA International):
 - .1 CSA-B139-09, Installation Code for Oil-Burning Equipment;
 - .2 CSA-B140.0-F03, Oil Burning Equipment, General Requirements;
 - .3 CSA-C282-F05, Emergency Electrical Power Supply for Buildings.
- .3 Health Canada – Workplace Hazardous Material Information Systems (WHMIS):
 - .1 Material Safety Data Sheets (MSDSs).
- .4 National Fire Code of Canada (2010).
- .5 National Building Code of Canada (2010).
- .6 Loi sur le bâtiment:
 - .1 Construction Code (2007).

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week prior to contract completion with the contractor's representative and the Departmental Representative, conforming with the schedule to:
 - .1 Verify Project requirements;
 - .2 Review manufacturer's installation instructions and warranty requirements.

- .2 The Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects;
 - .2 Determine priorities for type of defects;
 - .3 Determine reasonable response time.
- .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
- .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four final copies of operating and maintenance manuals in English and French.
- .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

1.5 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings:
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems, 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:
 - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on CD.

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names;
 - .2 Addresses, and telephone numbers of 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.
 - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .6 Training: refer to Section 01 79 00 - Demonstration and Training.

1.7 AS -BUILT DOCUMENTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain on site one record copy of the following as per the Departmental Representative's intentions:
 - .1 Contract Drawings;
 - .2 Specifications;
 - .3 Addenda;
 - .4 Change Orders and other modifications to Contract;
 - .5 Reviewed shop drawings, product data, and samples;
 - .6 Field test records;
 - .7 Inspection certificates;
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.

- .4 Maintain record documents in clean, dry and legible condition:
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by the Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress:
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum;
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements;
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction;
 - .4 Field changes of dimension and detail;
 - .5 Changes made by change orders;
 - .6 Details not on original Contract Drawings;
 - .7 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items;
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.9 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual specification sections;
 - .2 Provide items of same manufacture and quality as items in Work;
 - .3 Deliver to site and location as directed; place and store.

- .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative;
 - .2 Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections;
 - .2 Provide items of same manufacture and quality as items in Work;
 - .3 Deliver to site and location as directed; place and store;
 - .4 Receive and catalogue items:
 - .1 Submit inventory listing to Departmental Representative;
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section;
 - .2 Provide items with tags identifying their associated function and equipment;
 - .3 Deliver to site and location as directed; place and store;
 - .4 Receive and catalogue items:
 - .1 Submit inventory listing to Departmental Representative;
 - .2 Include approved listings in Maintenance Manual.

1.10 DELIVERY, STORAGE AND HANDLING

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 00 50 – General Instructions.
- .2 Section 01 33 00- Submittal Procedures.
- .3 Section 01 91 13 – Commissioning, General Requirements.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel two weeks prior to date of final inspection.
- .2 Owner: provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.
- .3 Preparation:
 - .1 Verify conditions for demonstration and instructions comply with requirements;
 - .2 Verify designated personnel are present.
- .4 Demonstration and Instructions:
 - .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at agreed upon times, at the designated location.
 - .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
 - .3 Review contents of manual in detail to explain aspects of operation and maintenance.
 - .4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.
- .5 Time Allocated for Instructions: ensure amount of time required for instruction of each item of equipment or system as follows:
 - .1 Section 01 91 13 – Commissioning, General Instructions for the Control and Regulation Systems for New Gas Installation: 4 hours of instruction.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Departmental Representative's approval.
- .3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.

- .4 Give time and date of each demonstration, with list of persons present.
- .5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.4 QUALITY ASSURANCE

- .1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
 - .1 Instruct Owner's personnel;
 - .2 Provide written report that demonstration and instructions have been completed.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Related Sections:
 - .1 Section 01 00 50 – General Instructions;
 - .2 Section 01 33 00 – Submittal Procedures.

1.2 GENERAL

- .1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:
 - .1 Verify installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and intent;
 - .2 Ensure appropriate documentation is compiled into the BMM;
 - .3 Effectively train O&M staff.
- .2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.
 - .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria;
 - .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.
- .3 Design Criteria: as per client's requirements or determined by designer to meet Project functional and operational requirements.

1.3 COMMISSIONING OVERVIEW

- .1 The Contractor must coordinate with and engage the generator and/or boiler service provider for starting the equipment. Any costs related to presence of this technician and any equipment necessary will be at the Contractors own cost.
- .2 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the built facility is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities include transfer of critical knowledge to facility operational personnel.

- .3 The Departmental Representative will issue Interim Acceptance Certificate when:
 - .1 Completed Cx documentation has been received, reviewed for suitability and approved by [Departmental Representative] [Engineer] [Consultant] [___].
 - .2 Equipment, components and systems have been commissioned.
 - .3 O&M training has been completed.
- .4 Commissioning of mechanical systems and connected equipment

1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by the Departmental Representative, to ensure effective performance.
- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.

1.5 PRE-CX REVIEW

- .1 Before Construction:
 - .1 Review contract documents, confirm by writing to Departmental Representative:
 - .1 Adequacy of provisions for Cx;
 - .2 Aspects of design and installation pertinent to success of Cx.
 - .2 During Construction:
 - .1 Co-ordinate provision, location and installation of provisions for Cx.
- .3 Before start of Cx:
 - .1 Ensure installation of related components, equipment, sub-systems, systems is complete;
 - .2 Fully understand Cx requirements and procedures;
 - .3 Understand completely design criteria and intent and special features;
 - .4 Submit complete start-up documentation to Departmental Representative;
 - .5 Ensure systems have been cleaned thoroughly;
 - .6 Ensure "As-Built" system schematics are available.
- .4 Inform Departmental Representative in writing of discrepancies and deficiencies on finished works.

1.6 CONFLICTS

- .1 Report conflicts between requirements of this section and other sections to Departmental Representative before start-up and obtain clarification.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.7 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit no later than 4 weeks after award of Contract:
 - .1 Name of Contractor's Cx agent;
 - .2 Draft Cx documentation;
 - .3 Preliminary Cx schedule.
 - .2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at least 2 weeks prior to start of Cx.
 - .3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least 2 weeks prior to start of Cx.

1.8 COMMISSIONING SCHEDULE

- .1 Provide detailed Cx schedule as part of construction schedule.
- .2 Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:
 - .1 Approval of Cx reports;
 - .2 Verification of reported results;
 - .3 Repairs, retesting, re-commissioning, re-verification;
 - .4 Training.

1.9 COMMISSIONING MEETINGS

- .1 Convene Cx meetings following project meetings as specified in this section.
- .2 Purpose: to resolve issues, monitor progress, identify deficiencies, relating to Cx.
- .3 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.
- .4 Meeting will be chaired by the Departmental Representative and the Contractor, who will record and distribute minutes.

1.10 START OF COMMISSIONING

- .1 Notify Departmental Representative at least 14 days prior to start of Cx.

1.11 INSTRUMENTS / EQUIPMENT

- .1 Submit to Departmental Representative for review and approval:
 - .1 Complete list of instruments proposed to be used;
 - .2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date and calibration accuracy.
- .2 Provide the following equipment as required:
 - .1 Ladders;
 - .2 Equipment as required to complete work.

1.12 COMMISSIONING PERFORMANCE VERIFICATION

- .1 Carry out Cx:
 - .1 Under accepted simulated operating conditions, over entire operating range, in all modes;
 - .2 On independent systems and interacting systems.
- .2 Cx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.
- .4 The startup of the boilers and generator using the temporary or new system must be done using an portable independent priming pump rated to at least 10 GPM supplied by the Contractor before starting the new installation.
- .5 The characteristics of the priming pump must be supplied at the start of the project.
- .6 Before the connection to the machine, the product must be circulated for a sufficiently long time so that there is no more air trapped in the pipe. A « Visiflow » machine must be installed along with the priming pump to verify the presence of air in the system.
- .7 The functioning time for the boilers and generator during the startup tests for the temporary and permanent installation must last at least 2 hours.
- .8 EMCS trending to be available as supporting documentation for performance verification.

1.13 WITNESSING COMMISSIONING

- .1 Departmental Representative to witness activities and verify results.

1.14 AUTHORITIES HAVING JURISDICTION

- .1 Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility.

- .2 Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction.
- .3 Provide copies to Departmental Representative within 5 days of test and with Cx report.

1.15 EXTENT OF VERIFICATION

- .1 Laboratory areas:
 - .1 Provide manpower and instrumentation to verify up to 100% of reported results.
- .2 Perform additional commissioning until results are acceptable to Departmental Representative.

1.16 REPEAT VERIFICATIONS

- .1 Assume costs incurred by the Departmental Representative for third and subsequent verifications where:
 - .1 Verification of reported results fail to receive the Departmental Representative's approval;
 - .2 Repetition of second verification again fails to receive approval;
 - .3 Departmental Representative deems Contractor's request for second verification was premature.

1.17 DEFICIENCIES, FAULTS, DEFECTS

- .1 Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative.
- .2 Report problems, faults or defects affecting Cx to Departmental Representative writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative.

1.18 COMPLETION OF COMMISSIONING

- .1 Upon completion of Cx leave systems in normal operating mode.
- .2 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by the Departmental Representative.

1.19 ACTIVITIES UPON COMPLETION OF COMMISSIONING

- .1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

1.20 TRAINING

- .1 The Contractor and the personnel of the manufacturer service provider, factory trained and certified, will ensure that participants of the training will learn:

- .1 Commissioning, start, normal operation, stop and decommissioning procedures for components, equipment and systems.
- .2 The Contractor and the manufacturer assures the training of participants in the following:
 - .1 Commissioning, start, normal operation and stop procedure, and decommissioning of equipment, components and systems, which they have certified installation, performed the commissioning and tested performance for monitoring purposes.

1.21 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

- .1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract.

1.22 OWNER'S PERFORMANCE TESTING

- .1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 00 50 – General Instructions.
- .2 Section 01 33 00 – Submittal Procedures.

1.2 REFERENCES

- .1 Canadian Environmental Protection Act:
 - .1 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations;
 - .2 CCME PN 1327-2008, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.
- .2 Canada Standards Association (CSA International):
 - .1 CSA-B139-09, Installation Code for Oil-Burning Equipment.
- .3 Health Canada /Workplace Hazardous Materials Information System (WHMIS):
 - .1 Material Safety Data Sheets (MSDSs).
- .4 National Fire Code of Canada (2010).
- .5 National Building Code of Canada (2010).
- .6 Loi sur le bâtiment:
 - .1 Construction Code (2007).

1.3 DEFINITIONS

- .1 Dangerous Goods: product, substance, or organism that is specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
- .2 Hazardous Material: product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .3 Hazardous Waste: any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .4 Workplace Hazardous Materials Information System (WHMIS): Canada-wide system designed to give employers and workers information about hazardous materials used in workplace. Under WHMIS, information on hazardous materials is provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by combination of federal and provincial laws.

1.4 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures:
 - .1 Submit to Departmental Representative current Material Safety Data Sheet (MSDS) for each hazardous material required prior to bringing hazardous material on site;
 - .2 Submit hazardous materials management plan to Departmental Representative that identifies hazardous materials, their use, their location, personal protective equipment requirements, and disposal arrangements.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Co-ordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.
- .2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
- .3 Store and handle flammable and combustible materials in accordance with current National Fire Code of Canada requirements.
- .4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.
 - .1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval;
 - .2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Departmental Representative.
- .5 Transfer of flammable and combustible liquids is prohibited within buildings.
- .6 Do not transfer of flammable and combustible liquids in vicinity of open flames or heat-producing devices.
- .7 Do not use flammable liquids having flash point below 38 degrees C, such as naphtha or gasoline as solvents or cleaning agents.
- .8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.
- .9 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:

- .1 Store hazardous materials and wastes in closed and sealed containers;
 - .2 Label containers of hazardous materials and wastes in accordance with WHMIS;
 - .3 Store hazardous materials and wastes in containers compatible with that material or waste;
 - .4 Segregate incompatible materials and wastes;
 - .5 Ensure that different hazardous materials or hazardous wastes are not mixed;
 - .6 Store hazardous materials and wastes in secure storage area with controlled access;
 - .7 Maintain clear egress from storage area;
 - .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment;
 - .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment;
 - .10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
- .10 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .11 Report spills or accidents immediately to the Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

1.6 TRANSPORTATION

- .1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
- .2 If exporting hazardous waste to another country, ensure compliance with federal Export and Import of Hazardous Waste Regulations.
- .3 If hazardous waste is generated on site:
 - .1 Co-ordinate transportation and disposal with Departmental Representative;
 - .2 Ensure compliance with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste;
 - .3 Use licensed carrier authorized by provincial authorities to accept subject material;
 - .4 Prior to shipping material obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material;
 - .5 Label container[s] with legible, visible safety marks as prescribed by federal and provincial regulations;
 - .6 Ensure that trained personnel handle, offer for transport, or transport dangerous goods;

- .7 Provide photocopy of shipping documents and waste manifests to Departmental Representative;
- .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to Departmental Representative;
- .9 Report any discharge, emission, or escape of hazardous materials to the Departmental Representative and appropriate provincial authority immediately. Take reasonable measures to control release.

Part 2 Products

2.1 MATERIALS

- .1 Only bring on site quantity of hazardous materials required to perform work.
- .2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.1 DISPOSAL

- .1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
- .2 Recycle hazardous wastes for which there is approved, cost effective recycling process available.
- .3 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.
- .4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
- .5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
- .6 Dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.
- .7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 02 81 01 – Hazardous Materials.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International):
 - .1 CSA-A23.1-[04]/A23.2-[04], Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.
- .3 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts.
- .4 Indicate formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.
- .5 Indicate sequence of erection and removal of formwork/falsework.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Store and manage hazardous materials in accordance with Section 01 47 15 - Sustainable Requirements: Construction.
- .2 Waste Management and Disposal:
 - .1 Place materials defined as hazardous or toxic in designated containers;
 - .2 Divert wood materials from landfill to a recycling facility as approved by Departmental Representative;
 - .3 Divert plastic materials from landfill to a recycling facility as approved by Departmental Representative;
 - .4 Divert unused form release material from landfill to an official hazardous material collections site as approved by the Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 Formwork materials:
 - .1 For concrete with special architectural features, use formwork materials to CSA-A23.1/A23.2.

Part 3 Execution

3.1 FABRICATION AND ERECTION

- .1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.
- .2 The formwork, stripping and concrete must be constructed while sheltered from weather.
- .3 Construction Wood: Plywood and wooden formwork must comply with the latest version CAN3-A23.1. For exposed surfaces, use plywood with high density coating complying with CSA 0121.
- .4 Formwork Oil: Made with chemical properties which react with lime present in the concrete that forms water-insoluble soaps to prevent the concrete from adhering to the formwork.
- .5 Tie rods for Formwork: Removable metal rods for fast decoupling, either fixed length or adjustable. Which can leave holes whose diameter is greater than 25mm and fitted with a polyethylene cone for exposed surfaces. No part of the tie should be within 16mm from the surface.
- .6 Tie rod filling: Acrylic plastic fill material conforming to 10-GP-5 of the Canadian General Standards Board (CGSB).
- .7 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.
- .8 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.
- .9 Provide enough camber in the forms of the slabs to correct for displacement of formwork.
- .10 After pouring the concrete, leave the formwork in place for a minimum duration of 1 day.

- .11 Use formwork oil for all the walls of the form already treated. Use formwork oil that won't mark or modify the surface of the concrete exposed. Use only the necessary quantity and apply it before erecting laying the armature. If a coating is to be applied to the surface, check if that coating is compatible with the formwork oil, otherwise use a different substance instead of the oil.
- .12 Place all points level and as per the plan.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 45 00 – Quality Control.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International):
 - .1 CSA-A23.1-[04]/A23.2-[04], Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete;
 - .2 CSA-A23.3-[04], Design of Concrete Structures;
 - .3 CAN/CSA-G30.18-[M92(R2002)], Billet-Steel Bars for Concrete Reinforcement, A National Standard of Canada.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit shop drawings including placing of reinforcement and indicate:
 - .1 Bar bending details;
 - .2 Lists;
 - .3 Quantities of reinforcement;
 - .4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings;
 - .5 Indicate sizes, spacings and locations of chairs, spacers and hangers.
- .3 Detail lap lengths and bar development lengths to CSA-A23.3, unless otherwise indicated.
- .4 Quality Assurance:
 - .1 Upon request submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Waste Management and Disposal:
 - .1 Place materials defined as hazardous or toxic in designated containers.

Part 2 Products

2.1 MATERIALS

- .1 Substitute different size bars only if permitted in writing by Departmental Representative.
- .2 Reinforcing steel: billet steel, grade 400R, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.
- .3 Reinforcing steel: weldable low alloy steel deformed bars to CAN/CSA-G30.18.
- .4 Cold-drawn annealed steel wire ties: to ASTM A497/A497M.
- .5 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23. and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 It is strictly prohibited to fold armatures on the work site.

2.3 SOURCE QUALITY CONTROL

- .1 Upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 4 weeks prior to beginning reinforcing work.

Part 3 Execution

3.1 PLACING REINFORCEMENT

- .1 Place reinforcing steel as indicated on placing drawings and in accordance with CSA-A23.1/A23.2.
- .2 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.
- .3 Ensure cover to reinforcement is maintained during concrete pour.
- .4 Protect epoxy and paint coated portions of bars with covering during transportation and handling.
- .5 Clean reinforcement bars before concrete pour.

3.2 FIELD TOUCH-UP

- .1 Touch up damaged and cut ends of epoxy coated or galvanized reinforcing steel with compatible finish to provide continuous coating.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Documents/Samples for Submission.
- .2 Section 01 35 30 – Health and Safety.
- .3 Section 02 81 01 – Hazardous Materials
- .4 Section 03 20 00 – Concrete Reinforcements

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International):
 - .1 CSA-A23.1/A23.2-, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete;
 - .2 CSA-A23.3 – Latest version. Calculations for Concrete Structures.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 47 15 - Sustainable Requirements: Construction and Section 02 81 01 - Hazardous Materials.

1.4 QUALITY ASSURANCE

- .1 Minimum 4 weeks prior to starting concrete work, submit proposed quality control procedures for review by Departmental Representative on following items:
 - .1 Falsework erection;
 - .2 Hot weather concrete;
 - .3 Cold weather concrete;
 - .4 Curing;
 - .5 Finishes;
 - .6 Formwork removal;
 - .7 Joints.
- .2 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Concrete hauling time: maximum allowable time for concrete to be delivered to site of Work and discharged not to exceed 120 minutes after batching.

- .1 Modifications to maximum time limit must be agreed to Departmental Representative and concrete producer as described in CSA A23.1/A23.2.
- .2 Deviations to be submitted for review by the Departmental Representative.
- .2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.
- .3 Waste Management and Disposal:
 - .1 Provide an appropriate area on the job site where concrete trucks can be safely washed;
 - .2 Divert unused admixtures and additive materials (pigments, fibres) from landfill to official hazardous material collections site as approved by the Departmental Representative;
 - .3 Unused admixtures and additive materials must not be disposed of into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard;
 - .4 Prevent admixtures and additive materials from entering drinking water supplies or streams. Using appropriate safety precautions collect liquid or solidify liquid with inert, non-combustible material and remove for disposal. Dispose of waste in accordance with applicable local, Provincial/Territorial and National regulations.

Part 2 Products

2.1 MATERIALS

- .1 Cement: to CAN/CSA-A3000, Type GUB-SF.
- .2 Water: to CSA-A23.1.
- .3 Water/Cement Ratio ± 0.45 .
- .4 Aggregates: to [CAN/CSA-A23.1/A23.2], 20mm diameter maximum.
- .5 Admixtures:
 - .1 Air entraining admixture: to ASTM C260;
 - .2 Compression Resistance: 35 MPa for 28 days;
 - .3 Shrinkage-reducing admixture (SRA): to 80mm + 30mm;
 - .4 Entrained Air 5% - 8%;
- .6 Broom Finish.

Part 3 Execution

3.1 PREPARATION

- .1 Obtain Departmental Representative's approval before placing concrete.
 - .1 Provide 24 hours notice prior to placing of concrete.
- .2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.
- .3 During concreting operations:
 - .1 Development of cold joints not allowed;
 - .2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.
- .4 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .5 The concrete should cover the reinforcement 15M by:
 - .1 On top and on the sides: 50mm;
 - .2 Underneath: 75mm.
- .6 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing [in adverse weather].
- .7 Protect previous Work from staining.
- .8 Clean and remove stains prior to application for concrete finishes.
- .9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
- .10 Do not place load upon new concrete until authorized by Departmental Representative.
- .11 The concrete must be vibrated during the pouring.
- .12 A protective coat must be put on the fresh concrete following the standard CAN/CSA-A23.1/A23.2 Chapter 21, and especially article 21.2.2. (Hot weather protection) and 21.2.3. (Cold weather protection).
- .13 All the holes created by the formwork cones must be resurfaced.
- .14 The top of the concrete slab must allow for the flow of water towards the exterior of the slab.

3.2 CONSTRUCTION

- .1 Do cast-in-place concrete work in accordance with CSA-A23.1/A23.2.
- .2 Finish the concrete in accordance with CSA-A23.1/A23.2.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 23 11 13 – Fuel Oil Pipe Installation, General Requirements.

1.2 REFERENCES

- .1 Canadian Environmental Protection Act:
 - .1 SOR-2008, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations;
 - .2 CCME PN 1327-2003, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.
- .2 Canadian Standard Association (CSA):
 - .1 CSA-B139-09, Fuel Oil Combustion System Installation Procedures;
 - .2 CSA-B140.0-F03, Fuel Oil Combustion Systems;
 - .3 CSA-C282-F09, Emergency Power Systems.
- .3 Health Canada – Workplace Hazardous Material Information Systems (WHMIS):
 - .1 Material Safety Data Sheets (MSDSs).
- .4 National Fire Code of Canada (NFC 2010).
- .5 National Building Code of Canada (NBC 2010).
- .6 Building Act:
 - .1 Construction Code (2007).

1.3 SUBMITTALS

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

Part 2 Products

2.1 EXISTING IDENTIFICATION SYSTEMS

- .1 Apply existing identification system to new work.
- .2 Where existing identification system does not cover for new work, use identification system specified in this section.
- .3 Before starting work, obtain written approval of identification system from Departmental Representative.

- .4 If missing, identify the existing oil pipes.

2.2 PIPING SYSTEMS GOVERNED BY CODES

.1 Identification:

- .1 Protect the existing and new pipes using an anti-rust primer and finishing paint, color specified by client conforming to Section 23 11 13 – Fuel Oil Pipe Installation.

2.3 IDENTIFICATION OF PIPING SYSTEMS

- .1 Identify contents by background colour marking, pictogram (as necessary), legend; direction of flow by arrows. To CAN/CGSB 24.3 except where specified otherwise.

.2 Legend:

- .1 Block capitals to sizes and colours listed in CAN/CGSB 24.3.

.3 Arrows showing direction of flow:

- .1 Outside diameter of pipe or insulation less than 75 mm: 100 mm long x 50 mm high;
- .2 Outside diameter of pipe or insulation 75 mm and greater: 150 mm long x 50 mm high;
- .3 Use double-headed arrows where flow is reversible.

.4 Extent of background colour marking:

- .1 To full circumference of pipe or insulation;
- .2 Length to accommodate pictogram, full length of legend and arrows.

.5 Materials for background colour marking, legend, arrows:

- .1 Pipes and tubing 20 mm and smaller: waterproof and heat-resistant pressure sensitive plastic marker tags;
- .2 Other pipes: pressure sensitive vinyl with protective overcoating, waterproof contact adhesive undercoating, suitable for ambient of 100% RH and continuous operating temperature of 150 degrees C and intermittent temperature of 200 degrees C.

.6 Colours and Legends:

- .1 All aboveground visible piping, including pipes located in access wells and transition boxes, must be labelled every 3 linear meters, as well as in any change of direction and in all parts. The labels must be clearly legible and display the following information: The product, the function and an arrow in the direction of flow.

2.4 IDENTIFICATION DUCTWORK SYSTEMS

- .1 12 mm high stencilled letters and directional arrows 150 mm long x 50 mm high.
- .2 For each network, supply block diagrams in an approved format, with diagrams and legends, specifying the type of fittings used, the network, the function, the location and the normal functioning position.

2.5 LANGUAGE

- .1 Identification in English and French.
- .2 Use one nameplate and label for both languages.

Part 3 Execution

3.1 TIMING

- .1 Provide identification only after painting has been completed.

3.2 INSTALLATION

- .1 Perform work in accordance with CAN/CGSB-24.3 except as specified otherwise.
- .2 Provide ULC and CSA registration plates as required by respective agency.

3.3 NAMEPLATES

- .1 Locations:
 - .1 Place in conspicuous locations to facilitate easy reading and identification from the operating floor.

3.4 LOCATION OF IDENTIFICATION ON PIPING AND DUCTWORK SYSTEMS

- .1 On long straight runs in open areas in boiler rooms, equipment rooms, galleries, tunnels: at not more than 17 m intervals and more frequently if required to ensure that at least one is visible from any one viewpoint in operating areas and walking aisles.
- .2 Adjacent to each change in direction.
- .3 At least once in each small room through which piping or ductwork passes.
- .4 On both sides of visual obstruction or where run is difficult to follow.
- .5 On both sides of separations such as walls, floors, partitions.
- .6 Where system is installed in pipe chases, ceiling spaces, galleries, confined spaces, at entry and exit points, and at access openings.

- .7 At beginning and end points of each run and at each piece of equipment in run.
- .8 At point immediately upstream of major manually operated or automatically controlled valves, and dampers. Where this is not possible, place identification as close as possible, preferably on upstream side.
- .9 Identification easily and accurately readable from usual operating areas and from access points.
 - .1 Position of identification approximately at right angles to most convenient line of sight, considering operating positions, lighting conditions, risk of physical damage or injury and reduced visibility over time due to dust and dirt.

3.5 VALVES, CONTROLLERS

- .1 Valves and operating controllers, except at plumbing fixtures, radiation, or where in plain sight of equipment they serve: Secure tags with non-ferrous chains or closed "S" hooks.
- .2 Number valves in each system consecutively.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 74 11 – Cleaning.
- .3 Section 01 74 21 – Construction Waste Management.

1.2 REFERENCES

- .1 American Society of Mechanical Engineers (ASME):
 - .1 ASME-B16.3-98, Malleable-Iron Threaded Fittings.
- .2 ASTM International:
 - .1 ASTM A53/A53M-04, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
- .3 CSA International:
 - .1 CSA-B139-09, Installation Code for Oil Burning Equipment;
 - .2 CSA-B140.0-03, Oil Burning Equipment: General Requirements;
- .4 Canadian National Research Council / Institute for Research in Construction:
 - .1 CNRC 38727, Canadian Fire Prevention Code.
- .5 Transport Canada (TC):
 - .1 Transport of Dangerous Goods Act (1992).
- .6 Canadian Council of Ministers of the Environment:
 - .1 CCME-PN1327-2004, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products.
- .7 Department of Justice Canada (DoJ):
 - .1 Canadian Environmental Protection Act (1999);
 - .2 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008).
- .8 Quebec Construction Code 2007, Chapter 8 –Petroleum Equipment Installations.
- .9 Quebec Safety Code 2007, Chapter 6 – Petroleum Equipment Installations.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meeting:
 - .1 Convene pre-installation meeting 1 week prior to beginning work of this Section and on-site installations, where the following will be outlined:
 - .1 Verify project requirements;
 - .2 Review manufacturer's installation instructions and warranty requirements.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications and datasheets for piping, fittings and equipment and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Manufacturers' Instructions: provide manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

- .1 Ensure piping is installed by company authorized by authority having jurisdiction.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements:
 - .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.

Part 2 Products

2.1 FILL VENT AND CARRIER PIPE

- .1 Steel: to ASTM A53/A53M, Schedule 40, threaded ends.
- .2 Double Wall Polyethylene: Conforms to CAN/ULC-s660-08, Standard for Nonmetallic Underground Piping for Flammable and Combustible Liquid.

2.2 STEEL PIPE COATING

- .1 Interior enamel paint and alkyd outdoor paint, urethane and silicone for metal only and specially formulated as a primer and finisher to stop rust from forming on new or rusted ferrous metals.

2.3 JOINTING MATERIAL

- .1 Filleted pipe joints for petroleum products must be used with joint compound or Teflon (polytetrafluoroethylene) tape rated to CAN/ULC-S642 Standars « Sealing Products for Filleted Pipe Joints ».

2.4 FITTINGS

- .1 Steel:
 - .1 Malleable iron: screwed, banded, Class 150 to ASME-B16.3;
 - .2 Flexible metal joint, to ULC/ORD-C536

2.5 VALVES

- .1 Valves must be ball-type, screwed ends, full flow, conforms to ULC/ORD-C842.

2.6 CHECK VALVES

- .1 Check valves will be of type Swing Check and Y-Pattern, with threaded end connections, class 150, conforms to API-602.

2.7 TRANSITION SUMPS

- .1 Transition sump with aboveground top made of stainless steel, same dimensions as OPW's model: PTS-4021 or equivalent. The aboveground part must be made of stainless steel 304, 14 gauge, polished finish and brushed welds.
- .2 Accepted product: OPW model PTS-4021 or equivalent.

2.8 DISCRIMINATING DETECTION SENSOR

- .1 Discriminating detection sensor can be connected to the existing leak detection system Veeder-Root TLS-350.
- .2 Accepted Products: Veeder-Root model 794380-322 or equivalent.
- .3 The probe support must be made by the same manufacturer.
- .4 Accepted Products: Veeder-Root model 330020-012 or equivalent.

2.9 PRIMARY BACKFILL

- .1 The backfill material must be new and cannot contain clay or clay chunks, sand, roots, pyretic shale, construction debris or organic material.
- .2 Underground pipes:
 - .1 Fine gravel, naturally rounded aggregate, larger than 3mm and less than 18mm.

2.10 GEOTEXTILE MEMBRANE

- .1 Geotextile membrane nonwoven needled made of polypropylene.
- .2 Properties:

PROPERTIES	TEST METHOD	VALUE
Tension Resistance at Rupture	CGSB 148.1 No. 7.3	800 N
Percent Elongation at Rupture	CGSB 4.2 No. 7.3	45-105%
Shear Resistance at Rupture	CGSB 4.2.1 No. 12.2	360 N
Burst Resistance	CGSB 148.1 No. 11.1	2275 kPa
Permeability	CGSB 148.1 No. 7.3	0.20 cm/s
Permittivity	CGSB 148.1 No. 4	0.96 s-1
FOS	CGSB 148.1 No. 10	150 µm
Standard Width	ASTM D 461.9	3.5 m
Standard Length	CGSB 148.1 No. 8	100 m

- .3 Accepted Products: Texel model 7612 or equivalent.

Part 3 Execution

3.1 APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 CLEARANCE

- .1 Leave a clearance around all equipment to facilitate inspection, maintenance and observation of proper working order, based on manufacturer's recommendations, the Canadian Fire Prevention Code and CSA B139 Standards.

3.3 PIPING

- .1 Install oil piping system in accordance with NFCC and CSA-B139.
- .2 Underground piping to be protected in conformance with CAN/ULC-S660-08.
- .3 Slope piping down in direction of storage tank unless otherwise indicated.

- .4 Cover threaded joints with a sealant for petroleum products.
- .5 Prevent foreign objects from entering into non-connected openings.
- .6 Install pipes to isolate individual devices to allow for removal without interrupting the operation of other devices in the network.
- .7 Group pipes when and where possible.
- .8 Deburr pipe ends, and clean insides for any debris before assembly.
- .9 Anticipate movement of pipes due to thermal expansion, and incorporate flexible metallic joints to compensate.
- .10 Fill immediate area around pipe as per the plans.

3.4 FLEXIBLE PIPES

- .1 Flexible pipes must not be installed in straight lines, but in a wave like fashion to compensate for thermal expansion and contraction, and as recommended by the manufacturer.
- .2 Prepare trenches for piping, such that they are free of debris, uniformly level and contain no sharp elevated points, as well as a 1% slope towards the reservoir.
- .3 Compact the ground of the trench to 95% PM.
- .4 Cover the bottom and wall of the trench with a geotextile membrane permeable separation.
- .5 Before installing the pipes in the trench, put a first layer of primary fill as specified. Then install the pipes and cover with second layer of fill.
- .6 The flexible piping must be filled in order to obtain:
 - .1 150mm of fill below each pipe;
 - .2 150mm of fill between the pipe and the sides of the membrane;
 - .3 At least twice the nominal diameter from another pipe;
 - .4 150 mm of fill above each pipe, including the finishing layer.
- .7 All fill material will be contained inside the permeable membrane, Each membrane will be installed in a continuous manner in the trench and folded over towards the center. They will prevent migration of soils into the primary fill.
- .8 Cover the membranes with crushed stone and 2 green metallic warning tapes. The tape is equipped with 2 steel wires which will allow easy detection of pipes, as well as a visual warning in the case of future excavation. This tape will be approximately 200mm above the pipes, or based on manufacturer recommendations.

- .9 The surfaces to fill must be clear of debris, clay, ice, stray or frozen ground, foreign matter or debris, or any other substance that will affect the compaction of ground.
- .10 The pipes will be subjected to sealing tests as mentioned in the Construction Code, and as per the directives of the manufacturer concerning these sealing tests. The Contractor must perform all the tests outlined in the installation manual of the pipes and must fill out all necessary documents before submitting the warranty application to the manufacturer. The Contractor must send these documents to both the manufacturer and the Client.

3.5 PIPE PAINTING

- .1 All interior pipes, new and existing, including the pipes located in canals, must have a fresh layer of paint applied, the painting will be done once the sealing tests have been passed.
- .2 All the pipes and joints inside of all the transition sumps must receive a fresh coat of paint.
- .3 The surface of the pipe must be dry and clean, without any dirt, oil, grease, wax, efflorescent salts, cracked paint or any other contaminant.
- .4 Dull and glossy surfaces.
- .5 Remove any cracked paint and any removable rust using a steel brush or scraper.
- .6 Using a cleaning product and rust remover for metal, approved product: Corrostop Ultra 635-104 or equivalent.
- .7 Paint the surfaces according to manufacturer specifications. Accepted product: Corrostop Ultra 0635-085 or equivalent.

3.6 SLEEVES

- .1 Install sleeves in transitions such as masonry or concrete and building interiors and other indicated locations.
- .2 Use sleeves made of black steel pipe, schedule 40.
- .3 Use caulking of ULC/ORD-S115 standard for the interior and exterior finish.

3.7 VALVES

- .1 Install valves with stems upright or horizontal unless approved otherwise by Consultant.
- .2 Install ball valves as indicated.
- .3 Install swing check valves and as indicated.

3.8 TRANSITION SUMPS

- .1 Install a transition sump close to the building as indicated in the plans.

3.9 METER

- .1 Repair and then calibrate, the meter at the outlet of the pump assembly.

3.10 DISCRIMINATING DETECTION SENSOR

- .1 In the new transition sump, install a liquid discriminating detection sensor 0mm above the bottom of the box, which can be connected to the existing leak detection system Veeder-Root TLS-350. The support of the probe must be made by the same manufacturer.
- .2 Connect the new probe to the existing Veeder-Root system using wiring and equipment recommended by the manufacturer.

3.11 GEOTEXTILE MEMBRANE

- .1 Install the geotextile membrane between the primary and secondary backfill according to the state of the art rules.
- .2 Install the membrane in such a way to obtain a smooth surface while avoiding and tension, folds or warping.
- .3 Remove any objects that could damage the membrane before installation.
- .4 Prevent displacement, and protect the membrane, before, during and after the installation, with a covering layer.
- .5 Geotextiles must be installed in a manner to have a minimum overlap of 300mm, or sewn together with thread resistant to chemical and biological agents equally, or superior to the resistance of the geotextiles.

3.12 PIPE PRESSURE TESTS

- .1 In addition to the instructions listed hereafter, The Contractor must perform all tests specified by the manufacturers, by the codes and by the Client of their representative.
- .2 The Contractor must supply a report of pressure tests to the Client's representative. Before the tests, the Contractor must inform the representative so they can witness the tests and confirm the results.
- .3 During the tests, either the Client or their representative must be present.
- .4 In order for the Client to be present at the test, the Contractor must notify the Client 48 hours prior to the start of the test.
- .5 All tests involving petroleum equipment will be done using nitrogen.

- .6 For underground pipes, tests for primary and secondary piping can be carried out simultaneously.

3.13 LEAK REPAIR

- .1 In all cases or seal tests where a leak is found on new or existing equipment, the pipes and all the joints and equipment that leak will be repaired or replaced, and then the system will be subject to a new seal test.

3.14 TESTS FOR ABOVEGROUND PIPES

- .1 Once installed, an aboveground pipe must pass a pressure test following the following criteria:
 - .1 A gauge test pressure of at least 350 kPa, or one and a half times the maximum operating pressure must be created inside the pipes;
 - .2 The pipes and its joins must be verified with a leak detection fluid;
 - .3 The pressure created inside the pipes must be measured by two graduated manometers with units no larger than 4 kPa for pressures less than or equal to 700 kPa, and units corresponding to no greater than 1% of the test pressure for systems operating at higher than 700 kPa, and if the pipe is able to contain that pressure.
- .2 If the test pressure surpasses the operating pressure produced by the pumps and other equipment in the pipe system, those equipment do not need to be pressure tested.
- .3 All new and existing piping must undergo a pressure test.
- .4 Once the temperature stabilizes and the source of pressure is removed, the induced pressure must be maintained in the pipes for at least 2 hours.

3.15 TESTS ON THE PRIMARY WALL FOR UNDERGROUND PIPES

- .1 The pressure test of the primary wall of a pipe follows the following criteria:
 - .1 The ends of the pipe must be hermetically sealed;
 - .2 The pressure must be measured using two manometers graduated in units of 10 kPa maximum;
 - .3 A hydrostatic pressure of Nitrogen at least 350 kilopascals and no more than 515 kilopascals must be applied;
 - .4 Each pipe joint must be verified using leak detection liquid;
 - .5 Once the temperature stabilizes and the source of pressure removed, the pressure applied must be maintained for at least 2 hours.

3.16 TESTS OF THE SECONDARY WALL FOR UNDERGROUND PIPES

- .1 The pressure test of the secondary wall of a pipe follows the following criteria:

- .1 Slide the cofferdam until it contacts the double wall;
 - .2 A hydrostatic pressure of Nitrogen of maximum 35 kPa must be applied;
 - .3 All joints and surfaces of the pipes must be checked using leak detection liquid.
- .2 Once the temperature has stabilized and the source of pressure removed, the pressure applied must be maintained for at least 1 hour.

3.17 GENERAL UNDERGROUND EQUIPMENT TESTS

- .1 After the tests on the primary and secondary walls, and all leaks have been fixed, a general test on the petroleum system must be done:
 - .1 A safety valve of no more than 40 kPa capable of releasing the flow from the source pressure must be installed and inspected before the test;
 - .2 The induced pressure inside the reservoir and the pipes must be measure using a manometer graduated in units of no more than 1 kPa;
 - .3 A pressure of at least 30 kPa and at most 35 kPa must be created in the assembly undergoing the test;
 - .4 All joints between the reservoir and the pipes must be verified while the assembly is under pressure using leak detection liquid;
 - .5 Once the temperature has stabilized and the source of pressure removed, the pressure in the system must be maintained for at least 2 hours.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Council of Ministers of the Environment (CCME):
 - .1 PN 1327-2003, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products;
 - .2 PN 1300-2006, Canadian Recommendations for Environment Quality:
 - .1 Chapter 7-2006, Canadian Recommendations for quality of Earth, Environment, and Health.
- .2 Canadian Federal Legislation:
 - .1 Canadian Environmental Protection Act (1999), Chapter 33;
 - .2 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008).
- .3 Provincial Regulations:
 - .1 Loi sur le bâtiment (2005);
 - .2 Construction Code (2007);
 - .3 Security Code (2007);
 - .4 Regulations regarding Hazardous Materials.
- .4 Canadian National Research Council:
 - .1 National Fire Prevention Code – Canada 2010, Section B, Part 4.
- .5 Cahier des charges et devis généraux (CCDG), Minister of Transport, Quebec Government.
- .6 Commission de la Santé et de la sécurité du travail du Quebec:
 - .1 Pour mieux exécuter les travaux de creusement, d'excavation et de tranchée, (2003) p. 15;
 - .2 CAN/CGSB-8.1-[88], Sieves, Testing, Woven Wire, Inch Series;
 - .3 CAN/CGSB-8.2-[M88], Sieves, Testing, Woven Wire, Metric.

1.2 DEFINITIONS

- .1 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.
- .2 Waste material: excavated material unsuitable for use in Work or surplus to requirements.
- .3 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures:
 - .1 Submit construction equipment list for major equipment to be used in this section prior to start of Work.
- .2 Preconstruction Submittals:
 - .1 Submit records of underground utility locates, indicating: [location plan of existing utilities as found in field] [clearance record from utility authority] [location plan of relocated and abandoned services, as required].
- .3 Requirements

Send all shop drawings of material and equipment and wait for approval before ordering and installer. The shop drawings shall be of the following equipment and materials:

 - .1 MSDS and size of the filling material;
 - .2 Lean concrete;
 - .3 Asphalt concrete.

1.4 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.

1.5 EXISTING CONDITIONS

- .1 Buried services:
 - .1 Before commencing work establish location of buried services on and adjacent to site;
 - .2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work: pay costs of relocating services;
 - .3 Remove obsolete buried services within 2 m of foundations: cap cut-offs;
 - .4 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed;
 - .5 Prior to beginning excavation Work, notify applicable the Departmental Representative and establish location and state of use of buried utilities and structures;
 - .6 Confirm locations of buried utilities by careful test excavations;
 - .7 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered;
 - .8 Record location of maintained, re-routed and abandoned underground lines;
 - .9 Confirm locations of recent excavations adjacent to area of excavation;

- .10 The excavation slopes must respect the slopes of the document « Pour mieux exécuter les travaux de creusement, d’excavation et de tranchée » of the CSST;
- .11 The contractor must assure that all the slopes of the excavation walls lean against the soil in such a way that avoids sliding. They must also assure the security of the work site with respect to the incline of the side of the excavation, or constructing temporary supports;
- .12 Buildings and structures present on the terrain:
 - .1 During the execution of work, protect against potential damage to buildings, structures or other elements present on the terrain. If damage occurs, repair the damages immediately, according to the directions of the Department Representative.

Part 2 Products

2.1 MATERIALS

- .1 Type 1 and Type 2 fill: properties to Section [31 05 16 - Aggregate Materials] [____] and the following requirements:
- .2 Backfill for excess excavation MG-112.
- .3 Backfill underneath concrete slabe MG-20.
- .4 Backfill for underground pipes, specified by the manufacturer.
- .5 Backfill for the transition boxes and the confinement box, specified by the manufacturer.
- .6 Geotextiles – Geotextile membrane, non-woven and needled, made of polypropylene. Model Texel 7612 or equivalent.
- .7 Properties

PROPERTIES	TEST METHOD	VALUE
Tension Resistance	ONGC 148.1 No.7.3	800 N
Percent Elongation at Rupture	ONGC 148.1 No.7.3	45 – 105 %
Shear Resistance	ONGC 4.2 No.12.2	360 N
Burst Resistance	ONGC 4.2 No.11.1	2 275 kPa
Permeability	ONGC 148.1 No.4	0.20 cm/s
Permittivity	ONGC 148.1 No.4	0.96 s-1
FOS	ONGC 148.1 No.10	150 µm
Standard width	ASTM D461.9	3.50 m
Standard length	ASTM D461.8	100 m

Part 3 Execution

3.1 SITE PREPARATION

- .1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
- .2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.2 PREPARATION/PROTECTION

- .1 Keep excavations clean, free of standing water, and loose soil.
- .2 Protect buried services that are required to remain undisturbed.

3.3 DEWATERING AND HEAVE PREVENTION

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

3.4 EXCAVATION

- .1 Excavate to lines, grades, elevations and dimensions as indicated.
- .2 Excavation must not interfere with bearing capacity of adjacent foundations.
- .3 Keep excavated and stockpiled materials safe distance away from edge of trench as directed by the Departmental Representative.
- .4 Restrict vehicle operations directly adjacent to open trenches.
- .5 Dispose of surplus and unsuitable excavated material off site.
- .6 Do not obstruct flow of surface drainage or natural watercourses.
- .7 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .8 Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth as directed by the Consultant.
- .9 Hand trim, make firm and remove loose material and debris from excavations:
 - .1 Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.
- .10 Install geotextiles in accordance with the plans.

3.5 FILL TYPES AND COMPACTION

- .1 Use types of fill as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D1557-02 “Relationship between soil humidity and density”, or from the standard CAN/BNQ 2501-255 « Sols – Détermination de la relation teneur en eau – masse volumique – Essai Proctor modifié ».
- .2 The contractor understands that all filling and compaction requirements must be rigorously followed.
- .3 Soil or another layer of material that loses its compaction density before the end of the contract due to circulation of machines, weather, freezing or unfreezing or any other case, must be recompacted to the required density by the contractor at his own cost.
- .4 Compaction must be while the materials are above 0°C (32°F). Refer to the standard specified if needed.
- .5 It is prohibited to compact two layers of backfill material at the same time to different densities. Each layer of 300mm thickness will be compacted to 98% PM before adding the next layer. If the thickness of a layer is less than 300 mm, it must be extended and compacted separately.
- .6 The compaction work must be done by adequate equipment based on the work that must be done.
- .7 All extra excavation will be returned to the required elevation with MG-112 placed in successive layers with a maximum thickness of 300mm. Each layer of gravel MG-112 will be compacted to 98% PM.
- .8 The owner reserves the right to call an external laboratory to verify the compaction. The contractor must inform the owner 48 hours in advance to starting compaction work. And must coordinate the scheduled works with the verifying laboratory chosen by the owner.
 - .1 Underneath the concrete slabs, a layer of 300mm thickness and 98% PM must be placed of MG-20, with type 1 material placed just directly beneath the slab.

3.6 BEDDING AND SURROUND OF UNDERGROUND SERVICES

- .1 Place and compact granular material for bedding and surround of underground services.
- .2 Place bedding and surround material in unfrozen condition.

3.7 BACKFILLING

- .1 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
- .2 Do not use backfill material which is frozen or contains ice, snow or debris.

- .3 Place backfill material in uniform layers not exceeding 300 mm compaction thickness up to grades indicated. Compact each layer before placing succeeding layer.
- .4 Backfilling around installations:
 - .1 Place bedding and surround material as specified elsewhere;
 - .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
- .5 Consolidate and level unshrinkable fill with internal vibrators.

3.8 RESTORATION

- .1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Reinststate pavements disturbed by excavation to thickness, structure and elevation which existed before excavation.
- .3 Clean and reinststate areas affected by Work as directed by the Departmental Representative.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Materials and installation for underground oil storage tanks.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

1.3 REFERENCES

- .1 Canadian Council of Ministers of the Environment (CCME):
 - .1 CCME PN1327-[2003], Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum Products and Allied Petroleum Products.
- .2 Canadian Standards Association (CSA International):
 - .1 CAN/CSA-B139-09, Installation Code for Oil Burning Equipment.
- .3 National Research Council:
 - .1 NRCC 38727, National Fire Code of Canada (NFC) - 2010.
- .4 Underwriters' Laboratories of Canada. (ULC):
 - .1 ULC-S615, Underground Reinforced Plastic Tanks;
 - .2 ULC/ORD-C58.15, Overfill Protection Devices for Underground Flammable Liquid Tanks;
 - .3 ULC/ORD-C58.19, Spill Containment Devices for Underground Flammable Liquid Tanks.
- .5 Department of Justice Canada (DoJ):
 - .1 Canadian Environmental Protection Act (1999);
 - .2 Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (2008).
- .6 Quebec Construction Code 2007, Chapter 8 – Petroleum Equipment Installations.
- .7 Quebec Security Code 2007, Chapter 6 – Petroleum Equipment Installations.

1.4 SUBMITTALS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:

- .1 Provide manufacturer's printed product literature, specifications and datasheets for piping, fittings and equipment and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Manufacturers' Instructions: provide manufacturer's installation instructions.

Part 2 Products

2.1 ACCESS SUMPS

- .1 Access sumps, sealed and made of fiberglass, according to standards of the existing tank as specified by manufacturer.

Accepted Products: ZCL.

2.2 SPILL BOXES

- .1 Underground spill box, sealed, below grade type, with integrated service box, 5 gallons capacity, ULC/ORD-C58.19 certified.
- .2 Accepted product: OPW model 101BG-2105 or equivalent.

2.3 SERVICE BOXES

- .1 Unless other specified, service boxes must be dimensioned sufficiently large in order to accommodate equipment specified.
- .2 The cover and ring must be made of cast iron with a galvanized steel skirt.
- .3 Accepted Products: OPW model 104A-1200 or OPW model 104AOW-1200 (observation well) or equivalent.
- .4 The service box above the access sumps and the interstitial probe must have a cover made of fiberglass.
- .5 Accepted Product: OPW model 104C-2000 (20") or OPW model 44CD-WT10 (44½") or equivalent.

2.4 PRIMARY BACKFILL

- .1 The primary backfill must be new and may not contain clay, fine sand, roots, pyretic shale, construction debris or organic materials.
- .2 Tank:
 - .1 The primary backfill must cover the tank with a width of at least 450mm above;
 - .2 Use the primary backfill recommended by the manufacturers.

Part 3 Execution

3.1 ACCESS SUMPS

- .1 The access sumps must be installed by the manufacturer of the tank in order to maintain the integrity and certification of the underground tank.

3.2 SPILL BOXES AND SERVICE BOXES

- .1 Install in accordance with manufacturer's recommendations.

END OF SECTION