

1.1 DESCRIPTION OF WORK

- .1 Work under this contract includes, but is not limited to, the supply and installation of material, and commissioning of the work described below:
 - 1. Lead Abatement:
 - a. A lead abatement program to decontaminate the firing range facility and associated mechanical, electrical and drainage systems is included in this tender package. Consultant will also do air quality sampling and swab sampling to verify lead levels during the course of construction.
 - 2. Architectural:
 - a. Work under the architectural consist mainly to remove existing wood door, ceiling tile, wooden floor, bullet trap system, shooting range equipment, construction of temporary walls, etc. Refer to drawing A1 for more detail on architectural scope of work.
 - 3. Electrical:
 - a. Electrical work consists mainly of dismantling all electrical equipment that were exposed to lead (including cable and devices) and installing new electrical components such as lights, baseboard heaters, receptacles, emergency battery pack, etc. Refer to electrical drawings for more information.
 - 4. Mechanical:
 - a. Mechanical work consists mainly of removing the ventilation system that was used for the firing range and replacing it with one HRV to supply ventilation to new storage area. Other work consist of installing new sprinkler head in the new storage area and to remove the glycol supply pipe as per mechanical plans. Refer to mechanical drawings for more information.

1.2 DOCUMENTS REQUIRED

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

1.3 WORK SCHEDULE

- .1 Provide work schedule as per Section 01 32 16.07 – Construction Progress Schedule – Bar (Gantt) chart.

- .2 The contractor shall give the occupants a minimum of 2 days notice prior to commencement of work.

1.4 COST BREAKDOWN

- .1 Before submitting first progress claim submit breakdown of contract price in detail as directed by Departmental Representative and aggregating contract price. After approval by consultant cost breakdown will be used as basis for progress payment.

1.5 CONTRACTOR'S USE OF SITE, DAILY SCHEDULE, TIME FRAMES FOR WORK AND METHOD OF OPERATIONS

- .1 Use of Site: limited to areas of work being carried out and as follows:
 - .1 Work relative to this tender will be performed during normal business hours unless work disturb tenants of the facility. Refer to Item 1.16 below.
- .2 Provide a schedule of construction operations one week in advance of actual work to Consultant for approval identifying on a daily basis that work to be performed.
- .3 Identify portions of site involved and the term of the work on an hourly basis. Identify equipment to be used, placement on site and traffic flow patterns. Weekly schedule to be in typed format acceptable to Consultant. No work to proceed until schedule is reviewed and accepted by Consultant. Modify schedule and work operations as requested by Consultant.
- .4 Access to all exits and barrier free access must be maintained during normal office hours.
- .5 Departmental Representative will designate contractor's access to the project site as well as parking facilities for workmen.
- .6 Do not unreasonably encumber site with materials or equipment. Only that material scheduled for immediate installation is to be brought on site.

1.6 CODES AND STANDARDS

- .1 Perform work in accordance with National Building Code of Canada (NBC) 2005 edition, and any other code of federal, provincial or local application provided that in any case of conflict or discrepancies, the more stringent requirement shall apply.
- .2 Materials and workmanship must meet or exceed requirements of contract documents, specified standards, codes and referenced documents.

1.7 PROJECT MEETINGS

- .1 Refer to Section 01 31 19 – Project Meetings for Project Meeting Requirements.

1.8 CUTTING, FITTING AND PATCHING

- .1 Execute cutting, fitting and patching required to make work fit properly.
- .2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work. Field check existing conditions, take site measurements and become fully aware of site conditions before commencing the work or fabricating or ordering construction materials.
- .3 Obtain Consultant's approval before cutting, boring or sleeving load-bearing members.
- .4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

1.9 EXISTING SERVICES

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to operation of facility.
- .2 Submit schedule to obtain approval from Consultant for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.
- .3 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .4 Record locations of maintained, re-routed and abandoned service lines.
- .5 Maintain services to building throughout the construction period.
- .6 Power and water above that required for the function of the existing building are available to the contractor at no cost. Connection to these services is to be coordinated with Departmental Representative with materials supplied by and connection costs paid for by Contractor.

1.10 ADDITIONAL DRAWINGS

- .1 Consultant may furnish additional drawings to assist proper execution of work.

These drawings will be issued for clarification only. Such drawings shall have same meaning and intent as if they were included with plans referred to in Contract Documents.

1.11 FIRES

- .1 Provide fire protection measures as directed.

1.12 SMOKING PRECAUTIONS

- .1 Smoking is not permitted on the premises, including building(s) and parking lot(s).

1.13 DISPOSAL OF WASTES

- .1 Refer to sections 01 74 11 – Cleaning and section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2 Disposal of waste shall also meet with Building Standard Operating Procedures (SOP).

1.14 TAXES

- .1 Pay all taxes properly levied by law (including Federal, Provincial and Municipal).

1.15 FEES AND PERMITS

- .1 Pay all fees and obtain all permits and certificates required from authorities having jurisdiction. Provide inspection authorities with such plans and information required for issue of inspection certificates. The Contractor shall send a copy of all permits and/or certificates to Departmental Representative.

1.16 OCCUPANT'S DAILY OPERATION

- .1 The Contractor shall complete the work of this contract with the least possible disturbance to the occupants of the complex. Where the work of this contract disrupts the operations of the facility such work shall be rescheduled or the Contractor's disruptive operation modified to permit the building occupants' duties to be performed. Any costs associated with such rescheduling and/or modification of disruptive operation is the responsibility of the Contractor.
- .2 The Contractor shall bear all direct and indirect costs associated with all after hours work. No extra cost will be paid to the Contractor for after hours work. The Contractor shall also bear all costs where the method of operation to perform the work must be altered to maintain the operation of the facility.

- .3 This facility **must** remain operational throughout the work of this contract. Existing systems must be maintained, where possible, during the building's occupied period.

1.17 SITE VISIT

- .1 All bidders, before submitting their tender, shall inspect and examine the site and its surroundings and shall satisfy themselves as to the form and nature of the work and materials necessary for the completion of the works, the means of access to the accommodation they may require, and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may affect their tender. No allowance shall be made subsequently in this connection on account of error or negligence to properly observe and determine the conditions that will apply.
- .2 A site visit may be arranged with Departmental Representative.

1.18 PROTECTION AGAINST DUST AND CLEANING DURING CONSTRUCTION PERIOD

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
- .2 As well as Appendix "B" – Ontario – Guideline – Lead for Construction Project, the following precautions shall be taken into account:
Employ dust screens, dividers, seal doors with tape and provide other means as directed by Consultant to ensure dust, dirt, fumes, mists, vapours or gases generated by construction operations is not transmitted to any other areas of the building. Should contaminants accidentally migrate beyond immediate construction area, employ local exhaust ventilation as may be necessary to clean the area to meet the requirements of the appropriate standards. Continue operation of ventilation and exhaust system for a time after cessation of work process to assure removal of harmful contaminants.
- .3 The Contractor is responsible for maintaining all those corridors and circulation routes used to gain access/egress from construction areas in a clean condition. Construction dust or debris tracked out of or allowed to escape the area of construction shall not be permitted or tolerated. Professional quality cleaning services shall be required to be provided by the Contractor without delay should such a condition be encountered.
- .4 Contractor shall protect the property during the course of the work and make good, at no cost to the Contract, any damage caused through the performance of this contract.

- .5 Dust preventive measures and cleaning procedures are subject to prior approval by Consultant. See also Section 01 74 11 – Cleaning.

1.19 ACCEPTANCES

- .1 Prior to the issuance of an Interim Certificate of Completion, in company with the Departmental Representative, make a check of all work. Correct all discrepancies before final inspection and acceptance.
- .2 Notwithstanding General Conditions, the Contractor's attention is drawn to the fact that the Department Representative will not issue an Interim Certificate of Completion until such time that the contractor turns over to the Consultant all certificates of test and test results.

1.20 OTHER CONTRACTS

- .1 Other contracts for work in or about the building may be in progress or may be let during the period that this contract is in progress.
- .2 Cooperate with other Contractors in carrying out their respective works and carry out all instructions from the Departmental Representative in this regard.
- .3 Connect properly and coordinate work with that of other Contractors. If any part of the work under this Contract depends for its proper execution or result upon the work of another Contractor, report promptly to the Consultant, in writing, any defects in the work of such other Contractors as may interfere with the proper execution of this work.

1.21 SECURITY

- .1 The Contractor shall have his entire staff on site, including sub-contractors security cleared by Public Works and Government Service Canada and RCMP.
- .2 As well, the Contractor is responsible to brief his own workforce and subcontractors in respect of the security regulations and to ensure that they abide by all rules and regulations.
- .3 An escort with adequate RCMP clearance (minimum FA3) must be present at all times. Scheduling and costs associated with the escort is the responsibility of the Contractor.

1.22 NON DISCLOSURE AGREEMENT

- .1 The Contractor shall not disclose any information on the tender document.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 32 16.07 – Construction Progress Schedule – Bar (GANTT) Chart;
- .2 Section 01 33 00 – Submittal Procedures;
- .3 Section 01 52 00 – Construction Facilities;
- .4 Section 01 78 00 – Closeout Submittals.

1.2 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work at the call of Consultant.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting five days in advance of meeting date to Departmental Representative, Consultant and all concerned parties.
- .4 Provide physical space and make arrangements for meetings.
- .5 Preside at meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Reproduce and distribute copies of minutes within two days after meetings and transmit to meeting participants and, affected parties not in attendance.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 PRECONSTRUCTION MEETING

- .1 Within 10 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Consultant, Contractor, major Subcontractors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.

- .2 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
- .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
- .5 Delivery schedule of specified equipment.
- .6 Site security.
- .7 Health and Safety.
- .8 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
- .9 Owner provided products.
- .10 Commissioning.
- .11 Record drawings in accordance with Section 01 78 00 – Closeout Submittals.
- .12 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
- .13 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .14 Monthly progress claims, administrative procedures, photographs, hold backs.
- .15 Appointment of inspection and testing agencies or firms.
- .16 Insurances, transcript of policies.

1.4 PROGRESS MEETINGS

- .1 During course of Work and 1 week prior to project completion, schedule progress meetings bi-weekly.
- .2 Contractor, major Subcontractors involved in Work, Consultant and Departmental Representative are to be in attendance.
- .3 Notify parties minimum 5 days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 2 days after meeting.
- .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.

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- .11 Review proposed changes for affect on construction schedule and on completion date.
 - .12 Other business.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

1.2 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

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

- .2 Submit to Consultant and Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Consultant and Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.4 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Consultant and Departmental Representative will review and return revised schedules within 5 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.5 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.

1.6 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.7 PROJECT MEETINGS

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

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 NOT USED

- .1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 45 00 – Quality Control.

1.2 ADMINISTRATIVE

- .1 Submit to Consultant 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 Consultant. 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 Consultant, 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 requirements of Contract Documents is not relieved by Consultant review.
- .10 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of New Brunswick, Canada. (If requested in specific section).
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion

of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

- .4 Allow 10 working days for Consultant's and owner representative review of each submission.
- .5 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .6 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, 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.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.

- .9 After Consultant's review, distribute copies.
- .10 Submit electronic copies of shop drawings. Consultants will return reviewed shop drawings to contractors.
- .11 If upon review by Consultant, 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.
- .12 The review of shop drawings by consultant's for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that the Consultant approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 SAMPLES

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Consultant's business address.
- .3 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .6 Make changes in samples which Consultant may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDE

- .1 Procedures to isolate and lockout electrical. Includes facility or other equipment from energy source.

1.2 RELATED WORK

- .1 Section 01 33 00 – Submittal Procedures;
- .2 Section 01 35 29.06 – Health and Safety Requirements;
- .3 Section 01 35 35 – Fire Safety Requirements.

1.3 REFERENCES

- .1 CSA C22.1, latest revision - Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
- .2 CSA C22.3 No. 1-M87, latest revision - Overhead Systems.
- .3 CSA C22.3 No. 7-94, latest revision - Underground Systems.
- .4 COSH, Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.

1.4 DEFINITIONS

- .1 Electrical Facility: means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.
- .2 Guarantee of Isolation: means a guarantee by a competent person in control or in charge that a particular facility or equipment is isolated.
- .3 De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).
- .4 Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.

- .5 Isolate: means that an electrical facility, mechanical equipment or machinery is separated or disconnected from every source of electrical, mechanical, hydraulic, pneumatic or other kind of energy that is capable of making it dangerous.
- .6 Live/alive: means that an electrical facility produces, contains, stores or is electrically connected to a source of alternating or direct current of an amperage and voltage that is dangerous or contains any hydraulic, pneumatic or other kind of energy that is capable of making the facility dangerous to persons.

1.5 COMPLIANCE REQUIREMENTS

- .1 Perform lockouts in compliance with:
 - .1 Canadian Electrical Code
 - .2 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in section 01 35 29.06 – Health and Safety Requirements.
 - .3 Regulations and code of practise as applicable to mechanical equipment or other machinery being de-energized.
 - .4 Procedures specified herein.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Consultant will advise on the course of action to be followed.

1.6 SUBMITTALS

- .1 Submit copy of proposed Lockout Procedures and sample form of lockout permit for review.
- .2 Submit documentation within 14 calendar days of contract award. Do not proceed with work until submittal has been reviewed by Consultant.
- .3 Submit above documents in accordance with the submittal - general requirements specified in section 01 33 00 – Submittal Procedures.
- .4 Resubmit Lockout Procedures with noted revisions as may result from Consultant's review.

1.7 ISOLATION OF EXISTING SERVICES

- .1 Obtain Consultant's written authorization prior to conducting work on an existing active, energized service or facility required as part of the work and before proceeding with lockout of such services or facility.
- .2 To obtain authorization, submit to Consultant following documentation:
 - .1 Written Request for Isolation of the service or facility and;
 - .2 Copy of Contractor's Lockout Procedures.

- .3 Make a Request for Isolation for each event, unless directed otherwise by Consultant, and as follows:
 - .1 Fill-out standard forms in current use at the Facility when so directed by Consultant or;
 - .2 Where no form exist at Facility, make request in writing identifying:
 - .1 Identification of system or equipment to be isolated, including it's location;
 - .2 Time duration, indicating Start time & date and Completion time & date when isolation will be in effect.
 - .3 Voltage of service feed to system or equipment being isolated.
 - .4 Name of person making the request.
 - .3 Document to be in typewritten format.
- .4 Do not proceed until receipt of written notification from Consultant granting the Isolation Request and authorizing to proceed with the isolation of designated equipment or facility. Consultant may designate other individual at the Facility as the person authorized to grant the Isolation Request.
- .5 Conduct safe, orderly shut down of equipment or facilities, de-energize and isolate power and other sources of energy and lockout items in accordance with requirement of clause 1.8 below.
- .6 Plan and schedule shut down of existing services in consultation with the Consultant and the Facility Manager. Minimize impact and downtime of facility operations.
- .7 Determine in advance, as much as possible, in cooperation with the Consultant, the type and frequency of situations which will require a Request for Isolation. Follow Engineer's directives in this regard.
- .8 Conduct hazard assessment as part of the planning process of isolating existing equipment and facilities. Hazard Assessments to conform with requirements of Health and Safety Section 01 35 29.06 – Health and Safety Requirements.

1.8 LOCKOUTS

- .1 Isolate and lockout electrical facilities, mechanical equipment and machinery from all potential energy sources prior to starting work on such items.
- .2 Develop and implement lockout procedures to be followed on site as an integral part of the Work.
- .3 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.
- .4 Use industry standard lockout tags.
- .5 Provide appropriate safety grounding and guards as required.

- .6 Prepare Lockout Procedures in writing. Describe safe work practices, work functions and sequence of activities to be followed on site to safely isolate all potential energy sources and lockout/tagout facilities and equipment.
- .7 Include within procedures a system of worker request and issuance of individual lockout permit by a person, employed by Contractor, designated to be "in-charge" and being responsible for:
 - .1 Controlling issuance of permits or tags to workers.
 - .2 Determining permit duration.
 - .3 Maintaining record of permits and tags issued.
 - .4 Submitting a Request for Isolation to Consultant when required in accordance with Clause 1.6 above.
 - .5 Designating a Safety Watcher, when one is required based on type of work.
 - .6 Ensuring equipment or facility has been properly isolated, providing a Guarantee of Isolation to worker(s) prior to proceeding with work.
 - .7 Collecting and safekeeping lockout tags, returned by workers, as a record of the event.
- .8 Clearly establish, describe and allocate, within procedures, the responsibilities of:
 - .1 Workers.
 - .2 Designated person controlling issuance of lockout tags/permits.
 - .3 Safety Watcher.
 - .4 Subcontractors and General Contractor.
- .9 Procedures shall meet the requirements of Codes and Regulations specified in clause 1.5 above.
- .10 Generic procedures, if used, must be edited, supplemented with pertinent information and tailored to reflect specific project conditions. Clearly label as being the procedures applicable to this contract.
 - .1 Incorporate site specific rules and procedures established by Facility Manager and in force at site. Obtain such procedures through Consultant.
- .11 Procedures to be in typewritten format.
- .12 Submit copy of Lockout Procedures to Consultant, in accordance with submittal requirements of clause 1.6 herein, prior to commencement of work.

1.9 CONFORMANCE

- .1 Ensure that lockout procedures, as established for project on site, are stringently followed. Enforce use and compliance by all workers.
- .2 Brief all persons working on electrical facilities, mechanical and other equipment fed by an energy source on requirements of this section.

- .3 Failure to perform lockouts in accordance with regulatory requirements or follow procedures specified herein may result in the issuance of a Non-Compliance Notification at Engineer's discretion with possible disciplinary measures imposed as specified in section 01 35 29.06 – Health and Safety Requirements.

1.10 DOCUMENTS ON SITE

- .1 Post Lockout Procedures on site in common location for viewing by workers.
- .2 Keep copies of Request for Isolation submitted to Consultant and lockout permits or tags issued to workers during the course of work for full project duration.
- .3 Upon request, make such data available to Consultant or to authorized safety representative for inspection.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Health and safety considerations required to ensure that Departmental Representative shows due diligence towards health and safety on construction sites.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit 4 copies of Contractor's authorized representative's work site health and safety inspection reports to Consultant weekly.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets to Consultant on delivery of materials.
- .7 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 5 working days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within 5 days after receipt of comments from Consultant.
- .8 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Consultant.
- .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.4 FILING OF NOTICE

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

1.5 SAFETY ASSESSMENT

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

1.6 MEETINGS

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

1.7 GENERAL REQUIREMENTS

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

1.8 RESPONSIBILITY

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

1.9 UNFORSEEN HAZARDS

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

1.10 CORRECTION OF NON-COMPLIANCE

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

1.11 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.
- .2 If air quality sampling results do not meet acceptable guideline criteria, work may be stop until air quality is rectify.

1.12 FIRE PROTECTION AND ALARM SYSTEMS

- .1 Fire protection and alarm systems shall not be:
 - .1 Obstructed.
 - .2 Shut-off.
 - .3 Left inactive at the end of a working day or shift.
- .2 Fire hydrants, standpipes and hose systems shall not be used for other than fire fighting purposes.
- .3 The Contractor is liable for all costs incurred, from the fire department and the building owner and tenants, resulting from setting of false alarms.

1.13 OVERLOADING

- .1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.14 HEAD PROTECTION

- .1 Personnel are required to wear hard hats.

1.15 FOOT PROTECTION

- .1 Personnel are required to wear safety foot wear.

1.16 EYE AND FACE PROTECTION

- .1 Personnel employed in grinding, drilling, chipping, sandblasting, jack hammering and welding activities are required to wear appropriate eye/face protection.

1.17 HEARING PROTECTION

- .1 Personnel using compressors, jack hammers, etc., or in areas where noise level is above 85 db are required to wear hearing protection.

1.18 RESPIRATORY PROTECTION

- .1 Personnel employed in area of fumes, noxious gases, asbestos material or dust, or where there is a suspected oxygen deficiency are required to wear appropriate respiratory protection. The type of respiratory protection will depend on the type and level of exposure.

1.19 LEAD ABATEMENT PROTECTION

- .1 When work will present a risk of lead contamination, refer to Procedure 2.0 Personal Protective Equipment of Standard Operation Procedures (SOP) and the Ontario Guideline for further details.

1.20 SPECIFIC TASK

- .1 When working on specific task, refer to Building Standard Operational Procedures (SOP) for additional protection that may be required.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 FIRE DEPARTMENT BRIEFING

- .1 Contractor is to co-ordinate arrangements for contractor's employee to be briefed on Fire Safety at pre-work conference by Fire Chief before work is commenced. It is mandatory for all employees to be briefed by Fire Chief.

1.2 REPORTING FIRES

- .1 Know location of nearest fire alarm box and telephone, including emergency phone number.
- .2 Report immediately fire incidents to Fire Department as follows:
 - .1 Activate nearest fire alarm box; or
 - .2 Telephone.
- .3 Person activating fire alarm box will exit the structure and standby to direct Fire Department to scene of fire.
- .4 When reporting fire by telephone, give location of fire, name or number of building and be prepared to verify location.

1.3 INTERIOR AND EXTERIOR FIRE PROTECTION AND ALARM SYSTEMS

- .1 Fire protection and alarm system will not be:
 - .1 Obstructed;
 - .2 Shut-off; and
 - .3 Left inactive at end of working day or shift without authorization from Fire Chief.
- .2 Fire hydrants, standpipes and hose systems will not be used for other than fire-fighting purposes unless authorized by Fire Chief.

1.4 FIRE EXTINGUISHERS

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

1.5 BLOCKAGE OF ROADWAYS

- .1 Advise Fire Chief of work that would impede fire apparatus response. This includes violation of minimum overhead clearance, as prescribed by Fire Chief, erecting of barricades and digging of trenches.

1.6 SMOKING PRECAUTIONS

- .1 Observe smoking regulations.

1.7 RUBBISH AND WASTE MATERIALS

- .1 Keep rubbish and waste materials at minimum quantities.
- .2 Burning of rubbish is prohibited.
- .3 Removal:
 - .1 Remove rubbish from work site at end of work day or shift or as directed.
 - .2 Refer to Waste Management and Disposal section of lead abatement scope of work (appendix A), procedures No.5 Waste Disposal and 14.0 Selection, Storage and Disposal of cleaning equipment and consumable of Building Standard Operating Procedures (SOP) and the Ontario Guideline (Appendix B)

1.8 FLAMMABLE AND COMBUSTIBLE LIQUIDS

- .1 Handling, storage and use of flammable and combustible liquids governed by current National Fire Code of Canada.
- .2 Keep flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing Underwriters' Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires permission of Fire Chief.
- .3 Transfer of flammable and combustible liquids is prohibited within buildings or jetties.
- .4 Transfer of flammable and combustible liquids will not be carried out in vicinity of open flames or any type of heat-producing devices.
- .5 Do not use flammable liquids having flash point below 38 degrees C such as naphtha or gasoline as solvents or cleaning agents.
- .6 Store flammable and combustible waste liquids, for disposal, in approved containers located in safe ventilated area. Keep quantities minimum and Fire Department is to be notified when disposal is required.

1.9 HAZARDOUS SUBSTANCES

- .1 Refer to Appendix A for procedures regarding lead dust for this project.
- .2 Work entailing use of toxic or hazardous materials, chemicals and/or explosives, or otherwise creating hazard to life, safety or health, in accordance with National Fire Code of Canada.
- .3 Notify Fire Chief of work involving welding, burning or use of blowtorches and salamanders, in buildings or facilities.
- .4 When Work is carried out in dangerous or hazardous areas involving use of heat, provide fire watchers equipped with sufficient fire extinguishers. Determination of dangerous or hazardous areas along with level of protection necessary for Fire Watch is at discretion of Fire Chief. Contractors are responsible for providing fire watch service for work on scale established and in conjunction with Fire Chief at pre-work conference.

- .5 Provide ventilation where flammable liquids, such as lacquers or urethanes are used, eliminate sources of ignition. Inform Fire Chief prior to and at cessation of such work.
- .6 Where oil or gas is dispensed in Contractor’s equipment, a fill procedures and emergency procedures in the event of an accidental spill or release is required.

1.10 HOT WORK PERMIT

- .1 Hot work permit are mandatory for all hot work activities. One permit per job is required everyday of work being performed.
- .2 Hot work permit to be issued by the local Departmental Representative on site.

1.11 QUESTIONS AND/OR CLARIFICATION

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

1.12 FIRE INSPECTION

- .1 Co-ordinate site inspections by Fire Chief through Consultant.
- .2 Allow Fire Chief unrestricted access to work site.
- .3 Co-operate with Fire Chief during routine fire safety inspection of work site.
- .4 Immediately remedy unsafe fire situations observed by Fire Chief.

1.13 QUESTIONS AND/OR CLARIFICATION

- .1 Any questions or clarification on fire safety in addition to the above requirements shall be directed through the fire Chief.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 FIRES

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

1.2 DISPOSAL OF WASTES

- .1 Refer to appendix A for guidance on disposal of lead – impacted materials and sludge from sediment trap.
- .2 Do not bury rubbish and waste materials on site.
- .3 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.3 DRAINAGE

- .1 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.4 NOTIFICATION

- .1 Consultant will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Consultant of proposed corrective action and take such action for approval by Consultant.
- .3 Consultant will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

1.1 GENERAL

- .1 Due to nature of this Facility, and client operations therein, security regulations pertaining to site will be in place during the work resulting in need for:
 - .1 Control and limit movement of construction workers at the site and inside building;
 - .2 Escort and continuous supervision of workers by security personnel;
 - .3 Workers must undergo a security clearance process;
 - .4 Specific rules and regulations as specified in this section and as directed by the Departmental Representative to be stringently followed.
- .2 It is the Contractor's responsibility to:
 - .1 Submit necessary documentation required and obtain security clearance for all workers;
 - .2 Become familiar with and abide by security rules and regulations;
 - .3 Brief all workers and subcontractors in respect of the security regulations and ensure that they abide by all rules and directives.
- .3 The Departmental Representative will coordinate a pre-construction meeting between Contractor, Facility Management and Security Personnel who will provide details and directives on control and movement on site.
 - .1 Note that building's custodial responsibilities are currently being managed by SNC Lavalin O & M.
- .4 Any infraction of site security regulations on the part of the Contractor, members of work force or any Subcontractor in his employ, could result in:
 - .1 Financial penalties in the form of progress payment reduction on holdback assessments being levied against the Contractor and;
 - .2 Demand immediate removal of offending party from the site.

1.2 SECURITY PERSONNEL

- .1 Obtain and pay for the services of security personnel, employed by the Canadian Corps of Commissionaires to provide escort and security supervision of all workers during the work of this contract.
- .2 Commissionaires employed on this project must have a current Enhanced Security Clearance status issued by RCMP.
- .3 Provide minimum of 1 Commissionaire to be on site at all times when work is carried out, having the following responsibilities:
 - .1 Limit movement of workers to within the boundaries established by the Departmental Representative;
 - .2 Maintain security control list of workers authorized to be on site as determined by Contractor and the Departmental Representative;
 - .3 Manage the distribution and control of worker ID tags;

- .4 Escort workers who need to circulate on site beyond the established boundaries of work, including the corridors, stairwells and elevators used for entry into and work inside the existing building and access to and from work areas.
- .5 Escort and supervise short term visitors who need access to the work site such as for material deliveries or to conduct inspections.
- .4 Provide additional commissionaires when required to perform supervision or escort function as may be needed due to Contractor's work operations in order that no worker is left unsupervised if work is to take place inside restricted building(s) on site.
- .5 Ensure Commissionaire(s) are present on site for entire workshift including workbreaks and time period after workshifts until all workers have left site.
- .6 Commissionaire must stay within the actual construction area and provide surveillance of all workers ensuring that security rules and requirements are obeyed and to limit movement to approved work areas of site.
- .7 Commissionaire must also escort workers from approved entry locations and work area(s).
- .8 Escort and supervision of workers by Commissionaire, when required by the Work, will be provided at all times when work of the contract is being performed regardless of whether this is during regular business hours or beyond.
- .9 Commissionaire shall report directly to the Departmental Representative and ensure that site security directives are obeyed by all workers.
- .1 Empower Commissionaire with authority to remove any worker deemed non-compliant with security directives.
- .10 Ensure Commissionaire is fitted and wears approved safety hard hat, safety footwear and other personnel protective equipment appropriate to work in accordance with applicable Occupational Health and Safety requirements specified.

1.3 SECURITY CLEARANCE REQUIREMENTS

- .1 All persons employed by Contractor or by subcontractors who will be working on site must undergo the following check:
 - .1 Apply for RCMP personnel security clearance screening and obtain a clearance ranging from a Facility Access up to Reliability Status. This will vary as to the Contractor involvement and access requirements during and after construction.
 - .2 The Contractor must have a Foreman/Site Superintendent on site at all times. As such, the Contractor shall have a back-up Foreman/Site Superintendent. These two individuals require RCMP Reliability Status level security clearance.
 - .3 All of the Contractor's and/or Subcontractor's workers require RCMP Facility Access 2 (Escort Required) level security clearance.
- .2 Persons who do not have security clearance, as specified above, will not be allowed on site.
- .3 Departmental Representative will advise when worker security clearance has been received and whether escort and supervision is still needed for any worker.

1.4 SECURITY CLEARANCE APPLICATION

- .1 In order to expedite the security clearance process, the successful bidder must submit the application forms and all supporting documentation for all workers who require security clearance as soon as the project is officially awarded.
 - .1 Make application for all workers as one submission to facilitate processing and minimize delays.
- .2 To obtain the RCMP Reliability Status clearance, the following information is required for each applicant:
 - .1 “Personnel Screening, Consent and Authorization form”. (Form No. TBS/SCT #330-23E (Rev. 2006/02) Completed by each supervisor.
 - .2 “Security Clearance Form” (Form No. TBS/SCT 330-60E (Rev. 2006/02) Completed by each supervisor.
 - .3 “Security/Reliability Pre-Interview Questionnaire” (RCMP GRC Form 1020-1e) Completed in full by each supervisor.
 - .4 Contractor Declaration to Public Works & Government Services Canada (RCMP Security Form “A” completed by Contractor attesting to having conducted an assessment of reliability for each supervisor applicant verifying employment and other reference data.
 - .5 Proof of applicant’s identify consisting of a picture ID such as a Canadian Motor Vehicle Driver’s License or other similar official ID card. Provide copy of front and back of Driver’s License or Government ID. The photo ID must be verified and signed by the Departmental Representative or Project Authority.
 - .6 Proof of applicant’s Canadian citizenship consisting of a provincial issued birth certificate, baptismal certificate, citizenship certificate or passport.
 - .7 Include forms along with a clear legible photocopy of the citizenship and identity documents submitted as one complete package for each applicant.
 - .8 Two passport-type photos, validated on back by the Departmental Representative/Project Authority.
 - .9 Two sets of fingerprints to be obtained at the local RCMP detachment. Inform the detachment. Inform the detachment that the fingerprints are required for RCMP contract employee purposes.
- .3 A sample of the above mentioned forms are included at the end of this Specification Manual for reference purposes and marked Appendix “A”.
 - .1 Information on filling out form TEB/SCT # 330-23E are as follows:
 - .1 Part A: by RCMP Project Manager;
 - .2 Part B: by applicant. Provide full name, including middle name (not simply an initial). Ensure addresses listed represent last five (5) years of residence and each address is fully completed including postal code. Print data in clear, legible manner.
 - .3 Part C: only boxes 1, 2, 3 & 5 need to be completed, requiring applicant’s initials. Name of official requested here can be RCMP Project Manager or RCMP Regional Security Agent provided that Contractor submits the RCMP Security Form “A” specified above.

- .4 Line number 5 must include the following comment: “Law Enforcement Records Check”.
- .4 To obtain the RCMP Facility Access 2 (Escort Required) clearance, the following information is required for each applicant:
 - .1 “Personnel Screening, Consent and Authorization form” (Form No. TBS/SCT #330-23E (rev. 2006/02) Completed by each worker.
 - .2 Contractor declaration to Public Works & Government Services Canada (RCMP Security Form “A”) Completed by Contractor attesting to having conducted an assessment of reliability for each worker applicant verifying employment and other reference data.
 - .3 Proof of applicant’s identity consisting of a picture ID such as a Canadian Motor Vehicle Driver’s License or other similar official ID card. Provide copy of front and back of driver’s license or government ID. The photo ID must be verified and signed by the Departmental Representative / Project Authority.
 - .4 Proof of applicant’s Canadian Citizenship consisting of a provincial issued birth certificate, baptismal certificate, citizenship certificate or passport.
 - .5 Include forms along with clear legible photocopy of the citizenship and identity documents submitted as one complete package for each applicant.
- .5 A sample of the above mentioned forms are included at the end of this Specification Manual for reference purposes and marked Appendix “A”.
 - .1 Information of filling out form TBS/SCT #330-23E are as follows:
 - .1 Part A: by RCMP Project Manager;
 - .2 Part B: by applicant. Provide full name, including middle name (not simply an initial). Ensure addresses listed represent last five (5) years of residence and each address is fully completed including postal code. Print data in clear, legible manner.
 - .3 Part C: Only boxes, 1, 2 and 5 need to be completed, requiring applicant’s initials. Name of official requested here can be RCMP Project Manager or regional RCMP security agent provided that contractor submits the RCMP Security Form “A” specified above.
- .6 Departmental Representative will provide details as to what procedures, location and time where workers must go should fingerprints be required.
- .7 Processing Time:
 - .1 The RCMP Departmental processing time to obtain all security clearance is estimated to be up to 8 weeks from date of receipt of required and correct documentation.
 - .2 To avoid delays, prepare worker documentation as soon as possible, however, submit documentation for each applicant as one package and send information for entire workforce as one submission. Ensure forms are fully completed, signed and that all information and photo identification is clear and legible.
 - .3 Be aware that processing time for applicants with criminal convictions may take longer and could extend to 6 months duration.

- .1 An interview with such applicant may also be required as part of the security clearance process.
- .8 Facilitate workers security clearance process as follows:
 - .1 Prepare comprehensive list of workers who will require security clearance throughout project, including those of subcontractors.
 - .2 Provide copy of list to Departmental Representative.
 - .3 Coordinate and expedite submission of various subcontractors.
 - .4 Brief and assist applicants in preparing and submitting documentation.
 - .5 Review documentation of each applicant for completeness before submission.
 - .6 Have each worker keep a copy of their completed application form in case the initial submission gets lost.
 - .7 Submit documentation in an organized manner with transmittal letter clearly identifying project for which worker clearance is required.
- .9 Send submission(s) directly to Departmental Representative or to the approved mailing address as directed by Departmental Representative.
- .10 Persons who have not been successful in obtaining security clearance, upon documentation review by RCMP, will not be allowed further access on site and cannot work on project any longer.

1.5 SECURITY PASSES

- .1 All personnel, visitors or workers, requiring access on site and/or inside the existing building(s) on site beyond the public lobby require a HRMIS number issued by RCMP. It is the responsibility of the Contractor and all personnel, visitors and workers to know their HRMIS number.

1.6 SECURITY CONTROL LIST

- .1 Provide a list of employee names from workforce and from subcontractors who will be present at site during the course of work.
- .2 List to include each person's name, address and telephone number.
- .3 Submit copy of list to Departmental Representative and to Security Commissionaire for control of workers.
- .4 Update list as work progresses.
- .5 Ensure that each worker can provide proof of identity upon demand, when requested by Security Personnel or Departmental Representative.

1.7 BUILDING ACCESS

- .1 Keys and door security access cards necessary for access to restricted areas may be issued at the discretion of the Departmental Representative. Follow all instructions in regards to use, care and disposition of all keys and access cards so issued,

- .2 Keys and security access cards given to the Commissionaire for his sole possession, as determined by Departmental Representative, shall not under any circumstances be given to any worker or subcontractor.
- .3 Do not, under any circumstances, make or allow workers to make duplicates of keys issued.
- .4 At end of project, return to Departmental Representative all keys and access cards issued. Departmental Representative will deduct from final contract payment, \$25.00 for each item not returned, regardless of the reason.
- .5 Immediately report to Departmental Representative any lost, stolen or destroyed keys and door security access cards.

1.8 SITE SECURITY

- .1 When work must be carried out during Off Hours or beyond the work hours previously agreed upon at start of work, provide notice within 48 hours beforehand to minimize impact on security and other operations on site.

END OF SECTION

Part 1 General

1.1 INSPECTION

- .1 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant law of Place of Work.
 - .1 More specifically, contractor will need to advise consultants when swab sampling will be required to clear a work area for other contractors.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. Contractor shall pay cost of examination and correction of such work.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Consultant for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Consultant at no cost to Contractor is to pay costs of retesting and reinspection.

1.3 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

- .1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

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

1.5 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Consultant.
- .4 If swab tests fail, work area will need to be cleaned again by contractor.

1.6 REPORTS

- .1 Submit 4 copies of inspection and test reports to Consultant.
- .2 Provide copies to subcontractor of work being inspected or tested.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
 - .2 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

1.2 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Identify areas which have to be gravelled to prevent tracking of mud.
- .3 Indicate use of supplemental or other staging area.
- .4 Provide construction facilities in order to execute work expeditiously.
- .5 Remove from site all such work after use.

1.3 SCAFFOLDING

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

1.4 HOISTING

- .1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists and cranes to be operated by qualified operator.

1.5 ELEVATORS

- .1 Designated existing elevators not to be used by construction personnel and transporting of materials. Co-ordinate use with Consultant.
- .2 Provide protective coverings for finish surfaces of cars and entrances.

1.6 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.7 CONSTRUCTION PARKING

- .1 Departmental Representative will designate contractor's acceptable parking area.

1.8 OFFICES

- .1 Contractor is responsible for and provide own site office, if required, including electricity, heat, lights and telephone. Locate site office as directed by Consultant.

1.9 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.10 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.11 CONSTRUCTION SIGNAGE

- .1 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .2 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Consultant.

1.12 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.2 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.3 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.

- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Consultant.
- .9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.4 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Owner. Unload, handle and store such products at no extra cost.

1.5 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.6 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.7 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

-
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.8 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

1.9 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Consultant of conflicting installation. Install as directed.
- .3 All fixtures, outlets and mechanical and electrical items governed by CAN/CSA-B651-04- Accessible design for the Built Environment shall be positioned as shown on drawings.

1.11 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.
- .7 Obtain Consultant's approval before using explosive actuated fastening device.

1.12 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated with written approval of Consultant.

1.13 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, building occupants and pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

1.14 LEAD ABATEMENT

- .1 Lead abatement work shall be performed by licensed and qualified contractor. Successful contractor will need to provide proof of such documentations to Departmental Representative prior to the commencement of the work.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .2 Appendix A – Lead Abatement Scope of Work.

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site. Removal of lead waste materials to be completed by a hazardous materials contractor.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .6 Dispose of waste materials and debris off site at designated dumping area, with exception of lead – impacted waste which is to be taken off site by a licensed hazardous material contractor.
- .7 Contractor is to manifests describing and listing waste created.
- .8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose. Use a negative pressur machine system to contain dust to work area.
- .11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .13 Entrance to building through which debris is removed must be kept clean at all times to prevent “tracking” of dust/dirt into the building. Dust transferred by foot traffic will be considered the contractor’s responsibility for cleaning.

- .14 Except for items to be salvaged and retained or built into final work, all debris becomes property of the contractor and must be removed from site unless noted otherwise.

1.3 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 including that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled time or dispose of as directed by authorities having jurisdiction, consultants and/or owner representative. Contractor is responsible for providing manifests describing and listing waste created.
- .6 Make arrangement 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 Remove dirt and other disfiguration from exterior surfaces.
- .14 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .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.
- .18 Remove snow and ice from access to building.

- .19 On completion of the work, contractor shall remove any smears and marks from surfaces not intended for work and leave the room neat and tidy condition.

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.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 WASTE MANAGEMENT GOALS

- .1 Prior to start of Work conduct meeting with Consultant and Departmental Representative to review and discuss Departmental Representative Waste Management Plan and Goals.
- .2 Accomplish maximum control of solid construction waste and lead – impacted waste.
- .3 Preserve environment and prevent pollution and environment damage.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Appendix A – Lead Abatement scope of work.

1.3 DEFINITIONS

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
- .2 Hazardous Waste – “material” impacted with lead.
- .3 Inert Fill: inert waste - exclusively asphalt and concrete.
- .4 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .5 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .6 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.
- .7 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.
- .8 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .9 Separate Condition: refers to waste sorted into individual types.
- .10 Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste.

- .11 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Contractor is to provide manifests listing and describing lead impacted waste. General contractor may acquire these from hazardous material contractor.
- .12 Waste Management Co-ordinator (WMC) : contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements. For this project, the waste management co-ordinator shall be representative of the hazardous waste contractor.

1.4 DOCUMENTS

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

1.5 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare and submit following prior to project start-up:
 - .1 Submit 2 copies of completed Waste Audit (WA).
 - .2 Submit 2 copies of completed Demolition Waste Audit (DWA).
- .3 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project using deconstruction/disassembly material audit form.
 - .1 Failure to submit could result in hold back of final payment.
 - .2 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled or disposed of.
 - .3 For each material reused, sold or recycled from project, include amount quantities by number, type and size of items and the destination.
 - .4 For each material land filled or incinerated from project, include amount of material and identity of landfill, incinerator or transfer station.

1.6 WASTE AUDIT (WA)

- .1 Conduct WA prior to project start-up.
- .2 Record, on WA, extent to which materials or products used consist of recycled or reused materials or products.

1.7 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Consultant.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Protect, stockpile, store and catalogue salvaged items.

- .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .5 Protect structural components not removed for demolition from movement or damage.
- .6 Support affected structures. If safety of building is endangered, cease operations and immediately notify Consultant.
- .7 Protect surface drainage, mechanical and electrical from damage and blockage.
- .8 Separate and store materials produced during dismantling of structures in designated areas.
- .9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
 - .1 On-site source separation is recommended.
 - .2 Remove co-mingled materials to off-site processing facility for separation.
 - .3 Provide waybills for separated materials.

1.8 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste or volatile materials such as mineral spirits, oil or paint thinner into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
 - .1 Number and size of bins.
 - .2 Waste type of each bin.
 - .3 Total tonnage generated.
 - .4 Tonnage reused or recycled.
 - .5 Reused or recycled waste destination.
- .4 Remove materials from deconstruction as deconstruction/disassembly Work progresses.
- .5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.

1.9 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.

1.10 SCHEDULING

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 SELECTIVE DEMOLITION

- .1 Reuse of Building Elements: this project has been designed to result in end of project rates for reuse of building elements as follows: do not demolish building elements beyond what is indicated on Drawings without approval by Consultant's.

3.2 APPLICATION

- .1 Do Work in compliance with WRW.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.3 CLEANING

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

3.4 DIVERSION OF MATERIALS

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers.
- .1 Mark containers or stockpile areas.
- .2 Provide instruction on disposal practices.
- .2 On-site sale of materials is not permitted.

3.5 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

- .1 Government Chief Responsibility for the Environment:

| Province | Agency | General Inquires | Fax |
|---------------|--|------------------|--------------|
| New Brunswick | Department of the Environment and the Local Government 20 McGloin St., Box 6000 Fredericton NB E3B 5T8 | 506-444-5149 | 506-453-2893 |

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 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .3 Copy will be returned after final inspection, with Consultant's comments.
- .4 Revise content of documents as required prior to final submittal.
- .5 Two weeks prior to Substantial Performance of the Work, submit to the Consultant, three final copies of operating and maintenance manuals in English.
- .6 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .7 Furnish evidence, if requested, for type, source and quality of products provided.
- .8 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .9 Pay costs of transportation.
- .10 Contractor is responsible to fill Asset Data Collection Form for each new piece of equipment installed. Refer to form located at the end of this section.

1.3 FORMAT

- .1 Public Works and Government Services Canada manual guideline is located at the end of this section for reference purposes.
- .2 Organize data as instructional manual.
- .3 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .4 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.
- .5 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

- .6 Arrange content by systems, under Section numbers and sequence of Table of Contents.
(Note: Refer to the end of this section for specific Owner's Representative O&M manual arrangement directives. Contractor is to follow these specific directives in the production and arrangement of the O&M manuals.)
- .7 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .8 Text: manufacturer's printed data, or typewritten data.
- .9 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.4 CONTENTS - EACH VOLUME

- .1 Table of Contents: 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. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.5 AS-BUILTS AND SAMPLES

- .1 Maintain, at site for Consultant and/or Owner review, one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. 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. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Consultant.

1.6 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on 2 sets of white prints provided by Consultant.
- .2 Maintain at site one set of the white prints and record changes in red ink on the prints. Mark only on one set of prints and at completion of project and prior to final inspection, neatly transfer notations to second set also by use of red ink and submit both sets to Engineer. All drawings of both sets shall be stamped As-Built Drawings and be signed and dated by Contractor.
- .3 Record information concurrently with construction progress. 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, and other documents required by individual specifications sections.

1.7 EQUIPMENT AND SYSTEMS

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .12 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .13 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.
- .14 Additional requirements: as specified in individual specification sections.

1.8 MATERIALS AND FINISHES

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-Protection and Weather-Exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional Requirements: as specified in individual specifications sections.

1.9 SPARE PARTS/MAINTENANCE MATERIALS

- .1 Provide spare parts and maintenance materials, in quantities specified in individual specification sections.

- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to location as directed; place and store.
- .4 Receive and catalogue items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.10 STORAGE, HANDLING AND PROTECTION

- .1 Store spare parts, maintenance materials, 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 to satisfaction of Consultant.

1.11 WARRANTIES AND BONDS

- .1 Submit, warranty information made available during construction phase, to Consultant for approval prior to each monthly pay estimate.
- .2 Assemble warranty or bond information in binder and submit upon acceptance of work. Organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties and bonds until time specified for submittal.
- .3 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

1.12 ASSET DATA COLLECTION FORMS

- .1 Fill out and complete an Owner's Representative Asset Data Collection Form for each new piece of equipment installed under this Contract. Refer to the end of this section for the Asset Data Collection Form.
- .2 Information on the equipment being replaced by the new equipment is also to be included on the Asset Data Collection Form.

-
- .3 Asset Data Collection Forms are to be submitted to Owner's Representative and/or Consultant for review two weeks prior to date of Substantial Performance of the Work.
 - .4 Revise contents of Asset Data Collection Forms as requested by Owner's Representative, and/or Consultant.
 - .5 Re-submit revised and completed Asset Data Collection Forms to Owner's Representative and/or Consultant prior to Final Inspection.
 - .6 Pay costs of transportation.
 - .7 Asset data sheet will be required for all exit light, emergency lights, and the automatic door operators

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

EQUIPMENT INFORMATION FORM CMMS

Rev. date: 8/14/2009

| | | | | | | |
|---|--|--|---|--|---|--|
| Building ID / Name <input style="width: 100%;" type="text"/> | | | Project Number <input style="width: 150px;" type="text"/> | | Project Name <input style="width: 180px;" type="text"/> | |
| Equipment Description <div style="border: 1px solid black; height: 60px; width: 100%;"></div> | | | This piece of equipment replaces equipment number: <input style="width: 170px;" type="text"/> | | | |
| | | | Supplier <input style="width: 170px;" type="text"/> | | Purchase Price <input style="width: 160px;" type="text"/> | |
| | | | Model Number <input style="width: 170px;" type="text"/> | | Manufacturer <input style="width: 160px;" type="text"/> | |
| | | | Serial Number <input style="width: 170px;" type="text"/> | | Purchase Date <input style="width: 160px;" type="text"/> | |
| Equipment Group <input style="width: 100px;" type="text"/> | | | Equipment Category <input style="width: 100px;" type="text"/> | | Unique Counter <div style="border: 2px solid black; width: 100px; height: 20px;"></div> | |
| Parent equipment Number <input style="width: 150px;" type="text"/> | | | Certification Expiry <input style="width: 170px;" type="text"/> | | Installation Date <input style="width: 160px;" type="text"/> | |
| Location ("Floor number" - "Room number" - "Section/Wing") <input style="width: 150px;" type="text"/> | | | Estimated Service Life (in years) <input style="width: 170px;" type="text"/> | | Warranty Expiry Date <input style="width: 160px;" type="text"/> | |
| Location (Specific Details) <input style="width: 150px;" type="text"/> | | | Is the Equipment Regulated? <input type="checkbox"/> Yes <input type="checkbox"/> No | | Tenant Owned <input type="checkbox"/> Yes <input type="checkbox"/> No | |

| | | | | | | | |
|---|--|--|--|--|--|--|--|
| Electrical Specifications | | Mechanical Specifications | | Fire Suppression | | Environmental | |
| Volts <input style="width: 100px;" type="text"/> | HP <input style="width: 100px;" type="text"/> | C.F.M. / G.P.M <input style="width: 100px;" type="text"/> | Capacity <input style="width: 100px;" type="text"/> | Type <input style="width: 100px;" type="text"/> | Refrigerant <input type="checkbox"/> Glycol <input type="checkbox"/> | | |
| Amps or KVA <input style="width: 100px;" type="text"/> | RPM <input style="width: 100px;" type="text"/> | Belts Size <input style="width: 100px;" type="text"/> | Belts Quantity <input style="width: 100px;" type="text"/> | Capacity (kg/lbs) <input style="width: 100px;" type="text"/> | Type <input style="width: 100px;" type="text"/> | Capacity <input style="width: 100px;" type="text"/> | ton/kw <input style="width: 100px;" type="text"/> |
| Phases <input style="width: 100px;" type="text"/> | No. of Circuit (Panels) <input style="width: 100px;" type="text"/> | Pre-Filters Size <input style="width: 100px;" type="text"/> | Pre-Filters Quantity <input style="width: 100px;" type="text"/> | Actuation Type (Auto/Man) <input style="width: 100px;" type="text"/> | Storage Tanks | | |
| Fuse size <input style="width: 100px;" type="text"/> | Fuse Quantity <input style="width: 100px;" type="text"/> | Main Filters Size <input style="width: 100px;" type="text"/> | Main Filters Quantity <input style="width: 100px;" type="text"/> | Sprinkler System/ <input style="width: 100px;" type="text"/> | Secondary containment | | |
| <input type="checkbox"/> Seasonal Maintenance: Start <input style="width: 100px;" type="text"/> Finish <input style="width: 100px;" type="text"/> | | | | Year of Installation <input style="width: 100px;" type="text"/> | <input type="checkbox"/> 1 Ext. above ground <input type="checkbox"/> Double Wall <input type="checkbox"/> 2 Ext. underground <input type="checkbox"/> Berm <input type="checkbox"/> 3 Interior Capacity <input style="width: 100px;" type="text"/> Litres Fuel type <input style="width: 100px;" type="text"/> | | |

| Lockout / Tagout Requirements: | | | | Deleted Equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <input type="checkbox"/> Required <input type="checkbox"/> Not Applicable <table style="width: 100%;"> <tr> <td>Hydraulic</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> </tr> <tr> <td></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> </tr> <tr> <td>Pneumatic</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> </tr> <tr> <td></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> </tr> <tr> <td>Steam</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> <td>Valve #</td> </tr> <tr> <td></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> </tr> <tr> <td>Electrical</td> <td>Breaker #</td> <td>Panel Name</td> <td>Breaker #</td> <td>Panel Name</td> <td>Breaker #</td> <td>Panel Name</td> <td>Breaker #</td> </tr> <tr> <td></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td><input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td><input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td><input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> </tr> <tr> <td>Other</td> <td>Type</td> <td>Lockout</td> <td>Type</td> <td>Lockout</td> <td>Type</td> <td>Lockout</td> <td>Type</td> </tr> <tr> <td></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td><input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> <td><input style="width: 100px;" type="text"/></td> <td>#1 <input style="width: 100px;" type="text"/></td> <td><input style="width: 100px;" type="text"/></td> <td>#2 <input style="width: 100px;" type="text"/></td> </tr> </table> | | | | Hydraulic | Valve # | Valve # | Valve # | Valve # | Valve # | Valve # | Valve # | | #1 <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | Pneumatic | Valve # | Valve # | Valve # | Valve # | Valve # | Valve # | Valve # | | #1 <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | Steam | Valve # | Valve # | Valve # | Valve # | Valve # | Valve # | Valve # | | #1 <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | Electrical | Breaker # | Panel Name | Breaker # | Panel Name | Breaker # | Panel Name | Breaker # | | #1 <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | Other | Type | Lockout | Type | Lockout | Type | Lockout | Type | | #1 <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> | #1 <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> | #2 <input style="width: 100px;" type="text"/> | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Equipment Number</th> <th>Reason / Justification</th> </tr> <tr><td><input style="width: 150px;" type="text"/></td><td><input style="width: 150px;" type="text"/></td></tr> <tr><td><input style="width: 150px;" type="text"/></td><td><input style="width: 150px;" type="text"/></td></tr> <tr><td><input style="width: 150px;" type="text"/></td><td><input style="width: 150px;" type="text"/></td></tr> <tr><td><input style="width: 150px;" type="text"/></td><td><input style="width: 150px;" type="text"/></td></tr> </table> | | | | Equipment Number | Reason / Justification | <input style="width: 150px;" type="text"/> | <input style="width: 150px;" type="text"/> | <input style="width: 150px;" type="text"/> | <input style="width: 150px;" type="text"/> | <input style="width: 150px;" type="text"/> | <input style="width: 150px;" type="text"/> | <input style="width: 150px;" type="text"/> | <input style="width: 150px;" type="text"/> |
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| Pneumatic | Valve # | Valve # | Valve # | Valve # | Valve # | Valve # | Valve # | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Electrical | Breaker # | Panel Name | Breaker # | Panel Name | Breaker # | Panel Name | Breaker # | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Other | Type | Lockout | Type | Lockout | Type | Lockout | Type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Equipment Number | Reason / Justification | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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Notes / Specific Maintenance Requirements during Warranty Period:

| Preventive Maintenance Set Up | | | |
|-------------------------------|--------------------------|--|--|
| Frequency | Required | Job Plan No | Schedule Date |
| | Yes | | Month/Year |
| Weekly | <input type="checkbox"/> | <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> |
| Monthly | <input type="checkbox"/> | <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> |
| Bi-Monthly | <input type="checkbox"/> | <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> |
| Quarterly | <input type="checkbox"/> | <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> |
| Semi-Annual | <input type="checkbox"/> | <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> |
| Annual | <input type="checkbox"/> | <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> |
| | <input type="checkbox"/> | <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> |
| Warranty | <input type="checkbox"/> | <input style="width: 100px;" type="text"/> | <input style="width: 100px;" type="text"/> |

| | |
|--------------------------------------|---|
| Equipment No. Label Provided: | <input type="checkbox"/> Yes <input type="checkbox"/> N/A |
| Warranty Card Provided | <input type="checkbox"/> Yes <input type="checkbox"/> N/A |

| | |
|------------------------------|--|
| PM Included in Route: | <input style="width: 150px;" type="text"/> |
| Asset No: | <input style="width: 150px;" type="text"/> |

| | |
|-----------------------------------|--|
| Submitted by: (Print Name) | <input style="width: 180px;" type="text"/> |
| Date | <input style="width: 100px;" type="text"/> |

| | | |
|--|---|--|
| CMMS Use Only | | |
| <input type="checkbox"/> Equipment Created | <input type="checkbox"/> PM's Attached or | <input type="checkbox"/> Equipment Added to List |

Operations and Maintenance Manual

Building Name: _____

Project #: _____

Project Name: _____

The commissioning process requires detailed O&M documentation as identified in the project specifications.

Initial Review of O&M manuals must take place 2 weeks prior to Substantial Completion or training

The contractor shall compile O&M manuals for every piece of equipment and building operating or electrical system being commissioned and as required by the project specifications with the following format:

- **Binder:** Must be in a "D" Ring binder no larger than 2" and no more than 2/3 full. The binder must be labeled on the front cover and on the binder edge with the following information: "Building Name", "Address", "Project Name", "Project Number", "Completed Date" i.e. October 2006, and "Submitted By". Dividers with permanently marked tabs shall separate each section and sub section. Tab labels shall not be hand written. Four copies are required. An electronic format that is compatible with the owner's system is required.
- **Title Page** : O&M manual for building name, address, date
- **Project Information:** building name, address, date, principal contractor's information: name, address & phone numbers, consultant: name, address & phone numbers. If the binder is one of many for the project, the volume must be noted i.e. Volume 1 of 3
- **Table of Contents:** Table of contents of first binder to include all sections in all binders (volumes). Each binder shall contain a table of contents for that binder's. Sections are to be as follows;
- **A** - Signed Letter of warranty' for each piece of equipment carrying a warranty. General contractor to provide a "letter of Warranty " to cover workmanship as defined in the specification. Warranties to be: dated, identify project by name, project number, location as well as warranty period. Any extended warranty of equipment only must be identified also.
- **B** - Contact information for all sub-contractors & suppliers.
- **C** - Reports: copy of all TAB reports, pre-functional tests, startup reports, functional test reports, completed performance verification forms, cabling verifications, ESA (Electronic Systems Associate) certification, pressure vessel certification, fire alarm certifications and all other required certifications required by National Building Code or Provincial

Regulations. Reports to be organized together by piece of equipment i.e. TAB, pre-functional, start-up etc to be together for a specific piece of equipment

- **D** – As built drawings
- **E** - Sequence of operation: outline how the system is designed to work.
- **F** – CMMS Data Sheets: All equipment which is to be deleted, removed, added or replaced from site is to have a CMMS inventory sheet completed and included in the O&M manual. If this equipment is a pressure vessel and is included in the annual inspection, the certification tag that is attached to the equipment must be removed prior to demolition and forwarded to the commissioning manager.
- **G, H, I ...** – Tab for each piece of new equipment to include:
 - Copy of approved shop drawing – all drawings must note which model has been installed if several are shown on one sheet
 - Copy of Specific Service and Maintenance manual for each.
- **Last Tab** : misc.

Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 General requirements relating to commissioning of project's components and systems, specifying general requirements to PV of components, equipment, sub-systems, systems, and integrated systems.
- .2 Related Sections:
 - .1 Section 01 33 00 – Submittal Procedures;
 - .2 Section 01 32 16.07 – Construction Progress Schedule – Bar (GANTT) Chart.
- .3 Acronyms:
 - .1 AFD - Alternate Forms of Delivery, service provider.
 - .2 BMM - Building Management Manual.
 - .3 Cx - Commissioning.
 - .4 EMCS - Energy Monitoring and Control Systems.
 - .5 O&M - Operation and Maintenance.
 - .6 PI - Product Information.
 - .7 PV - Performance Verification.

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 Cx to be a line item of Contractor's cost breakdown.
- .2 Cx activities supplement field quality and testing procedures described in relevant technical sections.
- .3 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 includes transfer of critical knowledge to facility operational personnel.
- .4 Consultant will issue Interim Acceptance Certificate when:
 - .1 Completed Cx documentation has been received, reviewed for suitability and approved by Consultant.
 - .2 Equipment, components and systems have been commissioned.
 - .3 O&M training has been completed.

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 Consultant, 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 Consultant.
 - .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 Have completed Cx Plan up-to-date.
 - .2 Ensure installation of related components, equipment, sub-systems, systems is complete.
 - .3 Fully understand Cx requirements and procedures.
 - .4 Have Cx documentation shelf-ready.

- .5 Understand completely design criteria and intent and special features.
- .6 Submit complete start-up documentation to Consultant.
- .7 Have Cx schedules up-to-date.
- .8 Ensure systems have been cleaned thoroughly.
- .9 Ensure "As-Built" system schematics are available.
- .4 Inform Consultant in writing of discrepancies and deficiencies on finished works.

1.6 CONFLICTS

- .1 Report conflicts between requirements of this section and other sections to Consultant 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 Consultant for changes to submittals and obtain written approval at least 8 weeks prior to start of Cx.
 - .3 Submit proposed Cx procedures to Consultant where not specified and obtain written approval at least 8 weeks prior to start of Cx.
 - .4 Provide additional documentation relating to Cx process required by Consultant.

1.8 COMMISSIONING DOCUMENTATION

- .1 Consultant to review and approve Cx documentation.
- .2 Provide completed and approved Cx documentation to Consultant.

1.9 COMMISSIONING SCHEDULE

- .1 Provide detailed Cx schedule as part of construction schedule in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
- .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.

1.10 COMMISSIONING MEETINGS

- .1 Convene Cx meetings following project meetings: Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart as specified herein.
- .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 At 60% construction completion stage. Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart. Consultant to call a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:
 - .1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.
 - .2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.
- .5 Thereafter Cx meetings to be held until project completion and as required during equipment start-up and functional testing period.
- .6 Meeting will be chaired by Contractor, who will record and distribute minutes.
- .7 Ensure subcontractors and relevant manufacturer representatives are present at 60% and subsequent Cx meetings and as required.

1.11 STARTING AND TESTING

- .1 Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

1.12 WITNESSING OF STARTING AND TESTING

- .1 Provide 14 days notice prior to commencement.
- .2 Consultant to witness of start-up and testing.
- .3 Contractor's Cx Agent to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers.

1.13 MANUFACTURER'S INVOLVEMENT

- .1 Factory testing: manufacturer to:
 - .1 Coordinate time and location of testing.
 - .2 Provide testing documentation for approval by Consultant.
 - .3 Arrange for Consultant to witness tests.
 - .4 Obtain written approval of test results and documentation from Consultant before delivery to site.

- .2 Obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with Consultant.
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.
- .3 Integrity of warranties:
 - .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.
 - .2 Verify with manufacturer that testing as specified will not void warranties.
- .4 Qualifications of manufacturer's personnel:
 - .1 Experienced in design, installation and operation of equipment and systems.
 - .2 Ability to interpret test results accurately.
 - .3 To report results in clear, concise, logical manner.

1.14 PROCEDURES

- .1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Cx.
- .2 Conduct start-up and testing in following distinct phases:
 - .1 Included in delivery and installation:
 - .1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.
 - .2 Visual inspection of quality of installation.
 - .2 Start-up: follow accepted start-up procedures.
 - .3 Operational testing: document equipment performance.
 - .4 System PV: include repetition of tests after correcting deficiencies.
 - .5 Post-substantial performance verification: to include fine-tuning.
- .3 Correct deficiencies and obtain approval from Consultant after distinct phases have been completed and before commencing next phase.
- .4 Document require tests on approved PV forms.
- .5 Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by Consultant. If results reveal that equipment start-up was not in accordance with requirements, and resulted in damage to equipment, implement following:
 - .1 Minor equipment/systems: implement corrective measures approved by Consultant.
 - .2 Major equipment/systems: if evaluation report concludes that damage is minor, implement corrective measures approved by Consultant.

- .3 If evaluation report concludes that major damage has occurred, Consultant shall reject equipment.
 - .1 Rejected equipment to be remove from site and replace with new.
 - .2 Subject new equipment/systems to specified start-up procedures.

1.15 START-UP DOCUMENTATION

- .1 Assemble start-up documentation and submit to Consultant for approval before commencement of commissioning.
- .2 Start-up documentation to include:
 - .1 Factory and on-site test certificates for specified equipment.
 - .2 Pre-start-up inspection reports.
 - .3 Signed installation/start-up check lists.
 - .4 Start-up reports,
 - .5 Step-by-step description of complete start-up procedures, to permit Consultant to repeat start-up at any time.

1.16 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

- .1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.
- .2 With assistance of manufacturer develop written maintenance program and submit to Consultant for approval before implementation.
- .3 Operate and maintain systems for length of time required for commissioning to be completed.
- .4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

1.17 TEST RESULTS

- .1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide manpower and materials, assume costs for re-commissioning.

1.18 START OF COMMISSIONING

- .1 Notify Consultant at least 21days prior to start of Cx.
- .2 Start Cx after elements of building affecting start-up and performance verification of systems have been completed.

1.19 INSTRUMENTS / EQUIPMENT

- .1 Submit to Consultant 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 2-way radios.
 - .2 Ladders.
 - .3 Equipment as required to complete work.

1.20 COMMISSIONING PERFORMANCE VERIFICATION

- .1 Carry out Cx:
 - .1 Under actual and/or 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 EMCS trending to be available as supporting documentation for performance verification.

1.21 WITNESSING COMMISSIONING

- .1 Consultant to witness activities and verify results.

1.22 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 Consultant within 5 days of test and with Cx report.

1.23 COMMISSIONING CONSTRAINTS

- .1 Since access into secure or sensitive areas will be very difficult after occupancy, it is necessary to complete Cx of occupancy, weather, and seasonal sensitive equipment and systems before issuance of the Interim Certificate, using, if necessary, simulated thermal loads.

1.24 EXTRAPOLATION OF RESULTS

- .1 Where Cx of weather, occupancy, or seasonal-sensitive equipment or systems cannot be conducted under near-rated or near-design conditions, extrapolate part-load results to design conditions when approved by Consultant in accordance with equipment manufacturer's instructions, using manufacturer's data, with manufacturer's assistance and using approved formulae.

1.25 EXTENT OF VERIFICATION

- .1 Number and location to be at discretion of Consultant.
- .2 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, instrumentation.
- .3 Perform additional commissioning until results are acceptable to Consultant.

1.26 REPEAT VERIFICATIONS

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

1.27 SUNDRY CHECKS AND ADJUSTMENTS

- .1 Make adjustments and changes which become apparent as Cx proceeds.
- .2 Perform static and operational checks as applicable and as required.

1.28 DEFICIENCIES, FAULTS, DEFECTS

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

1.29 COMPLETION OF COMMISSIONING

- .1 Upon completion of Cx leave systems in normal operating mode.
- .2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.
- .3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Consultant.

1.30 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.

1.31 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

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

1.32 OCCUPANCY

- .1 Cooperate fully with Consultant during stages of acceptance and occupancy of facility.

1.33 INSTALLED INSTRUMENTATION

- .1 Use instruments installed under Contract for PV if:
 - .1 Accuracy complies with these specifications.
 - .2 Calibration certificates have been deposited with Consultant.
- .2 Calibrated EMCS sensors may be used to obtain performance data provided that sensor calibration has been completed and accepted.

1.34 OWNER'S PERFORMANCE TESTING

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

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

- .1 Description of overall structure of Cx Plan and roles and responsibilities of Cx team.

1.2 REFERENCES

.1 Public Works and Government Services Canada (PWGSC)

- .1 PWGSC - Commissioning Guidelines CP.4 -3rd edition-03.

1.3 GENERAL

.1 Provide a fully functional window assembly:

- .1 Facility user and O&M personnel have been fully trained in aspects of installed systems.
- .2 Optimized life cycle costs.
- .3 Complete documentation relating to installed equipment and systems.

.2 Term "Cx" in this section means "Commissioning".

.3 Use this Cx Plan as master planning document for Cx:

- .1 Outlines organization, scheduling, allocation of resources, documentation, pertaining to implementation of Cx.
- .2 Communicates responsibilities of team members involved in Cx Scheduling, documentation requirements, and verification procedures.
- .3 Sets out deliverables relating to O&M, process and administration of Cx.
- .4 Describes process of verification of how built works meet design requirements.
- .5 Produces a complete functional system prior to issuance of Certificate of Occupancy.
- .6 Management tool that sets out scope, standards, roles and responsibilities, expectations, deliverables, and provides:
 - .1 Overview of Cx.
 - .2 General description of elements that make up Cx Plan.
 - .3 Process and methodology for successful Cx.

.4 Acronyms:

- .1 Cx - Commissioning.
- .2 BMM - Building Management Manual.
- .3 EMCS - Energy Monitoring and Control Systems.
- .4 MSDS - Material Safety Data Sheets.
- .5 PI - Product Information.
- .6 PV - Performance Verification.
- .7 TAB - Testing, Adjusting and Balancing.
- .8 WHMIS - Workplace Hazardous Materials Information System.

1.4 DEVELOPMENT OF 100% CX PLAN

- .1 Cx Plan to be 95% completed before added into Project Specifications.
- .2 Cx Plan to be 100% completed within 2 weeks of award of contract to take into account:
 - .1 Approved shop drawings and product data.
 - .2 Approved changes to contract.
 - .3 Contractor's project schedule.
 - .4 Cx schedule.
 - .5 Contractor's, sub-contractor's, suppliers' requirements.
 - .6 Project construction team's and Cx team's requirements.
- .3 Submit completed Cx Plan to Departmental Representative and obtain written approval.

1.5 REFINEMENT OF CX PLAN

- .1 During construction phase, revise, refine and update Cx Plan to include:
 - .1 Changes resulting from Client program modifications.
 - .2 Approved design and construction changes.
- .2 Revise, refine and update during construction phase. At each revision, indicate revision number and date.
- .3 Submit each revised Cx Plan to Departmental Representative for review and obtain written approval.
- .4 Include testing parameters at full range of operating conditions and check responses of equipment and systems.

1.6 COMPOSITION, ROLES AND RESPONSIBILITIES OF CX TEAM

- .1 Departmental Representative to maintain overall responsibility for project and is sole point of contact between members of commissioning team.
- .2 Project Manager will select Cx Team consisting of following members:
 - .1 PWGSC Design Quality Review Team: during construction, will conduct periodic site reviews to observe general progress.
 - .2 PWGSC Quality Assurance Commissioning Manager: ensures Cx activities are carried out to ensure delivery of a fully operational project including:
 - .1 Review of Cx documentation from operational perspective.
 - .2 Review for performance, reliability, durability of operation, accessibility, maintainability, operational efficiency under conditions of operation.
 - .3 Protection of health, safety and comfort of occupants and O&M personnel.
 - .4 Monitoring of Cx activities, training, development of Cx documentation.
 - .5 Work closely with members of Cx Team.
 - .3 Departmental Representative is responsible for:
 - .1 Organizing Cx.
 - .2 Monitoring operations Cx activities.
 - .3 Witnessing, certifying accuracy of reported results.
 - .4 Ensuring implementation of final Cx Plan.
 - .5 Performing verification of performance of installed systems and equipment.

- .6 Implementation of Training Plan.
- .4 Construction Team: contractor, sub-contractors, suppliers and support disciplines, is responsible for construction/installation in accordance with contract documents, including:
 - .1 Performance of Cx activities.
 - .2 Delivery of training and Cx documentation.
 - .3 Assigning one person as point of contact with Consultant and PWGSC Cx Manager for administrative and coordination purposes.
- .5 Contractor's Cx agent implements specified Cx activities including:
 - .1 Demonstrations.
 - .2 Preparation, submission of test reports.
- .6 Property Manager: represents lead role in Operation Phase and onwards and is responsible for:
 - .1 Receiving facility.
 - .2 Day-To-Day operation and maintenance of facility.

1.7 CX PARTICIPANTS

- .1 Employ the following Cx participants to verify performance of equipment and systems:
 - .1 Installation contractor/subcontractor.
- .2 Specialist subcontractor: equipment and systems supplied and installed by specialist subcontractor.
- .3 Specialist Cx agency:
 - .1 Possessing specialist qualifications and installations providing environments essential to client's program but are outside scope or expertise of Cx specialists on this project.
- .4 Client: responsible for intrusion and access security systems.
- .5 Ensure that Cx participant:
 - .1 Could complete work within scheduled time frame.
 - .2 Available for emergency and troubleshooting service during first year of occupancy by user for adjustments and modifications outside responsibility of O&M personnel.
- .6 Provide names of participants to Departmental Representative and details of instruments and procedures to be followed for Cx prior to starting date of Cx for review and approval.

1.8 EXTENT OF CX

- .1 Cx Structural and Architectural Systems:
 - .1 Architectural and structural:
 - .1 Doors, windows, related hardware:
- .2 Commission mechanical systems and associated equipment:
 - .1 Plumbing systems:
 - .1 Domestic CWS and HWS.
 - .2 Regular sanitary waste systems.
 - .3 Sewage pumps.

- .4 Storm water systems.
 - .5 Sump pumps.
 - .2 HVAC and exhaust systems:
 - .1 HVAC systems.
 - .2 General exhaust systems.
 - .3 Exhaust systems and related systems.
 - .4 Heat recovery systems.
 - .3 Fire and life safety systems:
 - .1 Special fire suppression systems identified herein:
 - .2 Wet pipe sprinkler systems.
 - .3 Fire extinguishers.
 - .4 IAQ environmental control systems:
 - .1 Indoor air quality (IAQ) in areas listed herein:
 - .1 All area of work.
 - .2 Adjacent corridor, parking garage and offices
 - .2 Environmental control systems in areas listed herein:
 - .1 temporary wall.
- .3 Commission electrical systems and equipment:
 - .1 High voltage:
 - .1 High voltage switch gear and transformation equipment.
 - .2 High voltage distribution systems.
 - .2 Low voltage below 750 V:
 - .1 Low voltage equipment.
 - .2 Low voltage distribution systems.
 - .3 Central clock systems.
 - .4 Voice communications systems.
 - .5 Electronic data and communications information systems.
 - .3 Lighting systems:
 - .1 Lighting equipment.
 - .2 Distribution systems.
 - .3 Emergency lighting systems, including battery packs.
 - .4 Fire exit emergency signage.
 - .4 Fire alarm systems, equipment:
 - .1 Annunciators.
 - .2 Control panels.
 - .3 Fire alarm battery banks.

1.9 DELIVERABLES RELATING TO O&M PERSPECTIVES

- .1 General requirements:
 - .1 Compile English and French documentation.
 - .2 Documentation to be computer-compatible format ready for inputting for data management.
- .2 Provide deliverables:
 - .1 Warranties.
 - .2 Project record documentation.
 - .3 Inventory of spare parts, special tools and maintenance materials.
 - .4 WHMIS information.
 - .5 MSDS data sheets.

1.10 DELIVERABLES RELATING TO THE CX PROCESS

- .1 General:
 - .1 Cx requirements, conditions for acceptance and specifications form part of relevant technical sections of these specifications.
- .2 Definitions:
 - .1 Cx as used in this section includes:
 - .1 Cx of components, equipment, systems, subsystems, and integrated systems.
 - .2 Factory inspections and performance verification tests.
- .3 Deliverables: provide:
 - .1 Cx Specifications.
 - .2 Completed installation checklists (ICL).
 - .3 Completed product information (PI) report forms.
 - .4 Completed performance verification (PV) report forms.
 - .5 Results of Performance Verification Tests and Inspections.
 - .6 Description of Cx activities and documentation.
 - .7 Tests performed by Owner/User .
 - .8 Training Plans.
 - .9 Cx Reports.
 - .10 Prescribed activities during warranty period.
- .4 Departmental Representative to witness and certify tests and reports of results provided to Departmental Representative.
- .5 Departmental Representative to participate.

1.11 PRE-CX ACTIVITIES AND RELATED DOCUMENTATION

- .1 Items listed in this Cx Plan include the following:
 - .1 Departmental Representative to use approved check lists.
 - .2 Include completed documentation with Cx report.
 - .3 Include completed documentation in Cx report.

1.12 CX ACTIVITIES AND RELATED DOCUMENTATION

- .1 Perform Cx by specified Cx agency using procedures developed by Departmental Representative and approved by Departmental Representative.
- .2 Departmental Representative to monitor Cx activities.
- .3 Upon satisfactory completion, Cx agency performing tests to prepare Cx Report using approved PV forms.
- .4 Departmental Representative to witness, certify reported results of, Cx activities.
- .5 Departmental Representative reserves right to verify a percentage of reported results at no cost to contract.

1.13 DELIVERABLES RELATING TO ADMINISTRATION OF CX

- .1 General:

- .1 Because of risk assessment, complete Cx of occupancy, weather and seasonal-sensitive equipment and systems in these areas before building is occupied.

1.14 CX SCHEDULES

- .1 Prepare detailed Cx Schedule and submit to Departmental Representative for review and approval same time as project Construction Schedule. Include:
 - .1 Milestones, testing, documentation, training and Cx activities of components, equipment, subsystems, systems and integrated systems, including:
 - .1 Design criteria, design intents.
 - .2 Cx agents' credentials.
 - .3 Cx procedures.
 - .4 Cx Report format.
 - .5 Implementation of training plans.
 - .6 Cx reports: immediately upon successful completion of Cx.
 - .2 Detailed training schedule to demonstrate no conflicts with testing, completion of project and hand-over to Property Manager.
- .2 After approval, incorporate Cx Schedule into Construction Schedule.
- .3 Consultant, Contractor, Contractor's Cx agent, and Departmental Representative will monitor progress of Cx against this schedule.

1.15 CX REPORTS

- .1 Submit reports of tests, witnessed and certified by Departmental Representative.
- .2 Include completed and certified PV reports in properly formatted Cx Reports.
- .3 Before reports are accepted, reported results to be subject to verification by Departmental Representative.

1.16 ACTIVITIES DURING WARRANTY PERIOD

- .1 Cx activities must be completed before issuance of Interim Certificate, it is anticipated that certain Cx activities may be necessary during Warranty Period.

1.17 TESTS TO BE PERFORMED BY OWNER/USER

- .1 None is anticipated on this project.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION