1.1 DESCRIPTION OF WORK

.1 In general work of this contract consists of construction of a new single level on grade pre-engineering metal building of some 195 m^2 floor area including related site, site services and other work. The building is an open warehouse. The building and its services are specified herein at a performance level. The contractor shall provide detail design, and construction ready drawings and specifications for architectural, structural, mechanical and electrical disciplines to the Departmental Representative's satisfaction sealed by professional licensed Architects and Engineers. The site and site services are designed completely in this specification and drawings.

.2 The site of work is located at Wabush Airport in the province of Newfoundland and Labrador on an active airport, airside.

1.2 SITE FAMILIARIZATION

.1 Before submitting a bid, it is recommended that bidders visit the site to review and verify the form, nature and extent of the work, materials needed, the means of access and temporary facilities required to perform the work.

.2 Contact and obtain permission from the Departmental Representative before carrying out such site visit.

1.3 WORK SCHEDULE

.1 Submit within 7 calendar days after contract award, a construction schedule showing commencement and completion of all work within the time stated in the accepted bid.

.2 Provide sufficient details in Schedule to clearly illustrate the entire implementation plan to achieve completion of the work on time and to monitor efficient use of resources and

the progress of work in relation to established milestones.

.3 Work Schedule shall include:
.1 Bar (Gantt) Chart indicating all work activities, their anticipated duration and planned dates for achieving major milestones and;
.2 Written narrative for key elements of work providing sufficient information to demonstrate a reasonable implementation plan.

.4 Schedule work in cooperation with and to the approval of the Departmental Representative.

.5 Submit updates when requested by Departmental Representative.

1.4 WORK RESTRICTIONS

.1 The work will take place on an active airport on the airside. Refer to section 01 35 13 – Special Procedures for Airport Facilities.

1.5 CODES AND STANDARDS

.1 Perform work in accordance with the National Building Code of Canada (latest edition)and any other code of provincial or local application, including all amendments up to the bid closing date, provided that in any case of conflict or discrepancy the more stringent requirement shall apply.

.2 Perform electrical work in accordance with CSA C22.1-2006. Use only licensed electricians to carry out such work.

.3 Materials and workmanship must meet or exceed requirements of specified standards, codes and referenced documents.

1.6 INTERPRETATION OF DOCUMENTS

.1 Supplementary to the General Conditions of the Contract, the Division 01 sections take precedence over the technical specification

sections in other Divisions of the Specification Manual.

1.7 TERM ENGINEER .1 Unless specifically stated otherwise, the term Engineer where used in the Specifications and on the Drawings shall mean the Departmental Representative and vice versa, as defined in the General Conditions of the Contract.

1.8 DOCUMENTS REQUIRED .1 Maintain at job site, one copy each of the following:
.1 Contract Drawings and Specifications
.2 Work Schedule
.3 Health and Safety Plan and other safety documents related to the Work.
.4 Shop Drawings.
.5 Change Orders
.6 Field test reports.
.7 Reports received from various inspection authorities.

1.9 PERMITS .1 Obtain and pay for building permit, compliance certificates, licenses and other applicable permits as required by municipal, provincial and federal authorities to perform the Work.

.2 Provide appropriate notifications of project to provincial and other authorities having jurisdiction.

.3 Upon request, submit copy of applications made and permits received to Departmental Representative.

1.10 PROJECT MEETINGS .1 Project meeting will be held at least monthly during the course of the work.

.2 Arrange project meetings and assume responsibility for setting times and recording minutes.

.3 Have Superintendent and subcontractors in attendance.

1.11 SETTING OUT WORK

.1 Assume full responsibility for and execute complete layout of work.

.2 Execute work with least possible interference or disturbance to Facility operations, occupants and the Public.

.3 Provide barricades, barriers and warning signs around work areas and adjacent to areas in use by Facility occupants and the Public. Provide temporary site fencing to maintain existing level of security. Fence work areas and access routes to isolate and secure from airside. Provide warning and navigation lights to transport Canada requirements.
.1 Signage to be professionally made with bilingual message or use internationally recognized graphic symbols.

.4 Do not block fire exits and emergency escape routes. Ensure free egress from buildings at all times during the work.

.5 Follow Departmental Representative's directives in meeting above requirements.

1.12 WORK ACCESS

.1 Use only designated roads, walkways, site areas designated by Departmental Representative to gain access to work areas.

.2 Restrict movement of workers to immediate work areas.

1.13 TEMPORARY FACILITIES

.1 Provide water and power supply for construction and pay cost.
.1 Be responsible for transporting such services to work areas.

.2 Store materials off site.

.3 Enclose work areas and site to the requirements of section 01 35 13 - Special

Procedures for Airport Facilities, Provide bilingual construction warning signs at prominent locations. All signage to be professionally made.

.4 Enclosed work site including access route with 1.8 m high galvanized steel purpose made construction fencing. Provide lockable truck gates. Extended to a point to connect to ground side and tie to air/ground divider security fence to carefully isolate work areas from airport airside. Provide navigation lights on fence to NAV Canada/transport Canada Standards. Fence and lights to be fixed to site to withstand winds, snow and jet blast.

.5 Provide sanitary facilities for work force in accordance with governing regulations and ordinances. Keep in sanitary conditions at all times.

1.14 HEATING AND VENTILATION

.1 Provide and pay for temporary heating, and ventilation during the entire course of work. Maintaining temperature at 15°C – 20°C.

.2 Provide suitable equipment and ventilate work areas as required to:
.1 Facilitate progress of work.
.2 Provide adequate ventilation to meet health regulations for safe working environment.
.3 Prevent accumulations of dust, fumes, mists, vapours or gases within building.
.4 Prevent harmful accumulation of hazardous substances into atmosphere.
.5 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.3 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.4 Maintain strict supervision of operation of temporary ventilating and heating equipment to:
.1 Conform with applicable codes and standards.
.2 Enforce safe practices.
.3 Prevent abuse of existing services provided by Departmental Representative.

1.15 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.

.3 Do not cut, bore, or sleeve load-bearing members.

.4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

.5 Fit work airtight to pipes, sleeves, ducts, conduits and other services penetrating new or existing condition.

1.16 EXISTING SERVICES

.1 Before commencing work, investigate and establish location and extent of concealed and buried service lines in area of work. Notify Departmental Representative of findings.

.2 Where work involves breaking into, connecting or shutting down of existing services, obtain approval beforehand from Departmental Representative. Schedule and carryout work at time as directed by Departmental Representative with minimum of disturbance to Facility and site operations. Adhere to approved schedule and provide notice to affected parties.

.3 Comply with electrical safety requirements

specified in Section 01 35 26.

.4 Protect, relocate or maintain existing active services as required. Where inactive services are encountered, cap off in manner approved by authority having jurisdiction over service. Record location of maintained, rerouted and abandoned service lines.

1.17 MATERIALS

.1 Use new material and equipment unless otherwise specified.

.2 Select and use products, adhesives and sealants which have:
.1 No or very low off-gassing levels.
.2 No or very little VOC content.
.3 Are least noxious and emit smallest amount of fumes, gases and strong odours during their cure period.
.4 Minimal chemical, physical or biological elements or agents in their composition which adversely affect human health and welfare or which degrades the environment.

.3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.

.4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

.5 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
.1 Name and Address of manufacturer.
.2 Trade Name, model and catalogue number.
.3 Performance, descriptive and test data indicating compliance with specified requirements.
.4 Manufacturer's installation or application instructions.

.5 Evidence of arrangements to procure.
.6 Evidence of manufacturer delivery problems or unforeseen delays.

.6 Obtain manufacturer's printed installation instructions and comply by such directives for installation of materials.

.7 Notify Departmental Representative in writing of any conflict between Specifications and manufacturer's instructions, so that Departmental Representative will designate which document is to be followed.

.8 Deliver, store and protect materials on site against theft, vandalism, soiling and climatic damage. Provide additional suitable cover beyond manufacturer's packaging where required.

.9 Touch-up factory finishes damaged by the Work. Use touch-up materials to match original. Do not paint over name plates.

1.18 FASTENERS

.1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur unless indicated otherwise. Prevent electrolytic action between dissimilar metals.

.2 Use non-corrosive heavy duty fasteners, anchors and spacers for all fastening conditions. Space fasteners within limits of load bearing or shear capacity. Ensure positive permanent anchorage.

1.19 HAZARDOUS MATERIALS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling and storage, and disposal of hazardous materials.

.2 Do not leave and store flammable and hazardous materials on site. Remove of site at end of

each work shift.

.3 Keep MSDS data sheets for all products brought on site. Provide copy to Departmental Representative.

.4 Asbestos Discovery: Demolition of spray or trowel-applied asbestos can be hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of work, immediately stop work and notify Departmental Representative. Do not proceed with relevant work until written instructions have been received from Departmental Representative.

1.20 ENVIRONMENTAL PROTECTION

.1 Have appropriate emergency spill response equipment and rapid clean-up kit on site. Provide personal protective equipment required for clean-up.

.2 Report all spills of petroleum, hazardous materials and accidents having potential of polluting the environment to Federal and Provincial Department of the Environment and to the Departmental Representative.

.3 Do not pump water containing suspended materials into sewer or drainage systems. Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with governing regulations and requirements.

.4 Do not dump hazardous materials and polluted water containing suspended hazardous products into sewers and drainage systems. Dispose in accordance with federal and provincial environmental regulations and recommended procedures.

.5 Fires and burning of waste and rubbish on site

is prohibited.

1.21 INSPECTION AND TESTING

.1 Give timely notice requesting inspection of work designated for inspections, special tests or approvals by Departmental Representative or by inspection authorities having jurisdiction.

.2 In accordance with the General Conditions, Departmental Representative may order any part of work to be examined if work is suspected to be not in accordance with Contract Documents.

.3 Rejected Work: removal and replace defective work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.

.4 Tests on materials and equipment, is the responsibility of the Contractor except where specified otherwise.
.1 Provide all necessary instruments, equipment and qualified personnel to perform tests.
.2 At completion of tests, turn over two sets of fully documented tests reports to the Departmental Representative.

.5 Unspecified tests may also be made by Departmental Representative. The costs of these tests will be paid for by the Departmental Representative.

.6 Where tests or inspection reveal work not in accordance with the Contract, the Contractor shall bear the cost of additional tests and inspections incurred by Departmental Representative as required to verify the acceptability of corrected work.

.7 If Contractor covers or permits to be covered work designated for special tests,

inspections or approvals before such is made, uncover work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to proceed. Pay costs to uncover and make good such work.

1.22 CLEANING

.1 As work progresses, maintain work areas and site in a tidy, clean and dust free condition at all times.

.2 Pick up debris immediately. Sweep work site regularly. Inspect site regularly and pick up all loose materials regardless of size. Large or very small debris if ingested into aircraft engines may have serious consequences.

.3 Provide on-site covered, locked steel dumpster containers for placement of waste and debris. Loose and scattered waste, debris and materials will not be allowed on site.

.4 Remove and dispose of waste and debris off site at end of each workday.

.5 Clean interior of building used by workers and dirtied by work.
.1 Wash walls, floors and other surfaces as needed.

.6 At project completion, conduct final cleaning of areas affected by work.
.1 Remove dust and dirt from all surfaces with recommended cleaning agents.
.2 Wash and polish finish surfaces.
.3 Wash clean pavements, rake clean grassed areas used.

.7 Use competent persons experienced in commercial cleaning operations.

.8 Meager attempt at controlling dust and ineffective cleaning will not be tolerated.
.1 Failure to provide effective dust

control and/or perform proper cleaning by the Contractor will result in the Departmental Representative to proceed and obtain an independent commercial cleaning agency to perform all required cleaning to the satisfaction of the Facility tenant for which the costs will be charged to the Contractor in the form of a financial assessment against the Contract.

1.23 WASTE MANAGEMENT

.1 Dispose of waste, debris and product packaging in accordance with municipal and provincial laws and regulations.

.2 Plan work to minimize waste, maximize reuse and recycling of materials and to divert the greatest amount of waste from being disposed into landfill sites.

.3 Separate waste, debris, leftover material, redundant equipment and product packaging at source, place into pre-planned waste categories during the course of the work and send to recycling facilities to maximum extent possible.

.4 Store, handle and dispose of hazardous waste in accordance with applicable federal, provincial and municipal laws, regulations, codes and guidelines.

.5 Upon request, submit written list of items salvaged and sent to recycling facility

1.24 COST BREAKDOWN

.1 Before submitting first progress claim, submit a breakdown of the contract price in format and detail as directed by Departmental Representative.

1.25 ACCEPTANCE

.1 Notify Departmental Representative in writing when work is complete and ready for final inspection.

.1 Make a check of all work and correct all

discrepancies, defects and outstanding work before sending notification.

.2 Accompany Departmental Representative during final inspection.

.3 Rectify all defects, faults and outstanding items identified by Departmental Representative during inspection.

1.1 SUBMITTALS

.1 Upon acceptance of bid and prior to commencement of work, submit to Departmental Representative the following work management documents:
.1 Work Schedule as specified herein.
.2 Shop Drawing Submittal Schedule specified in section 01 33 00.
.3 Waste Management Plan specified in section 01 74 21.
.4 Environmental Plan specified in section 01 35 43.
.5 Health and Safety Plan specified in section 01 35 30.
.6 Hot Work Procedures specified in section 01 35 24.
.7 Lockout Procedures specified in section 01 35 25.
.8 Dust Control Plan specified in section 01 50 00.
.9 List of workers requiring security clearance and those to be placed on Site Security Control list as specified in section 01 35 54.

1.2 WORK SCHEDULE

.1 Upon acceptance of bid submit:
.1 Work schedule within 7 calendar days of contract award.

.2 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted bid.

.3 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.

.4 Work schedule content to include as a minimum the following:
.1 Bar (GANTT) Charts, indicating all work

activities, tasks and other project elements, their anticipated durations, planned dates for achieving key activities and major project milestones supported with;
.2 Written narrative on key elements of work illustrated in bar chart, providing sufficient details to demonstrate a reasonable implementation plan for completion of project within designated time.
.3 Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.

1.5 PROJECT MEETINGS .1 Schedule and administer project meetings, held on a minimum monthly basis, for entire duration of work and more often when directed by Departmental Representative as deemed necessary due to progress of work or particular situation.

.2 Prepare agenda for meetings.

.3 Notify participants in writing 4 days in advance of meeting date.
.1 Ensure attendance of all subcontractors.
.2 Departmental Representative will provide list of other attendees to be notified.

.4 Hold meetings at project site or where approved by Departmental Representative.

.5 Preside at meetings and record minutes.
.1 Indicate significant proceedings and decisions. Identify action items by parties.
.2 Distribute to participants by mail or by facsimile within 3 calendar days after each meeting.
.3 Make revisions as directed by Departmental Representative.
.4 Departmental Representative will advise whether submission of minutes by Email is acceptable. Decision will be based on

compatibility of software among participants.

1.6 WORK COORDINATION

.1 The General Contractor is responsible for coordinating the work of the various trades and predetermining where the work of such trades interfaces with each other.

.1 Designate one person from own employ having overall responsibility to review contract documents and shop drawings, plan and manage such coordination.

.2 The General Contractor shall convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required.

.1 Provide each trade with the plans and specs of the interfacing trade, as required, to assist them in planning and carrying out their respective work.

.2 Develop coordination drawings when deemed required illustrating potential interference between work of various trades and distribute to all affected parties including structural trade.

.1 Pay particularly close attention to overhead work above ceilings and within or near to building structural elements.

.2 Coordination drawings to identify all building elements, services lines, rough-in points and indicate from where various services are coming.

.3 Review coordination drawings at purposely called meetings. Have subcontractors sign-off on drawings and publish minutes of each meeting.

.4 Plan and coordinate work in such a way to minimize quantity of service line offsets.

.5 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes.

.3 Submission of shop drawings and ordering of prefabricated equipment or prebuilt components shall only occur once coordination meeting for such items has taken place between trades and all conditions affecting the work of the interfacing trades has been made known and accounted for.

.4 Work Cooperation:
.1 Ensure cooperation between trades in order to facilitate the general progress of the work and avoid situations of spatial interference.
.2 Ensure that each trade provides all other trades reasonable opportunity for the completion of the work and in such a way as to prevent unnecessary delays, cutting, patching and the need to remove and replace completed work.

.5 No extra costs to the Contract will be considered by the Departmental Representative as a result of Contractor's failure to effectively coordinate all portions of the Work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor to be resolved at own cost.

1.1 SUBMITTAL GENERAL REQUIREMENTS

.1 Submit shop drawings, product data, samples and other items specified for review by Departmental Representative.

.2 Submit sufficient copies for own use plus 3 copies which will be kept by Departmental Representative.
.1 Include additional copies for insertion into the O & M manuals specified in section 01 78 00.

.3 Accompany data with transmittal letter identifying project name, project number, Contractor's name and address, supplier name, description of items and quantity of drawings/data being submitted.

.4 Allow 14 calendar days for review of shop drawings by Departmental Representative.

.5 Do not proceed with work applicable to shop drawing item until relevant submission has been reviewed by Departmental Representative.

.6 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.

.7 Present data, dimensions and engineering values in SI Metric units.

.8 Review submittals prior to submission. Ensure that all requirements have been addressed, field dimensions and data have been taken and submittal has been checked and coordinated with work of contract documents.

.9 Stamp and sign each item of submittal

certifying contractor's review and verification of submitted data.

.10 Submittals not stamped and signed will be returned unexamined by Departmental Representative and considered rejected.

1.2 SHOP DRAWINGS

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

.2 Shop Drawings Content:
.1 Indicate materials, methods of construction, attachment, connections, explanatory notes and other information necessary for completion of work. Where items attach or connect to other items, confirm that all interrelated work has been coordinated, regardless of section or trade from which the adjacent work is being supplied and installed.
.2 Supplement manufacturer's standard drawings and literature with additional information to provide details applicable to project.

.3 Shop Drawings Format:
.1 Opaque white prints or photocopies of original drawings or standard drawings modified to clearly illustrate work specific to project requirements. Maximum sheet size to be 1000 x 707 mm.
.2 Product data from manufacturer's standard catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products, to be original full colour brochures, clearly marked indicating applicable data and deleting information not applicable to project.
.3 Non or poorly legible drawings, photocopies or facsimiles will not be

accepted and returned not reviewed.

.4 Delete information not applicable to project on all submittals.

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

.6 After Departmental Representative's review, distribute copies.

.7 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept. This review shall not mean that Canada approves the detail design inherent in the 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 all requirements of the construction and Contract Documents. 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 all sub-trades.

1.3 SAMPLES

.1 Submit samples for items specified in trade sections. Label with origin and intended use.

.2 Deliver samples to Departmental Representative's office. Do not drop off samples at construction site except for special circumstances pre-approved by Departmental Representative.

.3 Notify Departmental Representative in

writing, at time of submission of deviations in samples from requirements of Contract Documents.

1.4 DESIGN DOCUMENTS .1 Provide detail design, construction drawings and specifications to be Departmental Representative sealed by licensed Architects and Engineers for all work performed under the performance specified aspects of the project, including all architectural, structural, mechanical and electrical disciplines.

PART 1 GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Movement of equipment and other special procedures that must be considered when construction is being carried out while the airport facility is in use.

1.2 GENERAL PROTECTION

.1 Do not disrupt airport business except as permitted by Departmental Representative.

.2 Provide temporary protection for safe handling of public, personnel, pedestrians and vehicular traffic: to Section 01 10 10 - General Instructions.

.3 Provide barricades and lights where directed and where indicated and as required by NAV Canada and transport Canada.

1.3 MOVEMENT OF EQUIPMENT AND PERSONNEL

.1 In areas of airport not closed to aircraft traffic:

.1 Obtain Departmental Representative's approval on scheduling of Work.

.2 Control movements of equipment and personnel as directed by Departmental Representative.

.3 Provide qualified field personnel at locations designated by Departmental Representative to relay signals from airport traffic control tower to equipment and personnel wishing to cross live traffic areas.

.4 Obey signals from airport traffic control tower instantly.

1.4 UNSERVICEABLE AREAS

.1 Mark off areas made unserviceable for aircraft by Work of this Contract by providing plainly visible danger markings by day and red lights by night.

.2 Open flames and inflammable fuels are not permitted.

.3 Park equipment not in use and stockpile materials so that stockpile tops are below 50 to 1 ratio from ends of useable landing strip and below 20 to 1 ratio from sides of

aircraft traffic areas. Mark tops with red lights as directed by Departmental Representative.

1.5 TRENCHING

.1 Obtain Departmental Representative's written permission to undertake trenching on pavements open to aircraft traffic which cannot be completed, backfilled and sealed within one working day.

1.6 AIRPORT FACILITIES

.1 Departmental Representative will stake or indicate location of underground facilities such as cables, pipes and ducts.

.2 Notify Departmental Representative of work areas sufficiently in advance of operations so that underground facilities can be located.

PART 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 EXECUTION

3.1 NOT USED

.1 Not Used.

1.1 SECTION INCLUDES

.1 Fire Safety Requirements

.2 Hot Work Permit

1.2 RELATED WORK

.1 Section 01 35 30 Health and Safety Requirements

1.3 REFERENCES

.1 Fire Protection Standards issued by Fire Protection Services, Labour Program Division of Service Canada:
.1 FCC No. 301-June 1982 Standard for Construction Operations.
.2 FCC No. 302-June 1982 Standard for Welding and Cutting.

.2 FCC standards may be viewed at:
.1 http://www.hrsdc.gc.ca/en/lp/lo/fp/standards/commissioner.shtml
.2 Fire Protection Services - Atlantic Region office, Halifax, N.S, Tel. (902) 426-6053.

1.4 DEFINITIONS

.1 Hot Work defined as:
.1 Welding work
.2 Cutting of materials by use of torch or other open flame devices
.3 Grinding with equipment which produces sparks.
.4 Use of open flame torches such as for roofing work.

1.5 SUBMITTALS

.1 Submit copy of Hot Work Procedures and sample of Hot Work permit to Departmental Representative for review, within 14 calendar days of acceptance of bid.

.2 Submit in accordance with section 01 33 00.

1.6 FIRE SAFETY REQUIREMENTS

.1 Implement and follow fire safety measures during Work. Comply with following:
.1 National Fire Code.
.2 Fire Protection Standards FCC 301 and FCC 302.
.3 Federal and Provincial Occupational Health and Safety Acts and Regulations.

.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, Departmental Representative will advise on the course of action to be followed.

1.7 HOT WORK AUTHORIZATION

.1 Obtain Departmental Representative's written "Authorization to Proceed" before conducting any form of Hot Work on site.

.2 To obtain authorization submit to Departmental Representative:
.1 Contractor's typewritten Hot Work Procedures to be followed on site as specified below.
.2 Description of the type and frequency of Hot Work required.
.3 Sample Hot Work Permit to be used.

.3 Upon review and confirmation that effective fire safety measures will be implemented and followed during performance of hot work, Departmental Representative will give authorization to proceed as follows:
.1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
.2 Subdivide the work into pre-determined, individual activities, each activity requiring a separately written authorization to proceed.

.4 Requirement for individual authorization will be based on:

.1 Nature or phasing of work;
.2 Risk to Facility operations;
.3 Quantity of various trades needing to perform hot work on project or;
.4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.

.5 Do not perform any Hot Work until receipt of Departmental Representative's written "Authorization to Proceed" for that portion of work.

1.8 HOT WORK PROCEDURES

.1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.

.2 Hot Work Procedures to include:
.1 Requirement to perform hazard assessment of site and immediate work area beforehand for each hot work event in accordance with Safety Plan specified in section 01 35 30.
.2 Use of a Hot Work Permit system with individually written permit issued by Contractor's Superintendent to specific worker or subcontractor granting permission to proceed with Hot Work.
.3 Permit required for each Hot Work event.
.4 Designation of a person on site as a Fire Safety Watcher responsible to conduct a fire safety watch for a minimum duration of 360 minutes immediately following the completion of the Hot Work.
.5 Compliance with fire safety codes, standards and occupational health and safety regulations specified.
.6 Site specific rules and procedures in force at the site as provided by the Facility Manager.

.3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project

conditions. Label document as being the Hot Work Procedures for this contract.

.4 Procedures shall clearly establish responsibilities of:
.1 Worker performing hot work,
.2 Person issuing the Hot Work Permit,
.3 Fire Safety Watcher,
.4 Subcontractor(s) and Contractor.

.5 Brief all workers and subcontractors on Hot Work Procedures and of Permit system. Stringently enforce compliance.

.6 Failure to comply with fire safety procedures may result in the issue of a Non-Compliance notification.

1.9 HOT WORK PERMIT

.1 Hot Work Permit to include the following:

.1 Project name and project number;
.2 Building name and specific room or area where hot work will be performed;
.3 Date of issue;
.4 Description of hot work type needed;
.5 Special precautions to be followed, including type of fire extinguisher needed;
.6 Name and signature of permit issuer.
.7 Name of worker to which the permit is issued.
.8 Permit validity period not to exceed 8 hours. Indicate start time/date and termination time/date.
.9 Worker's signature with time/date of hot work completion.
.10 Stipulated time period of safety watch.
.11 Fire Safety Wather's signature with time/date.

.2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.

.3 Each Hot Work Permit to be completed in full,

signed and returned to Contractor's Superintendent for safe keeping on site.

1.10 FIRE PROTECTION AND ALARM SYSTEMS

.1 Fire protection and alarm systems shall not be:
.1 Obstructed.
.2 Shut-off, unless approved by Departmental Representative.
.3 Left inactive at the end of a working day or shift.

.2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

.3 Costs incurred, from the fire department, Facility owner and tenants, resulting from negligently setting off false alarms will be charged to the Contractor in the form of financial progress payment reductions and holdback assessments against the Contract.

1.11 DOCUMENTS ON SITE

.1 Keep Hot Work Permits and Hazard assessment documentation on site for duration of Work.

.2 Upon request, make available to Departmental Representative or to authorized safety Representative for inspection.

1.1 SECTION INCLUDES

.1 Procedures to isolate and lockout electrical facility and other equipment from energy sources.

1.2 RELATED WORK

.1 Section 01 35 30: Health and Safety

1.3 REFERENCES

.1 CSA C22.1-06 - Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.

.2 CAN/CSA C22.3 No.1-06 - Overhead Systems.

.3 CSA C22.3 No.7-06 - 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 has been 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 Comply with the following in regards to isolation and lockout of electrical facilities and equipment:
.1 Canadian Electrical Code
.2 Federal and Provincial Occupational Health and Safety Acts and Regulations.
.3 Regulations and code of practice 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, Departmental Representative will advise on the course of action to be followed.

1.6 SUBMITTALS

.1 Submit copy of proposed lockout procedures and sample of lockout permit or lockout tags to Departmental Representative for review, within 14 calendar days of acceptance of bid.

.2 Submit in accordance with section 01 33 00.

1.7 ISOLATION OF EXISTING SERVICES

.1 Obtain Departmental Representative's written authorization prior to working on existing live or active electrical facilities and equipment and before proceeding with isolation of such item.

.2 To obtain authorization, submit to Departmental Representative the following documentation:
.1 Written request to isolate the particular service or facility and;
.2 Copy of Contractor's Lockout Procedures.

.3 Make a Request for Isolation for each event, unless directed otherwise by Departmental Representative, as follows:
.1 Fill-out standard form in current use at the Facility as provided by Departmental Representative or;
.2 Where no form exist, make written request indicating:
.1 The equipment, system or service to be isolated and its location;
.2 Duration of isolation period (ie: start time & date and completion time & date).
.3 Voltage of service feed to system or equipment being isolated.
.4 Name of person making the request.

.4 Do not proceed with isolation until receipt of written notification from Departmental Representative granting the Isolation Request and authorization to proceed with the work.
.1 Note that Departmental Representative may designate another person at the Facility being authorized to grant the Isolation Request.

.5 Conduct safe, orderly shutdown of equipment

or facility. De-energize, isolate and lockout power and other sources of energy feeding the equipment or facility.

.6 Determine in advance, as much as possible, in cooperation with the Departmental Representative, the type and frequency of situations which will require isolation of existing services.

.7 Plan and schedule shut down of existing services in consultation with the Departmental Representative and the Facility Manager. Minimize impact and downtime of Facility operations. Follow Departmental Representative's directives in this regard.

.8 Conduct hazard assessment as part of the process in accordance with health and safety requirements specified Section 01 35 30.

1.8 LOCKOUTS

.1 De-energize, isolate and lockout electrical facility, mechanical equipment and machinery from all potential sources of energy prior to working on such items.

.2 Develop and implement clear and specific lockout procedures to be followed as part of the Work.

.3 Prepare typed written Lockout Procedures describing safe work practices, procedures, worker responsibilities and sequence of activities to be followed on site by workforce to safely isolate an active piece of equipment or electrical facility and effectively lockout and tagout it's sources of energy.

.4 Include as part of the Lockout Procedures a system of lockout permits managed by Contractor's Superintendent or other qualified person designated by him/her as being "in-charge" at the site.
.1 A lockout permit shall be issued to specific worker providing a Guarantee of

Isolation before each event when work must be performed on a live equipment or electrical facility.

.2 Duties of person managing the permit system to include:

.1 Issuance of permits and lockout tags to workers.

.2 Determining permit duration.

.3 Maintaining record of permits and tags issued.

.4 Making a Request for Isolation to Departmental Representative when required as specified above.

.5 Designating a Safety Watcher, when one is required based on type of work.

.6 Ensuring equipment or facility has been properly isolated.

.7 Collecting and safekeeping lockout tags returned by workers as a record of the event.

.5 Clearly establish, describe and allocate responsibilities of:

.1 Workers.

.2 Person managing the lockout permit system.

.3 Safety Watcher.

.4 Subcontractor(s) and General Contractor.

.6 Generic procedures, if used, must be edited and supplemented with pertinent information to reflect specific project requirements.

.1 Incorporate site specific rules and procedures in force at site as provided by Facility Manager through the Departmental Representative.

.2 Clearly label the document as being the Lockout procedures applicable to work of this contract.

.7 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.

.8 Use industry standard lockout tags.

.9 Provide appropriate safety grounding and guards as required.

1.9 CONFORMANCE

.1 Brief all workers and subcontractors on requirements of this section. Stringently enforce use and compliance.

.2 Failure to follow lockouts procedures specified herein may result in the issuance of a Non-Compliance notification as specified in section 01 35 30.

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 forms and lockout permits and tags issued to workers on site for full duration of Work.

.3 Upon request, make available to Departmental Representative or to authorized safety Representative for inspection.

1.1 ELECTRICAL SAFETY

.1 Ensure electrical power and other source of energy to equipment and electrical facilities are effectively disconnected and locked out before proceeding with work on such items.

.2 Locate power source, isolate and lockout service feed and provide a guarantee of isolation to worker(s) before commencing any electrical work.
.1 Conduct hazard assessment as part of process.

.3 Develop and implement lockout procedures, complete with the use of lockout tags, to be followed on site to ensure that electrical power and other sources of energy are effectively disconnected and locked out in accordance with Canadian Electrical Code and Provincial and Federal health and safety regulations.
.1 Contractor's Superintendent shall issue and control the distribution of lockout tags to workers for each lockout event.

.4 Submit Contractor's written lockout procedures and sample of lockout tag to be used on project to Departmental Representative.

.5 Obtain Departmental Representative's approval before disconnecting existing services to ensure minimum disruption to Facility operations.

1.2 FIRE SAFETY

.1 Abide by National Fire Code of Canada and fire protections standards FCC 301 and FCC 302 published by Fire Protection Services, Labour Program Division of Service Canada.

.2 FCC standards may be viewed at the following web site:
.1 http://www.hrsdc.gc.ca/en/lp/lo/fp/standards/commissioner.shtml

.3 Obtain approval from Departmental Representative before conducting Hot Work inside or adjacent to building.

.4 Hot Work defined as:
.1 Welding
.2 Use of torch or other open flamed device
.3 Grinding with equipment which produces sparks

.5 Approval will be given upon receipt and confirmation that the following procedures shall be carried out by the Contractor:
.1 Hazard assessment for each hot work event and location.
.2 Fire safety procedures and work practices will be implemented and stringently followed for each event.
.3 Use of a hot work permit system, issued by Contractor's Superintendent to worker conducting the hot work.
.4 Fire watch by a designated person for a minimum of 1 hour immediately upon completion of the hot work.

.6 Submit Contractor's written fire safety procedures and practices to be used on project to Departmental Representative.

1.3 FIRE PROTECTION AND ALARM SYSTEMS

.1 Fire protection and alarm systems shall not be:
.1 Obstructed.
.2 Shut-off, unless approved by Departmental Representative.
.3 Left inactive at the end of a working day or shift.

.2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

.3 Any costs incurred from the fire department and charged to the Facility owner resulting from negligently setting off false alarms will be transferred to the Contractor in the form of financial holdback assessment against

the Contract.

1.4 DOCUMENTS ON SITE

.1 Keep copy of Lockout tags, Hot Work Permits and Hazard assessment documentation on site for duration of Work.

.2 Upon request, make available to Departmental Representative or to authorized safety Representative for inspection.

1.1 RELATED WORK

.1 Section 01 35 26: Electrical and fire safety requirements.

1.2 COMPLIANCE REQUIREMENTS

.1 Comply with the Occupational Health and Safety Act for the Province of Newfoundland & Labrador and the Regulations made pursuant to that Act.

.2 Comply with Canada Labour Code Part II, and the Canada Occupational Safety and Health Regulations made under Part II of the Canada Labour Code.

.3 Observe and enforce construction safety measures required by:
.1 National Building Code of Canada;
.2 Provincial Worker's Compensation Board;
.3 Municipal statutes and ordinances.

.4 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, Departmental Representative will advise on the course of action to be followed.

.5 Maintain Workers Compensation Coverage for duration of Contract.

1.3 SITE SAFETY

.1 Be responsible for health and safety of persons on site, of property and for protection of persons and the general public circulating adjacent to work areas to extent that they may be affected by conduct of Work.

.2 Designate one person from own workforce as site Safety Officer to be on site at all times and be responsible for health and safety of the work site. Provide name to Departmental Representative.

.3 Assign responsibility, obligation and

authority to Safety Officer to stop work as deemed necessary for reasons of health and safety.

.4 Conduct safety inspections of the work and tool box safety meetings with workers on a regular basis.

.5 Control access to work areas and grant entry only to workers and authorized persons.
.1 Brief all persons of site hazards, safety rules and personal protective equipment (PPE) to be dorned on site before entry is permitted.
.2 Enforce compliance of site safety rules by all persons granted access.

1.4 HAZARD ASSESSMENTS

.1 Perform health and safety hazard assessments as integral part of the work. Conduct:
.1 Before commencement of work and;
.2 On an on-going process during entire course of the work.

.2 Identify risks and hazards resulting from site conditions, weather conditions and work operations.

.3 Record results in Health and Safety Plan.

1.5 HEALTH AND SAFETY PLAN

.1 Develop written site-specific Project Health and Safety Plan, based on hazard assessments, prior to commencement of the work.
.1 Submit Plan to Departmental Representative for review within 7 calendar days after of Contract Award.

.2 Plan shall contain three (3) parts as follows:
.1 Part 1: health risks and safety hazards identified by hazard assessments.
.2 Part 2: safety measures to prevent or mitigate identified risks and hazards.
.3 Part 3: emergency procedures and communications response to be followed for all incidents and accidents, including names

and telephone numbers of persons to contact.

.3 Coordinate Plan with the Facility's Emergency Response and Evacuation Plan. Departmental Representative will provide pertinent data, including contact names of PWGSC and Facility management.

.4 Post Plan on site. Enforce compliance by all workers.

.5 As work progresses, revise Plan to reflect additional health risks and safety hazards identified by hazard assessments.

.6 Submission of the Health and Safety Plan, and updates, to the Departmental Representative is for review and information purposes only. Departmental Representative's receipt, review and any comments made of the Plan shall not be construed to imply approval in part or in whole of such Plan by Departmental Representative and shall not be interpreted as a warranty of being complete and accurate or as a confirmation that all health and safety requirements of the Work have been addressed and that it is legislative compliant. Furthermore, Departmental Representative's review of the Plan shall not relieve the Contractor of any of his legal obligations for Occupational Health and Safety provisions specified as part of the Work and those required by provincial legislation.

1.6 ACCIDENT REPORTING

.1 Report all incidents and accidents to authorities having jurisdiction and to Departmental Representative.

1.7 SITE RECORDS

.1 Maintain on site a copy of all health and safety documentation specified to be produced

as part of the work and received from authorities having jurisdiction.

1.1 RELATED WORK

.1 Waste Management and Disposal: Section 01 74 21.

1.2 DEFINITIONS

.1 Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment.

1.3 FIRES

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

1.4 HAZARDOUS MATERIAL HANDLING

.1 Store and handle hazardous materials in accordance with applicable federal and provincial laws, regulations, codes and guidelines. Store in location that will prevent spillage into the environment

.2 Label containers to WHMIS requirements and keep MSDS data sheets on site for all hazardous materials.

.3 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when storage began.

.4 Store and handle flammable and combustible materials in accordance with National Fire Code.

.5 Transport hazardous materials in accordance with federal Transportation of Dangerous Goods Regulations and applicable Provincial regulations.

1.5 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site. Dispose in accordance with project

waste management requirements.

.2 Do not dispose of hazardous waste or volatile materials, such as mineral spirits, paints, thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites.

.3 Dispose of hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.

1.6 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with governing regulations and requirements.

.4 Provide control devices such as filter fabrics, sediment traps and settling ponds to control drainage and prevent erosion of adjacent lands. Maintain in good order for duration of work.

1.7 SITE AND PLANT PROTECTION

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

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

.3 Protect roots of designated trees to drip line during excavation and site grading to prevent disturbance or damage. Avoid unnecessary

traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated or designated by Departmental Representative.

1.8 WORK ADJACENT TO WATERWAYS

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material

.3 Do not dump excavated fill, waste material or debris in waterways.

.4 At borrow sites, design and construct temporary crossings to minimize erosion to waterways in strict conformance with federal environmental regulations.

.5 Do not skid logs or construction materials across waterways.

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.7 Do not blast under water or 100 m of spawning beds.

.8 Do not refuel any type of equipment within 100 meters of a water body. Maintain equipment in good working condition with no fluid leaks, loose hoses or fittings.

1.9 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features during this contract.

.2 Control emissions from equipment and plant to local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous

materials from contaminating air beyond application area, by providing temporary enclosures.

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

.5 Have appropriate emergency spill response equipment and rapid clean-up kit on site located adjacent to hazardous materials storage area. Provide personal protective equipment required for clean-up.

.6 Report, spills of petroleum and other hazardous materials as well as accidents having potential of polluting the environment to Federal and Provincial Department of the Environment.

.1 Notify Departmental Representative and submit a written spill report to Departmental Representative within 24 hours of occurrence.

1.10 WILDLIFE PROTECTION

.1 Should nests of migratory birds in wetlands be encountered during work, immediately notify Departmental Representative for directives to be followed.

.1 Do not disturb nest site and neighboring vegetation until nesting is completed.

.2 Minimize work immediately adjacent to such areas until nesting is completed.

.3 Protect these areas by following recommendations of Canadian Wildlife Service.

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;
.2 Workers must undergo a security clearance process;
.3 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 clearances 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.

.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 or holdback assessments being levied against the Contractor and;

.2 Demand immediate removal of offending party from the site.

1.2 SECURITY CLEARANCE REQ'TS

.1 All persons employed by Contractor or by subcontractors who will be working on site must undergo the following check:
.1 Apply for PWGSC personnel security clearance screening and obtain a Reliability Status.

.2 Persons do not have security clearance, as specified above, will not be allowed to circulate freely in restricted areas of site and must be under constant escort and surveillance by security personnel.
.1 Restricted area defined as: all areas of site.

.3 Departmental Representative will advise when worker security clearance has been received and whether escort and supervision is still needed for any worker.

1.3 SECURITY CLEARANCE APPLICATION

.1 Within 1 week following notification of acceptance of bid, submit application form for all workers who require security clearance.
.1 Make application for all workers as one submission to facilitate processing and minimize delays.

.2 To obtain the PWGSC 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 worker.
.2 Contractor Declaration to Public Works & Government Services Canada (PWGSC 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.

.4 Proof of applicant's Canadian citizenship consisting of a provincial issued birth certificate, baptismal certificate, citizenship certificate or passport.

.5 Include both forms along with a clear legible photocopy of the citizenship and identity documents submitted as one complete package for each applicant.

.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 TBS/SCT # 330-23E are as follows:

.1 Part A: by PWGSC Project Manager;

.2 Part B: by applicant. Provide full name, including middle name (not simply and 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 need to be completed, requiring applicant's initials. Name of official requested here can be PWGSC Project Manager or PWGSC Regional Security Agent provided that Contractor submits the PWGSC Security Form "A" specified above.

.4 Fingerprinting will also be required if:

.1 Applicant indicates that he/she has a previous criminal conviction on Form #330-23E;

.2 Security clearance search process results in two persons with same identity and/or same name/initials, such as having the same name.

.5 Departmental Representative will provide details as to what procedures, location and time where workers must go should fingerprints are needed.

.6 Processing Time:
.1 The PWGSC departmental processing time to obtain all security clearances is estimated to be 4 weeks from date of receipt of required 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.

.7 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.

.8 Send submission(s) directly to Departmental Representative or to the approved mailing address as directed by Departmental

Representative.

.9 Persons who have not been successful in obtaining security clearance, upon documentation review by PWGSC, will not be allowed further access on site and cannot work on project any longer.

1.4 SECURITY PASSES .1 Visitor or worker ID Tags are required for all personnel requiring access on site.

.2 ID Tags will be provided by the Facility Security, issued to Contractor for distribution to authorized workers which shall also be placed on the Security Control List specified below.

.3 All persons while on site, must wear the ID Tag issued to him regardless of daytime or nighttime work.

.4 Be responsible to obtain ID Tags before work commences, including those required by subcontractors, and continually control their distribution and use by workers. Submit request for tags as early as possible prior to commencement of work.

.5 For the duration of this contract, anyone not in possession of the ID Tag will not be allowed access on site.

.6 At end of project, return to Departmental Representative all tags issued to workers and to subcontractors.
.1 The Departmental Representative will levy a financial penalty in the form of a holdback assessment against the Contract for each pass not returned regardless of the reason the pass is not returned.

.7 Immediately report any lost, stolen or destroyed ID Tags to the Departmental Representative.

1.5 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 Facility's Security Personnel, Departmental Representative or by Facility Management.

1.6 USE OF SITE AND FACILITIES

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

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

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

4. Departmental- Representative will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.

1.7 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

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

1.8 EXISTING SERVICES

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

2. Where work involves breaking into or connecting to existing services, give Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

3. Provide for pedestrian and vehicular traffic.

1.9 SPECIAL REQUIREMENT'S

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

2. Keep within limits of work and avenues of ingress and eqress.

1.10 SECURITY

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

2. Work will be done in the presence of a Commissionaire, at the cost of the contractor. Work may have to be scheduled around the schedule and availability of a Commissionaire.

1.11 Building Smoking Environment

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

1.1 INSPECTION

.1 Give timely notice requesting inspection of Work designated for special tests, inspections or approvals by Departmental Representative or by inspection authorities having jurisdiction.

.2 In accordance with the General Conditions, Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents.

.3 If Contractor covers or permits to be covered Work designated for special tests, inspections or approvals before such is made, uncover Work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to proceed.

.4 Pay costs to uncover and make good work disturbed by inspections and tests.

1.2 TESTING

.1 Tests on materials, equipment and building systems as specified in various sections of the Specifications is the responsibility of the Contractor except where stipulated otherwise.
.1 Provide all necessary instruments, equipment and qualified personnel to perform tests.

.2 At completion of tests, turn over 2 sets of fully documented tests reports to the Departmental Representative. Submit in accordance with Section 01 33 00.
.1 Obtain additional copies for inclusion of a complete set in each of the maintenance manuals specified in Section 01 78 00.

.3 Unspecified tests may also be made by Departmental Representative, at the discretion of the Departmental Representative. The costs of these tests will

be paid for by the Departmental Representative.

.4 Where tests or inspections reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests and inspections incurred by Departmental Representative as required to verify acceptability of corrected work.

1.3 INDEPENDENT INSPECTION AGENCIES

.1 Departmental Representative will engage and pay for service of Independent Inspection and Testing Agencies for purpose of inspecting and testing portions of Work except for the following which remain part of Contractor's responsibilities:

.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.

.2 Inspection and testing performed exclusively for Contractor's convenience.

.3 Testing, adjustment and balancing of mechanical and electrical equipment and other building systems.

.4 Performance verification tests before building commissioning procedures commences.

.5 Mill tests and certificates of compliance.

.6 Tests as specified within various sections designated to be carried out by Contractor under the supervision of Departmental Representative.

.7 Additional tests as specified in Clause 1.3.4 above.

.2 Provide sufficient advance notice to Departmental Representative of time when the Work will be ready for testing by designated Testing Agency in order for Departmental Representative to make attendance arrangements with such Agency. When directed by Departmental Representative notify the Agency directly.

.3 When specified or directed, submit

Representative samples of materials, in required quantities, to Testing Agency for testing purposes. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.4 Provide labour and facilities to obtain, handle and deliver samples.

.5 Provide sufficient space on site for Testing Agency's exclusive use to store equipment and cure test samples.

.6 Employment of Independent Inspection and Testing Agencies by Departmental Representative does not relax responsibility to perform Work in accordance with Contract Documents.

1.4 ACCESS TO WORK

.1 Facilitate Departmental Representative's access to Work. If part of Work is being fabricated at locations other than construction site, make preparations to allow access to such Work whenever it is in progress.

.2 Furnish labour and facility to provide access to the work being inspected and tested.

.3 Co-operate to facilitate such inspections and tests.

1.5 REJECTED WORK

.1 Remove and replace defective Work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in Work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.

.2 Make good damages to new and existing construction and finishes resulting from removal or replacement of defective work.

1.6 MOCK-UPS

.1 Prepare mock-ups of certain work as specified in various sections of the Specifications. Include in each mock-up all related work components representative of final assembly.

.2 Construct in locations acceptable to Departmental Representative.

.3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

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

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

.6 Dismantle and remove mock-up when directed by Departmental Representative, unless approval is given for mock-up to remain as part of the Work.

1.1 SITE ACCESS AND PARKING

.1 The Departmental Representative will designate Contractor's access to project site as well as parking facilities for equipment and workers.

.2 The Contractor is advised that while parking facilities for his workers and subcontractors may be on property, such parking facilities may be remote from the actual site of the work. In any case, follow all instructions from the Departmental Representative in regards to parking facilities.

.3 Build and maintain temporary access roads and provide snow removal and dust control during period of work.

.4 Maintain new and existing roads and parking areas at site, where used by Contractor, for duration of contract.
.1 Keep clean and free of mud and dirt by washing on a regular basis.
.2 Provide snow removal in areas located within construction site or enclosed by work.
.3 Make good and repair damage resulting from Contractor's use of existing roads, asphalted areas and lawns on site.

1.2 CONTRACTOR'S SITE OFFICE

.1 Be responsible for and provide own site office, if required, including electricity, heat, lights and telephone. Locate site office as directed by Departmental Representative.

1.4 MATERIAL STORAGE

.1 Locate site storage trailers where directed by Departmental Representative. Place in location of least interference with existing Facility operations.

.2 Material storage space on site is limited. Coordinate delivery to minimize storage

period on site before being needed for incorporation into work.

1.5 SITE ENCLOSURES

.1 Provide temporary fence to enclose entire site.

.2 Erect galvanized steel wire fence to 1.8 mm height, fixed security. Provide lockable truck gates.
.1 Inspect fence regularly, repairing sags and damaged sections.
.2 Incorporate within fence one operable truck gate and one pedestrian gate.

.3 Make all gates lockable and provide keyed padlocks.

.4 Obtain Departmental Representative's approval beforehand of location and layout of all temporary fence enclosures.

.5 Provide hard wired powered navigation lights around the perimeter of the site enclosure to NAV Canada and transport Canada requirements to clearly mark its location at night.

.6 Provide warning signs affixed to all fenced areas, identifying those enclosed areas as "Construction Zones" with access restricted to only those persons so authorized by General Contractor.

.7 Do not construe fencing as an acceptable replacement for pedestrian walkway and hoarding requirements specified below.

1.6 PEDESTRIAN WALKWAYS AND HOARDING

.1 Ensure maximum safety and security to facility users during the course of work.

.2 Adequately frame and brace fencing to resist wind, jet blast, and other weather or site conditions.

.3 Erect such protective devices during Facility's non-operational off hour periods.

.4 Obtain Departmental Representative's concurrence prior to removal of fencing.

1.9 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.10 ENCLOSURE OF STRUCTURE

.1 Provide temporary weathertight enclosures and protection for exterior openings until permanently enclosed.

.2 Provide weathertight and heated enclosures to conduct exterior work during winter and other inclement weather conditions. Erect to allow accessibility for installation of materials and working inside of enclosure.

.3 Design enclosures to withstand wind pressure, jet blast and snow loading.

1.11 POWER

.1 Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances.

.2 Supply and install all temporary facilities for power such as pole lines, meter socket, underground cables, etc...as required and to approval of local power supply authority.

.3 Provide and pay all costs to supply and install temporary cabling, panelboards, switching devices and other equipment as required to connect into power source, provide adequate ground fault protection and extend power supply from existing source to

work areas. Perform work and make all connections in accordance with the Canadian Electrical Code, in compliance with the federal and provincial Occupational Health and Safety Regulations as specified in section 01 35 30 and to lockout requirements specified in section 01 35 25.

.4 Provide and maintain temporary lighting to conduct work. Ensure illumination level is not less than 162lx in all locations.

.5 Electrical power and lighting systems installed under this Contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage. Replace lamps which have been used over period of 3 months.

1.12 WATER SUPPLY

.1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances.

1.13 SCAFFOLDING

.1 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CAN/CSA-S269.2-M87(R2003).

.2 Erect scaffolding independent of walls. Remove when no longer required.

1.14 HEATING AND VENTILATING

.1 Supply, install and pay for costs of temporary heat and ventilation used during construction, including costs of installation, fuel, operation, maintenance and removal of equipment. Use of direct-fired heaters discharging waste products into work areas will not be permitted.

.2 Provide temporary heat and ventilation in enclosed areas as required to:
.1 Facilitate progress of work.
.2 Protect work and products against dampness and cold.

.3 Prevent moisture condensation on surfaces.

.4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.

.5 Provide adequate ventilation to meet health regulations for safe working environment.

.3 Maintain minimum temperature of 10 degrees C, or higher where specified, as soon as finishing work is commenced and maintain until acceptance of structure by Departmental Representative.

.1 Maintain ambient temperature and humidity levels as required for comfort of office personnel.

.4 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.

.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

.6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.5 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

.1 Conform with applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to

outside.

1.15 CONSTRUCTION SIGN AND NOTICES

.1 Safety and Instruction Signs and Notices:
.1 Signs and notices for safety and instruction shall be in both official languages or commonly understood graphic symbols conforming to CAN3-Z321-96(R2006).

.2 Maintenance and Disposal of Site Signs:
.1 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 Departmental Representative.

1.16 REMOVAL OF TEMPORARY FACILITIES

.1 Remove temporary facilities from site when directed by Departmental Representative.

1.1 GENERAL

.1 Use new material and equipment unless otherwise specified.

.2 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
.1 Name and address of manufacturer.
.2 Trade name, model and catalogue number.
.3 Performance, descriptive and test data.
.4 Compliance to specified standards.
.5 Manufacturer's installation or application instructions.
.6 Evidence of arrangements to procure.
.7 Evidence of manufacturer delivery problems or unforseen delays.

.3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.

.4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

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

1.2 PRODUCT QUALITY

.1 Contractor shall be solely responsible for submitting relevant technical data and independent test reports to confirm whether a product or system proposed for use meets contract requirements and specified standards.

.2 Final decision as to whether a product or system meets contract requirements rest solely with the Departmental Representative in accordance with the General Conditions of

the Contract.

1.3 ACCEPTABLE MATERIALS AND ALTERNATIVES

.1 Acceptable Materials: When materials specified include trade names or trademarks or manufacturers or supplier's name as part of the material description, select and only use one of the names listed for incorporation into the Work.

.2 Alternative Materials: Submission of alternative materials to trade names or manufacturer's names specified must be done during the bidding period following procedures indicated in the Instructions to Bidders.

.3 Substitutions: After contract award, substitution of a specified material will be dealt with as a change to the Work in accordance with the General Conditions of the Contract.

1.4 MANUFACTURERS INSTRUCTIONS

.1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods to be used. Do not rely on labels or enclosure provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer’s instructions, so that Departmental Representative will designate which document is to be followed.

1.5 AVAILABILITY

.1 Immediately notify Departmental Representative in writing of unforeseen or unanticipated material delivery problems by manufacturer. Provide support documentation as per clause 1.1.2 above.

1.6 WORKMANSHIP

.1 Ensure quality of work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed.

.2 Remove unsuitable or incompetent workers from site as stipulated in the General Conditions of the Contract.

.3 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision on site at all times.

.4 Coordinate work between trades and subcontractors. See section 01 14 10 in this regard.

.5 Coordinate placement of openings, sleeves and accessories.

1.7 FASTENINGS - GENERAL

.1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spacers for securing exterior work and in humid areas.

.2 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood or organic material plugs not acceptable.

.3 Keep exposed fastenings to minimum, space evenly and lay out neatly.

.4 Fastenings which cause spalling or cracking of material, to which anchorage is made are not acceptable.

.5 Do not use explosive actuated fastening devices unless approved by Departmental Representative. See section on Health and Safety Requirements in this regard.

1.8 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur and, use resilient washers with stainless steel.

1.9 STORAGE, HANDLING AND PROTECTION

.1 Deliver, handle and store materials in manner to prevent deterioration and soiling and in accordance with manufacturer's instructions when applicable. Provide same degree of protection to materials supplied by Departmental Representative.

.2 Store packaged or bundled materials in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work. Provide additional cover where manufacturer's packaging is insufficient to provide adequate protection.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementations 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 and 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 Immediately remove damaged or rejected materials from site.

.9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.10 CONSTRUCTION EQUIPMENT AND PLANT

.1 On request, prove to the satisfaction of Departmental Representative that the construction equipment and plant are adequate to manufacture, transport, place and finish work to quality and production rates specified. If inadequate, replace or provide additional equipment or plant as directed.

.2 Maintain construction equipment and plant in good operating order.

1.1 GENERAL

.1 Conduct cleaning and disposal operations to comply with local ordinances and anti-polution laws.

.2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.3 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

1.2 MATERIALS

.1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.3 CLEANING DURING CONSTRUCTION

.1 Maintain work site in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.

.2 Provide on-site covered latched steel dumpster containers for collection of waste materials and debris.

.3 Use separate collection bins, clearly marked as to purpose, for source separation and recycling of waste and debris in accordance with waste management requirements specified.

.4 Remove waste materials, and debris from site on a daily basis.

.5 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

.6 Immediately clean all dust, dirt, smears, scuffs and soiled surfaces resulting from the Work.

.1 Perform cleaning, dusting and washing operations, carpet vacuuming and floor washing as necessary to thoroughly clean all soiled surfaces.

.7 Remove snow and ice from site.

1.4 FINAL CLEANING

.1 In preparation for acceptance of the completed work perform final cleaning.

.2 Remove grease, dust, dirt, stains, labels, fingerprints, marks and other foreign materials, from interior and exterior finished surfaces. Clean and polish surfaces including glass, mirrors, hardware, wall tile, stainless steel, chrome, baked enamel, plastic laminate, mechanical and electrical fixtures.

.3 Replace items with broken pieces, scratches or disfigured.

.4 Clean lighting reflectors, lenses, and other lighting surfaces.

.5 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.6 Wax, seal, or prepare floor finishes as recommended by manufacturer.

.7 Inspect finishes, fitments and equipment. Ensure specified workmanship and operation.

.8 Broom clean and wash exterior paved surfaces and walks; rake clean other surfaces of grounds.

.9 Remove debris and surplus materials from crawl areas, roof areas and other accessible concealed spaces.

.10 Clean equipment, fixtures to a sanitary condition. Replace filters of mechanical equipment.

1.1 RELATED WORK

.1 Environment Procedures: Section 01 35 43.

1.2 GENERAL

.1 Carry out work placing maximum emphasis on the areas of:
.1 Waste reduction;
.2 Diversion of waste from landfill and;
.3 Material Recycling.

1.3 WASTE MANAGEMENT PLAN

.1 Prior to commencement of work, prepare waste Management Workplan.

.2 Workplan to include:
.1 Waste audit.
.2 Waste reduction practices.
.3 Material source separation process.
.4 Procedures for sending recyclables to recycling facilities.
.5 Procedures for sending non-salvageable items and waste to approved waste processing facility or landfill site.
.6 Training and supervising workforce on waste management at site.

.3 Workplan to incorporate waste management requirements specified herein and in other sections of the Specifications.

.4 Develop Workplan in collaboration with all subcontractors to ensure all waste management issues and opportunities are addressed.

.5 Submit copy of Workplan to Departmental Representative for review and approval.
.1 Make revisions to Plan as directed by Departmental Representative.

.6 Implement and manage all aspects of Waste Management Workplan for duration of work.

.7 Revise Plan as work progresses addressing new opportunities for diversion of waste from landfill.

1.4 WASTE AUDIT

.1 At project start-up, conduct waste audit of:
.1 Site conditions identifying salvageable and non-salvageable items and waste resulting from demolition and removal work.
.2 Projected waste resulting from product packaging and from material leftover after installation work.

.2 Develop written list. Record type, composition and quantity of various salvageable items and waste anticipated, reasons for waste generation and operational factors which contribute to waste.

1.5 WASTE REDUCTION

.1 Based on waste audit, develop waste reduction program.

.2 Structure program to prioritize actions, with waste reduction as first priority, followed by salvage and recycling effort, then disposal as solid waste.

.3 Identify materials and equipment to be:
.1 Protected and turned over to Departmental Representative when indicated.
.2 Salvaged for resale by Contractor.
.3 Sent to recycling facility.
.4 Sent to waste processing/landfill site for their recycling effort
.5 Disposed of in approved landfill site.

.4 Reduce construction waste during installation work. Undertake practices which will minimize waste and optimize full use of new materials on site, such as:
.1 Use of a central cutting area to allow for easy access to off-cuts;
.2 Use of off-cuts for blocking and bridging elsewhere.
.3 Use of effective and strategically placed facilities on site for storage and staging of left-over or partially cut materials (such as plywood, insulation etc...) to allow for easy incorporation into work whenever possible avoiding unnecessary

waste.

.5 Develop other strategies and innovative procedures to reduce waste such as minimizing the extent of packaging used for delivery of materials to site etc.

1.6 MATERIAL SOURCE SEPARATION PROCESS

.1 Develop and implement material source separation process at commencement of work as part of mobilization and waste management at site.

.2 Provide on-site facilities to collect, handle and store anticipated quantities of reusable, salvageable and recyclable materials.
.1 Use suitable containers for individual collection of items based on intended purpose.
.2 Locate to facilitate deposit but without hindering daily operations of airport operations.
.3 Clearly mark containers and stockpiles as to purpose and use.

.3 Isolate product packaging and delivery containers from general waste stream. Send to recycling facility or return to supplier/manufacturer.

.4 Send leftover material resulting from installation work for recycling whenever possible.

.5 Establish methods whereby hazardous and toxic waste materials, and their containers, encountered or used in the course work are properly isolated, stored on site and disposed in accordance with applicable laws and regulations from authorities having jurisdiction.

1.7 WORKER TRAINING AND SUPERVISION

.1 Provide adequate training to workforce, through meetings and demonstrations, to emphasize purpose and worker

responsibilities in carrying out the Waste Management Plan.

.2 Waste Management Coordinator: designate full-time person on site, experienced in waste management and having knowledge of the purpose and content of Waste Management Plan to:
.1 Oversee and supervise waste management during work.
.2 Provide instructions and directions to all workers and subcontractors on waste reduction, source separation and disposal practices.

.3 Post a copy of Plan in a prominent location on site for review by workers.

1.8 CERTIFICATION OF MATERIAL DIVERSION

.1 Submit to Departmental Representative, copies of certified weigh bills from authorized waste processing sites and sale receipts from recycling/reuse facilities confirming receipt of building materials and quantity of waste diverted from landfill.

.2 Submit data at pre-determined project milestones as determined by Departmental Representative.

.3 Compare actual quantities diverted from landfill with projections made during waste audit.

1.9 DISPOSAL REQUIREMENTS

.1 Burying or burning of rubbish and waste materials is prohibited.

.2 Disposal of waste, volatile materials, mineral spirits, oil, or paint thinner into waterways, storm, or sanitary sewers is prohibited.

.3 Dispose of waste only at approved waste processing facility or landfill sites approved by authority having jurisdiction.

.4 Contact the authority having jurisdiction prior to commencement of work, to determine what, if any, demolition and construction waste materials have been banned from disposal in landfills and at transfer stations. Take appropriate action to isolate such banned materials at site of work and dispose in strict accordance with provincial and municipal regulations.

.5 Transport waste intended for landfill in separated condition, following rules and recommendations of Landfill Operator in support of their effort to divert, recycle and reduce amount of solid waste placed in landfill.

.6 Collect, bundle and transport salvaged materials to be recycled in separated categories and condition as directed by recycling facility. Ship materials only to approved recycling facilities.

.7 Sale of salvaged items by Contractor to other parties not permitted on site.

1.1 SECTION INCLUDES

.1 Administrative procedures preceding inspection and acceptance of Work by Departmental Representative.

1.2 RELATED SECTIONS

.1 Section 01 78 00 - Closeout Submittals.

1.3 INSPECTION AND DECLARATION

.1 Contractor's Inspection: Coordinate and perform, in concert with subcontractors, an inspection and check of all Work. Identify and correct deficiencies, defects, repairs and perform outstanding items as required to complete work in conformance with Contract Documents.

.1 Notify Departmental Representative in writing when deficiencies from Contractor's inspection have been rectified and that Work is deemed to be complete and ready for Departmental Representative's inspection of the completed work.

.2 Departmental Representative's Inspection: Accompany Departmental Representative during all substantial and final inspections of the Work.

.1 Address defects, faults and outstanding items of work identified by such inspections.

.2 Advise Departmental Representative when all deficiencies identified have been rectified.

.3 Note that Departmental Representative will not issue a Certificate of Substantial Performance of the work until such time that Contractor performs following work and turns over the specified documents:

.1 Project record as-built documents;

.2 Final Operations and Maintenance manuals;

.3 Maintenance materials, parts and tools;

.4 Compliance certificates from applicable authorities;

.5 Reports resulting from designated tests;
.6 Demonstration and training complete with user manuals;
.7 Manufacturer's Guarantee certificates.
.8 Testing, adjusting and balancing of equipment and systems complete with submission of test reports.
.9 Commissioning of equipment and systems specified.

.4 Correct all discrepancies before Departmental Representative will issue the Certificate of Completion.

1.1 GENERAL

.1 Submit closeout documents specified in this section prior to application for Certificate of Substantial Performance of the Work.

.2 Submit data in sufficient lead time to allow adequate review by Departmental Representative.

.3 Make revisions to data as directed by Departmental Representative based on review.

1.2 PROJECT RECORD DOCUMENTS

.1 Departmental Representative will provide 2 white print copies of contract drawings specifically to record "as-built" conditions.

.2 Maintain 1 set at site and record actual built conditions.

.3 Mark each drawing with up-to-date, real time as-built conditions as work progresses.

.4 Maintain drawings in good condition and make available for inspection by the Departmental Representative whenever requested.

.5 Record changes in red ink on the prints. Mark only on 1 set of drawings and transfer data to other set at completion of project.
.1 Neatly transfer notations to second set also by use of red ink.
.2 Obtain CAD files and specification from Departmental Representative. Transfer as-built information to CAD files and specifications. All drawings and specifications with the notation "As-Built". Also sign and date drawings and specifications.
.3 Indicate all modifications, substitutions and deviations from that shown on the Contract Drawings or in Specifications.

.6 Record following information:

.1 Field changes to dimensions and details;
.2 Any additional details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings;
.3 All Change Orders issued, documenting accurately and consistently the changed condition as it applies to all affected drawing details.

.7 Maintain As-built documents current as the contract progresses.

.8 Submit AutoCAD, Word format as-built drawings and specifications.

1.3 OPERATIONS & MAINTENANCE DATA

.1 Submit 2 copies of Operations and Maintenance (O&M) manual(s).

.2 O&M manuals to be hard cover three ring binder for 215 x 280 mm size paper. Each copy shall contain:
.1 Technical data for installation, operations and maintenance of products and systems supplied in project.
.2 Nameplate information for mechanical and electrical equipment.
.3 List of spare parts and tools.
.4 Original or certified copy of warranties and manufacturer's product guarantees.
.5 Reports of any field test.
.6 Complete set of reviewed shop drawings.

.3 Provide cover sheet in each manual with:
.1 Project name and number
.2 Name and address of Contractor and subcontractors
.3 Date of submission
.4 Table of contents

.4 Manuals to be in English language.

1.4 TOOLS AND PARTS

.1 Supply special tools, wrenches and spare parts as supplied by manufacturer to

disassemble, remove and reinstall components as needed for maintenance purposes.

.2 Tag all items with name of associated equipment and function.

.3 Turn items over to Departmental Representative immediately upon completion of work.

.4 Where required, provide manufacturer's written instructions on intent and method of use.

.5 Provide name, address and telephone number of nearest supplier.

.6 Prepare and include complete inventory list of items supplied into the maintenance manuals.

1.1 RELATED SECTIONS

.1 Operations and Maintenance Manual: Section 01 78 00.

1.2 DESCRIPTION

.1 Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel prior to date of final inspection.

.2 Departmental Representative will provide a list of Owner's personnel to receive instructions,

.3 Cooperate with Departmental Representative in coordinating time and attendance of Owner's personnel with manufacturer's training Representative(s).

1.3 QUALITY CONTROL

.1 Ensure that only personnel from own forces, Subcontractors or Suppliers competent and fully knowledgeable in the particular material component, equipment or system installation are used to provide training and demonstrations.

.2 When specified in individual Sections, obtain the manufacturers authorized Representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstration and instructions have been completed.

.3 Upon request, provide evidence to Departmental Representative of individual Trainer’s knowledge and qualifications.

1.4 SUBMITTALS

.1 Submit schedule of time, date and complete list of equipment and systems for which demonstration and training sessions will be provided. Submit schedule a minimum of 2 weeks prior to designated dates, for Departmental Representative's approval.

.2 Submit report within 1 week after completion

of demonstration, that demonstration and instructions have been satisfactorily completed. Provide time and date of when each demonstration was actually given, with list of persons present.

1.5 CONDITIONS FOR DEMONSTRATIONS

.1 Prior to carrying out demonstration and training, ensure that equipment has been inspected and tested, is fully operational, has been performance verified and TAB has been carried out.

.2 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.6 PREPARATION

.1 Verify that conditions for demonstration and instructions comply with requirements.

.2 Verify that designated personnel are present.

1.7 DEMONSTRATION AND INSTRUCTIONS

.1 Include the following items within the demonstration and training:

.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each of equipment.

.2 Instruct personnel in all phases of operation and maintenance using operation and maintenance manuals as the basis of instruction.

.3 Review contents of manual in detail to explain all aspects of operation and maintenance.

.4 Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instructions.

.5 Provide other specific training and instructions as specified in trade sections.

1.8 TIME ALLOCATED FOR INSTRUCTIONS

.1 Observe the allocated time period specified in trade sections. Provide additional time when required to ensure all personnel fully understand all aspects of the information and instructions being provided. Allow for questions by participants.

1.1 SECTION INCLUDES

.1 This section deals with commissioning activities to occur during the construction stage and the early period of facility occupancy stage.

.2 Section includes:
.1 Commissioning activities to be performed by the Contractor who is assigned membership on a Commissioning Team as part of the contract requirements.
.2 Commissioning activities to be performed by other members of the Commissioning Team.

.3 In general, Contractor's commissioning activities consists of performing specified tasks and functions to assist the Commissioning Agent, along with other members of the commissioning team who will commission various components and systems of the Facility.

1.2 RELATED SECTIONS

.1 Operations and Maintenance Manuals: Section 01 78 00.

.2 Demonstration and Training: Section 01 79 00.

1.3 BACKGROUND INFORMATION

.1 Historically in the past, the term commissioning has been used in reference to the process used to conduct testing, adjusting and balancing of the heating, ventilation and air conditioning (HVAC) systems of a building.

.2 Commissioning (or the commissioning process), as understood by PWGSC, is a planned program of activities conducted in concert with other activities performed during each stage of project delivery.
.1 The commissioning process identifies issues during the Planning and Design stages which are addressed during the Construction and Occupancy Stages of a Facility to ensure that the built facility is constructed and proven to operate satisfactorily under all

weather, environmental and occupancy conditions to meet operational and user requirements.

.2 Commissioning activities during the Construction stage incorporates a third party verification process and a transfer of critical operational knowledge to Facility personnel.

1.4 COMMISSIONING OBJECTIVES

.1 A Commissioning Plan will be prepared by the Departmental Representative, which identifies, among other issues, specific commissioning activities to be carried out by the commissioning team during the Construction and Occupancy Stages of the project.

.2 The commissioning activities have the following objectives:

.1 Collect data on equipment and systems being supplied and document their installation;

.2 Conduct checks and tests on fully installed building components, equipment, systems and integrated systems to:

.1 Verify whether they operate in accordance with requirements of Contract Documents;

.2 Verify performance against design criteria and user requirements and measure peak capacities;

.3 Prepare a Building Management Manual (BMM) which contains operations and maintenance data, as-built record documents, commissioning reports, training data and other critical information for future use by Facility operational staff;

.4 Ensure transfer of knowledge on the operations, maintenance and management of the Facility to Tenant and Operational personnel by means of appropriate training.

.3 Work to achieve the above objectives requires a collaborative effort from all members of the commissioning team.

.1 Contractor's commissioning activities and responsibilities are described in Clause 1.8 below.

.4 Commissioning activities performed by the Commissioning Agent and the Departmental Representative does not replace checks, tests, adjustments, balancing and other performance verification procedures to be carried out by the Contractor as an integral part of performing the Work of this contract as specified in other sections of the Specifications.

1.5 SYSTEMS TO BE COMMISSIONED

.1 The following systems and controls, complete with associated equipment and components, will be commissioned by the Commissioning Agent and requires related commissioning activities to be performed by Contractor as specified:
.1 Mechanical Systems.
.2 Electrical Systems.
.3 Controls Systems.
.4 Doors and Hardware.
.5 Overhead Crane.

1.6 DEFINITIONS

.1 For the purpose of this contract, the various terms listed below, as they relate directly or indirectly to the commissioning process, shall be deemed to have the following meaning.

.2 Commissioning Process: a planned program of tasks, activities and procedures carried out systematically during the Construction and Occupancy Stages in accordance with the commissioning objectives, specified in clause 1.4.2 above, to:
.1 Verify whether the fully installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and;
.2 Ensure that appropriate documentation is compiled to effectively train O& M staff and prepare a comprehensive Building

Management Manual (BMM).

.3 Commission (ie: to commission a building component or system): tests and checks conducted by Commissioning Agent on all systems and integrated systems of Facility; carried out only after they are fully installed, functional and Contractor's Performance Verification responsibilities have been completed and approved.
.1 Contractor provides assistance during this process by operating equipment and systems, by troubleshooting and making adjustments as may be required.
.2 Systems are run under their full operation and under various modes to determine if they function correctly, consistently, at peak efficiency and interactively with each other as intended in accordance with Contract Documents and design criteria.
.3 During these checks, adjustments may be made enhancing performance to meet environmental or user requirements.

.4 Commissioning Agent: a specifically appointed person, representing the Departmental Representative, responsible for the development of a Commissioning Plan and managing its implementation by overseeing and coordinating various activities and responsibilities to be performed by members of the Commissioning Team.
.1 In this project, the Commissioning Agent is part of the engineering consultant firm engaged by PWGSC to prepare the final design and contract documents for this Work.
.2 Commissioning Agent plays a lead role in support to the Departmental Representative to ensure that the commissioning objectives are achieved.

.5 Commissioning Manager: a PWGSC departmental employee providing advice and guidance on commissioning requirements to the

Commissioning Agent in support to the Departmental Representative.

.6 Commissioning Plan: The document which describes the organization, scheduling, allocation of resources, required documentation, target dates, and team roles and responsibilities for verification that the built works meet Contract Document and design criteria requirements.

.7 Contractor: means the General Contractor, however it also refers to any personnel from subcontractors, including the controls and TAB specialists, suppliers and manufacturer's technical persons which Contractor employs to carry out his/her designated commissioning duties and activities.

.8 Departmental Representative: persons from the civil, structural, architectural, mechanical and electrical design disciplines of the architectural and engineering firm(s) which have been engaged by the Departmental Representative and those engaged by the contractor to prepare the final design and produce the contract documents. Design Consultants also have specifically identified commissioning activities for this project.

.9 Design Criteria: All those factors included in the design of a Facility prescribed by the tenant needs or as determined by Designer as necessary in order to meet all Facility functional and user operational requirements

.10 Installation/Start-up Checks:(sometimes referred to as pre-functional checks) A written compilation of checks and inspections to be performed by Contractor during the pre-start-up and start-up of a particular equipment or system component.
.1 Checklist sheets are produced which include the following data:

.1 Product manufacturer's installation instructions and recommended checks and;
.2 Special procedures as specified in relevant sections of Specifications;
.3 Other items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.

.2 Standard Installation/Start-up Checklist sheets prepared by equipment manufacturer are acceptable for use. However, supplement with additional data representative of specific project conditions as deemed required by Commissioning Agent.

.3 Use Checklist sheets for all equipment installation. Document in writing on checklist the various checks made, deficiencies noted and corrective action taken.

.4 Installer to sign Checklist sheets upon completion, certifying that stated checks and inspections have been performed.

.5 Use of Installation/Start-up Checklists shall not be considered part of the commissioning process but shall be stringently used for all equipment pre-start and start-up procedures.

.6 Return completed Installation/Start-up Checklist sheets after use to Commissioning Agent for retention. Checklists are required by Commissioning Agent when Facility is commissioned and will be included in the BMM manual at completion of project.

.11 Performance Verification: (sometimes referred to Functional Testing) checks, running dynamic tests and adjustments carried out by Contractor on equipment and systems, upon their installation, to ensure they operate correctly, efficiently and function independently and interactively with other systems as intended in accordance with contract documents and manufacturer's recommendations.

.1 Performance Verification shall not be considered part of the commissioning process. It is however considered an essential and integral part of Contractor's responsibilities in the equipment installation process which must be stringently conducted, successfully completed and approved by Departmental Representative before a piece of equipment or system is considered fully installed and functional.

.2 Facility components and systems will not be commissioned by Commissioning Agent until performance verification has been completed and approved.

.12 Performance Verification Report Sheets (PV sheets): forms developed by Commissioning Agent for Contractor's use to record measured data and readings taken during functional testing and Performance Verification procedures.

.13 Product Information (PI Data): a compilation of data gathered on a particular piece of equipment, typically produced by manufacturer, which includes nameplate information, installation/startup instructions, parts list, operating instructions, maintenance guidelines and other pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of such equipment. This documentation is included in the Building Management Manual (BMM) at completion of work.

1.7 COMMISSIONING TEAM

.1 A commissioning team will be assembled to carryout various functions needed to effectively commission the Facility. Contractor shall be part of this team with duties and responsibilities as specified in this section and in other sections of the

Specifications.

.2 Members of the Commissioning Team are as follows:
.1 Commissioning Agent
.2 Departmental Representative Design Consultants
.3 Contractor
.4 Contractor Design Consultants
.5 Construction Commissioning Supervisor
.6 Departmental Representative
.7 PWGSC Commissioning Manager
.8 PWGSC departmental personnel providing advice and project quality control to Departmental representative when required.
.9 Facility's operation and maintenance personnel staff as identified by Departmental Representative.

.3 Effective commissioning requires coordination between members of the commissioning team. Cooperate with other team members in fulfilling assigned duties and as follows:
.1 Communicate commissioning objectives, to subcontractors, suppliers and manufacturers.
.2 Coordinate activities between subcontractors and trades as needed to carryout Contractor's assigned commissioning activities.
.3 Ensure attendance of subcontractors and required specialist at commissioning meetings and during the commissioning process.

.4 Construction Commissioning Supervisor:
.1 Assign a person, under Contractor's employ, to be the Construction Commissioning Supervisor.
.2 Person to be knowledgeable and have past experience in commissioning of mechanical and electrical systems. Submit affidavit confirmation person's qualifications for Departmental Representative's review and

approval.
.3 Construction Commissioning Supervisor to coordinate and oversee all work activities and input required from subcontractors and applicable trades as required to make equipment, subsystems and system ready for commissioning and to conduct commissioning duties assigned to the Contractor.
.4 Construction Commissioning Supervisor shall:
.1 Be the main point of contact, representing the Contractor, with whom the Commissioning Agent and Departmental Representative will to deal with in matters relating to commissioning.
.2 Attend all commissioning meetings and ensure that appropriate persons from subcontractors, trades, suppliers and manufacturers attend meetings when deemed required by Commissioning Agent or Departmental Representative.

1.8 CONTRACTOR'S COMMISSIONING ACTIVITIES

.1 General:
.1 Organize and arrange for the services of Contractors Design Consultants subcontractors, their specialists and manufacturer's technical representatives to perform Contractor's commissioning activities
.2 Ensure that personnel forming part of the Commissioning Team are qualified and knowledgeable of installed equipment and systems and with design intent.
.3 Develop in conjunction with the Commissioning Agent a commissioning schedule as specified in clause 1.11.
.4 Notify Departmental Representative in writing when Facility is ready for be commissioned. Give 14 calendar day notice.
.5 Commissioning will only commence once that full documentation has been received and installed equipment and systems have undergone successful performance verification.

.6 Note that Certificate of Substantial Completion will only be issued when:
.1 All commissioning documentation has been received and found suitable by Departmental Representative;
.2 Designated equipment and systems have been commissioned and;
.3 Training has been completed.
.7 Performance faults:
.1 Equipment and systems found not operating correctly or not performing as intended during commissioning shall be re-verified by checking 100% of all equipment and components of the unfunctional system, including related controls as required to rectify the deficiencies and ensure correct performance.
.2 Costs to conduct additional tests and inspections, as deemed required by Departmental Representative, to determine acceptability and proper performance of such item to be paid for by Contractor.

.2 Prior to Facility being Commissioned:
.1 Submit commissioning documentation as specified in clause 1.13 below.
.2 Submit the Installation/Start-up Checklist sheets to Commissioning Agent for review prior to conducting the pre-start and start-up of any piece of equipment. Incorporate additional start-up instructions onto checklist as determined by the Commissioning Agent's review.
.3 Conduct the pre-start and start-up of all equipment by following and filling out the approved Installation/Start-up Checklists.
.4 Conduct Performance Verification on all installed equipment and systems. Use and fill out the PV Report Sheets provided.
.5 Upon completion of start-up and performance verification process, submit signed copy of Checklist and PV sheets to Commissioning Agent as affidavit that

required checks and tests were successfully conducted.
.6 Record performance measurements and data reading on PV sheets and return to Commissioning Agent for compilation.
.7 Give Departmental Representative and Commissioning Agent a minimum of 5 days' notice for start-up and performance verification of equipment and systems which must be witnessed by Commissioning Agent as determined by Commissioning Agent beforehand on PV sheets.
.8 Provide missing information and data as identified by Commissioning Agent and Departmental Representative during documentation review.
.9 Submit above noted documentation before Commissioning will proceed.
.10 Address deficiencies in Work identified during performance verification of equipment and systems. Conduct additional performance verification thereafter.
.11 Arrange for special tools and devices, identified at commissioning meeting(s), as deemed required to assist with commissioning.
.12 Provide access ladders, two way radios and other equipment required by Team when facility will be commissioned.

.3 When Facility is being Commissioned:
.1 Assist in commissioning architectural building component, mechanical and electrical systems specified and as follows:
.1 Operate designated building component, mechanical/electrical equipment and system under all modes of operation and conduct checks and tests as directed by Commissioning Agent.
.2 Check and verify that building component, equipment, systems and integrated systems, including their controls, are functioning and responding correctly and interactively with each other.
.3 Test systems independently and then in unison with other related

systems.

.4 Conduct all Commissioning checks and tests in presence of and witnessed by Commissioning Agent and Departmental Representative.

.5 Assist Design Consultant and other members of the commissioning team who will also be present to commission Facility.

.2 Specific procedures used to commission Facility will be provided by Commissioning Agent which includes:

.1 Sequential order of building component and system to be tested.

.2 Running systems under various anticipated modes and demands (example: high and low cooling or heating loads, duplicating outside temperature conditions, fire alarm and power failure conditions etc.).

.3 Running building controls through all sequences of operation to verify and confirm that equipment and systems are responding as designed and intended.

.4 Operating designated equipment at peak capacities, recording output data against design criteria.

.3 Run component or systems as long as necessary to effectively commission all items as deemed required by Commissioning Agent and Departmental Representative.

.4 Monitor equipment and system responses.

.5 Record test results, measurements and other data on commissioning forms provided by Commissioning Agent.

.6 Assist in analyzing results. Identify system deficiencies and components not responding as intended.

.7 Correct deficiencies and system non-conformance issues. Adjust, calibrate or fine tune system components as required. Debug system software as may be required.

.8 Retest systems when directed to confirm

compliance.

.4 Upon completion of Facility Commissioning:
.1 Provide training to maintenance & operational personnel as specified in clause 1.12 below.
.2 Turn over any filled-in checks sheets or reports resulting from commissioning.

.5 During Warranty period at Occupancy Stage:
.1 After 10 months has elapsed from the commencement of the warranty period, conduct commissioning checks on the following building components and systems:
.2 Fine tune components, systems and integrated systems and continue system debugging to optimize Facility performance.
.3 Rectify warranty issues.
.4 Submit written report to Commissioning Agent and Departmental Representative.
.1 Indicate results noted and corrective action taken.
.2 Note improvements made to operating parameters and control settings.
.3 Recommend modifications deemed advisable to improve performance, environmental conditions, energy consumptions and other issues.
.5 Commissioning Agent and other team members as determined by Departmental Representative to be present during such work.

1.9 COMMISSIONING ACTIVITIES OF OTHER TEAM MEMBERS

.1 Commissioning Agent:
.1 Represents the Departmental Representative during the commissioning process.
.2 Coordinates activities of the commissioning team members to ensure that commissioning activities are carried out properly and in a timely manner.
.3 Prepares commissioning schedule in

concert with Contractor.
.4 Chairs commissioning meetings.
.5 Works with Contractor, subcontractors, equipment suppliers, Design Consultant resources, Contractor's Design Consultants PWGSC and Tenant Representatives to resolve technical problems which may arise during the process.
.6 Witnesses Contractor's pre-start, start-up and performance verification procedures for certain equipment and systems specified when deemed required due to their critical nature and function in the Facility.
.7 Verifies that Installation/Start-up Checklists and Performance Verification checks and tests are used and stringently followed by Contractor.
.8 Assists Contractor in coordination of training activities for facility staff.
.9 Submits final commissioning report to Departmental Representative.

.2 Design Consultant:
.1 Prepares in concert with Commissioning Agent the Commissioning Plan.
.2 Reviews Contractor's Installation/Start-up Checklists for completeness, incorporating supplement data not addressed on checklist. Provides to Contractor checklist for products which manufacturer does not provide installation and start-up instructions.
.3 Develops performance verifications report sheets for use by Contractor to record actual data and measurements against design data criteria.
.4 Includes, on performance verification report sheets, design data and anticipated performance values for equipment and systems to undergo verification.
.5 Compiles commissioning documentation submitted by Contractor. Prepares final Building Management Manuals.
.6 Assists Commissioning Agent in witnessing pre-start, start-up and

performance verification activities.
.7 Approves type and method of calibration for instruments used by Contractor to conduct performance verification and commissioning tests.
.8 Assists Commissioning Agent in reviewing and analyzing tests results.
.9 Participate in the training sessions provided by Contractor to tenant O&M staff by giving introductory information on design philosophy, design intent and systems designs,
.10 Assist in the resolution of issues relating to commissioning.

.3 Tenant Representative:
.1 Participates with other team members to ensure that systems as installed meet the operational and functional requirements.
.2 Periodically attends commissioning meetings as required.
.3 Attends final commissioning activities.
.4 Assists in resolving technical problems by providing additional details on operational requirements.

.4 Facility Operations and Maintenance Staff:
.1 Participates in the commissioning process to obtain early introduction to the facility systems and to provide early operator feedback.
.2 Prime interest is in the familiarization and training of appropriate maintenance staff.
.3 Staff may attend certain critical equipment start-up and performance verification activities and provide comments and practical suggestions on issues which may arise during actual operation, maintenance and repair of the equipment and systems.
.4 Attends commissioning meetings periodically, depending on issues being discussed.
.5 Identifies the appropriate staff which must receive the O & M training.

1.10 COMMISSIONING MEETINGS

.1 General briefing on commissioning will be conducted at first project construction meeting at commencement of work.

.1 Issues discussed will include scope and extent of commissioning and clarify responsibilities of commissioning team members.

.2 All team members must attend, including subcontractors of equipment and systems to be commissioned.

.2 Include commissioning as one agenda item at each construction meeting held and chaired by Contractor during construction. Give subject due consideration for each material and equipment supplied and for all matters of Work.

.3 At the 60% construction completion stage, as determined by Departmental Representative, a separate commissioning scope meeting will be called by Departmental Representative to review progress of work, discuss schedule of equipment start-up activities and prepare for upcoming commissioning. Issues at meeting will include:

.1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.

.2 Determine the degree of involvement of each trade and manufacturer's representatives in the commissioning process.

.4 Separate commissioning meetings will be held from the 60% construction stage to project completion. Meetings are tentatively scheduled to be held on a bi-monthly basis but may be more frequent during the equipment start-up and functional testing period.

.5 Whenever possible meetings will be held immediately following the construction meetings.

.6 Meeting will be chaired by Contractor Commissioning Agent/Departmental Representative, who will record and distribute minutes.

.7 Ensure that all subcontractors and relevant manufacturer representatives are present at the 60% commissioning scope meeting and at other meetings as deemed required.

1.11 COMMISSIONING SCHEDULE

.1 Address commissioning activities within the construction work schedule. Clearly identify allocated time period for commissioning and training activities.

.2 Provide a separate independent commissioning schedule at the 60% construction stage in order that specific issues and individual details of commissioning can be reviewed, discussed and dealt with from that period onward to project completion. Submit monthly updates thereafter,

.3 Develop commissioning schedule in conjunction with Commissioning Agent. Indicate allocated time period and anticipated dates for:

.1 Submission of commissioning documentation, including O&M Manuals.
.2 Equipment and system start-up and performance verification, making them ready to be commissioned.
.3 Allocated period to commission designated building components and systems.
.4 Training period.
.5 Work during Warranty period.

.4 Submit schedule to Departmental Representative for review.

1.12 TRAINING

.1 Commence process of familiarizing Tenant and O&M personnel in the early stages of work on purpose and operation of various equipment

and systems. Continue process throughout the entire construction duration.
.1 Provide informal briefings during occasional site visits, at planned commissioning meetings and during the final commissioning site activities.

.2 Conduct formal demonstration and training sessions' only after all identified systems have been commissioned by Commissioning Agent and Departmental Representative has given approval to proceed with the training process.

.3 Provide training and demonstration on equipment, sub-systems, systems and integrated systems.

.4 Carryout training in accordance with requirements of section 01 79 00.

.5 Submit written agenda of training session(s) 4 weeks beforehand for review by Commissioning Agent and Departmental Representative.

.6 Coordinate content with Commissioning Agent. Design Consultant will provide introductory presentation giving general outline of each system design and intended function.

.7 Submit training manuals for review 2 weeks prior to actual training.

.8 Ensure required tools and O&M Manuals are on site for training and system demonstration.

.9 As a minimum, the training sessions to cover the following information:
.1 Introduction.
.2 Description of the system with factory personnel being involved at appropriate times.
.3 Instructions on start-up procedures including seasonal procedures, system

check-lists and emergency procedures.
.4 Operational procedures, including occupancy considerations, seasonal change-over, manual and automatic operations and emergency modes.
.5 Instruction on system shutdowns, including checklists.
.6 Instructions on all aspects of system maintenance, including routine servicing, lubrication, overhaul and factory servicing.
.7 Information concerning the scope of warranties and their use.
.8 A description of spare parts in stock and their service.
.9 A description of normal tools required for servicing the systems/equipment.

.10 Submit typewritten record of training sessions given and list of attendees. Use forms of format approved by Departmental Representative.

1.13 COMMISSIONING DOCUMENTATION

.1 Submit the following documentation for use during commissioning and for incorporation thereafter into a Building Management Manual (BMM):
.1 Operations and Maintenance Manuals, Project Record Documents and other data as specified in Section 01 78 00. Data to include:
.1 Equipment Product Information (PI Data) complete with:
.1 Nameplate info,
.2 Installation instructions,
.3 Operating procedures and
.4 Maintenance guidelines.
.2 Reviewed shop drawings,
.3 As-built record drawings and Specifications.
.2 Completed Installation/Start-up Checklist sheets used.
.3 Performance Verifications checks and tests procedures and completed report sheets used.

.4 Copy of any static and dynamic test and reports conducted.
.5 TAB report and other reports as specified in various trade sections.

.2 Above documentation is required by Commissioning Agent to commission Facility. Submit data minimum 3 weeks before commencement of commissioning.

.3 Documentation to include detailed information and number of copies as specified for maintenance manuals of section 01 78 00.

.4 Commissioning Agent and Design Consultants will compile above documentation and produce a BMM manuals for operation/maintenance staff and tenant use.