

*1.1 Description of
Work*

- .1 The Work described herein includes for all labour and material, including overtime required to meet the project schedule, to modernize elevators per Division 14. Provide all work required for a completed project, accepted by the Authority Having Jurisdiction including:

*1.2 Familiarization
with Site*

- .1 Before submitting their tender, it is recommended that tenderers inspect and examine the site and its surroundings and satisfy themselves as to the form and nature of the work and materials necessary for the completion of the work, the means of access to the site, the accommodation they may require, and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. No allowance shall be made subsequently in this connection on account of error or negligence to properly observe and determine the conditions that will apply.
- .2 Obtain prior permission from the Departmental Representative before carrying out such site inspection.

*1.3 Codes and
Standards*

- .1 Perform work in accordance with the National Building Code of Canada and any other code of provincial or local application including all amendments up to project tender closing date provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.
- .2 Materials and workmanship must meet or exceed requirements of specified standards, codes and referenced documents.

*1.4 Setting out
Work*

- .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .2 Provide devices needed to lay out and construct work.
- .3 Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work.

- .4 Supply stakes and other survey markers required for laying out work.

1.5 Work Schedule

- .1 Submit within seven work days of notification of acceptance of tender, a construction schedule showing commencement and completion of all work within the time stated in the accepted tender.
- .2 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.
- .3 As a minimum, work schedule to be prepared and submitted in the form of Bar (GANTT) Charts, indicating work activities, tasks and other project elements, their anticipated durations and planned dates for achieving key activities and major project milestones provided in sufficient details and supported by narratives to demonstrate a reasonable plan for completion of project within designated time. Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
- .4 Submit schedule updates on a minimum monthly basis and more often, when requested by Departmental Representative, due to frequent changing project conditions. Provide a narrative explanation of necessary changes and schedule revisions at each update.
- .5 Schedule work in cooperation with the Departmental Representative. Departmental Representative's decision is final in regards to time and order of work.
- .6 The schedule, including all updates, shall be to the Departmental Representative's approval. Take necessary measures to complete work within approved time. Do not change schedule without Departmental Representative's approval.

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- 1.6 Interpretation of Documents .1 Division 01 sections of the Specifications take precedence over technical specifications in other Divisions of the Specifications.
- 1.7 Cost Breakdown .1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price.
- .2 List items of work by the 16 division numerical system of the Specifications and subdivide into major component or systems as directed by Departmental Representative. After approval by Departmental Representative, cost breakdown will be used as basis for progress payment.
- 1.8 Measurement for Payment NA
- 1.9 Project Meetings .1 Hold project meetings at regularly established times and location approved by Departmental Representative
- .2 Notify participants of meetings.
- .3 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording minutes.
- 1.10 Documents Required .1 Maintain at job site, one copy each of the following:
- .1 Contract Drawings
 - .2 Specifications
 - .3 Addenda
 - .4 Reviewed Shop Drawings
 - .5 List of outstanding shop drawings
 - .6 Change Orders
 - .7 Other modifications to Contract
 - .8 Field Test Reports
 - .9 Copy of Approved Work Schedule
 - .10 Health and Safety Plan and other safety related documents
 - .11 Other documents as stipulated elsewhere in the Contract

Documents.

1.11 Permits

- .1 In accordance with the General Conditions, obtain and pay for building permit, certificates, licenses and other permits as required by municipal, provincial and federal authorities.
- .2 Provide appropriate notifications of project to municipal and provincial inspection authorities.
- .3 Obtain compliance certificates as prescribed by legislative and regulatory provisions of municipal, provincial and federal authorities as applicable to the performance of work.
- .4 Submit to Departmental Representative, copy of application submissions and approval documents received for above referenced authorities.

1.12 Alterations, Additions
or Repairs to Existing
Building

- .1 Execute work with least possible interference or disturbance to occupants. Arrange with Departmental Representative to facilitate execution of work.
- .2 Where security has been reduced by work of Contract, provide temporary means to maintain security.
- .3 Protect walls of passenger elevators, to approval of Departmental Representative prior to use. Accept liability for damage, safety of equipment and overloading of existing equipment.
- .4 Provide temporary dust screens, barriers, warning signs in locations where renovation and alteration work is adjacent to areas which will be operative during such work.

1.13 Roughing-In

- .1 Be responsible for obtaining manufacturer's literature and for correct roughing-in and hook-up of equipment, fixtures and appliances.

1.14 Cutting, Fitting
and Patching

- .1 The General Contractor shall ensure that cutting and patching for all trades is included in his tender price bid for the work.
- .2 Execute cutting, fitting and patching required to make work fit properly.
- .3 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.
- .4 Do not cut, bore, or sleeve load-bearing members.
- .5 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- .6 Fit work airtight to pipes, sleeves ducts and conduits.

1.15 Concealment

- .1 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.16 Location of
Fixtures

- .1 Location of equipment, fixtures and outlets, shown or specified shall be considered as approximate. Actual location shall be as required to suit conditions at time of installation and as is reasonable.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative when impending installation conflicts with other new or existing components. Follow directives for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.17 Existing
Services

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to tenant operations.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.
- .3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.
- .4 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .5 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .6 Protect, relocate or maintain existing active services as required. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction over service. Record locations of maintained, re-routed and abandoned service lines.

1.18 Inspection
and Testing

- .1 Tests on materials and equipment, as specified within trade sections, are the responsibility of the Contractor except where specified otherwise herein or within trade sections.
- .2 Provide all necessary instruments, equipment and qualified personnel to perform tests.
- .3 At completion of tests, turn over two sets of fully documented tests reports to the Departmental Representative.
- .4 Unspecified tests may be made at the discretion of the Departmental Representative. The costs of these tests will be paid for by the Departmental Representative.
- .5 Where tests or inspection reveal work not in accordance with the

Contract, the Contractor shall bear the cost of such tests and additional tests as the Departmental Representative requires to verify the acceptability of corrected work.

- .6 Pay costs for uncovering and making good work that is covered before inspection or testing is completed and approved by the Departmental Representative.

1.19 Acceptances

- .1 Prior to the issuance of an Interim Certificate of Completion, in company with the Departmental Representative, make a check of all work. Correct all discrepancies before final inspection and acceptance.
- .2 Notwithstanding Clause CG44.2 of the General Conditions document "C", the Contractor's attention is drawn to the fact that the Departmental Representative will not issue an Interim Certificate of Completion until such time that the Contractor turns over to the Departmental Representative all specified as-builts, training and maintenance manuals, certificates of test and test results.

1.20 Works Coordination

- .1 The General Contractor is responsible for coordinating the work of the various trades, where the work of such trades interfaces with each other.
- .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. 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.
- .3 Shop drawing review and material ordering shall only commence after this coordination has taken place between trades and all conditions affecting the work of the interfacing trades has been made known and accounted for.
- .4 Ensure coordination and cooperation between trades in order to facilitate the general progress of the work and avoid situations of spatial interference.

- .5 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.
- .6 Public Works and Government Services Canada will not be responsible for or held accountable for any extra costs incurred as a result of the failure to carry out coordination 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 and shall be resolved by him at no extra cost to the Contract.

1.21 Other Contracts

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

1.22 Bilingual Notations

- .1 Any items supplied and installed under this contract which have operating instructions on them such as door hardware, washroom accessories, push button activation controls powered hand dryers, mechanical equipment such as water coolers, etc., and which can be expected to be used by the public and building tenants, must have such operating instructions in bilingual format - English and French.
- .2 Factory embossed or recessed symbols illustrating equipment operation is an acceptable alternate to lettering.

- .3 Items supplied with factory - embossed or recessed lettering in one official language with an applied sticker or decal representing the second official language is not acceptable unless the Departmental Representative gives prior approval before any such items are ordered.
- .4 Internationally recognized color coding such as red and blue center pieces for plumbing brass is acceptable.
- .5 Public Works and Government Services Canada will not be responsible for re-stocking or re-ordering costs incurred by the Contractor as a result of his failure to ensure bilingual designation on such items.
- .6 The Contractor is responsible for ensuring that all trades are made aware of these requirements.

1.23 Building Smoking
Environment

- .1 Comply with smoking restrictions.

1.24 Asbestos
Discovery

- .1 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, stop and notify Departmental Representative immediately. Do not proceed until written instructions have been received from Departmental Representative.

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- 1 Related Work .1 Any required Environment Protection.
- 2 General
- .1 Carry out work of this contract placing maximum emphasis on the areas of solid waste reduction, recyclability, the use of sustainable and environmentally friendly construction materials and practices that respond and are beneficial to the environment and to human health needs.
- .2 Within 14 days of contract award, prepare in writing an Environmental Protection Plan and a Waste Management Plan as specified below. Submit both plans to the Departmental Representative for review and approval. Make revisions to the plans as directed by Departmental Representative.
- .3 Implement both plans at start of Work. Manage and carryout all aspects of these plans for entire duration of Work.
- .4 Appoint person or persons responsible for managing, monitoring and ensuring compliance with Plans by subcontractors and workers.
- .5 Communicate the information contained in both plans and their intent to all subcontractors, suppliers and workers working on the construction project. Post a copy of both plans in a prominent location on site for viewing and review by workers.
- 3 Environmental Protection Plan
- .1 Prepare an Environmental Protection Plan:
.1 Addressing the environmental responsibilities specified in the contract documents;
.2 Identifying specific materials, products and construction practices to be used that respond to and have a beneficial effect on the environment and to human health needs.
- .2 Develop the plan in collaboration with the various subcontractors, including the electrical and mechanical subcontractors, to ensure that full advantage is taken of environmental protection opportunities.
- .3 To assist in developing the plan, become familiar with Environment Canada's Environmental Choice Program (ECP) and the ECP standards, as they apply to this project such as those relating to items

such as adhesives, sealants, wallboards, solvent-borne paints, products made from recycled plastics and papers, etc...

- .4 In keeping with the intent of the Environmental Protection Plan, ensure that the following materials, where used in this project, are used to the maximum extent possible and acknowledge their use in the plan:
 - .1 Paints: all paints used indoors shall be water based, low and preferably no VOC type.
 - .2 Flooring adhesives: shall be water dispersion, low toxicity type.
 - .3 Insulation: fibreglass insulation shall be a minimum 50% recycled. Mineral fibre shall contain a minimum 50% recycled fibre. Polystyrene insulations must be chlorofluorocarbon free.
 - .4 Drywall: gypsum board shall be manufactured with recycled gypsum and/or newsprint.
 - .5 Steel studs: shall contain a minimum 50% recycled steel.
 - .6 Plywood: all interior use plywood shall be exterior grade or certified formaldehyde free. Do not use exterior grade formaldehyde-containing plywood.
- .5 Review each section of the specifications to determine what other environmental considerations have been specified in regards to selection of materials and installation instructions to be followed.
- .6 Include in the plan, a list of all anticipated volatile and solvent based products to be used (ie: adhesives, sealants, solvents, paints, etc...) including those recognized and listed under the Workplace Hazardous Materials Information System (WHMIS).
 - .1 Include actual product names, purpose of use and location or time within project where it will be used.
 - .2 Submit list to Departmental Representative prior to commencement of construction and make updates as work progresses including at major project milestones.
 - .3 Provide copies of WHMIS product data sheets.
- .7 Product Installations: Note that waterborne or low volatile content adhesives, sealers, sealants and finish coatings quite often require installation procedures, environmental temperatures and other application conditions which are different from those of conventional solvent based products used in the past. Longer set time (grab time) or curing period are sometimes required before other work can continue over the freshly applied material. Warmer temperatures and other environmental conditions may need to be

provided on site for correct application.

- .1 None of the above conditions shall influence the Contractor and subcontractors into selecting, less environmentally friendly materials than those specified.
- .2 Alternately, the Contractor and subcontractors shall, in their efforts to use good products and produce quality work, make all efforts to select materials which are considered "green" products containing:
 - .1 The lowest amount of toxic substances content available;
 - .2 Low VOC content;
 - .3 Least noxious odours possible;
 - .4 Core content from renewable resources;
 - .5 Considered most friendly to human health and to the environment.
- .3 Obtain all pertinent product data and installation instructions from manufacturers and provide suitable training to workers, as may be required, for any new products.
- .4 Make allowance in work schedule for longer installation periods, if so required.
- .5 Provide, by use of temporary devices as necessary, the correct temperature and environmental conditions as dictated by manufacturer for application of such "green" products.
- .6 Public Works and Government Services Canada shall not incur additional costs to the contract due to situations where Contractor must return a product which does not meet the environmental requirements specified for that material or for instances where special installation procedures or a longer time period, inherent with that product, was not anticipated by the Contractor.
- .8 Once the plan has been reviewed and approved by the Departmental Representative, take the necessary steps to ensure its full implementation over the course of Work.
- .9 Submission of the Environmental Plan does not relieve Contractor's responsibilities for:
 - .1 Health and safety of workers, building tenants and the general public and;
 - .2 Environmental responsibilities in regards to use, storage and disposal of hazardous materials in accordance with governing Laws and Regulations.

4 Solid Waste
Management Plan

- .1 Prepare a Solid Waste Management Plan to minimize construction waste, and maximize reuse or recyclability of construction waste, building demolition debris and equipment removed on this project. Include in plan the following minimum requirements to be followed on site:
 - .1 Undertake construction practices which will minimize waste and optimize use of materials 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 gypsum board, plywood, ceiling tiles, insulation etc...) to allow for easy incorporation into work whenever possible avoiding unnecessary waste.
 - .2 Carrying out demolition work and removal of existing building equipment and components following a systematic deconstruction process, separating materials and equipment at source, carefully dismantling, labelling and stockpiling for the following purposes:
 - .1 Reinstallation into the work where indicated.
 - .2 Salvaging reusable items for sale by Contractor to other parties. See clause [4.5] below on this subject.
 - .3 Separating debris into various waste piles and same material categories for sending as many products as possible to locally available recycling facilities, diverting them from landfill disposal.
 - .4 Disposal of waste at approved landfill sites, where no recycling facility exist for such products, in a "non-mixed" state to facilitate Landfill Owner's recycling efforts.
 - .3 Also separate waste resulting from new materials installed, including cardboard, containers and other packaging into separate piles. Send for recycling or disposal in a non-mixed state similar to requirements specified above.
 - .4 Establish methods whereby hazardous and toxic waste materials, and their containers, encountered or used as part of the work are properly handled, stored on site, removed and disposed of in accordance with applicable laws and regulations from authorities having jurisdiction.

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- .5 Use only approved landfill sites and transfer stations for disposal of construction waste and demolition debris.
 - .6 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.
 - .7 Cooperate with landfill operators' recycling program in place at their facility. Obtain and abide by their rules and recommendations for separation and receipt of waste at the facility. Support their effort of reducing landfill disposal to maximum extent possible.
 - .8 Provide on-site facilities for individual collection, handling, and storage of anticipated quantities of salvaged, reusable items and for recyclable waste materials. Clearly mark containers or stock pile areas as to purpose and use.
 - .9 Place containers in locations to facilitate deposit of materials but without hindering daily operations of building tenants and as directed by Departmental Representative.
 - .10 Isolate and protect removed materials and equipment identified for reuse within work. Minimize damage.
- .2 Worker Training and Supervision:
 - .1 Provide adequate worker training, through meetings and demonstrations, to emphasize purpose and worker responsibilities in carrying out the Waste Management Plan.
 - .2 Have designated persons on site, experienced in deconstruction and disassembly procedures, knowledgeable of the Plan's purpose and content, to provide direction and supervision. Provide instructions to all workers on source separation and disposal practices.
 - .3 On-site sale of salvaged and reusable materials is not permitted.
- 5 Disposal of Wastes
- .1 Burying or burning of rubbish and waste materials is prohibited.
 - .2 Disposal of waste, volatile materials, mineral spirits, oil, or paint

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thinner into waterways, storm, or sanitary sewers is prohibited.

PART 1 - GENERAL

- 1.1 Related Work
- .1 Section 01362: Special Procedures on Fire Safety Requirements.
 - .2 Section 01364: Special Procedures on Lockout Requirements.
- 1.2 Submittals
- .1 Submit to Departmental Representative copies of the following documents, including updates issued:
 - .1 Site Specific Health and Safety Plan.
 - .2 Building Permit, compliance certificates and other permits obtained.
 - .3 Reports or directions issued by Federal, Provincial inspectors or other Authority having jurisdiction.
 - .4 Formal Safety Inspection Reports.
 - .5 Accident or Incident Reports.
 - .6 MSDS data sheets.
 - .7 Name of person(s) designated to perform full time health and safety site supervision.
 - .8 Name of person designated as Health and Safety Site Coordinator.
 - .2 Medical Surveillance: Where prescribed by federal or provincial legislation and regulations, and upon request by Departmental Representative, obtain and submit certification of medical surveillance for site personnel prior to commencement of work.
 - .3 Submit other data, information and documentation upon request as stipulated elsewhere in this section.
 - .4 Submit above documents in accordance with the submittal - general requirements.
- 1.3 Compliance Requirements
- .1 Comply with the Occupational Health and Safety Act for the Province of Prince Edward Island, and the Occupational Health and Safety Act Regulations made pursuant to the 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.
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- .3 Observe and enforce construction safety measures required by:
- .1 National Building Code of Canada, Part 8;
 - .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 A copy of the Canada Labour Code Part II may be obtained by contacting:
- Canadian Government Publishing
 - Public Works & Government Services Canada
 - Ottawa, Ontario, K1A 0S9
 - Tel: (819) 956-4800 (1-800-635-7943)
 - Publication No. L31-85/2000 E or F
- .6 Maintain Workers Compensation Coverage for duration of Contract. Submit Letter of Good Standing to Departmental Representative upon request.
- 1.4 Responsibility
- .1 Be responsible for safety of persons and property on work site and for protection of building employees and general public circulating adjacent to work operations to extent that they may be affected by conduct of Work.
- .2 Enforce compliance by workers and other persons granted access to work site with safety requirements of Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- 1.5 Site Control and Access
- .1 Control work site and entry points. Grant and allow entry to only workers and other persons so authorized. Immediately stop non-authorized persons from circulating within construction areas and remove from site.
- .2 Implement procedures for granting permission to enter onto work site to all persons who require access. Procedures to include the provision of a site safety orientation session.
- .3 Delineate and isolate construction areas from other areas of
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site by use of appropriate means. Erect barricades, fences, hoarding and temporary lighting as required.

- .4 Erect signage at entry points and at other strategic locations around site, clearly identifying construction area(s) as being "off-limits" to non-authorized persons. Signage must be professionally made in both official languages or by use of well understood graphic symbols.
- .5 Secure site at night time [or provide security guard] as deemed necessary to protect site against entry.
- .6 Ensure persons granted access are fitted and wear appropriate personnel protective equipment (PPE). Be responsible for the provision of such PPE to persons who require access to conduct work or perform inspections.

1.6 Protection

- .1 Provide temporary facilities for protection and safe passage of building occupants, public pedestrians and vehicular traffic around and adjacent to work site.
- .2 Provide safety barricades, lights and signage on work site as required to provide a safe working environment for workers.
- .3 Carry out work placing emphasis on health and safety of public, building employees, site personnel and protection of the environment.
- .4 Should unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.

1.7 Filing of Notice

- .1 File Notice of Project and other Notices with Provincial authorities prior to commencement of Work.
- .2 Upon request, Departmental Representative will provide name and mailing address of provincial department to whom the Notice of Project must be sent.

1.8 Permits

- .1 Obtain building permit related to project prior to commencement of Work.
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- .2 Obtain permits, licenses and compliance certificates, at appropriate times and frequency as stipulated by authorities having jurisdiction.
 - .3 Where particular permit or compliance certificate cannot be obtained at the required stage of work, notify Departmental Representative in writing and obtain Departmental Representative's approval to proceed prior to carrying out that portion of work.
 - .4 Post all permits on site. Submit copies to Departmental Representative.
- 1.9 Hazard Assessments
- .1 Implement and carry out a health and safety hazard assessment program as part of the work. Program to include:
 - .1 Initial hazard assessment carried out immediately upon notification of contract award and prior to commencement of work.
 - .2 On-going hazard assessments performed during the progress of work identifying new or potential health risks and safety hazards not previously known. As a minimum hazard assessments shall be carried out when:
 - .1 New sub trade work, new subcontractor(s) or new workers arrive at the site to commence another portion of the work.
 - .2 The scope of work has been changed by Change Order.
 - .3 Potential hazard or weakness in current health and safety practices are identified by Departmental Representative or by an authorized safety representative.
 - .3 Hazard assessments to be project and site specific, based on review of contract documents, site and weather conditions.
 - .4 Each hazard assessment to be made in writing. Keep copies of all assessments on site for duration of work. Upon request, make available to Departmental Representative for inspection.
- 1.10 Project/Site Conditions
- .1 Obtain from Departmental Representative, copy of MSDS Data sheets of existing hazardous materials stored on site or being used by Facility and Tenant personnel in the course of their operations.
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- .2 Above lists shall not be construed as being complete and inclusive of safety and health hazards encountered as a result of Contractor's operations during the course of work. Include above items into the hazard assessment program specified herein.
- 1.11 Safety Meetings
- .1 Prior to commencement of work attend health and safety meeting conducted by Departmental Representative. Have Contractor's [Site Superintendent][and Designated Health and Safety Site Coordinator] in attendance. Departmental Representative will advise of time and location.
- .2 Provide site safety orientation session to all workers and other authorized persons prior to granting them access to work site. Brief persons on site conditions and on the minimum site safety rules in force at site.
- .3 Conduct site specific occupational health and safety meetings during the entire work as follows:
- .1 Formal meetings on a minimum monthly basis
 - .2 Informal tool box meetings on a regular basis from a predetermined schedule.
- .4 Keep workers informed of anticipated hazards, on safety practices and procedures to be followed and of other pertinent safety information related to:
- .1 Progress of Work;
 - .2 New sub-trades arriving on site and;
 - .3 Changes in site and project conditions.
- .5 Record and post minutes of meetings. Make copies available to Departmental Representative upon request.
- 1.12 Health and Safety Plan
- .1 Develop written site-specific Project Health and Safety Plan, based on hazard assessments, prior to commencement of work. Submit plan to Departmental Representative within 7 calendar days of Contract Award date.
- .2 Health and Safety Plan shall contain the following three (3) parts:
- .1 Part 1: List of individual health risks and safety hazards identified by hazard assessment(s).
 - .2 Part 2: List of specific measures to control or mitigate each hazard and risk identified in part one of Plan.
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Describe the engineering controls, personnel protective equipment and safe work practices to be implemented and followed when performing work related to each identified hazard or risk.

.3 Part 3: Emergency Measures and Communications Procedures as follows:

.1 Emergency Measures: on-site operating procedures, evacuation measures and emergency response to be implemented in the occurrence of an accident or incident. Procedures to be specific and relevant to identified hazards. Measures to complement and be integrated with the [Facility] [and Tenant(s)] Emergency Response Plans in place at site. Obtain information on existing emergency and evacuation plans from Departmental Representative and incorporate appropriate data.

.2 Communication Procedures:

.1 List of names and telephone numbers of designated official(s) to be contacted should an incident or emergency situation occur, including the following:

.1 General Contractor and all Subcontractors.

.2 Federal and Provincial Departments and local emergency resources organizations, as applicable to the hazards identified and type of accident or incident which might occur, in accordance with applicable laws and regulations.

.3 Officials from PWGSC, Facility Management and Tenant Departments, [housed in building] [located in vicinity], where work is carried out. Departmental Representative will provide list of names to be included.

.2 Procedures implemented at site to communicate and share information between workers, subcontractors, and General Contractor on work activities, and in particular those which might endanger workers and Facility employees.

.3 List of critical construction activities to be communicated with the Facility Manager and designated tenant representative(s) which could affect facility

and tenant operations, or pose a risk to the health and safety of their employees and to the general public. Develop list in consultation with the Departmental Representative.

- .3 Prepare Health and Safety Plan in a three column format, addressing the three parts specified above, as follows:

Column 1	Column 2	Column 3
Identified Hazard	Control Measures Implemented	Emergency Measures & Communications Procedures

- .4 Develop Health and Safety Plan in collaboration with all subcontractors. Address all work and activities of subcontractors as they arrive on site. Immediately update Plan and submit to Departmental Representative.
- .5 Implement, maintain and enforce compliance with requirements of the Health and Safety Plan until final completion of work and demobilization from site.
- .6 As work progresses, review and update Plan addressing additional health risks and safety hazards identified by on-going hazard assessments.
- .7 Submit revised versions of Plan to Departmental Representative.
- .8 Post a typed written copy, including all updates, of the Health and Safety Plan in a common visible location at work site.
- .9 Submission of the Health and Safety Plan, and updates, to the Departmental Representative is for review and information purposes only. Its submission shall not be construed to imply approval by Departmental Representative, be interpreted as a warranty of being complete, accurate and legislative compliant and shall not
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relieve Contractor of his legal obligations for the provision Health and Safety on the construction project.

1.13 Safety
Supervision and
Inspections

- .1 Designate competent person or persons to be present on site at all times during work, responsible for supervising health and safety and conducting safety inspections of work site.
 - .2 Assign responsibility, obligation and authority to such designated person(s) to stop and start work as deemed necessary for reasons of health and safety.
 - .3 Provide names of designated individuals to Departmental Representative.
 - .4 Cooperate with Health and Safety Site Coordinator responsible for the entire site or facility, should one be designated by Departmental Representative.
 - .5 Conduct regularly scheduled safety inspections of work site as follows:
 - .1 Informal Inspections: carry out on a minimum bi-weekly basis. Note deficiencies and remedial action taken in a log book or diary.
 - .2 Formal Inspections: carry out on a minimum monthly basis. Use standardized safety checklist forms. Prepare written report for each formal inspection. Document deficiencies, remedial action needed and assign responsibility for rectification to appropriate subcontractor or worker.
 - .6 Distribute monthly reports to subcontractors for their pursuance. Follow-up and ensure appropriate action and corrective measures are taken.
 - .7 Maintain safety inspection documentation on site. Submit copies of formal inspection reports to Departmental Representative.
 - .8 All persons in Contractor's employ responsible for health and safety requirements specified in the Contract Documents to be competent in Occupational Health and Construction Safety as defined in the Provincial Occupational Health And Safety Act.
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- 1.14 Training
- .1 Ensure that workers, subcontractors and other authorized persons granted access to site are trained and have been fully instructed, by a competent instructor, on:
 - .1 Safe operation of tools and equipment.
 - .2 Proper wearing and use of personnel protective equipment (PPE) as applicable to the purpose and activities to be conducted on site.
 - .3 Safe work practices and procedures to be followed during the performance of their given work tasks or function on site.
 - .4 Site Conditions and minimum site safety rules provided through site orientation sessions.
 - .2 Make training records readily available for review by Departmental Representative upon request.
- 1.15 Minimum Site Safety Rules
- .1 Notwithstanding the requirement to abide by federal and provincial health and safety regulations, the following safety rules shall be considered minimum requirements at the work site and obeyed by all persons granted access:
 - .1 Wear personnel protective equipment (PPE) appropriate to function and task on site; the minimum requirements being hard hat, safety footwear and eye protection.
 - .2 Immediately report unsafe activities, conditions, near-miss accidents, injuries and damages.
 - .3 Maintain site in tidy condition.
 - .4 Obey warning signs and safety tags.
 - .2 The following actions or conduct by Contractor, workers and sub-contractors will be considered as non conformance with the health and safety requirements of the contract for which a Non-Compliance Notification will be issued to the General Contractor by the Departmental Representative:
 - .1 Failure to follow the minimum site safety rules specified above.
 - .2 Negligence resulting in serious injury or major property damage.
 - .3 Deliberate non-compliance with Federal and Provincial Acts and Regulations.
 - .4 Falsification of information in Workers Compensation Reports, safety reports and other health and safety related documents submitted to Departmental Representative or to Authority having jurisdiction.
 - .5 Possession of firearms on site.
 - .6 Possession of non-prescriptive illegal drugs or
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alcohol.

.7 Action, or lack thereof, resulting in the issuance of Warnings, Fines or Stop Work Orders from a Provincial Authority having jurisdiction.

.8 Violation of other specified health and safety rules and requirements as determined by Departmental Representative.

.3 The final decision as to what constitutes a safety violation or non-compliance issue will be made by Departmental Representative.

.4 Non-Compliance Notifications may result in disciplinary measures taken as specified under the Non-Compliance Disciplinary Measures specified elsewhere in this section.

.5 Brief workers on site safety rules, and on the disciplinary measures to be taken for violation or non compliance of such rules. Post such information on site.

1.16 Accident Reporting

.1 Investigate and report incidents and accidents as outlined in Provincial Occupational Safety and Health Act and Regulations.

.2 Investigate and immediately report to Departmental Representative incidents and accidents which results, [or has the potential of resulting] in:

.1 Injuries requiring medical aid,

.2 Property damage in excess of \$5000.00,

.3 Interruption to building operations with potential loss to owner or client in excess of \$5000.00,

.4 Required notification to Workers Compensation Board or other regulatory agencies as stipulated by applicable regulations.

.3 Medical aid in above clause shall have the same meaning as the term "medical aid injury" as defined in the Canadian Dictionary of Safety Terms - 1987 issue, from the Canadian Society of Safety Departmental Representatives (C.S.S.E) as follows:

.1 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.

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| <u>1.17 Tools and Equipment Safety</u> | .1 | Implement and follow a scheduled tool and equipment inspection/maintenance program at work site. Regularly check tools, equipment and machinery for safe operation and perform maintenance at pre-established time and frequency intervals as recommended by manufacturer. Include subcontractors equipment as part of the inspection process. |
| | .2 | Use standardized checklists to ensure established safety checks are stringently followed. |
| | .3 | Immediately tag and remove items found faulty or defective off site. |
| | .4 | Maintain written documentation on each inspection. Make available to Departmental Representative upon request. |
| | | |
| <u>1.18 Hazardous Products</u> | .1 | Comply with requirements of Workplace Hazardous Materials Information System (WHMIS). |
| | .2 | Keep MSDS data sheets on site. Provide copies of all data sheets to Departmental Representative upon receipt of materials on site. |
| | .3 | Post all MSDS data sheets on site, in a common area, visible to workers. |
| | .4 | On building renovation projects where work is adjacent to occupied areas, locate data sheets in a public location accessible to tenant employees. |
| | | |
| <u>1.19 Blasting</u> | .1 | Blasting or other use of explosives is not permitted. |
| | | |
| <u>1.20 Powder Actuated Devices</u> | .1 | Use powder actuated fastening devices only after receipt of written permission from Departmental Representative. |
| | | |
| <u>1.21 Confined Spaces</u> | .1 | Carry out work in confined spaces in compliance with:
.1 Provincial Occupational Safety and Health Regulations and;
.2 Part XI of the Regulations Respecting Occupational Safety and Health made under Part II of the Canada Labour Code. |
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| | .2 | Include hazard assessment of confined space(s) as part of the hazard assessment program. |
| | .3 | Provide and maintain all equipment as required for the safety and emergency evacuation of persons entering and/or perform work in confined space. |
| | .4 | Provide training to all persons entering and working in confined spaces. |
| | .5 | <u>Safety for Inspectors:</u>
.1 Upon Departmental Representative's request, provide protective equipment and training to Departmental Representative or to other person designated by Departmental Representative for the purpose of entering the confined space(s) to conduct inspections.
.2 Training to be specialized instructions (beyond basic confined space entry training) to suit the specific nature and type of confined space conditions at site.
.3 Be responsible for the efficacy of the equipment and for the safety of such persons during their entry and occupancy in the confined space. |
| | .6 | Develop and use "Entry Permits" for each and every entry into the confined space in accordance with Section 11.3 of Part XI of the Regulations Respecting Occupational Safety and Health made under Part II of the Canada Labour Code. Keep all entry permits on site for duration of work. Make permits available for inspection when requested by Departmental Representative. |
| 1.22 Posting of Documents | .1 | Post documents indicated herein and as required by Authority having jurisdiction. |
| 1.23 Records on Site | .1 | Maintain on site copy of safety documentation as specified in this section and other safety related reports and documents issued to or received from authorities having jurisdiction. |
| | .2 | Make available to Departmental Representative, or authorized safety representative, for inspection upon request. |
| 1.24 Non Compliance Notifications and Disciplinary | .1 | Immediately address and correct health and safety violations and non-compliance issues. |
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Measures

- .2 In an effort to communicate the importance placed by Public Works and Government Services Canada (PWGSC) of stringently maintaining health and safety on the construction site, Departmental Representative will institute on project a system of "Non-Compliance Notifications" issued to the General Contractor. The non-compliance notifications could lead to disciplinary measures imposed on the offending party and on the General Contractor depending on the frequency or severity of infractions.
- .3 The system consists in the issuance of a "Non-Compliance Notification" by Departmental Representative to the General Contractor whenever a worker, subcontractor or other person, granted access to the work site violates a site safety rule, or a health and safety requirement of the Contract or is non-compliant with applicable occupational health and safety laws and regulations.
 - .1 Each non-compliance notification issued is given a rating based on a three level classification system.
 - .2 Levels are graduated and progressive to reflect:
 - .1 The seriousness of the infraction(s) as viewed by PWGSC and by the Departmental Representative and;
 - .2 The degree of disciplinary measures which will be taken by PWGSC.
- .4 The following describes the situations and disciplinary actions to be taken by Departmental Representative dependent on the rating level given to a particular Non-Compliance Notification issued:
 - .1 Non-Compliance Notification-Level 1 rating:
 - .1 Situation: occurrence of a first time infraction by a person or party on site.
 - .2 Action: verbal warning to General Contractor, documented in PWGSC project files and copy sent to the General Contractor.
 - .2 Non-Compliance Notification-Level 2 rating:
 - .1 Situation:
 - .1 The second occurrence of a previous infraction by the same person or party on site or;
 - .2 Accumulation of several level one notifications for different infractions by the same person or party on site or;
 - .3 Non-action on the part of the

- Contractor or subcontractor to rectify non-compliance infractions previously identified in one or several level one notifications or;
- .4 Violation or non observance of a Federal or Provincial safety Law or Regulation by subcontractor or Contractor or;
- .5 Negligence by a person or party resulting in injury or major property damage.
- .2 Action: written notice to General Contractor complete with an Order for immediate remedial action to be taken. Depending on the severity of the offence, Order may include the immediate removal of the offending person or party from site.
- .3 Non-Compliance Notification-Level 3 rating:
- .1 Situation:
- .1 Continued and repeated non-compliance with health and safety requirements by the General Contractor or by subcontractor(s) or;
- .2 The occurrence of a "serious accident" on site resulting in serious bodily injury or death.
- .2 Action :
- .1 Formal letter issued to General Contractor with an Order to "Immediately Stop Work" until so notified to proceed.
- .2 Review and possible investigation by Departmental Representative and other PWGSC officials of all the non compliance incidences which have occurred or of the serious accident.
- .3 Based on outcome of the review/investigation, Departmental Representative may proceed with ["Taking the Work out of the Contractor's Hands" in accordance with article no. GC 38 of the General Conditions Document "C"]["Suspension or Termination of the Contract in accordance with article no. GC 17 of the General Conditions for Minor Works].
- .4 General Contractor may also be placed on a PWGSC list of tenderers for which bidding privileges will be suspended
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on future projects for a stipulated period of time.

.3 The term "serious accident", as used herein, shall have the same meaning as defined in the Canadian Dictionary of Safety Terms - from the Canadian Society of Safety Departmental Representatives (C.S.S.E).

- .5 Non-Compliance Notifications issued by Departmental Representative shall not be construed as to overrule or disregard warnings, orders and fines levied against Contractor by a Regulatory Agency having jurisdiction.
- .6 An explanation of the disciplinary system, how it will function and be administered will be provided to the successful Tenderer at the pre-construction Health and Safety meeting. Upon award of contract, be responsible to fully brief workers and subcontractors on the operation and importance of this system.
- .7 Decision on which "rating level" to be placed on any given Non-Compliance Notification will be determined solely by Departmental Representative.
- .8 Departmental Representative will make final decision as to when a Non-Compliance Notification will be issued, based on nature of violation noted or brought to his/her attention by an authorized safety representative.
- .9 Denied future tendering opportunities: Be aware that Contractors to whom a charge or charges are laid by a Regulator for violations of safety laws and/or regulations and which result in a conviction, may have their bidding privileges suspended indefinitely on future PWGSC construction projects. This decision will be solely at the discretion of PWGSC and be dependent on the severity of the offense.

1.25 Health and
Safety Site
Coordinator

- .1 Obtain and employ, as part of the Work, the services of a competent person to be designated as the Health and Safety Site Coordinator, having the following duties:
 - .1 Monitor activities of various General Contractors, and their subcontractors, who are conducting work simultaneously at the project site to ensure a continued safe work environment at site. General Contractors to be monitored are listed in clause 1.25.4 below.

.2 Verify that activities of a particular contractor do not conflict with other contractors, posing a health risk or creating a safety hazard to workers, facility employees and the general public at the site.

.3 Assist Departmental Representative and Contractors in the coordination of various on-going construction activities as they relate to maintaining health and safety on site. Follow Departmental Representative's directives in this regard.

.4 Communicate pertinent and critical information between various Contractors, Building Manager and Tenant representatives to maintain a safe work place.

.5 Report to Departmental Representative outstanding health and safety issues and concerns, not addressed by Contractor(s).

.6 Assist Departmental Representative and Contractors in the process of controlling and granting site access to authorized persons. Help Contractors in the provision of site safety orientation sessions.

.7 Report incidents and accidents to Departmental Representative. Assist with investigations of accidents and incidents when directed by Departmental Representative.

.8 When delegated by Departmental Representative, review and issue to requesting Contractors the following:

.1 Written authorization to proceed with Hot Work in accordance with requirements of section 01362 and;

.2 Written authorization of Request for Isolation in accordance with requirements of section 01364.

.9 Assist Contractors on site in the development and functioning of a joint site specific health and safety committee, with representation from all Contractors on site. Committee structure, function and activities to meet with Provincial Occupational Health & Safety legislated requirements.

.1 Provide support to committee by preparing agenda items, notifying participants, taking and distributing minutes and carrying out other assigned secretarial duties.

.10 Attend Federal Employee Workplace Occupational Safety & Health committee meetings, when directed by Departmental Representative, as the representative of Contractors, and their workers, conducting work on site.

.2 Health and Safety Site Coordinator qualifications and

requirements:

- .1 Have minimum 2 years site related working experience specific to activities associated with construction safety,
- .3 Within 7 days after contract award, submit to Departmental Representative for review, Site Coordinator's name, and information to substantiate qualifications specified in above clause.
- .4 Departmental Representative will provide full description of Contracts listed above, complete with drawings and specifications, and name of each General Contractor prior to commencement of Work or immediately upon award of future contracts.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

PART 1 - GENERAL

1.1 Section Includes

- .1 Fire Safety Requirements
- .2 Hot Work Permit
- .3 Existing Fire Protection and Alarm Systems

1.2 Related Work

- .1 Section 01700: Health and Safety
- .2 Section 01364: Special Procedures on Lockout Requirements

1.3 References

- .1 FCC No. 301-Standard for Construction Operations.
- .2 FCC No. 302-Standard for Welding and Cutting.

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.

1.5 Submittals

- .1 Submit copy of Hot Work Procedures, to Departmental Representative for review, within 14 calendar days after contract award.
- .2 Include sample of Hot Work Permit.
- .3 Submit above documents in accordance with the submittals – general requirements.

1.6 Fire Safety &
Hot Work Requirement

- .1 Implement and follow fire safety measures during Work. Comply with following:
 - .1 National Fire Code.
 - .2 Fire Protection Standards FCC 301, Standard for Construction Operations and FCC 302, Standard for Welding and Cutting as issued by the Fire Protection Services of Human Resources Development Canada.
 - .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.
- .3 FCC standards, noted above, may be viewed at the Regional Fire Protection Services' office (previously known as the Fire Commissioner of Canada) .
- .4 Hot Work Requirements:
 - .1 Obtain Departmental Representative's written Authorization to Proceed for the performance of Hot Work on site as may be required in the course of Work.
 - .2 To obtain authorization submit to Departmental Representative for review:
 - .1 Departmental Representative's Hot Work Procedures to be followed on site in accordance with clause 1.8 below.
 - .2 Type of work and frequency of situations which will require Hot Work.
 - .3 Upon confirmation that effective fire safety measures will be implemented for hot work, Departmental Representative will grant Authorization to Proceed.
 - .4 In most cases, Departmental Representative will issue only one written authorization covering the entire construction project and duration of work. However in some cases, depending on the nature or phasing of work, the quantity of various trades needing to perform welding and cutting on site, or other deemed situation, Departmental Representative might designate certain portions of the work as separate entities, each entity requiring individual written authorization to proceed. Follow Departmental Representative's directives in this regard.

- .5 Do not perform any Hot Work until receipt of Departmental Representative's written Authorization to Proceed.
- .6 In tenant occupied facilities, coordinate performance of Hot Work with Facility Manager through the Departmental Representative. When directed perform Hot Work during non-operative hours when Facility is vacant of employees. Follow Departmental Representative's directives in this regard.

1.7 Conformance

- .1 Ensure that Hot Work Procedures, as established for project and agreed upon with Departmental Representative, are stringently followed. Enforce use and compliance by all workers.
- .2 Brief all workers and subconsultants on Hot Work Procedures and Permit system,

1.8 Hot Work Procedures

- .1 Develop Hot Work Procedures, to be followed when Hot Work is required as part of the work.
- .2 Describe safe work practises and sequence of activities to be followed on site by Departmental Representative and workers to minimize the potential occurrence of a fire resulting from Hot Work.
- .3 Hot Work Procedures to include:
 - .1 Requirement to perform hazard assessment of the site or immediate work area, based on type and extent of Hot Work required, in accordance with Hazard Assessment and Safety Plan . Use of a Hot Work Permit system, issued by an authorized person in Departmental Representative's employ, for each event when Hot Work is required, granting permission to carry out hot work.
- .4 Procedures to comply with fire safety codes and standards specified herein and occupational health and safety regulations .
- .5 Generic procedures, if used, must be edited, supplemented with pertinent information and tailored to reflect specific project conditions. Clearly label as being the Hot Work Procedures applicable to this contract.

- .6 Include within procedures the step by step process on how to prepare and issue the Hot Work Permit.
- .7 Hot Work Procedures to be in typewritten format, listing step by step procedures and worker instructions, clearly establishing and allocating responsibilities of:
 - .1 Worker(s),
 - .2 Designated person authorized to issue the Hot Work Permit,
 - .3 Fire Safety Watcher,
 - .4 SubDepartmental Representatives and Departmental Representative.

1.9 Hot Work Permit

- .1 Develop "Hot Work Permit" form in typewritten format.
- .2 Hot Work Permit form to include, as a minimum, the following data:
 - .1 Project name and project number;
 - .2 Building name, address and specific floor, room or area where hot work will be performed;
 - .3 Date when permit issued;
 - .4 Description on type of hot work to be carried out;
 - .5 Special precautions required, including type of fire extinguisher needed;
 - .6 Name and signature of authorized person, designated by Departmental Representative, to issue the permit;
 - .7 Name of worker(s) (clearly printed) to which the permit is being Issued;
 - .8 Time duration of permit (not to exceed 8 hours) indicating "Start" time & date and "Completion" time & date when Hot Work permit will be in effect;
 - .9 Worker signature with date and time when hot work terminated;
 - .10 Specified period of time requiring Safety Watch;
 - .11 Name and signature of person designated as Fire Safety Watcher, complete with time & date when safety watch terminated, certifying that the surrounding area was under his continual watch and inspection for the minimum time period specified in Permit and commenced immediately upon the completion of Hot Work.
- .3 Industry Standard forms shall only be used if all data specified above is included on form.
- .4 Each Hot Work Permit to be completed in full and signed as follows:

- .1 Authorized person issuing Permit before hot work commences;
- .2 Worker(s) upon completion of Hot Work;
- .3 Fire Safety Watcher upon termination of safety watch and;
- .4 Returned to Departmental Representative's Site Superintendent for safe keeping.

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 fire fighting.
- .3 Costs incurred, from the fire department, building owner [and tenants], resulting from negligently setting off false alarms will be charged to the Departmental Representative 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.

PART 2 - PRODUCTS

2.1 Not Used .1 Not Used.

PART 3 - EXECUTION

3.1 Not Used .1 Not Used.

PART 1 - GENERAL

1.1 Section

Includes

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

1.2 Related Work

- .1 Section 01700: Health and Safety
- .2 Section 01362: Fire Safety Requirements

1.3 References

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

1.4 Definitions

- .1 **Electrical Facility:** means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.
- .2 **Guarantee of Isolation:** means a guarantee by a competent person in control or in charge that a particular facility or equipment is isolated.
- .3 **De-energize:** in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).
- .4 **Guarded:** means that an equipment or facility is covered,

shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.

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

1.5 Compliance Requirements

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

1.6 Submittals

- .1 Submit copy of proposed Lockout Procedures and sample form of lockout permit for review.
- .2 Submit documentation within 14 calendar days of contract award. Do not proceed with work until submittals has been reviewed by Departmental Representative.
- .3 Submit above documents in accordance with the submittals - general requirements specified in section 01330.
- .4 Resubmit Lockout Procedures with noted revisions as may result

from Departmental Representative's review.

1.7 Isolation of Existing Services

- .1 Obtain Departmental Representative's written authorization prior to conducting work on an existing active, energized service or facility required as part of the work and before proceeding with lockout of such services or facility.
- .2 To obtain authorization, submit to Departmental Representative following documentation:
 - .1 Written Request for Isolation of the service or facility and;
 - .2 Copy of Contractor's Lockout Procedures.
- .3 Make a Request for Isolation for each event, unless directed otherwise by Departmental Representative, and as follows:
 - .1 Fill-out standard forms in current use at the Facility when so directed by Departmental Representative or;
 - .2 Where no form exist at Facility, make request in writing identifying:
 - .1 Identification of system or equipment to be isolated, including it's location;
 - .2 Time duration, indicating Start time & date and Completion time & date when isolation will be in effect;
 - .3 Voltage of service feed to system or equipment being isolated;
 - .4 Name of person making the request.
 - .3 Document to be in typewritten format.
- .4 Do not proceed until receipt of written notification from Departmental Representative granting the Isolation Request and authorization to proceed with the isolation of designated equipment or facility. Departmental Representative may designate other individual at the Facility as the person authorized to grant the Isolation Request.
- .5 Conduct safe, orderly shut down of equipment or facilities, de-energize and isolate power and other sources of energy and lockout items in accordance with requirement of clause 1.8 below.
- .6 Plan and schedule shut down of existing services in consultation with the Departmental Representative and the Facility Manager. Minimize impact and downtime of facility operations.

- .7 Determine in advance, as much as possible, in cooperation with the Departmental Representative, the type and frequency of situations which will require a Request for Isolation. Follow Departmental Representative's directives in this regard.
- .8 Conduct hazard assessment as part of the planning process of isolating existing equipment and facilities. Hazard Assessments to conform with requirements of Health and Safety Section.

1.8 Lockouts

- .1 Isolate and lockout electrical facilities, mechanical equipment and machinery from all potential energy sources prior to starting work on such items.
- .2 Develop and implement lockout procedures to be followed on site as an integral part of the Work.
- .3 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.
- .4 Use industry standard lockout tags.
- .5 Provide appropriate safety grounding and guards as required.
- .6 Prepare Lockout Procedures in writing. Describe safe work practices, work functions and sequence of activities to be followed on site to safely isolate all potential energy sources and lockout/tagout facilities and equipment.
- .7 Include within procedures a system of worker request and issuance of individual lockout permit by a person, employed by Contractor, designated to be "in-charge" and being responsible for:
 - .1 Controlling issuance of permits or tags to workers.
 - .2 Determining permit duration.
 - .3 Maintaining record of permits and tags issued.
 - .4 Submitting a Request for Isolation to Departmental Representative when required in accordance with Clause 1.7 above.
 - .5 Designating a Safety Watcher, when one is required based on type of work.
 - .6 Ensuring equipment or facility has been properly isolated, providing a Guarantee of Isolation to worker(s) prior to

proceeding with work.

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

- .8 Clearly establish, describe and allocate, within procedures, the responsibilities of:
 - .1 Workers.
 - .2 Designated person controlling issuance of lockout tags/permits.
 - .3 Safety Watcher.
 - .4 Subcontractors and General Contractor.
- .9 Procedures shall meet the requirements of Codes and Regulations specified in clause 1.5 above.
- .10 Generic procedures, if used, must be edited, supplemented with pertinent information and tailored to reflect specific project conditions. Clearly label as being the procedures applicable to this contract.
 - .1 Incorporate site specific rules and procedures established by Facility Manager and in force at site. Obtain such procedures through Departmental Representative.
- .11 Procedures to be in typewritten format.
- .12 Submit copy of Lockout Procedures to Departmental Representative, in accordance with submittals requirements of clause [1.6] herein, prior to commencement of work.

1.9 Conformance

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

1.10 Documents on Site

- .1 Post Lockout Procedures on site in common location for viewing by workers.

- .2 Keep copies of Request for Isolation submitted to Departmental Representative and lockout permits or tags issued to workers during the course of work for full project duration.
- .3 Upon request, make such data available to Departmental Representative or to authorized safety representative for inspection.

PART 2 - PRODUCTS

2.1 Not Used .1 Not Used.

PART 3 - EXECUTION

3.1 Not Used .1 Not Used.

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 Building Access

- .1 Use only access doors, and circulation routes within building as designated by Departmental Representative to access interior work.

3 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.

4 Material Storage

- .1 Material storage space on site is limited. Coordinate delivery to minimize storage period on site before being needed for incorporation into work.
- .2 Make arrangements elsewhere in the city as deemed required and pay all costs for storage of materials not ready for incorporation into work.

5 Interior Dust Control
and Dust Barriers

- .1 Control creation and spread of dust and dirt to building interior and in particular to areas within premises still under use by occupants.
- .2 Develop and implement a dust control plan, addressing effective measures to carry out work with least amount of dust being created and propagated.
 - .1 Carefully evaluate the type of work to be undertaken and the physical layout of each work area on site.
 - .2 Provide specifically tailored strategy for each work area.
 - .3 Pre-determine location and placement of dust barriers to confine resulting dust to immediate work area.

.4 Inform Departmental Representative of the proposed dust control measures to be followed at each work area and for each major dust generating activities. Obtain Departmental Representative's approval before proceeding with work.

.3 Dust control plan to incorporate as a minimum the following dust protection and cleaning requirements:

.1 Erect dustproof partitions completely around work area to fully isolate construction from other parts of the building.

6 Sanitary Facilities

.1 Sanitary facilities are available at the site and may be used by Contractor's work force. Make arrangements for the use of such facilities through the Departmental Representative.

7 Power

.1 Power supply is available and will be provided for construction usage at no cost.
.1 Make arrangements for the use of such services through the Departmental Representative.
.2 Departmental Representative will designate and approve each location of existing power source to which connections can be made to obtain temporary power service.
.3 Connect to existing power supply in accordance with Canadian Electrical Code.

.2 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.

.3 Provide and maintain temporary lighting to conduct work. Ensure illumination level is not less than 200 lx in all locations.

.4 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.

8 Scaffolding

- .1 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CAN/CSA-S269.2.
- .2 Erect scaffolding independent of walls. Remove when no longer required.

9 Construction Sign and Notices

- .1 Upon request by Departmental Representative, erect a self supporting project sign in location indicated.
- .2 Contractor or subcontractor advertisement signboards are not permitted on site.
- .3 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.
- .4 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.

10 Removal of Temporary Facilities

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

1 General

- .1 Be aware of security regulations pertaining to control and movement of construction personnel which are in force inside building, and of the special rules applicable to working in the vicinity. It is the Contractor's responsibility to become familiar with and abide by such rules and regulations. Obtain such directives from Tenant Security Personnel through the Departmental Representative.
 - .1 Departmental Representative will coordinate preconstruction meeting between Contractor, Building Management and Security Personnel.
- .2 Be responsible to brief all workers and sub-contractors in respect of the security regulations and ensure that they abide by all rules and directives.
- .3 An infraction of site security regulations on the part of the Contractor, members of work force or any sub-contractor in his employ could result in a fine, to a maximum of \$1,000.00, being levied against the General Contractor. Any subsequent infractions will, at the discretion of the Departmental Representative, result in removal of the offending party from the site.

2 Security Personnel

- .1 Obtain and pay for the services of security personnel, to provide security supervision during the work of this contract.

3 Security Passes

- .1 Visitor Tags are required for all personnel requiring access inside the building. Such tags will be made available on application to the Security Personnel.
- .2 The Contractor is responsible to obtain tags before work commences, including those required by his sub-contractors, and to continually control their distribution and use by workers. Submit request for tags as early as possible prior to commencement of work.
- .3 All personnel must wear the visitor tag at all times when circulating inside the building, regardless of daytime or night

time work hours.

- .4 For the duration of this contract, anyone not in possession of the visitor tag will not be allowed access.
- .5 At end of project, return to Departmental Representative all tags issued to workers and to subcontractors. Departmental Representative will deduct from final contract payment, \$100.00 for each pass not returned regardless of the reason the pass is not returned.
- .6 Immediately report any lost, stolen or destroyed passes through the Departmental Representative to the Building's Security Personnel Manager.

4 Security Control List

- .1 Provide a list of employee names from workforce and from sub-contractors who will be present at site during the course of work.
- .2 List to include names, addresses and telephone numbers of all persons.
- .3 Submit copy to Departmental Representative and make list available to Building Security.
- .4 Update list as work progresses.
- .5 Ensure that each worker can provide proof of identity upon demand, when requested by Security Personnel, or by Building Facility Management.
- .6 Contractor's security personnel shall not allow access onto site of persons not identified on security control list.

5 Building Access

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

- .2 Keys and security access cards given to the Commissionaire for his sole possession, as determined by Departmental Representative, shall not under any circumstances be given to any worker or sub-contractor.
- .3 Do not, under any circumstances, make or allow workers to make duplicates of keys issued.
- .4 At end of project, return to Departmental Representative all keys and access cards issued. Departmental Representative will deduct from final contract payment, \$100.00 for each item not returned, regardless of the reason.
- .5 Immediately report to Departmental Representative any lost, stolen or destroyed keys and door security access cards.

6 Site Security

- .1 Where work of this contract requires use of a permanently locked door, it is Contractor's responsibility to ensure that door is unlocked and locked after each use or provide a competent security guard, posted at door, when door must remain open for an elongated period of time during a particular work shift.
 - .1 Notify Building Facility Management when security doors will be used and stringently follow all directives to ensure building security is effectively maintained.
- .2 Where work of this contract results in removal of doors or walls (providing security to the exterior or between spaces and suites), erect temporary security hoarding over openings constructed in such a way to provide the same degree of security as doors/walls removed.
- .3 When work must be carried out during "off- hours", Notify Departmental Representative a minimum of 48 hours in advance and follow all directives regarding access and the circulation of workers. Provide notice as soon as possible in order to minimize the impact on Building Security and Tenant operations.

PART 1 - GENERAL

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 manufacturer's installation or application instructions;
 - .5 evidence of arrangements to procure;
 - .6 evidence of manufacturer delivery problems or unforeseen 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 & Referenced Standards

- .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 Document .

1.3 Acceptable Materials and Alternatives

- .1 Where materials are specified by trade names, trade marks or manufacturers, when so listed in the various sections of the

Specification or added into the Contract Documents by addendum, select one of the names listed for use on project.

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 manufacturers 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.

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.
- .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 01010 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.

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.
- .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 cementitious products clear of earth or concrete floors, and

away from walls.

- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials 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.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

PART 1 - GENERAL

1.1 General

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution 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 areas in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.
- .2 Keep existing building entrances, corridors and stairwells used by workers in clean dust free condition at all times. Conduct thorough cleaning of these areas at end of each work shift.
- .3 Provide on-site containers for collection of waste materials and debris.
- .4 Use separate collection bins, clearly marked as to purpose, for collection of waste and demolition debris intended for source separation and recycling process of waste management procedures.
- .5 Remove waste materials, and debris from site on a minimum weekly basis.
- .6 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

- .7 Provide and employ dust barriers, dividers, seals on doors and other dust control measures as required to ensure dust and dirt generated by work are not transmitted to other areas of building. Should dust accidentally migrate into areas under use by building occupants or public, employ such means as may be necessary to immediately clean all contaminated surfaces within these area(s) to the satisfaction of the Departmental Representative.
 - .1 See Section 01500 for requirements on dust control and for erection of dust partitions.
- .8 Immediately clean all dust, dirt, smears, scuffs and soiled surfaces and within tenant occupied areas] resulting from use by workers.
 - .1 Perform cleaning, dusting and washing operations, carpet vacuuming (including shampooing if deemed required by Departmental Representative) and floor washing as necessary to thoroughly clean all soiled surfaces.
- .9 Remove snow and ice from access doors used by workforce.

1.4 Final Cleaning

- .1 In preparation for acceptance of the project on an interim or final certificate of completion 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, louvers and screens.
- .6 Wax, seal, shampoo 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, washroom and kitchen fixtures to a sanitary condition. Replace filters of mechanical equipment.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

PART 1 General

1.1 SECTION INCLUDES

- .1 Undertake commissioning to CSA Z320-11, Building Commissioning Standards, as a minimum. Provide documentation to Departmental Representative.
- .2 The main objectives of the commissioning process can be classified as follows:
 1. To ensure installation of all new equipment conforms to the contract document.
 2. Performance verification that all components of the equipment actually perform as specified. This will be verified by measurements, visual inspection, equipment data sheets, manufacturer's representative assistance at start-up, and integrated testing.
 3. Operation & Maintenance Personnel fully trained to operate and maintain the new equipment and systems.

1.2 RELATED SECTIONS

- .1 All applicable Division 01 subsections.
- .2 All applicable Division 14 subsections.

1.3 SCOPE OF COMMISSIONING

- .1 The scope consists of:
 1. Testing of the 'new' components installed.
 2. Testing of system(s) including existing system(s) which has been modified or extended as part of the work.
 3. Remote monitoring and all other related Integrated System Performance Testing, and fine tuning.

1.4 COMMISSIONING SCHEDULE

- .1 Within 2 weeks of contract award, the contractor will be responsible for providing a detailed schedule for showing all commissioning activities. Schedule to include the following milestones as a minimum; testing, start-up, training, delivery of O&M Manual, sequencing of commissioning, acceptance, and occupancy.
- .2 Contractor to provide schedule as described in Section 01323 – Project Time Management, Monitoring and Control System – Bar (Gantt) Charts.

- .3 Unless otherwise specified in writing by the Departmental Representative, all testing and related requirements specified herein will be successfully performed prior to the issuance of the Interim Certificate of Completion.

1.5 SUBMITTAL

- .1 Prior to start of Work; submit one (1) set of shop drawings to the Departmental Representative for review and comments, from an O&M perspective. This shall include all components and systems delivered within Division 14 21 23 and 26.
- .2 Submit CMMS documentation for all components or systems to be removed as part of this project prior to removal.
- .3 Submit start-up report forms prior to scheduling commissioning activities.
- .4 Submit O&M Manual for review and comments prior to scheduling commissioning activities and training of O&M personnel.
- .5 Submit reports of testing, adjusting and balancing postponed due to seasonal, climatic, occupancy or other reasons beyond Contractor's control, promptly after execution of those services.
- .6 Documentation will be required from all equipment manufacturers outlining that their respective equipment is operational, has been installed to their requirements, started and commissioned successfully.
- .7 Submit not later than 2 weeks after award of contract. Request to make any changes to these commissioning specification, including; timing, procedures, tolerances and instruments. Request should be made in writing to the Departmental Representative, and approval obtained from the Departmental Representative not less than 3 weeks prior to start of commissioning.

1.6 MANUFACTURERS INVOLVEMENT

- .1 Arrange for Manufacturer to submit copies of all production test records for production test required by these specifications prior to shipping.
- .2 Prior to start-up of equipment or systems, obtain manufacturer's installation, start-up and operation instructions and review with Departmental Representative.
- .3 Use manufacturer's trained start-up personnel to maintain integrity of warranty.
- .4 Verify with manufacturer that testing as specified will not void any warranties.
- .5 Manufacturer's personnel to be experienced in design, installation and operation of equipment and systems and be able to interpret test results in clear, concise, logical manner.
- .6 Report in writing to Departmental Representative any deficiencies or defects noted during performance of services.

1.7 SEASONAL TESTING

- .1 Notwithstanding all inclusive requirements specified in this section, additional separate cycles of performance testing and verification will be required at later date for components and systems whose full operation is dependent on seasonal conditions.
- .2 Contractor's responsibilities with respect to such commissioning activities will be as specified in relevant sections.

1.8 RESPONSIBILITIES

- .1 Departmental Representative is responsible for the overall delivery of commissioning activities, review and approval of all documentation, overview of performance, verification of activities, and verification of accuracy of reported results.
- .2 Where requested, consultant or Departmental Engineering Specialists is responsible for the witnessing and certification of the performance verification results.
- .3 Contractor is responsible to perform all commissioning activities and record results.
- .4 Responsibility of the satisfactory completion of the project, and demonstration that the requirements of the commissioning are satisfied rest with the Contractor, who will employ and pay for Specialists, supervision, inspection and testing as required, to complete the work as described.
- .5 Coordinate all sub-trades, other divisions, manufacturers, suppliers, and other specialists as required to ensure all phases of work shall be properly organized prior to commencement of each particular testing procedure. Establish all necessary manpower requirements.
- .6 Coordinate the activities of this Section with the starting and testing of:
 - .1 Fire Suppression components and systems specified in Division 21.
 - .2 Mechanical components and systems specified in Division 23.
 - .3 Electrical components and systems specified in Division 26.
 - .4 Conveying Equipment and systems specified in Division 14.
- .7 Where any components or systems require testing prior to starting, ensure that such work has been completed and approved prior to starting of these components and systems.

1.9 PREPARATION

- .1 The contractor shall have contract documents, shop drawings, product data, and operation and maintenance data in hand during equipment performance verification process.
- .2 Except when otherwise specified, complete all start-up and testing prior to acceptance test and hand-over of the project.
- .3 Co-ordinate work and manpower requirements of sub-trades, suppliers, manufacturers, specialists, disciplines as required to ensure that all work is properly organized prior to start-up and testing.
- .4 Where equipment or systems require testing prior to start-up, ensure that such work is completed and approved prior to delivery of equipment or systems.
- .5 Notify Departmental Representative seven [7] days prior to time project will be ready for testing, adjusting, and balancing.

1.10 COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM (CMMS)

- .1 All contract work shall comply with the requirements of the PWGSC CMMS. It is required to provide CMMS inventory sheets and coding (sample provided in annex). Inventory sheets will include all product data, serial and model numbers, equipment description, and location. Departmental Representative will assist the Contractors by providing CMMS sequential numbers as are available.
- .2 Collect and record all CMMS data for all new or relocated equipment being installed, replaced, removed from or taken out of service from existing inventory of equipment.
- .3 Submit to the Departmental Representative an inventory sheet identified with CMMS number only for each existing system or component being removed prior to removal.
- .4 Submit to Departmental Representative fully completed inventory data sheets for all new equipment two (2) weeks prior to seeking approval for proposed component identification. All CMMS inventory sheets are to be added in to the O&M Manual.
- .5 CMMS applies to all major components or systems. Minor items such as switches, thermostats, etc., are not to be inventoried under the CMMS. The Departmental Representative will provide clarification to the Contractors upon request.

1.11 START-UP AND TESTING

- .1 Before start-up, clean all newly installed equipment and or systems and verify same to be free from all contaminants.
- .2 After testing, protect equipment and systems from construction activities.

- .3 Conceal equipment and systems only after inspection and testing is completed and approved by Departmental Representative.
- .4 Assume all liabilities and costs for inspections including disassembly and re-assembly after approval, starting, testing, and adjusting, including supply of testing equipment.

1.12 WITNESSING OF STARTING AND TESTING

- .1 Provide sufficient notice not less than seven (7) days prior to commencement.
- .2 Departmental Representative may witness all or any portion of start-up and testing at their discretion.
- .3 General Contractor to be present at all tests performed by sub-trades, suppliers, and equipment manufacturers.

1.13 START-UP ACTIVITIES

- 1. Factory and on-site testing
- 2. Pre-start-up, component by component inspections.
- 3. Check of all equipment, systems, installation, electrical connections, etc. for conformity to contract documents, equipment manufacturer's installation requirements, etc.
- 4. Check of location, installation, setting of controls, limit and safety devices and operate as designed.
- 5. Compilation of pre-start-up deficiency list and rectification of all deficiencies in writing to Departmental Representative.
- 6. Start-up verification for proper and safe operation.
- 7. Identification and correction of start-up and pre-commissioning deficiencies.
- 8. Failure to follow specified start-up procedures shall result in a re-evaluation of equipment by independent testing agency selected by Departmental Representative. Should results reveal that the equipment start-up was not in accordance with specified requirements, the contractor shall remove from site and replace with new, which will also be subject to specific start-up procedures.
- 9. TAB shall be as specified in relevant sections and shall verify the performance of all systems to ensure that they meet requirements of the contract document.

1.14 MAINTENANCE OF EQUIPMENT AND SYSTEMS

- 1. After start-up, maintain equipment and systems as directed by equipment/system manufacturer.

2. Maintain equipment and provide equipment service call-backs as described in section 01010 – General Instructions
3. In conjunction with the manufacturer, develop written maintenance program. Submit to Departmental Representative for approval before implementation.

1.15 START-UP DOCUMENTATION

1. Assemble and submit start-up reports to the Departmental Representative and Departmental Representative before commencement of commissioning.
2. Start-up documentation to include as a minimum, witness and certified by the Departmental Representative, factory and on-site test certificates, pre-start-up inspection reports, installation/start-up check lists signed, certified and witnessed.
3. Marked-up schematics of systems as actually installed.

1.16 COMMISSIONING DOCUMENTATION

1. All results of test, performance verification and commissioning procedures to be reported, documented, witnessed and certified by Departmental Representative
2. All commissioning documentation to be reviewed and approved by the Departmental Representative.
3. Fully completed forms with the exception of verification results data, are to be completed and submitted to the Departmental Representative within four (4) weeks of approval of shop drawings, or as specified.
 1. Supplementing the above, the Contractor shall provide project specific verification forms for electrical mechanical, control (EMCS) systems. Submit sample verification forms with shop drawing submission. Update forms as required and resubmit to Departmental Representative should there be changes to the initial scope of work. After contractor start-up and debugging of programming, complete verification process in the presence of the Departmental Representative.
2. Component forms shall be completed as follows:
 1. The specified requirements shall be completed by Contractor and verified by the Departmental Representative.
 2. The shop drawing information shall be completed by hand and shall reflect APPROVED shop drawings.
 3. The installed information shall be completed by the contractor from nameplates on installed equipment. This shall be completed by hand.
 4. The systems verification cannot take place before all related components have been verified as correct.

5. Integrated systems verification cannot take place before all related systems have been verified as correct.
6. Verification forms will be provided for information and convenience to the Contractor and will not relieve the Contractor of responsibility for verification of components, systems, or integrated systems not included on the verification forms.
7. A verification form is to be completed for each integrated system in a category requiring verification.
8. System and Integrated system verification forms are to be completed by the Contractor and verified by the Departmental Representative.

1.17 TRAINING

1. In accordance with Section 141260 – Demonstration & Commissioning.
2. As supplemented in other sections of the contract document.

1.18 START OF COMMISSIONING

1. Notify Departmental Representative not less than seven (7) days prior to commencement of commissioning.
2. Commissioning to be in accordance with the completion schedule for the project and commissioning plan.
3. Start commissioning only after completion of start-up, TAB, and any elements of building affecting start-up and performance verification of systems has been rectified.
4. Contractor to provide sufficient ‘qualified’ personnel to Departmental Representative’s satisfaction at field locations and at the central operation work (monitoring) station to successfully test and commission components, systems, and integrated systems.

1.19 COMMISSIONING GENERAL REQUIREMENTS

1. Carry out commissioning under actual or simulating operating range in all modes. (i.e.: regular, emergency, day, night, heating, and cooling).
2. Each system to be tested independently. If interlocked with or operation is affected by other systems, in unison with those systems.
3. Commissioning procedures to be repeatable and reported results are to be verifiable.
4. Follow equipment manufacturer’s instruction re: operating and safety aspects.

1.20 CONFLICTS

1. If requirements of this or other sections of construction or commissioning specification conflict, report to the Departmental Representative before start-up and obtain clarification.
2. Failure to report conflicts and obtain clarification will result in application of most stringent requirement.

1.21 COMMISSIONING MEETING

1. In accordance with requirements of project meeting supplemented as specified herein, commissioning meetings will be held at same time as, and form part of regular construction progress meetings, or can be separate.
2. Commissioning meetings will be held in conjunction with the project meetings during the construction phase. Meetings to continue on regular basis until issuance of Interim Certificate of Completion, after which meetings will occur as required to address operational and warranty issues.
3. Purpose of meetings shall be to resolve issues, monitor progress, identify deficiencies relating to commissioning.
4. To be present at the meetings, General Contractor and all his sub-contractors, Departmental Representative and Project Manager.
5. Departmental Representative to put forward agenda, chair meeting as well as record and distribute minutes.

1.22 RECORDS OF COMMISSIONING ACTIVITIES

1. Maintain accurate, detailed records of commissioning activities including names of technicians, supervisors and dates of commissioning activities.

1.23 INTER-DISCIPLINARY CO-ORDINATION

1. Be present, assist and witness commissioning of all systems and equipment of other disciplines which impact upon, interface with, are interlocked or interconnected with system being commissioned.

1.24 PRE-COMMISSIONING REVIEW

1. Review contract documents and confirm in writing to Departmental Representative adequacy of provisions for commissioning and all other aspects of design pertinent to the success of commissioning.
2. Before starting commissioning, review:
 1. Installation

2. Documentation
 3. Design Criteria and Intents
 4. All Start-up Documentation
 5. Commissioning Specifications, requirements and forms
 6. Commissioning Schedules
 7. Commissioning Standards and Procedures
 8. Cleanliness of Systems
 9. As-built drawings (marked-up)
 10. O&M Manual
4. Report to Departmental Representative in writing all discrepancies and deficiencies.

1.25 OPERATION OF SYSTEM DURING COMMISSIONING

1. Operate and maintain for the length of time required as determined by the Departmental Representative for commissioning to be completed, and as required for verification of reported results.

1.26 COMMISSIONING TOLERANCES

1. Definitions:
 1. Application tolerances: Specified range of acceptable deviations of measured values from specified values or specified design criteria.
 2. Measurement tolerances: Unless specified otherwise, all measured and reported values to be within $\pm 2\%$ of actual values.
 3. Instrument accuracy tolerances: Accuracy of measured value as percentage of actual value. Refer to relevant sections of these commissioning specifications.
 4. Values measured during verification of reported results to be within $\pm 5\%$ of reported results.

1.27 RESULTS

1. If start-up, testing and or PV produce unacceptable results, repair, replace or repeat specified stating and or PV procedures until acceptance results are achieved.
2. Provide manpower and materials, bear cost for re-commissioning.

1.28 INSTRUMENTS

1. Submit list of all instruments proposed to be used, listing all data including serial number, current calibration certificate date, calibration expiry date for review and approval by Departmental Representative.
2. Provide safety equipment required for personnel involved in the starting testing and commissioning program.
3. In addition to instruments listed in the specification document, provide the following:
 1. Two way radio
 2. Ladders
 3. Other equipment
 4. Safety equipment for start-up and testing personnel.
 5. Provide list of equipment and instruments to be used in the start-up, TAB, testing for review and approval by the Departmental Representative.

1.29 INSTALLED INSTRUMENTATION

1. Instruments installed under Contract may be used for TAB and PV if:
 1. Accuracy complies with these specifications.
 2. Calibration certificates have been deposited with the Departmental Representative.
 3. Calibrated EMCS sensors may be used to obtain performance data provided that sensor calibration has been completed and accepted.

1.30 WITNESSING COMMISSIONING

1. Commissioning Manager will witness all activities. Departmental Representative may witness some activities to satisfy the design intent has been met.
2. Departmental Representative will certify all the results.
3. Contractor to be present at all tests.

1.31 AUTHORITIES HAVING JURISDICTION

1. The contractor will complete initial start-up successfully prior to performance verifications and certification by presiding authorities having jurisdiction.
2. To facilitate the turnover of the project, call and arrange for authorities to witness procedures in a manner that avoids unnecessary duplication of tests. It shall be the

responsibility of the Contractor to confirm which tests the presiding authorities having jurisdiction are required to attend. Confirm that the presiding authorities will be present for each test, as required.

3. Any cost associated with presiding authorities attending testing during the daytime and during off-hours shall be the responsibility of the Contractor. Include all such cost in your tender.
4. Obtain Certificates of Approval, acceptance and compliance with the rules and regulations of authority having jurisdiction. Provide copies to the Departmental Representative within five (5) days of tests with the commissioning report.
5. Submit reports generated by special testing agencies to the Departmental Representative prior to the issuance of the Interim Certificate of Completion.
6. Special Testing agencies shall be approved by the Departmental Representative with acceptable facilities and qualifications.

1.32 DEFICIENCIES, FAULTS, DEFECTS, REPETITION

1. Correct all deficiencies found during start-up and commissioning to satisfaction of the Departmental Representative.
2. Report faults, defects affecting commissioning to Departmental Representative in writing as they become apparent. Unless instructed otherwise, halt commissioning until same is rectified.
3. Where verification of reported results fail to receive Departmental Representative approval, and where repetition of verification again fails to receive approval, and where Departmental Representative deems Contractor's request for 2nd verification was premature, then all costs incurred by Departmental Representative for 3rd and subsequent verifications to be borne by the contractor.

1.33 ACTIVITIES UPON COMPLETION OF COMMISSIONING

1. After commissioning is completed to satisfaction of Departmental Representative, replace drive guards, close access doors, lock devices in set positions, and ensure sensors are at required settings.
2. Permanently and indelibly mark all settings to allow restoration at any time during life of facility. Markings not be eradicated or covered in any way.
3. Record 'as commissioned' settings in commissioning report.

1.34 COMPLETION OF COMMISSIONING

1. Co-operate fully with Departmental Representative during all stages of acceptance and occupancy of the facility.
2. Upon completion of commissioning, leave all systems in normal operating mode.

3. Except for warranty and seasonal verification activities specified in these commissioning specifications, commissioning to be completed prior to issuance of Interim Certificate of Completion.
4. Compile test reports, verification forms, and certificates, by Division, by specification Section, into one Commissioning Manual.
5. Submit draft manual for review and approval of the Departmental Representative 2 weeks prior to application for Interim Certificate of Completion for the project.
6. Submit 3 copies of the approved manual prior to Interim Certificate of Completion.