

## **1 General**

### **1.1 SCOPE OF WORK**

- .1 The Contractor is to provide each item, and properly execute all work as specified herein, indicated by drawings, addenda, or change orders issued with respect to this project.
- .2 The Contractor shall coordinate, administer, and supervise all work, material acquisition and labour.
- .3 Contractor to embrace the safety culture mandatory on this project. Failure to comply 100% will result in removal of workers and/or Contractor from site. Refer in particular to Sections 01 35 24 - Special Procedures on Fire Safety Requirements, Section 01 35 25 - Special Procedures on Lockout Requirements and Section 01 35 29 - Health, Safety and Emergency Response Procedures.
- .4 The Contractor shall complete the following:
  - .1 Establish dust control barriers.
  - .2 Seal return air ducts to prevent dust intake into the ventilation system.
  - .3 Demolish / salvage building components as shown on drawing, including flooring, existing electrical in walls, ceiling including lighting, electrical systems and ventilation as shown.
  - .4 Refer to electrical drawings for direction on demolition work and removal of existing systems back to termination point.
  - .5 Refer to mechanical drawings for direction on demolition work and repositioning requirements for ventilation, sprinkler and controls.
  - .6 Dispose off all components from demolition off-site.
  - .7 Install new space fit-up components including architectural, mechanical and electrical as shown on drawings and described in the specification.
  - .8 Reuse salvaged fixtures, flooring, demountable partitions, door hardware etc., all as shown on drawings.
  - .9 Remove dust control barriers.
  - .10 Perform commissioning.
  - .11 Turn over space to Owner.
- .5 Obtain and pay for the services of security personnel, employed by the Canadian Corp of Commissionaires to provide security supervision during the work of this Contract. Reference Section 01 35 53 - Security Procedures.

### **1.2 FAMILIARIZATION WITH SITE**

- .1 Before submitting their tender, it is recommended that bidders 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 A bidders site visit will be scheduled during the Tender period.

### **1.3 COST BREAKDOWN**

- .1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. Departmental Representative will provide the required forms for application of progress payment.
- .2 Provide cost breakdown in same format as the numerical and subject title system used in this specification project manual and thereafter sub-divided into major work

- components or building systems as directed by Departmental Representative.
- .3 Upon approval by Departmental Representative, cost breakdown will be used as basis for progress payment.

#### **1.4 PERMITS**

- .1 Provide appropriate notifications of project to municipal and provincial inspection authorities.
- .2 Obtain compliance certificates as prescribed by legislative and regulatory provisions of municipal, provincial and federal authorities as applicable to the performance of Work.
- .3 Submit to Departmental Representative, copy of application submissions and approval documents received for above referenced authorities.

#### **1.5 BILINGUAL NOTATIONS**

- .1 Any items supplied and installed under this contract which have operating instructions on them 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 give prior approval before any such items are ordered.
- .4 Internationally recognized colour 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.

#### **1.6 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions. The building and grounds are non-smoking.

#### **1.7 COORDINATION**

- .1 All Trades on site are responsible to co-operate and co-ordinate with each other.
- .2 Coordination prior to installation of all building components is mandatory.
- .3 Where work must be modified or reinstalled to be properly coordinated, the cost to do so will be paid by the Contractor. The Owner will not pay for uncoordinated work nor will the Owner pay to resolve uncoordinated work.

#### **1.8 EMERGENCIES**

- .1 The Departmental Representative has authority in an emergency to stop the progress of the work whenever in his or her opinion, such stoppage may be necessary to ensure the safety of life, or of the structure. This includes authority to make such changes and to order, access and award the cost of such work extra to the Contract or otherwise as may in his or her opinion be necessary.

#### **1.9 EXECUTION**

- .1 Execute work with least possible interference or disturbance to building operations, public and normal use of premises.

#### **1.10 MITIGATION OF IMPACT ON EXISTING BUILDING**

- .1 This Contractor will recognize that the existing facility must remain fully functional with minimal disruption during the course of the Work. Any planned disruption in services

must be brought to the attention of the Departmental Representative and receive prior approval before commencement.

- .2 This Contractor is responsible to ensure that the existing building is kept free from any contamination that may result from any of the Work.
- .3 The life safety and security systems in the existing building are required to remain functional during construction. This Contractor is responsible to ensure that such systems are not inadvertently activated or deactivated during construction.

#### **1.11 DOCUMENTS**

- .1 The Contract Documents are complementary and what is called for by any one shall be as binding as if called for by all.
- .2 Descriptions of materials or work which have well known technical or trade meanings shall be held to refer to such recognized standards.
- .3 Should the specifications conflict with the drawings, the specifications shall govern.
- .4 In the case of discrepancies between drawings, those of larger scale, or if the scale are the same, those of later date shall govern.
- .5 All drawings and specifications shall be interpreted in conformity with the agreement.

#### **1.12 PROTECTION OF WORK AND PROPERTY**

- .1 The Contractor shall maintain continuously adequate protection of all his or her work from damage and shall take reasonable precautions to protect the Owner's property from all injury arising in connection with this Contract. He or she shall make good any damage or injury to his or her work and shall make good any damage or injury to the property of the Owner resulting from the lack of reasonable protective precautions.

#### **1.13 COMMUNICATION**

- .1 All submissions and inquiries shall be directed to the Departmental Representative for review.
- .2 All direction will be transmitted to the Contractor by the Departmental Representative.

#### **1.14 CODES AND REGULATIONS**

- .1 Perform work in accordance with National Building Code of Canada (NBC) 2010 and any other code of provincial or local application, provided that in any case of conflict or discrepancy the more stringent requirements shall apply.
- .2 Meet or exceed requirements of contract documents and specified standards.
- .3 References to standards, including manufacturer's direction for installation shall be the latest edition.
- .4 All materials, components and equipment as well as construction methods shall comply with the latest edition of the National Building Code and all other applicable Provincial codes or regulations.
- .5 The latest edition of the Canadian Electrical Code shall govern all electrical work, whether pre-wired an/or assembled remote from the site or not.
- .6 All equipment supplied or installed shall be CSA approved for the intended use.
- .7 The latest edition of the PEI Occupational Health and Safety Act and Regulations shall govern safe construction practices.
- .8 Provide a copy of all certificates of acceptance issued by Provincial or local authorities.

#### **1.15 WORK SCHEDULE AND PROGRESS REPORTS**

- .1 The Contractor will prepare and maintain a consolidated schedule in weekly increments showing scheduled work versus actual work. The schedule shall indicate the contract commencement and completion date for the total project.
- .2 The Contractor is to develop a detailed schedule identifying specific components of the carpentry, roofing and metal trades. A single line items for each is not acceptable.

- .3 Provide updated schedule information from time to time as the progress of the work or Departmental Representative may require.
- .4 The Contractor shall furnish monthly progress reports from the date of commencement. These reports shall show the percentage of completion of the various divisions of work and contain comments on the general progress of the project.

#### **1.16 JEAN CANFIELD BUILDING ACTIVITIES**

- .1 The Contractor is not to negatively impact the Jean Canfield Building (JCB) activities in any way. The building is to remain fully functional.

#### **1.17 WORK PLAN**

- .1 The Contractor is to prepare and submit a weekly work plan by end of business Thursdays to Departmental Representative.
- .2 Work plan to identify work for the coming week, interruptions, deliveries, use of loading dock, updated schedule, Jean Canfield Building (JCB) schedule requirements.
- .3 Work plan to be submitted through from Award to Final Completion for all aspects of the project.

#### **1.18 CONTRACTOR'S USE OF SITE**

- .1 Do not unreasonably encumber site with materials or equipment.
- .2 Move stored products or equipment, which interfere with operations of Departmental Representative or other Contractors.
- .3 Obtain and pay for use of additional off site storage or work areas needed for operations.

#### **1.19 PROJECT MEETINGS**

- .1 Hold weekly project meetings at the site, in the Contractor's site office and at a time approved by Departmental Representative. In addition hold any additional meetings as the need arises or as directed by the Departmental Representative.
- .2 Notify all parties concerned of such meetings.
- .3 The Contractor will record minutes of meetings and distribute to all parties within three (3) days of meeting.
- .4 Failure of the Contractor to accurately record minutes or distribute the minutes in a timely manner will result in the Departmental Representative taking over the duties and deducting an equal amount from the progress claims as compensation.

#### **1.20 SITE INSPECTOR**

- .1 No work is to be covered without having received approval from the Departmental Representative. The Departmental Representative will have the authority to cause any part of the work to cease, should, in his or her opinion, there be cause to do so.
- .2 This work shall be examined by the Departmental Representative and approval granted to resume when a satisfactory solution has been found out.

#### **1.21 SETTING OUT OF WORK**

- .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations.
- .2 Provide all equipment, materials and 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.

#### **1.22 LOCATION OF EQUIPMENT AND FIXTURES**

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and

maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

- .3 Inform Departmental Representative of impending installation and obtain his approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

#### **1.23 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING**

- .1 Execute Work with least possible interference or disturbance to building operations, occupants, public and normal use of premises by government departments. 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 Where elevators, dumbwaiters, conveyors or escalators exist in building, only those assigned for Contractor's use may be used for moving workers and material within building. Protect walls of passenger elevators, to approval of Departmental Representative prior to use. Accept liability for damage, safety or equipment and overloading of existing equipment.
- .4 Provide temporary dust screens, barriers, warning signs in locations where renovations and alteration work is adjacent to areas which will be operative during such Work.

#### **1.24 ROUGHING-IN**

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

#### **1.25 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. This includes patching of openings in existing work resulting from removal of existing services.
- .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.

#### **1.26 CONCEALMENT**

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

#### **1.27 EXISTING SERVICES**

- .1 Before commencing Work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings
  - .2 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. This includes disconnection of electrical power and communication services to tenant's operational areas. Adhere to approved schedule and provide notice to affected parties.
  - .3 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
  - .4 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.
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- .5 Before commencing work, establish the location and extent of service lines and notify Departmental Representative of findings if in conflict with information or intent shown.
- .6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .7 Contractor shall pay for any or all repairs to existing services that have been damaged due to the Contractor's negligence in the course of his work.
- .8 Notify Departmental Representative and utilities of intended interruption of services and obtain permission.
- .9 Where Work involves breaking into or connecting to existing services, give Departmental Representative 24 hours notice for necessary interruption. Minimize duration of interruptions. Carry out Work at times as directed by governing authorities or Departmental Representative with minimum disturbance.
- .10 Provide temporary services when directed by Departmental Representative to maintain critical building and tenant systems.

#### **1.28 ADDITIONAL DRAWINGS**

- .1 The Departmental Representative may furnish as necessary for the execution of the work, additional instructions, by means of drawings or otherwise. All such additional instructions shall be consistent with the contract documents. In giving such additional instructions the Departmental Representative shall have authority to make minor changes in the work, consistent with the Contract.

END OF SECTION

## **1 General**

### **1.1 APPOINTMENT AND PAYMENT**

- .1 The Contractor will arrange and pay for the services of an independent Consultant to carry out the following tests:
  - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
  - .2 Inspection and testing performed exclusively for Contractor's convenience.
  - .3 Testing, adjustment and balancing of conveying systems, electrical equipment and systems.
  - .4 Mill tests and certificates of compliance.
  - .5 Where tests or inspections reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as Departmental Representative may require to verify acceptability of corrected work.

### **1.2 CONTRACTOR'S RESPONSIBILITIES**

- .1 Provide labour, equipment and facilities to:
  - .1 Provide access to Work for inspection and testing.
  - .2 Facilitate inspections and tests.
  - .3 Make good Work disturbed by inspection and test.
  - .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.
- .2 Notify Departmental Representative sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.
- .4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.
- .5 Provide Departmental Representative with two (2) sets of fully documented test reports, submitted immediately following the testing operations.

### **1.3 FINAL REPORT**

- .1 Submit to the Departmental Representative at completion of job, three (3) bound copies of inspection report. This report to include:
  - .1 All copies of test results, indexed to correspond with testing requirements of this Section.
- .2 Written report from the testing firm carrying out the work of this Contract stating that the work as itemized under Par. 4 of this Section has been performed in strict accordance with the requirements of the Contract documents.
- .3 The report will be signed and sealed by a Professional Engineer registered to practice in the Province of Prince Edward Island and practicing in the field of materials testing.

**END OF SECTION**

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## **1 General**

### **1.1 SUBMITTALS**

- .1 10 working days after award of contract and prior to commencement of Work, submit to Departmental Representative the following work management documents:
  - .1 Work Schedule as specified herein.
  - .2 Shop Drawing Submittal Schedule specified in Section 01 33 00 - Submittal Procedures.
  - .3 Lockout Procedures specified in Section 01 35 25 - Special Procedures on Lockout Requirements.
  - .4 Health and Safety Plan specified in Section 01 35 29 - Health, Safety, and Emergency Response Procedures.
  - .5 Environmental Plan specified in Section 01 35 43 - Environmental Procedures.
  - .6 List of workers requiring security clearance and those to be placed on Site Security Control list as specified in Section 01 35 53 - Security Procedures.
  - .7 Dust Control Plan specified in Section 01 50 00 - Facilities and Controls.

### **1.2 WORK SCHEDULE**

- .1 Upon notification of tender acceptance submit:
  - .1 Work schedule submitted within 7 calendar days of contract award.
- .2 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted tender.
- .3 Provide sufficient details in schedule to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of Work on time and permit effective monitoring of Work progress in relation to established milestones.
- .4 Work schedule content to include as a minimum the following:
  - .1 Bar (GANTT) Charts, indicating all work activities, tasks and other project elements, their anticipated durations, planned dates for achieving key activities and major project milestones supported with;
  - .2 Written narrative on key elements of work illustrated in bar chart, providing sufficient details to demonstrate a reasonable implementation plan for completion of project within designated time.
  - .3 Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
- .5 Work schedule must take into consideration and reflect the required sequence of Work, special conditions and operational restrictions as specified below.
- .6 Schedule Work in cooperation with the Departmental Representative. Departmental Representative's decision is final in regards to time and order of Work. Incorporate within Work Schedule, items identified by Departmental Representative during review of preliminary schedule.
- .7 Completed schedule shall be to the Departmental Representative's approval. When schedule has been approved by Departmental Representative, take necessary measures to complete work within scheduled time. Do not change schedule without Departmental Representative's approval.
- .8 It is the Contractor's responsibility to ensure all subtrades and subcontractors are made aware of the work restraints and operational restriction specified.
- .9 Schedule Updates:
  - .1 Submit when requested by Departmental Representative.
  - .2 Provide information and pertinent details explaining reasons for necessary changes to implementation plan.
  - .3 Identify problem areas, anticipated delays, impact on schedule and proposed



corrective measures to be taken.

- .10 Departmental Representative will make interim reviews and evaluate progress of work based on approved schedule. Frequency of such reviews will be as decided by Departmental Representative. Address and take corrective measures on items of work as identified by reviews and as directed by Departmental Representative. Update schedule accordingly.
- .11 In every instance, change or deviation from work scheduling, no matter how minimal the risk or impact on safety or inconvenience to tenant or public might appear, will be subject to prior review and approval by the Departmental Representative.

### 1.3 PROJECT PHASING

- .1 Be aware that Building must be kept operational for the full duration of work of this contract. Building services to areas under use by tenants must also be maintained at all times during the Facility's operational hours and as specifically defined in operational restrictions specified in this section.

### 1.4 OPERATIONAL RESTRICTIONS

- .1 The Contractor must recognize that building occupants will be affected by implementation of this contract. The Contractor must perform the work with utmost regard to the safety and conscience of building occupants and users. All work activities must be planned and scheduled with this in mind. The Contractor will not be permitted to disturb any other portion of the building without providing temporary facilities as necessary to ensure safe and direct passage through disturbed or affected areas
- .2 Contractor to meet with the Departmental Representative on a weekly basis to identify intended work areas, activities and scheduling for the coming week.
- .3 To assure that construction work may proceed productively without risk to safety of building occupants and the public, and due to the nature of the tenant's operation be aware that certain work of this contract must be carried out during "Off-Hours".
- .4 Off-Hours: for the purposes of this contract, "off-hours" are defined as follows:
  - .1 Weeknight Hours: between the hours of 18:00 and 7:00 for each weekday Monday to Thursday inclusive.
  - .2 Weekend Hours: between the hours of 18:00 Friday evening to 7:00 Monday morning.
  - .3 Dependent on the nature and location of the construction activity, the day of the week and the time of the year, "off-hours" could be subject to redefinition to start or end at adjusted time periods. Scheduling of "off-hours" work will be subject to approval by the Departmental Representative.
- .5 The following work shall be performed during Off-Hours:
  - .1 Erection and dismantling of dust barriers, hoarding or other protective devices to separate areas of Facility occupied and under use by public and tenants from work areas;
  - .2 Asbestos abatement;
  - .3 Demolition of any masonry or concrete inside building;
  - .4 All work involving saw curring or boring of openings through masonry and concrete walls, floors, ceilings or roof;
  - .5 Work which requires the use of products controlled by WHMIS and for which MSDS sheets indicate toxic or hazardous materials requiring special handling and application procedures;
  - .6 Use of materials having high solvent content or other content emitting strong noxious fumes or odours;
  - .7 Painting;
  - .8 Removal of demolition debris from the building including cleaning of premises;
  - .9 Cleaning and preparing of occupied areas for daytime use by tenants

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- immediately following an off-hour workshift;
  - .10 Work which requires the temporary disconnection of power and communication services to occupied areas;
  - .11 Testing of fire alarms and other emergency annunciating system;
  - .12 Delivery of materials and equipment from exterior to the interior of building when access routes are located in tenant occupied spaces.
  - .13 Work which creates excessive noise or vibration creating interference with tenant operations.
  - .6 Departmental Representative reserves the right to stop certain daytime work activities, if the nature of that activity generates excessive noise or dust and have Contractor re-schedule that particular work to be performed during the Off-Hour period.
  - .7 Ensure that all trades are aware of the "Off-Hour" requirements of this contract and ensure that any extra costs incurred as a result is included in the Contractor's bid price for the work. No extra cost will be paid by Owner due to failure by General Contractor or his sub-contractors to recognize the off-hour requirements and other restrictions specified herein and to include all necessary allowances within their prices.
  - .8 See Section 01 35 53 - Security Procedures in regards to:
    - .1 Special security requirements which must be observed in the course of work.
    - .2 Provisions of security personnel by Contractor as part of the work.
  - .9 Limited Maneuvering Space on Site:
    - .1 Coordinate with Departmental Representative for loading/off loading. Parking is not available on-site.
  - .10 Facility circulation maintained:
    - .1 Ensure that entrances, corridors, stairwells, exits and other circulation routes are maintained free and clear providing safe and uninterrupted passage for facility users and public at all times for duration of work.
    - .2 Maintain those areas clean and free of construction materials and equipment during operational hours of Facility. Provide temporary and adequate devices to ensure users are not exposed to construction hazardous conditions and are protected from exposure to dust, noise and hazardous materials.
    - .3 Maintain fire escape routes accessible and fire fighting access open all times for the duration of the project. Do not under any circumstances block fire exit doors and do not leave construction materials or debris in corridors, stairwells and in building entrances and exits.
  - .11 Safety Signage:
    - .1 Provide on site, and erect as required during progress of work, proper bilingual signage, mounted on self-supporting stands, warning the public and building occupants of construction activities in progress and alerting need to exercise caution in proceeding through disturbed areas of the facility, and directing building occupants through any detours which may be required.
    - .2 Signage to be professionally printed and mounted on wooden backing, colored and to express messages as directed by the Departmental Representative.
    - .3 Generally maximum size of sign should be in the order of 1.0 square meter. Number of signs required will be dependent on number of areas in facility under renovation at any one time.
    - .4 Include cost for the supply and installation of these signs in the tender price.
  - .12 Dust and Dirt Control:
    - .1 See Sections 01 50 00 - Facilities and Controls and 01 74 19 - Construction Waste Management Disposal for dust control and cleaning requirements.
    - .2 Effectively plan and implement dust control measures and cleaning activities as an integral part of all construction activities. Review all measures with the Departmental Representative before undertaking work, especially for major dust
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- generating activities.
  - .3 Do not allow demolition debris and construction waste to accumulate and contribute to the propagation of dust.
  - .4 As work progresses, maintain construction areas in a tidy condition at all times. Remove gross dust accumulations by cleaning and vacuuming immediately following the completion of any major dust generating activity.
  - .5 Immediately remove all debris and dust from within occupied areas as generated by work therein during a given workshift.
  - .6 Disconnect and seal-off ductwork of HVAC servicing the construction area to stop spread of dust into other areas of Building.
  - .7 Avoid situation and practices which results in dust and dirt being brought from the construction areas or from the exterior and traced inside the building into occupied areas used by tenants or public. Provide and maintain tack mats and dust vestibules to facilitate dust control.
  - .8 Stop workers with soiled footwear from entering building. This includes roofing mechanics and heavy civil workers.
  - .9 Inform workers and make them sensitive to the need for dust and dirt control. Stringently enforce rules and regulations, immediately address non-compliance.
  - .10 Keep access doors to work areas closed at all times. Use only designated doors for entry or egress.
  - .13 Work in Occupied Areas:
    - .1 Where work must be carried out in an occupied area beyond the boundaries of the enclosed construction site, perform such work during the non-operational off-hour periods of the Facility.
    - .2 Ensure that all dust, dirt, debris, construction waste, materials, tools and equipment are completely removed at the end of each workshift. Clean and reinstate area ready for daytime use by tenant.
    - .3 Provide temporary dust barriers around immediate work areas and place fabric drop sheets over workstations, equipment and other furnishings located immediately adjacent to such work.
    - .4 Conduct work in such a way as to minimize the creation of dust and to avoid contaminating areas beyond the immediate location.
    - .5 Discuss and obtain Departmental Representative's approval beforehand on the type and extent of dust barriers, protective devices and measures needed.
    - .6 Be responsible for temporarily moving office furnishings, workstations, computer equipment and other objects as needed to gain access and conduct work. Reinstall all dislocated items at end of each workshift making the area operational again.
    - .7 Disconnect and reconnect any power and communications systems feeding workstations as required.
    - .8 Clean such areas as well as those corridors and routes used to gain entry and access.
  - .14 Cleaning of tenant occupied areas used by Contractor:
    - .1 Clean lobbies, corridors, stairs and other circulation routes used by workers to gain access to work by conducting cleaning, vacuuming and washing of floors, walls and other soiled surfaces.
    - .2 Obtain and pay for the services of a professional cleaning company to perform this cleaning. Cleaning staff shall remain on site one hour beyond the end of each off-hour workshifts to address any Tenant complaint or concerns and carryout additional cleaning functions as directed by Departmental Representative or by a pre-designated person(s) representing the tenant(s).
    - .3 Meager attempts at controlling dust and ineffective unprofessional cleaning
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procedures will not be tolerated.

- .4 Failure to provide effective dust control, allowing construction dust and dirt to escape beyond construction areas and contaminate occupied areas and building circulation areas will result in Contractor being ordered to immediately provide professional cleaning services without delay to remedy the situation and conduct all cleaning to the extent as determined by Departmental Representative. Alternatively, Departmental Representative may at certain times and at his own discretion obtain the services of an independent building cleaning agency when cleaning being provided by Contractor is ineffective or tardy in response. Costs of such services will be charged against Contractor in the form of financial penalties or holdback assessments against the Contract.
- .15 Ensure that all sub-trades are made aware of and abide by the contents of this section and in particularly the work restrictions specified herein due to tenant operational requirements.

## **1.5 PROJECT MEETINGS**

- .1 Schedule and administer project meetings, held on a minimum weekly basis, for entire duration of work and more often when directed by Departmental Representative as deemed necessary due to progress of work of particular situation.
- .2 Prepare agenda for meetings.
- .3 Notify participants in writing 4 days in advance of meeting date.
  - .1 Ensure attendance of all subcontractors.
  - .2 Departmental Representative will provide list of other attendees to be notified.
- .4 Hold meetings at project site or where approved by Departmental Representative.
- .5 Preside at meetings and record minutes.
  - .1 Indicate significant proceedings and decisions. Identify action items by parties.
  - .2 Distribute to participants by mail or by facsimile within 3 calendar days after each meeting.
  - .3 Make revisions as directed by Departmental Representative.
  - .4 Departmental Representative will advise whether submission of minutes by email is acceptable. Decision will be based on compatibility of software among participants.

## **1.6 WORK COORDINATION**

- .1 The General Contractor is responsible for coordinating the work of the various trades and predetermining where the work of such trades interfaces with each other.
  - .1 Designate one person from own employ having overall responsibility to review contract documents and shop drawings, plan and manage such coordination.
- .2 The General Contractor shall convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required.
  - .1 Provide each trade with the plans and specs of the interfacing trade, as required, to assist them in planning and carrying out their respective work.
  - .2 Develop coordination drawings when deemed required illustrating potential interference between work of various trades and distribute to all affected parties including structural trade.
    - .1 Pay particularly close attention to overhead work above ceilings and within or near to building structural elements.
    - .2 Coordination drawings to identify all building elements, service lines, rough-in points and indicate from where various services are coming.
  - .3 Review coordination drawings at purposely called meetings. Have subcontractors sign-off on drawings and publish minutes of each meeting.

- .4 Plan and coordinate work in such a way to minimize quantity of service line offsets.
- .5 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes.
- .3 Submission of shop drawings and ordering of prefabricated equipment or prebuilt components shall only occur once coordination meeting for such items has taken place between trades and all conditions affecting the work of the interfacing trades has been made known and accounted for.
- .4 Work Cooperation:
  - .1 Ensure cooperation between trades in order to facilitate the general progress of the work and avoid situations of spatial interference.
  - .2 Ensure that each trade provides all other trades reasonable opportunity for the completion of the work and in such a way as to prevent unnecessary delays, cutting, patching and the need to remove and replace completed work.

END OF SECTION

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## **1 General**

### **1.1 GENERAL**

- .1 Make specified submittals to the Departmental Representative. Include:
  - .1 Contract Security
  - .2 Proof of Insurance
  - .3 Workers' Compensation clearance letter
  - .4 Cost Breakdown
  - .5 Permits as required
  - .6 Construction schedule
  - .7 Corporate Safety Plan
  - .8 Site specific safety plan
  - .9 Shop drawing schedule
- .2 During Construction provide:
  - .1 Updated trade construction schedule
  - .2 Shop drawings as required
  - .3 Inspection and test reports
  - .4 Request for Information
  - .5 Submission required for payment purposes
- .3 At completion of Work provide:
  - .1 Submission at completion of Work as specified in Project Close Out, Commissioning, and Operations and Maintenance Data Sections.

### **1.2 ADMINISTRATIVE**

- .1 Refer to GC 3.10 Shop Drawings
- .2 Submit to Departmental Representative submittals listed for review. Submit in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .3 Do not proceed with Work affected by submittal until review is complete.
- .4 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .5 Where items or information is not produced in SI Metric units, converted values are acceptable.
- .6 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .7 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .8 Verify field measurements and affected adjacent Work are co-ordinated.
- .9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .11 Keep one reviewed copy of each submission on site.

### **1.3 SUBMITTAL SCHEDULES:**

- .1 Submittal schedule shall be formatted as follows:

| SECTION | ITEM/ | SHOP DWG | ORDER | ITEM |
|---------|-------|----------|-------|------|
|---------|-------|----------|-------|------|

- | NUMBER | EQUIP   | DEL DATE | DATE | DEL DATE |
|--------|---|----------|------|----------|
| .2     | The initial submission shall include completion of the first 3 columns of the above table example. Once approved shop drawings are received by the Contractor, the balance of the summary shall be updated and submitted accordingly. |          |      |          |

#### 1.4 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Allow 10 working days for Departmental Representative's review of each submission.
- .4 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .5 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .6 Submissions include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - .5 Details of appropriate portions of Work as applicable:
    - .1 Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.
    - .7 Operating weight.
    - .8 Wiring diagrams.
    - .9 Single line and schematic diagrams.
    - .10 Relationship to adjacent work.
- .7 After Departmental Representative's review, distribute copies.
- .8 Submit one transparency of shop drawings product data sheets, test reports, certificates, manufacturers instructions, manufacturers field reports for each requirement requested in specification Sections plus four (4) copies to be retained by Departmental Representative. Transparency to be returned to Contractor for his copying and distribution.
- .9 Submit 3 copies of Operation and Maintenance Data for requirements requested in

- specification Sections and as requested by Departmental Representative.
- .10 Delete information not applicable to project.
  - .11 Supplement standard information to provide details applicable to project.
  - .12 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, transparency will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
  - .13 The review of shop drawings by Public Works and Government Services Canada (PWGSC) or its authorized Consultant is for sole purpose of ascertaining conformance with general concept. This review shall not mean that PWGSC approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of the construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

## **1.5 SAMPLES**

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

## **1.6 SCHEDULES, PERMITS AND CERTIFICATES**

- .1 Submit to Departmental Representative copy of Work Schedule and various other schedules, permits, certification documents and project management plans as specified in other sections of the Specifications.
- .2 Submit copy of permits, notices, compliance Certificates received by Regulatory Agencies having jurisdiction and as applicable to the Work.

**END OF SECTION**

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## **1 General**

### **1.1 SECTION INCLUDES**

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

### **1.2 RELATED SECTIONS**

- .1 Section 01 35 29 - Health, Safety and Emergency Response Procedures.

### **1.3 REFERENCES**

- .1 National Fire Code 2010.
- .2 National Building Code 2010.

### **1.4 DEFINITIONS**

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

### **1.5 SUBMITTALS**

- .1 Submit copy of Hot Work Procedures and sample of Hot Work permit to Departmental Representative for review, within 14 calendar days of acceptance of bid.
- .2 Submit in accordance with Section 01 33 00 - Submittal Procedures.

### **1.6 FIRE SAFETY REQUIREMENTS**

- .1 Implement and follow fire safety measures during Work. Comply with following:
  - .1 National Fire Code 2010.
  - .2 National Building Code 2010.
  - .3 Federal and Provincial Occupational Health and Safety Acts and Regulations.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

### **1.7 HOT WORK AUTHORIZATION**

- .1 Obtain Departmental Representative's written "Authorization to Proceed" before conducting any form of Hot Work on site.
  - .2 To obtain authorization submit to Departmental Representative:
    - .1 Contractor's typewritten Hot Work Procedures to be followed on site as specified below.
    - .2 Description of the type and frequency of Hot Work required.
    - .3 Sample Hot Work Permit to be used.
  - .3 Upon review and confirmation that effective fire safety measures will be implemented and followed during performance of hot work, Departmental Representative will give authorization to proceed as follows:
    - .1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
    - .2 Subdivide the work into pre-determined, individual activities, each activity requiring a separately written authorization to proceed.
  - .4 Requirement for individual authorization will be based on:
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- .1 Nature or phasing of work;
- .2 Risk to Facility operations;
- .3 Quantity of various trades needing to perform hot work on project or;
- .4 Other situation deemed necessary by Departmental Representative to ensure fire safety on premises.
- .5 Do not perform any Hot Work until receipt of Departmental Representative's written "Authorization to Proceed" for that portion of work.
- .6 In tenant occupied Facility, coordinate performance of Hot Work with Facility Manager through the Departmental Representative. When directed, perform Hot Work only during non-operative hours of the Facility. Follow Departmental Representative's directives in this regard.
- .7 Submit requests in sufficient time so as not to delay work.

## **1.8 HOT WORK PROCEDURES**

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
- .2 Hot Work Procedures to include:
  - .1 Requirement to perform hazard assessment of site and immediate work area beforehand for each hot work event in accordance with Safety Plan specified in Section 01 35 29 - Health and Safety Requirements.
  - .2 Use of a Hot Work Permit system with individually issued permit by Contractor's Superintendent to worker or subcontractor granting permission to proceed with Hot Work.
  - .3 Permit required for each Hot Work event.
  - .4 Designation of a person on site as a Fire Safety Watcher responsible to conduct a fire safety watch for a minimum duration of 30-60 minutes immediately following the completion of the Hot Work.
  - .5 Compliance with fire safety codes, standards and occupational health and safety regulations specified.
  - .6 Site specific rules and procedures in force at the site as provided by the Facility Manager.
- .3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Label document as being the Hot Work Procedures for this contract.
- .4 Procedures shall clearly establish responsibilities of:
  - .1 Worker performing hot work,
  - .2 Person issuing the Hot Work Permit,
  - .3 Fire Safety Watcher,
  - .4 Subcontractor(s) and Contractor.
- .5 Brief all workers and subcontractors on Hot Work Procedures and of Permit system. Stringently enforce compliance.

## **1.9 HOT WORK PERMIT**

- .1 Hot Work Permit to include the following:
  - .1 Project name and project number;
  - .2 Building name and specific room or area where hot work will be performed;
  - .3 Date of issue;
  - .4 Description of hot work type needed;
  - .5 Special precautions to be followed, including type of fire extinguisher needed;
  - .6 Name and signature of permit issuer.
  - .7 Name of worker to which the permit is issued.

- .8 Permit validity period not to exceed 8 hours. Indicate start time/date and termination time/date.
- .9 Worker's signature with time/date of hot work completion.
- .10 Stipulated time period of safety watch.
- .11 Fire Safety Watcher's signature with time/date.
- .2 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.
- .3 Each Hot Work Permit to be completed in full, signed and returned to Contractor's Superintendent for safe keeping on site.

#### **1.10 FIRE PROTECTION AND ALARM SYSTEMS**

- .1 Fire protection and alarm systems shall not be:
  - .1 Obstructed.
  - .2 Shut-off, unless approved by Departmental Representative.
  - .3 Left inactive at the end of a working day or shift.
- .2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.
- .3 Costs incurred, from the fire department, Facility owner and tenants, resulting from negligently setting off false alarms will be charged to the Contractor in the form of financial progress payment reductions and holdback assessments against the Contract.

#### **1.11 DOCUMENTS ON SITE**

- .1 Keep Hot Work Permits and Hazard assessment documentation on site for duration of Work.
- .2 Upon request, make available to Departmental Representative or to authorized safety Representative for inspection.

END OF SECTION

## **1 General**

### **1.1 SECTION INCLUDES**

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

### **1.2 RELATED SECTIONS**

- .1 Section 01 35 29 - Health, Safety and Emergency Response Procedures.
- .2 Section 01 35 53 - Security Procedures.

### **1.3 REFERENCES**

- .1 CSA C22.1-12, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
- .2 CAN/CSA-C22.3 No.1-06, Overhead Systems.
- .3 CSA C22.3 No.7-06, Underground Systems.
- .4 COSH: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.

### **1.4 DEFINITIONS**

- .1 Electrical Facility: means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.
- .2 Guarantee of Isolation: means a guarantee by a competent person in control or in charge that a particular facility or equipment has been isolated.
- .3 De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).
- .4 Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.
- .5 Isolate: means that an electrical facility, mechanical equipment or machinery is separated or disconnected from every source of electrical, mechanical, hydraulic, pneumatic or other kind of energy that is capable of making it dangerous.
- .6 Live/alive: means that an electrical facility produces, contains, stores or is electrically connected to a source of alternating or direct current of an amperage and voltage that is dangerous or contains any hydraulic, pneumatic or other kind of energy that is capable of making the facility dangerous to persons.

### **1.5 COMPLIANCE REQUIREMENTS**

- .1 Comply with the following in regards to isolation and lockout of electrical facilities and equipment:
  - .1 Canadian Electrical Code.
  - .2 Federal and Provincial Occupational Health and Safety Acts and Regulations.
  - .3 Regulations and code of practice as applicable to mechanical equipment or other machinery being de-energized.
  - .4 Procedures specified herein.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply.

### **1.6 SUBMITTALS**

- .1 Submit copy of lockout procedures, sample of lockout permit and lockout tags proposed for use in accordance with Section 01 33 00 - Submittal Procedures.. Submit within 14
-

calendar days of acceptance of bid.

## **1.7 ISOLATION OF EXISTING SERVICES**

- .1 Obtain Departmental Representative's written authorization prior to working on existing live or active electrical facilities and equipment and before proceeding with isolation of such item.
- .2 To obtain authorization, submit to Departmental Representative the following documentation:
  - .1 Written request to isolate the particular service or facility and;
  - .2 Copy of Contractor's Lockout Procedures.
- .3 Make a Request for Isolation for each event, unless directed otherwise by Departmental Representative, as follows:
  - .1 Fill-out standard form in current use at the Facility as provided by Departmental Representative or;
  - .2 Where no form exist, make written request indicating:
    - .1 The equipment, system or service to be isolated and it's location;
    - .2 Duration of isolation period (ie: start time & date and completion time & date).
    - .3 Voltage of service feed to system or equipment being isolated.
    - .4 Name of person making the request.
- .4 Do not proceed with isolation until receipt of written notification from Departmental Representative granting the Isolation Request and authorizing to proceed with the work.
  - .1 Note that Departmental Representative may designate another person at the Facility being authorized to grant the Isolation Request.
- .5 Conduct safe, orderly shut down of equipment or facility. De-energize, isolate and lockout power and other sources of energy feeding the equipment or facility.
- .6 Determine in advance, as much as possible, in cooperation with the Departmental Representative, the type and frequency of situations which will require isolation of existing services.
- .7 Plan and schedule shut down of existing services in consultation with the Departmental Representative and the Facility Manager. Minimize impact and downtime of Facility operations. Follow Departmental Representative's directives in this regard.
- .8 Conduct hazard assessment as part of the process in accordance with health and safety requirements specified Section 01 35 29 - Health and Safety Requirements.

## **1.8 LOCKOUTS**

- .1 De-energize, isolate and lockout electrical facility, mechanical equipment and machinery from all potential sources of energy prior to working on such items.
- .2 Develop and implement clear and specific lockout procedures to be followed as part of the Work.
- .3 Prepare typed written Lockout Procedures describing safe work practices, procedures, worker responsibilities and sequence of activities to be followed on site by workforce to safely isolate an active piece of equipment or electrical facility and effectively lockout and tagout it's sources of energy.
- .4 Include as part of the Lockout Procedures a system of lockout permits managed by Contractor's Superintendent or other qualified person designated by him/her as being "in-charge" at the site.
  - .1 A lockout permit shall be issued to specific worker providing a Guarantee of Isolation before each event when work must be performed on a live equipment or electrical facility.
  - .2 Duties of person managing the permit system to include:
    - .1 Issuance of permits and lockout tags to workers.

- .2 Determining permit duration.
- .3 Maintaining record of permits and tags issued.
- .4 Making a Request for Isolation to Departmental Representative when required as specified above.
- .5 Designating a Safety Watcher, when one is required based on type of work.
- .6 Ensuring equipment or facility has been properly isolated.
- .7 Collecting and safekeeping lockout tags returned by workers as a record of the event.
- .5 Clearly establish, describe and allocate responsibilities of:
  - .1 Workers.
  - .2 Person managing the lockout permit system.
  - .3 Safety Watcher.
  - .4 Subcontractor(s) and General Contractor.
- .6 Generic procedures, if used, must be edited and supplemented with pertinent information to reflect specific project requirements.
  - .1 Incorporate site specific rules and procedures in force at site as provided by Facility Manager through the Departmental Representative.
  - .2 Clearly label the document as being the Lockout procedures applicable to work of this contract.
- .7 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.
- .8 Use industry standard lockout tags.
- .9 Provide appropriate safety grounding and guards as required.

#### **1.9 CONFORMANCE**

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

#### **1.10 DOCUMENTS ON SITE**

- .1 Post Lockout Procedures on site in common location for viewing by workers.
- .2 Keep copies of Request for Isolation forms and lockout permits and tags issued to workers on site for full duration of Work.
- .3 Upon request, make available to Departmental Representative or to authorized safety representative for inspection.

END OF SECTION

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 01 35 24 - Special Procedures on Fire Safety Requirements.
- .2 Section 01 35 25 - Special Procedures on Lockout Requirements.

### **1.2 DEFINITIONS**

- .1 COSH: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- .2 Competent Person: means a person who is:
  - .1 Qualified by virtue of personal knowledge, training and experience to perform assigned work in a manner that will ensure the health and safety of persons in the workplace, and;
  - .2 Knowledgeable about the provisions of occupational health and safety statutes and regulations that apply to the Work and;
  - .3 Knowledgeable about potential or actual danger to health or safety associated with the Work.
- .3 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.
- .4 PPE: personal protective equipment.

### **1.3 SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan prior to commencement of Work.
  - .1 Submit within 10 work days of notification of Bid Acceptance. Allow for 5-10 days for Department review and recommendations prior to the commencement of work. Provide 3 copies.
  - .2 Departmental Representative will review Health and Safety Plan and provide comments.
  - .3 Revise the Plan as appropriate and resubmit within 5 work days after receipt of comments.
  - .4 Departmental Representative's review and comments made of the Plan shall not be construed as an endorsement, approval or implied warranty of any kind by Canada and does not reduce Contractor's overall responsibility for Occupational Health and Safety of the Work.
  - .5 Submit revisions and updates made to the Plan during the course of Work.
- .3 Submit name of designated Health and Safety Site Representative and support documentation specified in the Safety Plan.
- .4 Submit building permit, compliance certificates and other permits obtained.
- .5 Submit copy of Letter in Good Standing from Provincial Workers Compensation or other Department of Labour organization.
  - .1 Submit update of Letter of Good Standing whenever expiration date occurs during the period of Work.
- .6 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit copies of incident reports.
- .8 Submit WHMIS MSDS - Material Safety Data Sheets.

### **1.4 COMPLIANCE REQUIREMENTS**

- .1 Comply with Occupational Health and Safety Act for Province of Nova Scotia, and Regulations made pursuant to the Act.
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- .2 Comply with Occupational Health and Safety Act for Province of New Brunswick, and General Regulations made pursuant to the Act.
- .3 Comply with Occupational Health and Safety Act for Province of Prince Edward Island, and Occupational Health and Safety Regulations made pursuant to the Act.
- .4 Comply with Occupational Health and Safety Act for Province of Newfoundland and Labrador, and Occupational Health & Safety Regulations made pursuant to the Act.
- .5 Comply with Canada Labour Code - Part II (entitled Occupational Health and Safety) and the Canada Occupational Health and Safety Regulations as well as any other regulations made pursuant to the Act.
  - .1 The Canada Labour Code can be viewed at: [www.http://laws-lois.justice.gc.ca/eng/acts/L-2\\_fulltext.html](http://laws-lois.justice.gc.ca/eng/acts/L-2_fulltext.html).
  - .2 Canadian Occupational Health and Safety Regulations can be viewed at: <http://laws-lois.justice.gc.ca/eng/regulations/SOR-86-304/index.html>.
  - .3 A copy may be obtained at: Canadian Government Publishing Public Works & Government Services Canada Ottawa, Ontario, K1A 0S9 Tel: 819-956-4800 or 1-800-635-7943 Publication No. L31-85/2000 (E or F).
- .6 Treasury Board of Canada Secretariat (TBS):
  - .1 Treasury Board, Fire Protection Standard April 1, 2010 [www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316&section=text](http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316&section=text).
- .7 Canadian Standards Association (CSA):
  - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .8 Observe construction safety measures of:
  - .1 NBC 2010, Division B, Part 8.
  - .2 Municipal by-laws and ordinances.
- .9 In case of conflict or discrepancy between above specified requirements, the more stringent shall apply.
- .10 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof of clearance through submission of Letter in Good Standing.
- .11 Medical Surveillance: Where prescribed by legislation or regulation, obtain and maintain worker medical surveillance documentation.

## **1.5 RESPONSIBILITY**

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons and environment adjacent to the site to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by all workers, sub-contractors and other persons granted access to Work Site with safety requirements of Contract Documents, applicable federal, provincial, and local by-laws, regulations, and ordinances, and with site-specific Health and Safety Plan.

## **1.6 SITE CONTROL AND ACCESS**

- .1 Control the Work and entry points to Work Site. Approve and grant access only to workers and authorized persons. Immediately stop and remove non-authorized persons.
  - .1 Departmental Representative will provide names of those persons authorized by Departmental Representative to enter onto Work Site and will ensure that such authorized persons have the required knowledge and training on Health and Safety pertinent to their reason for being at the site, however, Contractor remains responsible for the health and safety of authorized persons while at the Work Site.
- .2 Isolate Work Site from other areas of the premises by use of appropriate means.
  - .1 Erect fences, hoarding, barricades and temporary lighting as required to



effectively delineate the Work Site, stop non-authorized entry, and to protect pedestrians and vehicular traffic around and adjacent to the Work and create a safe environment. See Section 01 50 00 - Facilities and Controls, for minimum acceptable requirements.

- .2 Post signage at entry points and other strategic locations indicating restricted access and conditions for access.
- .3 Provide safety orientation session to persons granted access to Work Site. Advise of hazards and safety rules to be observed while on site.
- .4 Ensure persons granted site access wear appropriate PPE. Supply PPE to inspection authorities who require access to conduct tests or perform inspections.
- .5 Secure Work Site against entry when inactive or unoccupied and to protect persons against harm. Provide security guard where adequate protection cannot be achieved by other means.

#### **1.7 PROTECTION**

- .1 Give precedence to safety and health of persons and protection of environment over cost and schedule considerations for Work.
- .2 Should unforeseen or peculiar safety related hazard or condition become evident during performance of Work, immediately take measures to rectify situation and prevent damage or harm. Advise Departmental Representative verbally and in writing.

#### **1.8 FILING OF NOTICE**

- .1 File Notice of Project with pertinent provincial health and safety authorities prior to beginning of Work.
  - .1 Departmental Representative will assist in locating address if needed.

#### **1.9 PERMITS**

- .1 Post permits, licenses and compliance certificates, specified in Section 01 35 29 - Health and Safety Requirements, Section 01 52 00 - Construction Facilities and Section 01 56 00 - Temporary Barriers and Enclosures.
- .2 Where a particular permit or compliance certificate cannot be obtained, notify Departmental Representative in writing and obtain approval to proceed before carrying out applicable portion of work.

#### **1.10 HAZARD ASSESSMENTS**

- .1 Perform site specific health and safety hazard assessment of the Work and its site.
- .2 Carryout initial assessment prior to commencement of Work with further assessments as needed during progress of work, including when new trades and subcontractors arrive on site.
- .3 Record results and address in Health and Safety Plan.
- .4 Keep documentation on site for entire duration of the Work.

#### **1.11 PROJECT/SITE CONDITIONS**

- .1 Following are potential health, environmental and safety hazards at the site for which Work may involve contact with:
    - .1 Facility on-going operations:
      - .1 Workers and operational activities at parking and loading docks..
      - .2 Interior workers and operational activities at interior of building in path to work site.
  - .2 Above items shall not be construed as being complete and inclusive of potential health and safety hazards encountered during Work.
  - .3 Include above items in the hazard assessment of the Work.
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- .4 MSDS Data sheets of pertinent hazardous and controlled products stored on site can be obtained from Departmental Representative.

#### **1.12 MEETINGS**

- .1 Attend pre-construction health and safety meeting, convened and chaired by Departmental Representative, prior to commencement of Work, at time, date and location determined by Departmental Representative. Ensure attendance of:
  - .1 Superintendent of Work.
  - .2 Designated Health & Safety Site Representative.
  - .3 Subcontractors.
- .2 Conduct regularly scheduled tool box and safety meetings during the Work in conformance with Occupational Health and Safety regulations.
- .3 Keep documents on site.

#### **1.13 HEALTH AND SAFETY PLAN**

- .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the Work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.
  - .2 Health and Safety Plan shall include the following components:
    - .1 List of health risks and safety hazards identified by hazard assessment.
    - .2 Control measures used to mitigate risks and hazards identified.
    - .3 On-site Contingency and Emergency Response Plan as specified below.
    - .4 On-site Communication Plan as specified below.
    - .5 Name of Contractor's designated Health & Safety Site Representative and information showing proof of his/her competence and reporting relationship in Contractor's company.
    - .6 Names, competence and reporting relationship of other supervisory personnel used in the Work for occupational health and safety purposes.
  - .3 On-site Contingency and Emergency Response Plan shall include:
    - .1 Operational procedures, evacuation measures and communication process to be implemented in the event of an emergency.
    - .2 Evacuation Plan: site and floor plan layouts showing escape routes, marshalling areas. Details on alarm notification methods, fire drills, location of firefighting equipment and other related data.
    - .3 Name, duties and responsibilities of persons designated as Emergency Warden (s) and deputies.
    - .4 Emergency Contacts: name and telephone number of officials from:
      - .1 General Contractor and subcontractors.
      - .2 Pertinent Federal and Provincial Departments and Authorities Having Jurisdiction.
      - .3 Local emergency resource organizations.
    - .5 Harmonize Plan with Facility's Emergency Response and Evacuation Plan. Departmental Representative will provide pertinent data including name of PWGSC and Facility Management contacts.
  - .4 On-site Communication Plan:
    - .1 Procedures for sharing of work related safety information to workers and subcontractors, including emergency and evacuation measures.
    - .2 List of critical work activities to be communicated with Facility Manager which have a risk of endangering health and safety of Facility users.
  - .5 Address all activities of the Work including those of subcontractors.
  - .6 Review Health and Safety Plan regularly during the Work. Update as conditions warrant to address emerging risks and hazards, such as whenever new trade or subcontractor
-

- arrive at Work Site.
- .7 Departmental Representative will respond in writing, where deficiencies or concerns are noted and may request re-submission of the Plan with correction of deficiencies or concerns.
- .8 Post copy of the Plan, and updates, prominently on Work Site.

#### **1.14 SAFETY SUPERVISION**

- .1 Employ Health & Safety Site Representative responsible for daily supervision of health and safety of the Work.
- .2 Health & Safety Site Representative may be the Superintendent of the Work or other person designated by Contractor and shall be assigned the responsibility and authority to:
  - .1 Implement, monitor and enforce daily compliance with health and safety requirements of the Work
  - .2 Monitor and enforce Contractor's site-specific Health and Safety Plan.
  - .3 Conduct site safety orientation session to persons granted access to Work Site.
  - .4 Ensure that persons allowed site access are knowledgeable and trained in health and safety pertinent to their activities at the site or are escorted by a competent person while on the Work Site.
  - .5 Stop the Work as deemed necessary for reasons of health and safety.
- .3 Health & Safety Site Representative must:
  - .1 Be qualified and competent person in occupational health and safety.
  - .2 Have site-related working experience specific to activities of the Work.
  - .3 Be on Work Site at all times during execution of the Work.
- .4 All supervisory personnel assigned to the Work shall also be competent persons.
- .5 Inspections:
  - .1 Conduct regularly scheduled safety inspections of the Work on a minimum bi-weekly basis. Record deficiencies and remedial action taken.
  - .2 Conduct Formal Inspections on a minimum [monthly] basis. Use standardized safety inspection forms. Distribute to subcontractors.
  - .3 Follow-up and ensure corrective measures are taken.
- .6 Cooperate with Facility's Occupational Health and Safety representative should one be designated by Departmental Representative.
- .7 Keep inspection reports and supervision related documentation on site.

#### **1.15 TRAINING**

- .1 Use only skilled workers on Work Site who are effectively trained in occupational health and safety procedures and practices pertinent to their assigned task.
- .2 Maintain employee records and evidence of training received. Make data available to Departmental Representative upon request.
- .3 When unforeseen or peculiar safety-related hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

#### **1.16 MINIMUM SITE SAFETY RULES**

- .1 Notwithstanding requirement to abide by federal and provincial health and safety regulations; ensure the following minimum safety rules are obeyed by persons granted access to Work Site:
  - .1 Notwithstanding requirement to abide by federal and provincial health and safety regulations; ensure the following minimum safety rules are obeyed by persons granted access to Work Site:

- .2 Immediately report unsafe condition at site, near-miss accident, injury and damage.
- .3 Maintain site and storage areas in a tidy condition free of hazards causing injury.
- .4 Obey warning signs and safety tags.
- .2 Brief persons of disciplinary protocols to be taken for noncompliance. Post rules on site.

#### **1.17 CORRECTION OF NON-COMPLIANCE**

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative will stop Work if non-compliance of health and safety regulations is not corrected in a timely manner.

#### **1.18 INCIDENT REPORTING**

- .1 Investigate and report the following incidents to Departmental Representative:
  - .1 Incidents requiring notification to Provincial Department of Occupational Safety and Health, Workers Compensation Board or to other regulatory Agency.
  - .2 Medical aid injuries.
  - .3 Property damage in excess of \$10,000.00,
  - .4 Interruptions to Facility operations resulting in an operational lost to a Federal department in excess of \$5,000.00.
- .2 Submit report in writing.

#### **1.19 HAZARDOUS PRODUCTS**

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).
- .2 Keep MSDS data sheets for all products delivered to site.
  - .1 Post on site.
  - .2 Submit copy to Departmental Representative.
  - .3 For interior work in an occupied Facility, post additional copy in one or more publically accessible locations.

#### **1.20 BLASTING**

- .1 Blasting or other use of explosives is not permitted on site.

#### **1.21 POWDER ACTUATED DEVICES**

- .1 Use powder actuated fastening devices only after receipt of written permission from Departmental Representative.

#### **1.22 CONFINED SPACES**

- .1 Abide by occupational health and safety regulations regarding work in confined spaces.
  - .2 Obtain an Entry Permit in accordance with Part XI of the Canada Occupational Health and Safety Regulations for entry into an existing identified confined space located at the Facility or premises of Work.
    - .1 Obtain permit from Facility Manager.
    - .2 Keep copy of permit issued.
  - .3 Safety for Inspectors:
    - .1 Provide PPE and training to Departmental Representative and other persons who require entry into confined space to perform inspections.
    - .2 Be responsible for efficacy of equipment and safety of persons during their entry and occupancy in the confined space.
-

**1.23 SITE RECORDS**

- .1 Maintain on Work Site copy of safety related documentation and reports stipulated to be produced in compliance with Acts and Regulations of authorities having jurisdiction and of those documents specified herein.
- .2 Upon request, make available to Departmental Representative or authorized Safety Officer for inspection.

**1.24 POSTING OF DOCUMENTS**

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on Work Site in accordance with Acts and Regulations of Province having jurisdiction.
- .2 Post other documents as specified herein, including:
  - .1 Site specific Health and Safety Plan.
  - .2 WHMIS data sheets.
  - .3 Notices for safety as per paragraph 1.9, this Section.

END OF SECTION

**1 General**

**1.1 FIRES**

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

**1.2 DISPOSAL OF WASTES**

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

**1.3 POLLUTION CONTROL**

- .1 Maintain temporary erosion and pollution control features installed under this contract.
- .2 Control emissions from equipment and plant to local authorities emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.  
Provide dust control for temporary roads.

**1.4 SMOKING RESTRICTIONS**

- .1 Smoking is not permitted inside the building or on site, at any time or at any stage of construction.

**1.5 ENVIRONMENTAL PERMIT APPROVAL**

- .1 Comply with requirements contained in the Transportation and Public Works  
Environmental Management Division environmental approval permit for the project.

END OF SECTION

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## **1 General**

### **1.1 GENERAL**

- .1 Employ Commissionaires (2) for execution of Work.
- .2 Due to the nature of this facility, and client operations therein, security regulations pertaining to site will be in place during the work resulting in need for:
  - .1 Control and limit of movement of construction workers inside building;
  - .2 Continuous escort and supervision of workers by security personnel;
  - .3 Specific rules and regulations as specified in this section and as directed by Departmental Representative to be stringently followed.
  - .4 All additional requirements found in the annex "Security Requirements Check List".
  - .5 Workers are required to sign at main entry daily, then proceed to loading bay for access to the work site. Passes to be returned at end of daily work.
- .3 It is the Contractor's responsibility to:
  - .1 Submit necessary documentation required and obtain security clearances for all workers (if required);
  - .2 Become familiar with and abide by security rules and regulations;
  - .3 Brief all workers and sub-contractors in respect of the security regulations and ensure that they abide by all rules and directives.
  - .4 Obtain and pay for a Security Commissionaire during the course of the work. Price to be carried in the Contractor's bid amount. Contact information for pricing and scheduling of Security Commissionaire as follows:
    - .1 Chris Collins  
Regional Manager Assistant  
Canadian Corps of Commissionaires  
NB / PEI Division  
Email: charlottetown@cccnbpei.ca  
Telephone: 902-894-7026  
Facsimile: 902-894-9564
- .4 The Departmental Representative will coordinate a pre-construction meeting between Contractor, Facility Management and Security Personnel who will provide details and directives on control and movement on site.
- .5 Any infraction of site security regulations on the part of the Contractor, members of work force or any Sub-contractor in his employee, could result in:
  - .1 Financial penalties in the form of progress payment reduction or holdback assessments being levied against the Contractor and;
  - .2 Demand immediate removal of offending party from site.

### **1.2 SECURITY PERSONNEL**

- .1 Commissionaire must stay within the actual construction area(s) for the entire work shift, including time periods before and after while workers are still on the premises, and provide surveillance to ensure that all workers abide by security requirements and limit movement to approved work areas.
- .2 Commissionaire to also provide escort function between loading dock and/or approved entrance door and to work area(s).
- .3 Commissionaire shall report directly to the Departmental Representative. All worker(s) shall follow security directives given by Commissionaire.
- .4 Ensure Commissionaire is fitted and wears approved safety hard hat, safety footwear and other personnel protective equipment appropriate to work in accordance with Section 01 35 29 - Health, Safety and Emergency Response Procedures.

### **1.3 SECURITY PASSES**

- .1 Visitor Tags are required for all personnel requiring access inside the building beyond the main public lobby. 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 nighttime 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.
- .6 The Departmental Representative will levy a financial penalty in the form of a holdback assessment against the Contract for each pass not returned regardless of the reason the pass is not returned.
- .7 Immediately report any lost, stolen or destroyed passes through the Departmental Representative to the Building's Security Personnel Manager.

### **1.4 SECURITY CONTROL LIST**

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

### **1.5 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 Security when security doors will be used and stringently follow all directives to ensure building security is effectively maintained.
  - .2 When work must be carried out during "off- hours" or beyond the work hours previously agreed upon at start of work, 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.
- .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.

END OF SECTION



## **1 General**

### **1.1 REFERENCES AND CODES**

- .1 Perform Work in accordance with National Building Code of Canada (NBC) 2010 including all amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.

### **1.2 HAZARDOUS MATERIAL DISCOVERY**

- .1 Asbestos: Demolition of spray or trowel-applied asbestos is hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of demolition work, immediately stop work and notify Departmental Representative.
- .2 Should material suspected of containing PCB's be encountered in the course of demolition work, immediately stop work and notify Departmental Representative.

END OF SECTION

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## 1 General

### 1.1 ABBREVIATION SCHEDULE

- .1 See Room Finish Schedule Abbreviations and Door Schedule Abbreviation attached to the respective Schedules for abbreviations specific to those schedules.

|       |                                |
|-------|--------------------------------|
| AFL   | Access Flooring                |
| ACI   | Acoustical Coated Insulation   |
| ACRYL | Acrylic Coating                |
| ACT   | Acoustical Ceiling Tile        |
| AGG   | Aggregate                      |
| AHU   | Air Handling Unit              |
| ALUM  | Aluminum                       |
| ANOD  | Anodized                       |
| ARCH  | Architect(ural)                |
| ASPH  | Asphalt                        |
| AUTO  | Automatic                      |
| AV    | Audio Visual                   |
| AWP   | Acoustic Wall Panel            |
| AWT   | Acoustical Wall Type           |
| A-RSF | Anti-Static Resilient Flooring |

|      |             |
|------|-------------|
| BL   | Bed Locator |
| BD   | Board       |
| BLDG | Building    |
| BR   | Bumper Rail |
| BRK  | Brick       |
| BULK | Bulkhead    |

|           |                           |
|-----------|---------------------------|
| C         | Conduit                   |
| C/A       | Cash Allowance            |
| CARP(CPT) | Carpet                    |
| CARP-T    | Carpet Tile               |
| CB        | Catch Basin               |
| CBD       | Chalkboard                |
| CBP       | Concrete Block Pier       |
| C/BLK     | Concrete Block            |
| C/C       | Center to Center          |
| CEIL      | Ceiling                   |
| CEM       | Cement                    |
| CEM/P     | Cement Plaster            |
| CG        | Corner Guard              |
| CGSB      | Can Gov't Standards Board |
| CH.R      | Chair Rail                |
| CH        | Ceiling Height            |
| CI        | Cast Iron                 |
| CJ        | Control Joint             |
| CL        | Ceiling Mounted           |
| C/L       | Centerline                |
| CLAD      | Cladding                  |
| CLR       | Clear                     |
| CLRD      | Colored                   |
| CM        | Construction Manager      |
| CNTR      | Counter                   |

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|         |                               |
|---------|-------------------------------|
| COL     | Column                        |
| COMM    | Communications                |
| CONC    | Concrete                      |
| CONC-H  | Concrete Hardener             |
| CONC-S  | Concrete Sealer               |
| CONSTR  | Construction                  |
| CONT    | Continuous                    |
| CORR    | Corridor                      |
| CS      | Carpet Sheet                  |
| CSA     | Canadian Standard Association |
| CT      | Ceramic Tile                  |
| CUH     | Cabinet Unit Heater           |
| C/W     | Complete With                 |
| C/WB    | Cabinet Whiteboard            |
| DEM     | Demountable                   |
| DET     | Detail                        |
| DF      | Double Faced                  |
| DIAM    | Diameter                      |
| DICT    | Dictation                     |
| DIM     | Dimension                     |
| DR      | Door                          |
| DS      | Door Schedule                 |
| DTL     | Detail                        |
| DWG     | Drawing                       |
| EBB     | Existing Baseboard Heater     |
| EC      | Epoxy Coating                 |
| ELECT   | Electrical                    |
| ELEV    | Elevator                      |
| EQ      | Equal                         |
| ETCH    | Etched Glass                  |
| EXIST   | Existing (Material)           |
| EXP     | Exposed                       |
| EXT     | Exterior                      |
| FAB     | Fabricated                    |
| FCB     | Flash Cove Base               |
| FCL     | Finish Ceiling Level          |
| FDN     | Foundation                    |
| FF      | Force Flow Heater             |
| FFL     | Finish Floor Level            |
| FILM    | Glass Film                    |
| FIN     | Finish                        |
| FIN SCH | Finish Schedule               |
| FL      | Floor                         |
| FP      | Fireproof(ing)                |
| FG      | Footgrille                    |
| FR      | Frame                         |
| FRP     | Fiber Reinforced Plastic      |
| FRR     | Fire Resistant Rating         |
| FS      | Fire Separation               |
| FUT     | Future                        |
| FXT     | Fixture                       |

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|          |  |
|----------|--|
| FC       | Flash Cove Base                              |
| GA       | Gauge  |
| GALV     | Galvanized                                   |
| GB (GWB) | Gypsum Board                                 |
| GB-IR    | Gypsum Board - Impact Resistant              |
| GGB-MR   | Gypsum Board - Moisture Resistant            |
| GL/BK    | Glass Block                                  |
| GL       | Glass or Glazing                             |
| GL-T     | Glass - Tempered                             |
| GL-W     | Glass - Wired (and WG)                       |
| H/C      | Handicapped                                  |
| HD       | Hard   |
| HDWE     | Hardware                                     |
| HM       | Hollow Metal                                 |
| HR       | Handrail                                     |
| HT       | Height                                       |
| HP       | Horsepower                                   |
| ICP      | Insulated Ceiling Panel                      |
| INCL     | Include(d) or Including                      |
| INSUL    | Friction Fit Batt Insulation                 |
| INT      | Interior                                     |
| IWP      | Insulated Wall Panel                         |
| JAN      | Janitor                                      |
| JT       | Joint  |
| LL       | Lead Lined                                   |
| LFI      | Loose Insulation Inside Concrete Block Cores |
| LINO     | Linoleum                                     |
| LNTRN    | Lantern                                      |
| LP       | Liner Panel                                  |
| LSG      | Laminated Safety Glass                       |
| LVR      | Louvre                                       |
| M        | Meters                                       |
| MAX      | Maximum                                      |
| MCC      | Motor Control Centre                         |
| MECH     | Mechanical                                   |
| MFCB     | Melamine Faced Composition Board             |
| MFGR     | Manufacturer                                 |
| MH       | Manhole                                      |
| MH/CB    | Manhole / Catch Basin                        |
| MIN      | Minimum                                      |
| MIR      | Mirror                                       |
| MISC     | Miscellaneous                                |
| MLC      | Metal Liner Ceiling                          |
| MM       | Millimeters                                  |
| MR       | Moisture Resistant                           |
| MS       | Millwork Schedule                            |
| MTL      | Metal  |

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|           |                                  |
|-----------|----------------------------------|
| NBCC      | National Building Code of Canada |
| NIC       | Not In Contract                  |
| NO        | Number                           |
| NOM       | Nominal                          |
| N/S       | Non-Slip                         |
| O/C       | On Centre                        |
| O/H       | Overhead                         |
| OHS       | Occupational Health and Safety   |
| OWSJ      | Open Web Steel Joist             |
| PAV       | Paving                           |
| PB        | Peg Board                        |
| PLAM      | Plastic Laminate                 |
| PLAST     | Plaster                          |
| PLY       | Plywood                          |
| PLWP      | Plastic Laminate Wood Panel      |
| PM        | Project Manager                  |
| PNL       | Panel                            |
| PP        | Plastic Paint                    |
| PS        | Projection Screen                |
| PSS       | Polished Stainless Steel         |
| PT        | Paint                            |
| PT-E      | Paint-Epoxy                      |
| P.T.      | Pressure Treated                 |
| PTN       | Partition                        |
| PTS       | Pneumatic Tube Station           |
| PVC       | Polyvinyl Chloride               |
| PRT       | Porcelain Tile                   |
| P.WR      | Public Washroom                  |
| Q-RND     | Quarter Round                    |
| QT        | Quarry Tile                      |
| R         | Radius                           |
| RBR (RUB) | Rubber / Rubber Base             |
| R/C       | Reinforced Concrete              |
| REQT      | Requirement                      |
| REV       | Revise, Revision                 |
| RES       | Resilient                        |
| RFC       | Resilient Flash Cove             |
| RFT       | Rubber Floor Tile                |
| RM        | Room                             |
| RMO       | Rough Masonry Open               |
| RND       | Round                            |
| RSF       | Resilient Sheet Flooring         |
| REINF     | Reinforced                       |
| RWL       | Rainwater Leader                 |
| RT        | Resilient Tile                   |
| RS        | Resilient Sheet                  |
| RS-N      | Resilient Sheet Non-Slip         |
| SAN       | Sanitary                         |
| SAP       | Sound Absorbing Panels           |

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|         |                                   |
|---------|-----------------------------------|
| SB      | Sound Blast                       |
| SC      | Special Coating                   |
| SCH     | Schedule                          |
| SHT-RBR | Sheet Rubber                      |
| SCI     | Sound Control Insulation          |
| SCRN    | Screen                            |
| SDG     | Sealed Double Glazing             |
| SHT     | Sheet                             |
| SHV     | Sheet Vinyl                       |
| SHT-S   | Sheet Vinyl Safety                |
| SHT-SR  | Sheet Vinyl Slip Resistant        |
| SHT-WG  | Sheet Vinyl Wood Grain            |
| SIM     | Similar                           |
| SLDG    | Sliding                           |
| SR      | Seamless Resin                    |
| SLR     | Sealer                            |
| SP      | Special                           |
| SPEC    | Specification(s)                  |
| SPKLR   | Sprinkler                         |
| SQ      | Square                            |
| SRF     | Studded Rubber Flooring           |
| SS      | Stainless Steel                   |
| STLD    | Steel Deck                        |
| STR     | Structural or Structure           |
| SV      | Stone Veneer                      |
| STOR    | Storage                           |
| S.WR    | Staff Washroom                    |
|         |                                   |
| TB      | Tackboard                         |
| TBR     | To Be Removed                     |
| TEL     | Telephone                         |
| T&F     | Taped and Filled                  |
| T&G     | Tongue and Groove                 |
| TORG    | Torginol                          |
| TOS     | Top of Structure                  |
| TERR    | Terrazzo                          |
| TERR-E  | Terrazzo - Epoxy                  |
| TS      | Tackboard Schedule                |
|         |                                   |
| U/C     | Undercut                          |
| U/G     | Underground                       |
| U/S     | Underside                         |
| ULS     | Underwriters Laboratory of Canada |
| UNO     | Unless Noted Otherwise            |
| URET    | Urethane                          |
| UWS     | Upholstered Wall System           |
|         |                                   |
| VB      | Vapor Barrier                     |
| VCT     | Vinyl Composite Tile              |
| VEST    | Vestibule                         |
| VF      | Vinyl Fabric                      |
| VM      | Vinyl Molding                     |
| VWC     | Vinyl Wall Covering               |
| VWP     | Vinyl Wall Protection             |

---

|     |                   |
|-----|-------------------|
| WB  | White Board       |
| WC  | Wood Closet       |
| WCH | Wheelchair        |
| WD  | Wood              |
| WR  | Washroom          |
| WS  | Wainscoting       |
| W/  | With              |
| WVP | Wood Veener Panel |

## **1.2 ABBREVIATION SCHEDULE**

END OF SECTION

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 78 00 - Closeout Submittals.

### **1.2 INSPECTION**

- .1 Facilitate Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents.

### **1.3 INDEPENDENT INSPECTION AGENCIES**

- .1 Departmental Representative may engage and pay for service of Independent Inspection and Testing Agencies for purpose of inspecting and testing portions of Work.
- .2 Where tests or inspections by designated Testing Agency reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests or inspections as Departmental Representative may require to verify acceptability of corrected work.
- .3 Provide equipment required for executing inspection and testing by appointed agencies.
- .4 Employment of Inspection/Testing Agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .5 If defects are revealed during inspection and/or testing, Departmental Representative may request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Owner. Pay costs for retesting and re inspection.

### **1.4 PROCEDURES**

- .1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
- .3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

### **1.5 REPORTS**

- .1 Submit copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to Subcontractor of work being inspected or tested.

### **1.6 EQUIPMENT AND SYSTEMS**

- .1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

END OF SECTION



---

**1 General**

**1.1 SITE ACCESS AND PARKING**

- .1 The Departmental Representative will designate Contractor's access to project site as well as parking facilities for equipment.
- .2 The Contractor will maintain asphalt surfaces and sidewalks free from mud and debris tracked from construction site, on a daily basis, at no cost to Owner.
- .3 The Contractor will provide and maintain signs, barricades and other devices required to indicate construction activities or other temporary and unusual conditions resulting from project work, at no cost.

**1.2 SNOW REMOVAL**

- .1 All snow removal to access Contractor's construction trailers and storage, and to perform own work by the Contractor.

**1.3 BUILDING ACCESS**

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

**1.4 STORAGE SHEDS**

- .1 Space does not allow for a site office, storage shed or material storage.

**1.5 LAYOUT**

- .1 Contractor shall be responsible for detailed setting out of his work.

**1.6 MATERIAL STORAGE**

- .1 Locate site storage trailers where directed by Departmental Representative. Place in location of least interference with existing facility operations.
- .2 Material storage space on site is limited. Coordinate delivery to minimize storage period on site before being needed for incorporation into work.
- .3 Make arrangements elsewhere in the City as deemed required and pay all costs for storage of materials not ready for incorporation into work.

**1.7 REMOVAL OF TEMPORARY FACILITIES**

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

**1.8 WASTE REMOVAL**

- .1 The Contractor will provide bins as required. Contractor responsible for placement and sorting of waste in the collection bins and removal of waste from site.

END OF SECTION

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## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 01 35 53 - Security Procedures.
- .2 Section 01 50 00 - Facilities and Controls.
- .3 Section 01 52 00 - Construction Facilities.
- .4 Section 01 56 00 - Temporary Barriers and Enclosures.

### **1.2 INSTALLATION AND REMOVAL**

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

### **1.3 WATER SUPPLY**

- .1 Water supply is available on site and will be provided for construction usage at no cost. Make arrangements for the use and transportation of such services to work area through the Departmental Representative.

### **1.4 SANITARY FACILITIES**

- .1 The Contractor will provide, at no cost to the Owner, sanitary facilities for work force in accordance with governing regulations and ordinances for entire duration of project. Facilities within the existing building are not available to the Contractor's work force.
- .2 The Contractor will post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.
- .3 Sanitary facilities must be located as directed by Departmental Representative.

### **1.5 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, panel boards, 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 and to lockout requirements specified in Section 01 35 29 - Health, Safety and Emergency Response Procedures.
- .3 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.

### **1.6 HEATING AND VENTILATING**

- .1 Heating by existing facility systems at Owner's cost.
- .2 Ventilating:
  - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
  - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
  - .3 Ventilate storage spaces containing hazardous or volatile materials.

- .4 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants, coordinate with Departmental Representative.
- .3 Submit tenders assuming existing equipment and systems will be used for heating and ventilating.

#### **1.7 FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies, authorities having jurisdiction, governing codes, regulations and bylaws.

END OF SECTION

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 01 50 00 - Facilities and Controls.
- .2 Section 01 51 00 - Temporary Utilities.
- .3 Section 01 56 00 - Temporary Barriers and Enclosures.

### **1.2 REFERENCES**

- .1 Canadian Construction Documents Committee (CCDC)
  - .1 CCDC 2-2008, Stipulated Price Contract.
- .2 Canadian General Standards Board (CGSB)
  - .1 CGSB 1-GP-189M-84, Primer, Alkyd, Wood, Exterior.
  - .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
- .3 Canadian Standards Association (CSA International)
  - .1 CAN3-A23.1-/A23.2-94, Concrete Materials and Methods for Concrete Construction/Method of Test for Concrete.
  - .2 CSA-0121-M1978, Douglas Fir Plywood.
  - .3 CAN/CSA-Z321-96, Signs and Symbols for the Occupational Environment.

### **1.3 INSTALLATION AND REMOVAL**

- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such work after use.

### **1.4 SCAFFOLDING**

- .1 Provide and maintain scaffolding.
- .2 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CAN/CSA-S269.2-M87(R1998).
- .3 Erect scaffolding independent of walls. Remove when no longer required.

### **1.5 HOISTING**

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

### **1.6 SITE STORAGE/LOADING**

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

### **1.7 EQUIPMENT, TOOL AND MATERIALS STORAGE**

- .1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.
- .3 Provide adequate weather tight, heat and ventilation appropriate for the use and storage of equipment, tools and materials.

END OF SECTION

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 01 50 00 - Facilities and Controls.
- .2 Section 01 51 00 - Temporary Utilities.
- .3 Section 01 52 00 - Construction Facilities.

### **1.2 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CGSB 1.189M-84, Primer, Alkyd, Wood, Exterior.
  - .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
- .2 Canadian Standards Association (CSA International)
  - .1 CSA-O121-M1978, Douglas Fir Plywood.

### **1.3 INSTALLATION AND REMOVAL**

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

### **1.4 DUST CONTROL 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 at entrance doors to work to fully isolate construction from other parts of the building.
  - .2 Construct dust partitions as follows:
    - .1 Use 10 mm polyethylene installed and sealed tightly to abutting walls, ceilings and floor with continuous duct tape along all edges and seams. Support in position with 38 x 89 wood framing at 400 mm o.c. Locate seams only at framing members and overlap sheeting by minimum of 150 mm.
  - .3 Provide and maintain tack mat.
  - .4 Provide and maintain vestibule.
  - .5 If these measures prove insufficient, provide and maintain vacuum cleaners in vestibule to vacuum workers clothing and boots.
- .4 Meager attempts at controlling dust will not be tolerated. Failure to provide effective dust control during work and to perform satisfactory cleaning there after will result in Departmental Representative to proceed and obtain a separate cleaning service agency to perform cleaning to tenant's satisfaction with cost for such services being charged against this Contract in the form of financial holdbacks.
- .5 Obtain Departmental Representative's approval before erecting any dust partitions simply to underside of finish ceiling.

- .6 Construction of dust barriers, enclosures and placement of temporary protective devices to be performed during Facility non-operational off-hour periods.

#### **1.5 GUARD RAILS AND BARRICADES**

- .1 Provide secure, rigid guard rails and barricades around areas where a change in elevation of greater than 900mm exists.
- .2 Provide as required by governing authorities.

#### **1.6 ACCESS TO EXITS**

- .1 Maintain access to all existing exits at all times.

#### **1.7 FIRE ROUTES**

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

#### **1.8 PROTECTION OF BUILDING FINISHES**

- .1 Provide protection for finished building components and equipment during demolition and construction. Protect stainless steel rails, flashings, windows, sky lights, wall panels, trees and landscaping elements which may be affected or damaged by the Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

#### **1.9 PROTECTION OF LANDSCAPE ELEMENT**

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Be responsible for damage incurred due to lack of or improper protection.

END OF SECTION

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## **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 materials and products proposed for supply:
  - .1 Name and address of manufacturer.
  - .2 Trade name, model and catalog number.
  - .3 Performance, descriptive and test data.
  - .4 Manufacturer's installation or application instructions.
  - .5 Evidence of arrangements to procure.
- .3 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.
- .4 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .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 REFERENCE STANDARDS**

- .1 Conform to reference standards, in whole or in part as specifically requested in specifications.
- .2 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.
- .3 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .4 Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.

### **1.3 CONFORMANCE**

- .1 When material or equipment is specified by standard or performance specifications, upon request of Departmental Representative, obtain from manufacturer an independent testing laboratory report, stating that material or equipment meets or exceeds specified requirements.

### **1.4 SUBSTITUTION OF MATERIAL**

- .1 Proposals for substitution may be submitted only after award of Contract. Such requests must include statements of respective costs of items originally specified and proposed substitutions.
  - .2 Proposals will be considered by Departmental Representative if:
    - .1 Products selected by tenderer from those specified, are not available, or
    - .2 Delivery date of products selected from those specified would unduly delay completion of Contract.
    - .3 Alternative products to those specified, which are brought to attention of, and considered by Departmental Representative as equivalent to those specified and will result in credit to Contract amount.
    - .4 Should proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on project. Pay for design or drawing changes required as a result of substitution.
    - .5 Amounts of all credits arising from approval of substitutions will be determined by
-

Departmental Representative and Contract price will be reduced accordingly. No substitutions will be permitted without prior written approval of Departmental Representative.

## **1.5 QUALITY OF PRODUCTS**

- .1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

## **1.6 QUALITY OF WORK**

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

## **1.7 AVAILABILITY**

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

## **1.8 TRANSPORTATION**

- .1 Pay costs of transportation and handling of products required in performance of Work.

## **1.9 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
  - .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
  - .3 Store products subject to damage from weather in weatherproof enclosures.
  - .4 Store cementitious products clear of earth or concrete floors, and away from walls.
  - .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on
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- wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber and on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

#### **1.10 MANUFACTURER'S INSTRUCTIONS**

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

#### **1.11 CO-ORDINATION**

- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

#### **1.12 FASTENINGS - GENERAL**

- .1 Provide metal fastenings and accessories in same texture, color and finish as base metal in which they occur.
- .2 Prevent electrolytic action between dissimilar metals.
- .3 Use non-corrosive fasteners, anchors and spacers for securing exterior work.
- .4 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood plugs not acceptable.
- .5 Keep exposed fastenings to minimum, space evenly and lay out neatly.
- .6 Fastenings which cause spalling or cracking are not acceptable.
- .7 Obtain Departmental Representative's approval before using explosive actuated fastening devices. If approval is obtained comply with CSA Z166-1975, and observe restrictions in Section 01 35 29 - Health, Safety and Emergency Response Procedures.

#### **1.13 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. Use No. 304 stainless steel for exterior areas.
- .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 resilient washers with stainless steel.

#### **1.14 LOCATION OF FIXTURES**

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
  - .2 Inform Departmental Representative of conflicting installation. Install as directed.
-

**1.15 CONCEALMENT**

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

**1.16 REMEDIAL WORK**

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

**1.17 CONSTRUCTION EQUIPMENT AND PLANT**

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

END OF SECTION

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**1 General**

**1.1 EXISTING SERVICES**

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.
- .2 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative.

**1.2 LOCATION OF EQUIPMENT AND FIXTURES**

- .1 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.
- .2 Inform Departmental Representative of impending installation and obtain approval for actual location.
- .3 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.
- .4 Record locations of maintained, re-routed and abandoned service lines.

END OF SECTION

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## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 01 10 00 - Summary
- .2 Section 01 33 00 - Submittal Procedures.

### **1.2 MATERIALS**

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

### **1.3 PREPARATION**

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

### **1.4 EXECUTION**

- .1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Remove samples of installed Work for testing.
- .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.
- .12 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.
- .13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

END OF SECTION

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## **1 General**

### **1.1 SECTION INCLUDES**

- .1 Text, schedules and procedures for systematic Waste Management Program for construction, deconstruction, demolition, and renovation projects, including:
  - .1 Diversion of Materials.
  - .2 Waste Audit (WA) - Schedule A.
  - .3 Waste Reduction Workplan (WRW) - Schedule B.
  - .4 Demolition Waste Audit (DWA) - Schedule C.
  - .5 Cost/Revenue Analysis Workplan (CRAW) - Schedule D.
  - .6 Materials Source Separation Program (MSSP).
  - .7 Canadian Governmental Responsibility for the Environment Resources - Schedule E.

### **1.2 RELATED SECTIONS**

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 02 41 19 - Selective Structural Demolition.

### **1.3 PRECEDENCE**

- .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

### **1.4 DEFINITIONS**

- .1 Materials Source Separation Program (MSSP): Consists of series of ongoing activities to separate usable and recyclable waste material into material categories from other types of waste at point of generation.
- .2 Recyclable: Ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.
- .3 Recycle: Process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .4 Recycling: Process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .5 Reuse: Repeated use of product in same form but not necessarily for same purpose. Reuse includes:
  - .1 Salvaging reusable materials from re-modeling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
  - .2 Returning reusable items including pallets or unused products to vendors.
- .6 Salvage: Removal of structural and non-structural materials from deconstruction/ disassembly projects for purpose of reuse or recycling.
- .7 Separate Condition: Refers to waste sorted into individual types.
- .8 Source Separation: Acts of keeping different types of waste materials separate beginning from first time they became waste.

### **1.5 DOCUMENTS**

- .1 Maintain at job site, one copy of following documents:
  - .1 Waste Reduction Workplan.
  - .2 Material Source Separation Plan.

### **1.6 SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Prepare and submit following prior to project start-up:
-

- .1 Submit 2 copies of completed Waste Reduction Work plan (WRW).

#### **1.7 QUALITY ASSURANCE - SITE VISIT**

- .1 Pre-bid site visit:
  - .1 Walk-through of project site prior to completion of bid submittal is mandatory.
  - .2 Date, time and location to be arranged by Departmental Representative.

#### **1.8 MATERIALS SOURCE SEPARATION PROGRAM (MSSP)**

- .1 Prepare MSSP and have ready for use prior to project start-up.
- .2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Departmental Representative.
- .3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.
- .4 Provide containers to deposit reusable and recyclable materials.
- .5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.
- .6 Locate separated materials in areas which minimize material damage.

#### **1.9 STORAGE, HANDLING AND PROTECTION**

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .3 Prevent contamination of materials to be recycled and handle materials in accordance with requirements for acceptance by designated facilities.
  - .1 On-site source separation is recommended.

#### **1.10 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste into waterways, storm, or sanitary sewers.
- .3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

#### **1.11 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises.
- .2 Maintain security measures established by existing facility.

#### **1.12 SCHEDULING**

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

### **2 Products**

#### **2.1 NOT USED**

- .1 Not used.

### **3 Execution**

#### **3.1 APPLICATION**

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

#### **3.2 CLEANING**

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

### 3.3 DIVERSION OF MATERIALS

- .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Consultant, and consistent with applicable fire regulations.
  - .1 Mark containers or stockpile areas.
  - .2 Provide instruction on disposal practices.
- .2 On-site sale of salvaged materials.
- .3 DEMOLITION WASTE:

| Material Type:          | Recommended<br>Diversion % | Actual<br>Diversion % |
|-------------------------|----------------------------|-----------------------|
| Acoustical Tile         | 50                         | _____                 |
| Acoustical Insulation   | 100                        | _____                 |
| Carpet                  | 100                        | _____                 |
| De-mountable Partitions | 80                         | _____                 |
| Doors and Frames        | 100                        | _____                 |
| Electrical Equipment    | 80                         | _____                 |
| Furnishings             | 80                         | _____                 |
| Mechanical Equipment    | 100                        | _____                 |
| Metals                  | 100                        | _____                 |
| Rubble                  | 100                        | _____                 |
| Wood (uncontaminated)   | 100                        | _____                 |
| Other                   | _____                      | _____                 |

### .4 CONSTRUCTION WASTE

| Material Type:        | Recommended<br>Diversion % | Actual<br>Diversion % |
|-----------------------|----------------------------|-----------------------|
| Cardboard             | 100                        | _____                 |
| Plastic Packaging     | 100                        | _____                 |
| Rubble                | 100                        | _____                 |
| Steel                 | 100                        | _____                 |
| Wood (uncontaminated) | 100                        | _____                 |
| Other                 | _____                      | _____                 |

### 3.4 WASTE AUDIT (WA)

- .1 Schedule A - Waste Audit (WA)
- .2 (1) Material Category, (2) Material Quantity Unit, (3) Estimated Waste %, (4) Total Quantity of Waste (unit), (5) Generation Point, (6) % Recycled, (7) % Reused.
- .3 Wood and Plastics Material Description.
- .4 Off-cuts.
- .5 Warped Pallet Forms.
- .6 Plastic Packaging.
- .7 Cardboard Packaging.
- .8 Other.
- .9 Doors and Windows Material Description.

- .10 Painted Frames.
- .11 Glass.
- .12 Wood.
- .13 Metal.
- .14 Other.

### **3.5 WASTE REDUCTION WORKPLAN (WRW)**

- .1 Schedule B
- .2 (1) Material Category, (2) Person(s) Responsible, (3) Total Quantity of Waste (unit), (4) Reused Amount (units) Projected Actual, (5) Recycled Amount (unit) Projected Actual, (6) Material (s) Destination.
- .3 Wood and Plastics Material Description.
- .4 Chutes.
- .5 Warped Pallet Forms.
- .6 Plastic Packaging.
- .7 Cardboard Packaging.
- .8 Other.
- .9 Doors and Windows Material Description.
- .10 Painted Frames.
- .11 Glass.
- .12 Wood.
- .13 Metal.

### **3.6 DEMOLITION WASTE AUDIT (DWA)**

- .1 Schedule C - Demolition Waste Audit (DWA)
- .2 (1) Material Description, (2) Quantity, (3) Unit, (4) Total, (5) Volume (cum), (6) Weight (cum), (7) Remarks and Assumptions.
- .3 Wood.
- .4 Wood Stud.
- .5 Plywood.
- .6 Baseboard-Wood.
- .7 Door Trim - Wood.
- .8 Cabinet.
- .9 Doors and Windows.
- .10 Panel Regular.
- .11 Slab Regular.
- .12 Wood Laminate.
- .13 Bi-fold - Closet.
- .14 Glazing.

### **3.7 COST/REVENUE ANALYSIS WORKPLAN (CRAW)**

- .1 Schedule D - Cost/Revenue Analysis Work plan (CRAW).
  - .2 (1) Material Description, (2) Total Quantity (unit), (3) Volume (cum), (4) Weight (cum), (5) Disposal Cost/Credit \$(+/-), (6) Category Sub-Total \$(+/-).
  - .3 Wood.
  - .4 Wood Stud.
  - .5 Plywood.
  - .6 Baseboard - Wood.
  - .7 Door Trim - Wood.
  - .8 Cabinet \$.
-



- .9 Doors and Windows.
- .10 Panel Regular.
- .11 Slab Regular.
- .12 Wood Laminate.
- .13 Bi-fold - Closet.
- .14 Glazing \$.
- .15 (7) Cost (-) / Revenue (+) \$

### **3.8 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT**

- .1 Schedule E - Government Chief Responsibility for the Environment.
  - .1 The Clean Environment Commission:  
284 Reimer Avenue, Box 21420,  
Steinback, MB R0A 2T3,  
(204) 326-2395  
(204) 326-2472.
  - .2 Environment Canada Toronto, ON  
(416) 734-4494
  - .3 Prince Edward Island Department of Environmental Resources,  
11 Kent Street, 4th Floor,  
PO Box 2000,  
Charlottetown, PE C1A 7N8  
(902) 368-5000  
(902) 368-5830

END OF SECTION

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 01 78 00 - Closeout Submittals.

### **1.2 INSPECTION AND DECLARATION**

- .1 Contractor's Inspection: Coordinate and perform, in concert with subcontractors, an inspection and check of all Work. Identify and correct deficiencies, defects, repairs and perform outstanding items as required to complete work in conformance with Contract Documents.
  - .1 Notify Departmental Representative in writing when deficiencies from Contractor's inspection have been rectified and that Work is deemed to be complete and ready for Departmental Representative's Inspection and Acceptance.
- .2 Departmental Representative's Inspection: Accompany Departmental Representative during all interim and final inspections of Work. Address defects, faults and outstanding items of work identified by such inspections.
- .3 The Departmental Representative will not issue an Interim Certificate of Completion until such time that Contractor performs following work and turns over to Departmental Representative specified documents:
  - .1 Project record as-built documents;
  - .2 Final Operations and Maintenance manuals;
  - .3 Maintenance materials, parts and tools;
  - .4 Compliance certificates from applicable authorities;
  - .5 Reports resulting from designated tests;
  - .6 Demonstration and training complete with user manuals;
  - .7 Manufacturer's Guarantee certificates.
  - .8 Testing, adjusting, balancing [and commissioning] of equipment and systems complete with submission of support documents.
- .4 At completion of project, in company with the Departmental Representative, make a check of all work and correct all discrepancies and defects. Be aware that the Final Certificate of Completion will not be issued until such time that Contractor has fully completed and turned over all specified as-built project record documents, training, maintenance manuals, test results and any guarantee certificate as issued by particular manufacturer.
- .5 Correct all discrepancies before final inspection and acceptance of Work.

### **1.3 WARRANTY PERIOD**

- .1 The Owner will advise the Departmental Representative of defects observed during Warranty periods.
- .2 The Departmental Representative will notify the Contractor of these defects and request him to remedy the defects in accordance with the Contract Documents.
- .3 Thirty days before expiration of Warranties the Owner, the Departmental Representative and the Contractor will review the work as arranged by the Contractor noting defects of products and workmanship.
- .4 The Contractor shall immediately remedy such noted defects.

END OF SECTION

## **1 General**

### **1.1 SECTION INCLUDES**

- .1 Project Record Documents as follows:
  - .1 As-Built drawings;
  - .2 As-Built specifications;
  - .3 Reviewed shop drawings.
- .2 Operations and Maintenance data as follows:
  - .1 Operations and Maintenance Manual;
  - .2 Maintenance Materials;
  - .3 Spare Parts;
  - .4 Special Tools.

### **1.2 RELATED SECTIONS**

- .1 Section 01 45 00 - Quality Control.
- .2 Section 01 77 00 - Closeout Procedures.

### **1.3 PROJECT RECORD DOCUMENTS**

- .1 Departmental Representative will provide two white print sets of contract drawings and two copies of Specifications Manual specifically for "as-built" purposes.
- .2 Maintain at site one set of the contract drawings and specifications to record actual as-built site conditions.
- .3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Departmental Representative at any time during construction.
- .4 As-Built Drawings:
  - .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of project and prior to interim inspection, neatly transfer notations to second set (also by use of red ink). Submit both sets to Departmental Representative. All drawings of both sets shall be stamped "As-Built Drawings" and be signed and dated by Contractor.
  - .2 Show all modifications, substitutions and deviations from what is shown on the contract drawings or in specifications.
  - .3 Record following information:
    - .1 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure;
    - .2 Field changes of dimension and detail;
    - .3 Location of all capped or terminated services and utilities.
    - .4 Chases for mechanical, electrical and other services;
    - .5 Ceiling and floor elevations;
    - .6 Reflected ceiling plan condition showing finished layout of all ceiling-mounted services and devices;
    - .7 Plumbing, heating, air conditioning and ventilation, sprinkler and electrical service installation locations; all to be dimensioned and referenced to building columns or load bearing walls;
    - .8 All design elevations, sections, floor plans and details dimensioned and marked-up to consistently report finished installation conditions;
    - .9 Any details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings must also be marked-up and dimensioned to reflect final as-built conditions and appended to the as-built drawing document;

- .10 All change orders issued over the course of the contract must be documented on the finished as-built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.
- .5 As-built Specifications: legibly mark in red each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly items substituted from that specified.
  - .2 Changes made by Addenda and Change Orders.
  - .3 Mark up both copies of specifications; stamp "as-built", sign and date similarly to drawings as per above clause.
- .6 Maintain As-built documents current as the contract progresses. Departmental Representative will conduct reviews and inspections of the documents on a regular basis. Frequency of reviews will be subject to Departmental Representative's discretion. Failure to maintain as-builts current and complete to satisfaction of the Departmental Representative shall be subject to financial penalties in the form of progress payment reductions and holdback assessments.

#### **1.4 REVIEWED SHOP DRAWINGS**

- .1 Compile full set of shop drawings and product data reviewed on project and incorporate into Operations and Maintenance Manual. Supply number of shop drawing sets equal to the required number of final Operations and Maintenance manuals.
- .2 Submit shop drawing sets at same time and as part of the contents of the Operation and Maintenance manuals specified in this section.

#### **1.5 UPDATING OF DIGITAL DRAWINGS**

- .1 Be aware that beyond the requirement to provide "red marked" as-built paper documents. Contractor shall also provide, as part of the contract requirements, the service of updating the digital drawings which were used to produce the contract drawings.
- .2 The Departmental Representative will provide one set of AutoCad Release 2000 drawing files specifically for "as-built" purposes. The AutoCad drawing files shall be updated to record same asbuilt information as specified in above clauses for the provision of paper as-built drawing documentation.
- .3 All "As-Built" changes to the electronic files provided shall be done following the standards as specified in the PWGSC Atlantic Region CADD Data Specification manual dated April 2002. A copy of this manual will be provided by the Departmental Representative upon request.
- .4 Make revisions to electronic files found to be in non-conformance with the CADD Data Specifications Manual as directed by Departmental Representative.
- .5 In regards to updating the digital files to reflect changes resulting from Change Orders, the change in cost of completing the As-Built documentation of changes is to be included in the amount for each Change Order issued. The amount included will constitute only the increase or decrease in CADD related costs resulting directly from the change. In determining the cost difference, full consideration will be given to the fact that other clauses of this section require As-Built CADD updates to the drawings irrespective of any Change Orders.
- .6 Deliver the digital information in same format and sequence as per contract drawings, submitted on writable CD's.
- .7 Submit the digital as-built files to the Departmental Representative at the same time as when turning over the two sets of marked-up paper white prints. Supply of digital as-builts documents does not replace the requirement for the provision of the marked-up white prints specified elsewhere in this section.

- .8 Provide 1 set of reproducible plots of the updated electronic as-built CADD drawing files.

## **1.6 OPERATIONS AND MAINTENANCE MANUALS**

- .1 Definition: an organized compilation of operating and maintenance data including detailed technical information, documents and records describing operation and maintenance of individual products or systems as specified in individual sections of the specifications.
- .2 Manual Language: final manuals to be in English language.
- .3 Number of copies required:
  - .1 Submit 2 interim copies of the manual for review and inspection by Departmental Representative. Make revisions and additions as directed and resubmit.
  - .2 Upon review and acceptance by Departmental Representative, submit 3 final copies. Initial copies are not to be considered as part of the final copies unless they have been fully revised and are identical to the final approved version.
- .4 Submission Date: submit complete operation and maintenance manual to Departmental Representative 3 weeks prior to application for Interim Certificate of Completion of project.
- .5 Binding:
  - .1 Assemble, coordinate, bind and index required data into Operation and Maintenance Manual.
  - .2 Use vinyl, hard covered, 3 "D" ring binders, loose leaf, sized for 215 x 280 mm paper, with spine pocket.
  - .3 Where multiple binders are needed, correlate data into related consistent groupings.
  - .4 Identify contents of each binder on spine.
  - .5 Organize and divide data into sections same as 16 division numerical order of contract specifications and thereafter subdivided into various equipment or building systems.
  - .6 Material: separate each section by use of cardboard dividers and labels. Provide tabbed fly leaf for each separate product or system within each section and with typed description of product and major component parts of equipment.
  - .7 Type lists and notes. Do not hand write.
  - .8 Drawings, diagrams and manufacturers' literature must be legible. Provide with reinforced, punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .6 Manual Contents:
  - .1 Cover sheet containing:
    - .1 Date submitted.
    - .2 Project title, location and project number.
    - .3 Names and addresses of Contractor, and all Sub-contractors.
  - .2 Table of Contents: provide full table of contents in each binder(s), clearly indicate which contents are in each binder.
  - .3 List of maintenance materials.
  - .4 List of spare parts.
  - .5 List of special tools.
  - .6 Original or certified copy of Warranties and Guarantees.
  - .7 Copies of approvals, and certificates issued by Inspection Authorities.
  - .8 Copies of reports and results from tests designated as Contractor's responsibilities.
  - .9 Product Information Data on all materials, equipment and systems as specified in individual sections of the specifications to include:

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- .1 List of equipment including manufacturer's name, supplier, local source of supplies and service depot(s). Provide full addresses and telephone numbers.
  - .2 Nameplate information including equipment number, make, size, capacity, model number and serial number.
  - .3 Parts list.
  - .4 Installation details.
  - .5 Operating instructions.
  - .6 Maintenance instructions for equipment.
  - .7 Maintenance instructions for finishes.
  - .7 Shop drawings:
    - .1 Bind one complete set of reviewed shop drawings into each copy of operations and maintenance manual.
    - .2 Bind the shop drawings in a manner such that they correspond with the specification section they relate to.
    - .3 Where large quantity of data is supplied due to size of project, fold and bind professionally into separate correctly sized binder.
  - .8 Equipment and Systems Data: the following list indicates the type of data and extent of information required to be included for each item of equipment and for each system:
    - .1 Description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
    - .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
    - .3 Include installed color coded wiring diagrams.
    - .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
    - .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
    - .6 Servicing and lubrication schedule, and list of lubricants required.
    - .7 Manufacturer's printed operation and maintenance instructions.
    - .8 Sequence of operation by controls manufacturer.
    - .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
    - .10 Provide installed control diagrams by controls manufacturer.
    - .11 Provide Contractor's coordination drawings, with installed color coded piping diagrams.
    - .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
    - .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
    - .14 Include test and balancing reports.
    - .15 Additional requirements as specified in individual specification sections.
  - .9 Materials and Finishes Maintenance Data:
    - .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and color and texture designations.
    - .2 Instructions for cleaning agents and methods, precautions against detrimental
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- agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional Requirements: as specified in individual specifications sections.

## **1.7 SUBMISSION**

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final inspection, with Departmental Representative's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, three final copies of operating and maintenance manuals in English.
- .5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.
- .9 Failure to deliver maintenance materials, spare parts, special tools and as-builts will delay progress payments.

## **1.8 FORMAT**

- .1 Organize data in the form of an instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: Manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

## **1.9 CONTENTS - EACH VOLUME**

- .1 Table of Contents: provide title of project;
  - .1 date of submission; names,
  - .2 addresses, and telephone numbers of Departmental Representative, Consultant and Contractor with name of responsible parties;
  - .3 schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
  - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to clearly identify specific products and component parts,

- and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control and Section 01 77 00 - Closeout Procedures.

#### **1.10 RECORDING ACTUAL SITE CONDITIONS**

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

#### **1.11 STORAGE, HANDLING AND PROTECTION**

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

#### **1.12 WARRANTIES AND BONDS**

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
  - .2 List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
  - .3 Obtain warranties and bonds, executed in duplicate by Subcontractors, suppliers, and manufacturers where specifically requested by individual specification sections, within ten days after completion of the applicable item of work.
  - .4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
  - .5 Verify that documents are in proper form, contain full information, and are notarized.
  - .6 Co-execute submittals when required.
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- .7 Retain warranties and bonds until time specified for submittal.

**1.13 SPARE PARTS, TOOLS AND MAINTENANCE MATERIALS**

- .1 Provide spare parts, special tools and extra materials for maintenance purposes in quantities specified in individual specification sections.
- .2 Tag all items with associated function or equipment.
- .3 Provide items of same manufacture and quality as items in Work.
- .4 Deliver to site in well packaged condition. Store in location as directed by Departmental Representative.
- .5 Clearly mark as to contents indicating:
  - .1 Part number.
  - .2 Identification of equipment or system for which parts are applicable.
  - .3 Installation instructions or intended use as applicable.
  - .4 Name, address and telephone number of nearest supplier.
- .6 Prepare and submit complete inventory list of items supplied. Include list within Maintenance Manual.

END OF SECTION

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 01 78 00 - Close Out Submittals

### **1.2 COMMISSIONING OBJECTIVE**

- .1 Perform commissioning activities in order to achieve the following objectives:
  - .1 Collect data on equipment and systems supplied; and to document their installation;
  - .2 Conduct checks and tests on fully installed building component, equipment, systems and integrated systems to:
    - .1 Verify whether they operate in accordance with requirements of Contract Documents;
    - .2 Verify performance against design criteria and user requirements and measure peak capacities;
  - .3 Prepare a Building Management Manual (BMM) which contains operations and maintenance data, as-built record documents, commissioning reports, training data and other critical information for future use by Facility operational staff;
  - .4 Ensure transfer of knowledge on the operations, maintenance and management of the Facility to Owner and Operational personnel by means of appropriate training.
- .2 Commissioning activities conducted by Owner and/or Departmental Representative does not replace checks, tests, adjustments, balancing and other performance verification responsibilities to be performed by Trade Contractor as part of the work and as specified in other sections of the Specifications.

### **1.3 DEFINITIONS**

- .1 For the purpose of this contract, the following terms, used in this section, as they relate directly or indirectly to the commissioning process, shall be deemed to have the meaning as defined hereafter.
- .2 Commissioning Process: a planned program of tasks, activities and procedures carried out systematically during the Construction and Occupancy Stages in accordance with the commissioning objectives, specified in clause 1.2 above, to:
  - .1 Verify whether the fully installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and;
  - .2 Ensure that appropriate documentation is compiled to effectively train Operation and Maintenance staff and prepare a comprehensive Building Management Manual (BMM).
- .3 Commission (ie: to commission a building component or system): tests and checks conducted on all systems and integrated systems of Facility; carried out only after they are fully installed, functional and Contractor's Performance Verification responsibilities have been completed and approved.
  - .1 Contractor provides assistance during this process by operating equipment and systems, by troubleshooting and making adjustments as may be required.
  - .2 Systems are run under their full operation and under various modes to determine if they function correctly, consistently, at peak efficiency and interactively with each other as intended in accordance with Contract Documents and design criteria.
  - .3 During these checks, adjustments may be made enhancing performance to meet environmental or user requirements.
- .4 Contractor: means the Contractor, however it also refers to any personnel from Subcontractors, including the controls subcontractors, suppliers and manufacturer

- representatives with whom the Contractor contracts or obtains services for the performance of work and designated commissioning duties.
- .5 Departmental Representative: persons from the civil, architectural, mechanical and electrical design disciplines of the Departmental Representative firm(s) engaged by Owner to prepare the final design and contract documents.
  - .6 Design Criteria: All those factors included in the design of a Facility prescribed by the tenant needs or as determined by Departmental Representative as necessary in order to meet all Facility functional and user operational requirements.
  - .7 Installation/Start-up Checks:(sometimes referred to as pre-functional checks). Checks and inspections to be performed by Contractor during the pre-start-up and start-up of a particular equipment or system component.
    - .1 Checklist sheets are produced which include the following data:
      - .1 Product manufacturer's installation instructions and recommended checks and;
      - .2 Special procedures as specified in relevant sections of Specifications;
      - .3 Other items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.
    - .2 Standard Installation/Start-up Checklist sheets prepared by equipment manufacturer are acceptable for use. Supplement with additional data representative of specific project conditions as deemed required by Departmental Representative.
    - .3 Use Checklist sheets for all equipment installation. Document in writing on checklist the various checks made, deficiencies noted and corrective action taken.
    - .4 Installing Sub-Contractor to sign Checklist sheets upon completion, certifying that stated checks and inspections have been performed.
  - .8 Performance Verification: (sometimes referred to Functional Testing) checks, running dynamic tests and adjustments carried out by Contractor on equipment and systems, upon their installation, to ensure they operate correctly, efficiently and function independently and interactively with other systems as intended in accordance with contract documents and manufacturer's recommendations.
    - .1 Performance Verification shall not be considered part of the commissioning process. It is however considered an essential and integral part of Contractor's responsibilities in the equipment installation process which must be stringently conducted, successfully completed and approved by Owner before a piece of equipment or system is considered fully installed and functional.
    - .2 Facility components and systems will not be commissioned until performance verification has been completed and approved.
  - .9 Product Information (PI Data): a compilation of data gathered on a particular piece of equipment, typically produced by manufacturer, which includes nameplate information, installation/startup instructions, parts list, operating instructions, maintenance guidelines and other pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of such equipment. This documentation is included in the Building Management Manual (BMM) at completion of work.

#### **1.4 CONTRACTOR'S COMMISSIONING RESPONSIBILITIES**

- .1 General:
  - .1 Coordinate the participation of the various subcontractors, their specialists and manufacturer's representatives in providing the commissioning activities described below.
  - .2 Ensure that workers and manufacturer's personnel are knowledgeable and qualified to interpret system functions and intended design criteria.

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- .3 Develop a commissioning schedule.
  - .4 Notify Departmental Representative in writing when Facility is ready for be commissioned. Give 14 calendar day notice.
  - .5 Commissioning of Facility and designated systems will only commence once that required documentation has been received and all installed equipment and systems have undergone successful performance verification.
  - .6 Be aware that inspection certificate will only be issued by Departmental Representative when:
    - .1 All commissioning documentation has been received, reviewed for suitability and approved by Departmental Representative;
    - .2 Designated facility components and systems have been commissioned and;
    - .3 Training has been completed.
  - .7 Non-Conformance of Performance Verification Requirements:
    - .1 Should incorrectly installed or malfunctioning equipment, system components or associated controls be found while Facility is being commissioned, Contractor shall be required to re-verify 100% of all equipment and components within the non functional system, including other related system as deemed required by Departmental Representative, to correct deficiencies and ensure effective performance.
    - .2 Costs to correct work and any additional tests or inspections, as deemed required by Departmental Representative, to determine acceptability and proper performance of such items to be paid for by Contractor.
      - .1 Above costs held against Contractor will be as financial penalties in the form of progress payment reductions or holdback assessments.
  - .2 Prior to Facility being Commissioned:
    - .1 Submit commissioning documentation as specified in clause 1.8 for use during commissioning.
    - .2 Carryout pre-start-up and start-up of equipment.
    - .3 Conduct performance verification on all installed equipment and systems. Ensure they are fully functional.
    - .4 Address deficiencies in Work identified during performance verification of equipment and systems. Conduct additional performance verification checks and tests to ensure acceptability of Work.
    - .5 Arrange for special tools and devices, identified at commissioning meeting(s), as deemed required to assist with commissioning.
    - .6 Provide access ladders, two way radios and other equipment required by Team when facility will be commissioned.
  - .3 When Facility is being Commissioned:
    - .1 Provide qualified tradespersons to be present at site to assist commissioning activity.
    - .2 Assist in commissioning architectural and structural building component, and mechanical, electrical and civil systems specified and as follows:
      - .1 Operate designated building component, mechanical/electrical equipment and system under all modes of operation and conduct checks and tests as directed by Departmental Representative.
      - .2 Check and verify that building component, equipment, systems and integrated systems, including their controls, are functioning and responding correctly and interactively with each other.
      - .3 Test systems independently and then in unison with other related systems.
-

- .4 Conduct all Commissioning checks and tests in presence of and witnessed by Departmental Representative.
- .3 Specific procedures used to commission Facility may be provided by Departmental Representative which includes:
  - .1 Sequential order of building component and system to be tested.
  - .2 Running systems under various anticipated modes and demands (example: high and low cooling or heating loads, duplicating outside temperature conditions, fire alarm and power failure conditions etc...).
  - .3 Operating designated equipment at peak capacities, recording output data against design criteria.
- .4 Run component or systems as long as necessary to effectively commission all items as deemed required by Departmental Representative.
- .5 Monitor equipment and system responses.
- .6 Record test results, measurements and other data.
- .7 Assist in analyzing results. Identify system deficiencies and components not responding as intended.
- .8 Correct deficiencies and system non-conformance issues. Adjust, calibrate or fine tune system components as required. Debug system software as may be required.
- .9 Retest systems when directed to confirm compliance.
- .4 Upon completion of Facility Commissioning:
  - .1 Provide training to Maintenance & Operational personnel as specified in clause 1.7 below.
  - .2 Turn over any filled-in checks sheets or reports resulting from commissioning.
- .5 During Warranty period at Occupancy Stage:
  - .1 Fine tune components, systems and integrated systems and continue system debugging to optimize Facility performance.
  - .2 Rectify warranty issues.
  - .3 Submit written report to Departmental Representative.
    - .1 Indicate results noted and corrective action taken.
    - .2 Note improvements made to operating parameters and control settings.
    - .3 Recommend modifications deemed advisable to improve performance, environmental conditions, energy consumptions and other issues.
  - .4 Departmental Representative to be present during such work.

#### **1.5 COMMISSIONING MEETINGS**

- .1 Convene Cx meetings following project meetings: as required through the project to coordinate Cx requirements.
- .2 Purpose: to resolve issues, monitor progress, identify deficiencies, relating to Cx.
- .3 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.
- .4 At 60% construction completion stage. Contractor to call a separate Cx scope meeting to review progress including consultant, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:
  - .1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.
  - .2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.
- .5 Thereafter Cx meetings to be held until project completion and as required during equipment startup and functional testing period.
- .6 Meeting will be chaired by Contractor, who will record and distribute minutes within 3

business days.

- .7 Ensure subcontractors and relevant manufacturer representatives are present at subsequent Cx meetings and as required.

## **1.6 COMMISSIONING SCHEDULE**

- .1 Address commissioning activities within the construction work schedule. Clearly identify allocated time period for commissioning and training activities.
- .2 Provide a commissioning schedule at the 60% construction stage in order that specific issues and individual details of commissioning can be reviewed, discussed and dealt with from that period onward to project completion. Submit updates thereafter,
- .3 Indicate allocated time period and anticipated dates for:
  - .1 Submission of commissioning documentation, including O&M Manuals.
  - .2 Equipment and system start-up and performance verification, making them ready to be commissioned.
  - .3 Allocated period to commission designated building components and systems.
  - .4 Training period.
  - .5 Work during Warranty period.
- .4 Submit schedule to Departmental Representative for review.

## **1.7 INSTRUCTORS**

- .1 Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:
  - .1 Start-Up, operation, shut-down of equipment, components and systems.
  - .2 Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.
  - .3 Instructions on servicing, maintenance and adjustment of systems, equipment and components.
- .2 Contractor and equipment manufacturer to provide instruction on:
  - .1 Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

## **1.8 TRAINING OBJECTIVES**

- .1 Training to be detailed and duration to ensure:
  - .1 Safe, reliable, cost-effective operation of systems in normal and emergency modes under all conditions.
  - .2 Effective on-going inspection, measurements of system performance.
  - .3 Proper preventive maintenance, diagnosis and trouble-shooting.
  - .4 Ability to update documentation.
- .2 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

## **1.9 TRAINING MATERIALS**

- .1 Contractor to be responsible for content and quality.
- .2 Training materials to include:
  - .1 "As-Built" Contract Documents.
  - .2 Operating Manual.
  - .3 Maintenance Manual.
  - .4 Management Manual.
  - .5 Testing, Adjusting and Balancing and Performance Verification Reports.
- .3 Training materials to be in a format that permits future training procedures to same degree of detail.

- .4 Supplement training materials:
  - .1 Transparencies for overhead projectors.
  - .2 Multimedia presentations.
  - .3 Manufacturer's training videos.
- .5 Equipment models.

#### **1.10 RESPONSIBILITIES**

- .1 Be responsible for:
  - .1 Implementation of training activities,
  - .2 Coordination among instructors,
  - .3 Quality of training, training materials,
- .2 Departmental Representative will evaluate training and materials.
- .3 Upon completion of training, provide written report, signed by Instructors, witnessed by Departmental Representative.
  - .1 Report to include a list of all attendees.

#### **1.11 TRAINING CONTENT**

- .1 Training to include demonstrations by Instructors using the installed equipment and systems.
- .2 Content includes:
  - .1 Review of facility and occupancy profile.
  - .2 Functional requirements.
  - .3 System philosophy, limitations of systems and emergency procedures.
  - .4 Review of system layout, equipment, components and controls.
  - .5 Equipment and system start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
  - .6 System operating sequences, including step-by-step directions for starting up, shut-down, operation of valves, dampers, switches, adjustment of control settings and emergency procedures.
  - .7 Maintenance and servicing.
  - .8 Trouble-shooting diagnosis.
  - .9 Inter-Action among systems during integrated operation.
  - .10 Review of O&M documentation.
- .3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

#### **1.12 TRAINING**

- .1 Allow for sufficient time to conduct adequate training, practice and questions.
- .2 Commence process of familiarizing O&M personnel in the early stages of work on purpose and operation of various equipment and systems. Continue process throughout the entire construction duration.
  - .1 Provide informal briefings during occasional site visits, at planned commissioning meetings and during the final commissioning site activities.
- .3 Conduct formal demonstration and training sessions only after all identified systems have been commissioned and Departmental Representative has given approval to proceed with the training process.
- .4 Provide training and demonstration on equipment, sub-systems, systems and integrated systems.
- .5 Carryout training in accordance with requirements of Section 01 91 13 - General Commissioning Requirements.
- .6 Submit written agenda of training session(s) 4 weeks before hand for review by

- Departmental Representative.
- .7 Submit training manuals for review 2 weeks prior to actual training.
- .8 Ensure required tools and O&M Manuals are on site for training and system demonstration.
- .9 As a minimum, the training sessions to cover the following information:
  - .1 Introduction.
  - .2 Description of the system.
  - .3 Instructions on start-up procedures, system check-lists and emergency procedures.
  - .4 Operational procedures, automatic operations and emergency modes.
  - .5 Instructions on all aspects of system maintenance, including routine servicing, lubrication, overhaul and factory servicing.
  - .6 Information concerning the scope of warranties and their use.
  - .7 A description of normal tools required for servicing the systems/equipment.
- .10 Submit typewritten record of training sessions given and list of attendees. Use forms of format approved by Departmental Representative.

#### **1.13 DESCRIPTION**

- .1 Owner will provide list of personnel to receive instructions, and will co-ordinate their attendance at agreed-upon times.

#### **1.14 SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Departmental Representative's approval.
- .3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .4 Record signatures of all attendees.
- .5 Give time and date of each demonstration, with list of persons present.

#### **1.15 CONDITIONS FOR DEMONSTRATIONS**

- .1 Equipment has been inspected and put into operation in accordance with respective applicable Sections.
- .2 Testing, adjusting, and balancing has been performed and equipment and systems are fully operational.
- .3 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

#### **1.16 PREPARATIONS**

- .1 Verify that conditions for demonstration and instructions comply with requirements.
- .2 Verify that designated personnel are present.

#### **1.17 DEMONSTRATION AND INSTRUCTIONS**

- .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, sequencing, winter/summer operating, servicing, and maintenance of each item of equipment at scheduled times, at the equipment location.
  - .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
  - .3 Review contents of manual in detail to explain aspects of operation and maintenance.
  - .4 Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.
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**1.18 COMMISSIONING DOCUMENTATION**

- .1 Submit the following documentation for use during commissioning and for incorporation thereafter into a Building Management Manual (BMM).
- .2 Operations and Maintenance Manuals, Project Record Documents and other data as specified in Section 01 78 00 - Closeout Submittals. Data to include:
  - .1 Equipment Product Information (PI Data) complete with:
    - .1 Nameplate info,
    - .2 Installation instructions,
    - .3 Operating procedures and
    - .4 Maintenance guidelines.
    - .5 Reviewed shop drawings,
    - .6 As-built record drawings and Specifications.
  - .2 Completed Installation/Start-up Checklist sheets used.
  - .3 Copy of any static and dynamic test and reports conducted.
  - .4 Reports as specified in various trade sections.
- .3 Documentation to include detailed information and number of copies as specified for maintenance manuals of Section 01 78 00 - Closeout Submittals.

END OF SECTION