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| <u>1.1 DESCRIPTION OF
WORK</u> | .1 | Work under this contract consist of:
.1 Renovation to existing GOCB building,
Levels one and three. |
| | .2 | Site of Work is at: 10 Weldon Street,
Shediac, NB. |
| <u>1.2 FAMILIARIZATION
WITH SITE</u> | .1 | Before submitting their bid, 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 bid. 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 scheduled site visit will be arranged
during Tender period, date to be determined. |
| <u>1.3 CODES AND
STANDARDS</u> | .1 | Perform work in accordance with the 2010
National Building Code of Canada and any
other code of provincial or local
application including all amendments up to
project tender closing date provided that in
any case of conflict or discrepancy, the
more stringent requirements shall apply. |
| | .2 | Materials and workmanship must meet or
exceed requirements of specified standards,
codes and referenced documents. |
| <u>1.4 SETTING OUT
WORK</u> | .1 | Assume full responsibility for and execute
complete layout of work to locations, lines
and elevations indicated. |
| | .2 | Provide devices needed to lay out and
construct work. |
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| <u>1.4 SETTING OUT
WORK
(Cont'd)</u> | .3 | Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work. |
| <u>1.5 INTERPRETATION
OF DOCUMENTS</u> | .1 | The Division 01 sections of the Specifications take precedence over technical specifications in other Divisions of the Specifications. |
| <u>1.6 COST BREAKDOWN</u> | .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 | List items of work by the 16 division numerical and subject title system used in the Specifications and subdivide into major component or systems as directed by Departmental Representative. After approval by Departmental Representative, cost breakdown will be used as basis for progress payment. |
| <u>1.7 MEASUREMENT FOR
PAYMENT</u> | .1 | Notify Departmental Representative sufficiently in advance of operations to permit required measurements for payment. |
| <u>1.8 DOCUMENTS
REQUIRED</u> | .1 | Maintain at job site, one copy each of the following:
.1 Contract Drawings
.2 Specifications
.3 Addenda
.4 Reviewed Shop Drawings
.5 List of outstanding shop drawings
.6 Change Orders
.7 Other modifications to Contract
.8 Field Test Reports
.9 Copy of Approved Work Schedule
.10 Health and Safety Plan and other safety related documents
.11 Other documents as stipulated elsewhere in the Contract Documents. |
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1.9 PERMITS

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

1.10 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 Provide temporary dust screens, barriers, warning signs, emergency exit signs in locations where renovation and alteration work is adjacent to areas which will be operative during such work.
 - .1 Dust barriers to be constructed of steel studs, 6mil poly, with all joints sealed, and 19 mm plywood as required for security.

1.11 ROUGHING-IN

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

- .1 The General Contractor shall ensure that cutting and patching for all trades is included in his bid price for the work.
- .2 Execute cutting including excavation, 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.

1.13 CONCEALMENT

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

1.14 LOCATION OF
FIXTURES

- .1 Location of equipment, fixtures and outlets, shown or specified shall be considered as approximate. Actual location shall be as required to suit conditions at time of installation and as is reasonable.
 - .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
 - .3 Inform Departmental Representative when impending installation conflicts with other new or existing components. Follow directives for actual location.
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| 1.14 LOCATION OF
FIXTURES
(Cont'd) | .4 | Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative. |
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| 1.15 EXISTING
SERVICES | .1 | Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian, vehicular traffic, tenant operations. |
| | .2 | Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings. |
| | .3 | Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. This includes disconnection of electrical power and communication services to tenant's operational areas. Adhere to approved schedule and provide notice to affected parties. |
| | .4 | Provide temporary services when directed by Departmental Representative to maintain critical building and tenant systems. |
| | .5 | Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing. |
| | .6 | Protect, relocate or maintain existing active services as required. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction over service. Record locations of maintained, re-routed and abandoned service lines. |
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1.16 BILINGUAL
NOTATIONS

- .1 Any items supplied and installed under this contract which have operating instructions on them such as door hardware, washroom accessories, push button activation controls powered hand dryers, mechanical equipment such as water coolers, etc., and which can be expected to be used by the building tenants, must have such operating instructions in bilingual format - English and French.
- .2 Factory embossed or recessed symbols illustrating equipment operation is an acceptable alternate to lettering.
- .3 Items supplied with factory - embossed or recessed lettering in one official language with an applied sticker or decal representing the second official language is not acceptable unless the Departmental Representative gives prior approval before any such items are ordered.
- .4 Internationally recognized color coding such as red and blue center pieces for plumbing brass is acceptable.
- .5 Public Works and Government Services Canada will not be responsible for re-stocking or re-ordering costs incurred by the Contractor as a result of his failure to ensure bilingual designation on such items.
- .6 The Contractor is responsible for ensuring that all trades are made aware of these requirements.

1.17 BUILDING
SMOKING
ENVIRONMENT

- .1 Comply with smoking restrictions.

1.18 ASBESTOS
DISCOVERY

- .1 Demolition of spray or trowel-applied asbestos can be hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of work, stop and notify Departmental Representative immediately. Do not proceed until written instructions have been received by the Departmental Representative.

1.19 CONTRACTORS
REQUEST FOR
INFORMATION

- .1 Contractor's Request For Information (RFI's) submitted by the Contractor is to be used for Clarification purposes only.
- .2 All RFI requests are a tool for the Contractor to clarify questions to the contract documents. As all items submitted under RFI's are to help the Contractor maintain schedule / direction, all RFI's are to be submitted a minimum of 2 weeks prior to required response.
- .3 Note that RFI's made by Contractor which are found to be clearly shown or specified in the Contract Documents shall be subject to financial penalties in the form of progress payment reductions and holdback assessment made against the Contract.

1.20 CONTRACT
DOCUMENTS

- .1 The Departmental Representative will provide 2 sets of contract documents for use by the contractor. All additional sets required will be at the contractor's cost.

Building Modernization Phase II 10 Weldon St. Shediac, NB Project No. R.039554.001	SUMMARY OF WORK	Section 01 11 00 Page 1 2013-07-17
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Part 1 General

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| <u>1.1 WORK COVERED BY
CONTRACT DOCUMENTS</u> | .1 | Work of this Contract comprises renovation of ground floor level + third floor level, 10 Weldon Street complex as indicated on the Drawings. |
| <u>1.2 CONTRACT METHOD</u> | .1 | Construct Work under single, stipulated price contract. |
| <u>1.3 CONTRACTOR USE
OF PREMISE</u> | .1 | Unrestricted use of site until Substantial Performance. |
| <u>1.4 DEPARTMENTAL
REPRESENTATIVE
FURNISHED ITEMS</u> | .1 | <p>Departmental Representative Responsibilities:</p> <ul style="list-style-type: none"> .1 Arrange for delivery of shop drawings, product data, samples, manufacturer's instructions to Contractor. .2 Deliver supplier's bill of materials to Contractor. .3 Arrange and pay for delivery to site in accordance with Progress Schedule. .4 Inspect deliveries jointly with Contractor and supplier. .5 Submit claims for transportation damage to supplier. .6 Arrange for replacement of damaged, defective or missing items. |
| | .2 | <p>Contractor Responsibilities:</p> <ul style="list-style-type: none"> .1 Designate delivery date required by Contractor for each product in progress schedule. .2 Review shop drawings, product data, samples, and other submittals. Submit to Departmental Representative notification of any observed discrepancies or problems anticipated due to non-conformance with Contract Documents within two weeks of receipt. .3 Receive and unload products at site. .4 Inspect deliveries jointly with Departmental Representative; record shortages, and damaged or defective items. |

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| 1.4 DEPARTMENTAL
REPRESENTATIVE
FURNISHED ITEMS
(Cont'd) | .2 | (Cont'd)
.5 Handle products at site, including uncrating and safe storage.
.6 Protect products from damage, and from exposure to elements.
.7 Assemble, install, connect, adjust, and finish products as required for professional installation.
.8 Provide installation inspections required by public authorities.
.9 Repair or replace items damaged by Contractor or sub contractor on site (under his control). |
| | .3 | Schedule of Departmental Representative furnished items:
.1 All furniture and items noted on the Drawings as "Departmental Representative Supplied" shall be supplied by the Departmental Representative and installed and coordinated by the Contractor. |

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| 1.5 DOCUMENTS
REQUIRED | .1 | Maintain at job site, one copy each of the following:
.1 Contract drawings.
.2 Specifications.
.3 Addenda
.4 Reviewed shop drawings.
.5 List of Outstanding Shop Drawings.
.6 Change orders.
.7 Other modifications to Contract.
.8 Field test reports.
.9 Copy of approved Work schedule.
.10 Manufacturers' installation and application instructions.
.11 Labour conditions and wage schedules.
.12 Health and Safety Plan and Other Safety Related Documents.
.13 Other documents as specified. |
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Part 2 Products

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| 2.1 NOT USED
Part 3 Execution | .1 | Not Used. |
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| 3.1 NOT USED | .1 | Not Used. |
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1.1 RELATED
SECTIONS

- .1 Section 01 50 00 - Temporary Facilities.

1.2 SUBMITTALS

- .1 Upon 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
 - .3 Waste Management Plan specified in Section 01 74 21
 - .4 Health and Safety Plan specified in Section 01 35 29
 - .5 Hot Work Procedures specified in Section 01 35 24
 - .6 Lockout Procedures specified in Section 01 35 25
 - .7 Dust Control Plan specified in Section 01 50 00.

1.3 WORK SCHEDULE

- .1 Upon notification of tender acceptance submit:
- .1 Preliminary work schedule submitted within 7 calendar days of contract award.
 - .2 Detailed work schedule submitted within 21 calendar days of contract award.
- .2 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted bid.
- .3 Provide sufficient details in preliminary 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 Preliminary 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;

1.3 WORK SCHEDULE
(Cont'd)

- .4 (Cont'd)
- .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 Detailed Work Schedule:
- .1 Prepare by use of Critical Path Method (CPM) indicating:
- .1 Complete and detailed sequence of all construction activities. Show projected start and completion dates for each activity.
- .2 Number of calendar days required to carryout each activity.
- .3 Critical path items with resulting critical dates, non-critical activities and resulting float time.
- .4 Actual workdays from non-working days such as weekend and statutory days etc...
- .5 Projected and actual percentage of work completed for each major work activity.
- .2 Prepare CPM schedule by use of well recognized and widely used electronic software. Submit copy of schedule in paper format and one electronic version on diskette for each submission.
- .3 Accompany CPM with written narrative as required and in sufficient detail to fully describe work and demonstrate a reasonable implementation plan for completion of project within designated time.
- .6 Work schedule must take into consideration and reflect any work phasing, required sequence of work, special conditions and operational restrictions as specified below and indicated on drawings.
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1.3 WORK SCHEDULE
(Cont'd)

- .7 Schedule work in cooperation with the Departmental Representative. Departmental Representative's decision is final in regards to time and order of work. Incorporate within Detailed Work Schedule, items identified by Departmental Representative during review of preliminary schedule.
 - .8 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.
 - .9 It is the Contractor's responsibility to ensure all subtrades and subcontractors are made aware of the work restraints and operational restrictions specified.
 - .10 Schedule Updates:
 - .1 Submit on a monthly basis.
 - .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.
 - .11 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.
 - .12 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.
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1.4 PROJECT PHASING .1 Be aware that Facility and tenants 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.

1.5 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 convenience 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 portion of the building without providing temporary facilities as necessary to ensure safe and direct passage through disturbed or otherwise 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 16:30 and 08:00 for each weekday Monday to Thursday inclusive.
.2 Weekend Hours: between the hours of 06:00 Friday evening to 06:00 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:

1.5 OPERATIONAL
RESTRICTIONS
(Cont'd)

- .5 (Cont'd)
- .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 Erection of site closure fencing and temporary hoarding at building entrances and fire exits to keep them operational during work;
 - .3 Asbestos abatement;
 - .4 Demolition of any masonry or concrete inside building;
 - .5 All work involving saw cutting or boring of openings through masonry and concrete walls, floors, ceilings or roof;
 - .6 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;
 - .7 Use of materials having high solvent content or other content emitting strong noxious fumes or odours;
 - .8 Painting;
 - .9 Removal of demolition debris from the building including cleaning of premises;
 - .10 Cleaning and preparing of occupied areas for daytime use by tenants immediately following an off-hour workshift;
 - .11 Work within a tenant occupied area including corridors, stairwells and other circulation routes under use;
 - .12 Work which requires the temporary disconnection of power and communication services to occupied areas;
 - .13 Testing of fire alarms and other emergency annunciating system;
 - .14 Delivery of materials and equipment from exterior to the interior of building when access routes are located in tenant occupied spaces.
 - .15 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.

1.5 OPERATIONAL
RESTRICTIONS
(Cont'd)

- .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 PWGSC 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 Facility circulation maintained:
 - .1 Ensure that entrances, corridors, 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 Provide temporary corridors, walkways, passageways, access to offices, etc... when required due to nature of work. Such circulation routes must be constructed to barrier free requirements unless approved otherwise by Departmental Representative.
 - .4 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.
 - .9 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.
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1.5 OPERATIONAL
RESTRICTIONS
(Cont'd)

- .9 (Cont'd)
- .2 Signage to be professionally printed and mounted on wooden backing, coloured 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 meters. Number of signs required will be dependent on number of areas in facility under renovation at any one time.
- .4 Include costs for the supply and installation of these signs in the bid price.
- .10 Dust and Dirt Control:
- .1 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 generating activities.
- .2 Do not allow demolition debris and construction waste to accumulate and contribute to the propagation of dust.
- .3 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.
- .4 Immediately remove all debris and dust from within occupied areas as generated by work therein during a given workshift.
- .5 Disconnect and seal-off ductwork of HVAC servicing the construction area to stop spread of dust into other areas of Facility.
- .6 Avoid situations and practices which results in dust and dirt being brought from the construction areas or from the exterior and tracked inside the building into occupied areas used by tenants or public.
- .7 Stop workers with soiled footwear from entering building. This includes roofing mechanics and heavy civil workers.
- .8 Inform workers and make them sensitive to the need for dust and dirt control. Stringently enforce rules and regulations, immediately address non-compliance.
- .9 Keep access doors to work areas closed at all times. Use only designated doors for entry or egress.
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1.5 OPERATIONAL
RESTRICTIONS
(Cont'd)

- .11 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 "off-hour" 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 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.
- .12 Cleaning of tenant occupied areas used by Contractor:
- .1 Clean lobbies, corridors, 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.

1.5 OPERATIONAL
RESTRICTIONS
(Cont'd)

.12 (Cont'd)

.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 complaints 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 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.

.13 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.

1.6 PROJECT MEETINGS

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

.2 Prepare agenda for meetings.

.3 Notify participants in writing 4 days in advance of meeting date.

1.6 PROJECT
MEETINGS
(Cont'd)

- .3 (Cont'd)
 - .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.
- .6 Departmental Representative will arrange project meetings and assume responsibility for setting times and recording minutes.

1.7 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.
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1.7 WORK
COORDINATION
(Cont'd)

- .2 (Cont'd)
- .2 (Cont'd)
- .1 Pay particularly close attention to overhead work above ceilings and within or near to building structural elements.
- .2 Coordination drawings to identify all building elements, services lines, rough-in points and indicate from where various services are coming.
- .3 Review coordination drawings at purposely called meetings. Have subcontractors sign-off on drawings and publish minutes of each meeting.
- .4 Plan and coordinate work in such a way to minimize quantity of service line offsets.
- .5 Submit copy of coordination drawings and meeting minutes to Departmental Representative for information purposes.
- .3 Submission of shop drawings and ordering of prefabricated equipment or prebuilt components shall only occur once coordination meeting for such items has taken place between trades and all conditions affecting the work of the interfacing trades has been made known and accounted for.
- .4 Work Cooperation:
- .1 Ensure cooperation between trades in order to facilitate the general progress of the work and avoid situations of spatial interference.
- .2 Ensure that each trade provides all other trades reasonable opportunity for the completion of the work and in such a way as to prevent unnecessary delays, cutting, patching and the need to remove and replace completed work.
- .5 Public Works and Government Services Canada will not be responsible for or held accountable for any extra costs incurred as a result of the failure to carry out coordination work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor and shall be resolved by him at no extra cost to the Contract.
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- 1.8 OTHER CONTRACTS
- .1 Other contracts may be in progress at the building during the course of this work.
 - .2 Further contracts may be let during the period that this contract is in progress.
 - .3 Cooperate with other Contractors in carrying out their respective works and carry out all instructions from the Departmental Representative in this regard.
 - .4 Connect properly and coordinate work with that of other Contractors. If any part of the work under this Contract depends for its proper execution or result upon the work of another Contractor, report promptly to the Departmental Representative, in writing, any defects in the work of such other Contractors as may interfere with the proper execution of this work.

Part 1 General

- 1.1 ADMINISTRATIVE
- .1 Schedule and administer bi-weekly (every two weeks) project meetings throughout progress of Work as determined by Departmental Representative.
 - .2 Prepare agenda for meetings.
 - .3 Distribute written notice of each meeting three (3) days in advance of meeting date to Departmental Representative.
 - .4 Provide physical space and make arrangements for meetings.
 - .5 Preside at meetings.
 - .6 Record minutes. Include significant proceedings and decisions. Identify action by parties.
 - .7 Reproduce and distribute copies of minutes within three (3) days after each meeting and transmit to meeting participants, affected parties not in attendance and Departmental Representative.
- 1.2 PRECONSTRUCTION MEETING
- .1 Within seven (7) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
 - .2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
 - .3 Establish time and location of meeting and notify parties concerned minimum three (3) days before meeting.
 - .4 Agenda to include following:
 - .1 Appointment of official representative of participants in Work.
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- 1.2 PRECONSTRUCTION .4 (Cont'd)
- MEETING .2 Schedule of Work, progress scheduling
(Cont'd) in accordance with Section 01 32 16.07 -
Project Time Management, Planning,
Monitoring and Control System - Bar (GANTT)
Charts.
- .3 Schedule of submission of shop
drawings, samples, colour chips in
accordance with Section 01 33 00 - Submittal
Procedures.
- .4 Requirements for temporary facilities,
site sign, offices, storage sheds,
utilities, fences in accordance with Section
01 51 00 - Temporary Utilities.
- .5 Delivery schedule of specified
equipment in accordance with Section 01 32
16.07 - Project Time Management, Planning,
Monitoring and Control System - Bar (GANTT)
Charts.
- .6 Site security in accordance with
Section 01 52 00 - Construction Facilities.
- .7 Proposed changes, change orders,
procedures, approvals required, mark-up
percentages permitted, time extensions,
overtime, and administrative requirements.
- .8 Departmental Representative provided
Products.
- .9 Record drawings in accordance with
Section 01 78 00 - Closeout Submittals.
- .10 Maintenance in accordance with Section
01 78 00 - Closeout Submittals.
- .11 Take-over procedures, acceptance, and
warranties in accordance with Section 01 77
00 - Closeout Procedures and 01 78 00 -
Closeout Submittals.
- .12 Monthly progress claims, administrative
procedures, photographs, and holdbacks.
- .13 Appointment of inspection and testing
agencies or firms in accordance with Section
01 45 00 - Quality Control.
- .14 Special project procedures, phasing,
security.
- .5 Comply with Departmental Representative's
allocation of mobilization areas of site;
for field offices and sheds, access,
traffic, and parking facilities.
-

- 1.2 PRECONSTRUCTION MEETING
(Cont'd)
- .6 During construction coordinate use of site and facilities through Departmental Representative's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.
- .7 Comply with instructions of Departmental Representative for use of temporary utilities and construction facilities.
- .8 Coordinate field engineering and layout work with Departmental Representative.
- 1.3 PROGRESS MEETINGS
- .1 During course of Work and two (2) weeks prior to project completion, schedule progress meetings bi-weekly (every two weeks).
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
- .3 Notify parties minimum three (3) days prior to meetings.
- .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within three (3) days after meeting.
- .5 Agenda to include following:
- .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
-

1.3 PROGRESS	.5	(Cont'd)
MEETINGS		.11 Review proposed changes for affect on
(Cont'd)		construction schedule and on completion
		date.
		.12 Other business.

Part 2 Products

2.1 NOT USED	.1	Not Used.
Part 3 Execution		

3.1 NOT USED	.1	Not Used.
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Part 1 General

1.1 DEFINITIONS

- .1 Activity: An element of Work performed during course of Project. An activity normally has an expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
 - .2 Bar Chart (GANTT Chart). A graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
 - .3 Baseline: Original approved plan (for Project, work package, or activity), plus or minus approved scope changes.
 - .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
 - .5 Duration: Number of work periods (not including holidays or other nonworking periods) required to complete an activity or other Project element. Usually expressed as workdays or workweeks.
 - .6 Master Plan: A summary-level schedule that identifies major activities and key milestones.
 - .7 Milestone: A significant event in Project, usually completion of major deliverable.
-

1.1 DEFINITIONS
(Cont'd)

- .8 Project Schedule: The planned dates for performing activities and the planned dates for meeting milestones. A dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: Overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative within ten (10) working days of Award of Contract Bar (GANTT) Chart as Project Schedule for planning, monitoring and reporting of project progress.

1.4 PROJECT
MILESTONES

- .1 Project milestones form interim targets for Project Schedule.
-

1.4 PROJECT
MILESTONES
(Cont'd)

- .1 (Cont'd)
- .1 Interim Certificate (Substantial Completion) within 96 weeks of Award of Contract date.

1.5 MASTER PLAN

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

1.6 PROJECT
SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Shop Drawings, Samples.
- .3 Permits.
- .4 Mobilization.
- .5 Masonry.
- .6 Interior Architecture (Walls, Floors and Ceiling).
- .7 Plumbing.
- .8 Lighting.
- .9 Electrical.
- .10 Piping.
- .11 Controls.
- .12 Heating, Ventilating, and Air Conditioning.

1.6 PROJECT
SCHEDULE
(Cont'd)

- .13 Millwork.
- .14 Fire Systems.
- .15 Testing and Commissioning.
- .16 Supplied equipment long delivery items.
- .17 Departmental Representative supplied equipment required dates.

1.7 PROJECT
SCHEDULE REPORTING

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

1.8 PROJECT
MEETINGS

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

1.1 RELATED
SECTIONS

- .1 Section 02 41 13 - Selective Site Demolition.

1.2 SECTION
INCLUDES

- .1 Shop drawings and product data.
.2 Samples.
.3 Certificates

1.3 SUBMITTAL
GENERAL REQUIREMENTS

- .1 Submit to Departmental Representative for review submittals listed, including shop drawings, samples, certificates and other data, as specified in other sections of the Specifications within six (6) weeks of contract award unless otherwise directed by the Departmental Representative .
.2 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative 's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.
.3 Do not proceed with work until relevant submissions are reviewed by Departmental Representative
.4 Present shop drawings, product data and samples in SI Metric units.
.5 Where items or information is not produced in SI Metric units, provide soft converted values.

1.3 SUBMITTAL
GENERAL REQUIREMENTS
(Cont'd)

- .6 Review submittals prior to submission to Departmental Representative . Ensure during review that necessary requirements have been determined and verified, required field measurements or data have been taken, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.
.1 Submittals not stamped, signed, dated and identified as to specific project will be returned unexamined by Departmental Representative 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 coordinated.
- .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 's review.
- .11 Submittal format: paper originals, or alternatively clear and fully legible photocopies of originals. Facsimiles are not acceptable, except in special circumstances pre-approved by Departmental Representative . Poorly printed non-legible photocopies or facsimiles will not be accepted and be returned for resubmission.
- .12 Make changes or revision to submissions which Departmental Representative may require, consistent with Contract Documents and resubmit as directed by Departmental Representative . When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.
- .13 Keep one reviewed copy of each submittal document on site for duration of Work.
-

1.4 SHOP DRAWINGS
AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, product data, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Number of Shop Drawings: submit sufficient copies of shop drawings which are required by the General Contractor and sub-contractors plus 4 copies which will be retained by Departmental Representative . Ensure sufficient numbers are submitted to enable one complete set to be included in each of the maintenance manuals specified in 01 78 00.
- .3 Shop Drawing Schedule:
 - .1 Submit, within 10 working days of contract award, in format acceptable to Departmental Representative , a schedule listing all shop drawings to be submitted for project as specified in various sections of the Specifications. Schedule to include proposed submission date of each shop drawing submission, review status and product delivery date to site. Track all submissions during entire project.
 - .2 As work progresses, revise schedule identifying those items which have been reviewed and finalized and indicating list of outstanding shop drawings.
 - .3 Submit schedule updates at stipulated dates or project time intervals as predetermined and agreed upon between Contractor and Departmental Representative at commencement of Work.
- .4 Shop Drawings Content and Format:
 - .1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where items or equipment attach or connect to other items or equipment, confirm that all interrelated work have been coordinated, regardless of section or trade from which the adjacent work is being supplied and installed.

- 1.4 SHOP DRAWINGS .4 (Cont'd)
AND PRODUCT DATA .2 Shop Drawings Format:
(Cont'd)
- .1 Opaque white prints or photocopies of original drawings or standard drawings modified to clearly illustrate work specific to project requirements. Maximum sheet size to be 1000 x 707 mm.
 - .2 Product Data from manufacturer's standard catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products, to be original full colour brochures, clearly marked indicating applicable data and deleting information not applicable to project.
 - .3 Non or poorly legible drawings, photocopies or facsimiles will not be accepted and returned not reviewed.
 - .3 Supplement manufacturer's standard drawings and literature with additional information to provide details applicable to project.
 - .4 Delete information not applicable to project on all submittals.
- .5 Allow 15 calendar days for Departmental Representative 's review of each submission.
- .6 Adjustments or corrections made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, advise Departmental Representative in writing prior to proceeding with Work.
- .7 If upon review by Departmental Representative , no errors or omissions are discovered or if only minor corrections and comments are made, fabrication and installation may proceed upon receipt of shop drawings. If shop drawings are rejected and noted to be Resubmitted, do not proceed with that portion of work until resubmission and review of corrected shop drawings, through same submission
-

- 1.4 SHOP DRAWINGS AND PRODUCT DATA
(Cont'd)
- .8 Accompany each submissions with transmittal letter, in duplicate, containing:
- .1 Date.
 - .2 Project title and project number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .9 Submissions shall include:
- .1 Date and revision dates.
 - .2 Project title and project 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 Cross references to particular details of contract drawings and specifications section number for which shop drawing submission addresses.
 - .6 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.
- .10 After Departmental Representative 's review, distribute copies.
-

<u>1.4 SHOP DRAWINGS AND PRODUCT DATA (Cont'd)</u>	.11	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.
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<u>1.5 SAMPLES</u>	.1	Submit for review samples as specified in respective specification Sections. Label samples with origin and intended use.
	.2	Deliver samples to PWGSC Project Manager's office or to other address as directed by Departmental Representative . Do not drop off samples at construction site except for special circumstances previously approved by Departmental Representative.
	.3	Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
	.4	Where colour, pattern or texture is criterion, submit full range of samples.
	.5	Adjustments made on samples by 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.

1.5 SAMPLES
(Cont'd)

- .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 Upon award of contract, submit to Departmental Representative copy of Work Schedule and various other schedules, permits, certification documents, Health and Safety Plan and project management plans as specified in other sections of the Specifications.
- .2 Submit a copy of Quality Control and Management Plan to the Departmental Representative within two (2) weeks of the contract award.
- .3 Submit copy of permits, notices, compliance Certificates received by Regulatory Agencies having jurisdiction and as applicable to the Work.
- .4 Submission of above documents to be in accordance with Submittal-General Requirements procedures specified in this section.

- | | | |
|-----------------------------|----|--|
| <u>1.1 SECTION INCLUDES</u> | .1 | Fire Safety Requirements |
| | .2 | Hot Work Permit |
| | .3 | Existing Fire Protection and Alarm Systems |
| <u>1.2 RELATED WORK</u> | .1 | Section 01 35 29 Health and Safety Requirements |
| | .2 | Section 01 35 25: Special Procedures on Lockout Requirements |
| <u>1.3 REFERENCES</u> | .1 | Fire Protection Standards issued by Fire Protection Services of Human Resources Development Canada as follows:
.1 FCC No. 301-June 1982 Standard for Construction Operations.
.2 FCC No. 302-June 1982 Standard for Welding and Cutting.
.3 FCC standards, may be viewed at the Regional Fire Protection Services' office (previously known as the Fire Commissioner of Canada) located at 99 Wyse Road, 8th Floor, Dartmouth, NS, Tel: (902) 426-6053. |
| <u>1.4 DEFINITIONS</u> | .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. |
| <u>1.5 SUBMITTALS</u> | .1 | Submit copy of Hot Work Procedures and sample of Hot Work permit to Departmental Representative for review, within 14 calendar days after contract award. |
| | .2 | Submit in accordance with the submittal - general requirements specified in section 01 33 00. |
-

1.6 FIRE SAFETY
REQUIREMENTS

- .1 Implement and follow fire safety measures during Work. Comply with following:
 - .1 National Fire Code, 2010
 - .2 Fire Protection Standards FCC 301 and FCC 302.
 - .3 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in section 01 35 29.
- .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 during performance of hot work, Departmental Representative will provide authorization to proceed as follows:
 - .1 Issue one written "Authorization to Proceed" covering the entire project for duration of work or;
 - .2 Separate work, or segregate certain parts of work, into individual entities. Each entity requiring a separately written "Authorization to Proceed" from Departmental Representative . Follow Departmental Representative 's directives in this regard.
 - .4 Requirement for individual authorization based on:
 - .1 Nature or phasing of work;
 - .2 Risk to Facility operations;
 - .3 Quantity of various trades needing to perform hot work on project or;
-

1.7 HOT WORK
AUTHORIZATION
(Cont'd)

- .4 (Cont'd)
 - .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 Facility. Follow Departmental Representative 's directives in this regard.

1.8 HOT WORK
PROCEDURES

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
 - .2 Procedures to include:
 - .1 Requirement to perform hazard assessment of site and immediate hot work area for each hot work event in accordance with Hazard Assessment and Safety Plan requirements of section 01 35 29.
 - .2 Use of a Hot Work Permit system for each hot work event.
 - .3 The step by step process of how to prepare and issue permit.
 - .4 Permit shall be issued by Contractor's site Superintendent, or other authorized person designated by Contractor, granting permission to worker or subcontractor to proceed with hot work.
 - .5 Provision of a designated person to carryout a Fire Safety Watch for a minimum of 60 minutes immediately upon completion of the hot work.
 - .6 Compliance with fire safety codes and standards specified herein and occupational health and safety regulations specified in section 01 35 29.
 - .3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Clearly label as being the Hot Work Procedures applicable to this contract.
-

1.8 HOT WORK
PROCEDURES
(Cont'd)

- .4 Hot Work Procedures shall clearly establish worker instructions and allocate responsibilities of:
 - .1 Worker(s),
 - .2 Authorized person issuing the Hot Work Permit,
 - .3 Fire Safety Watcher,
 - .4 Subcontractors and Contractor.
- .5 Brief all workers and subcontractors on Hot Work Procedures and Permit system established for project. Stringently enforce compliance.
 - .1 Failure to comply with the established procedures may result in the issuance of a Non-Compliance Notification at Departmental Representative 's discretion with possible disciplinary measures imposed as specified in section 01 35 29.

1.9 HOT WORK
PERMIT

- .1 Hot Work Permit to include, as a minimum, the following data:
 - .1 Project name and project number;
 - .2 Building name, address and specific room or area where hot work will be performed;
 - .3 Date when permit issued
 - .4 Description of hot work type to be performed;
 - .5 Special precautions required, including type of fire extinguisher needed;
 - .6 Name and signature of person authorized to issue the permit.
 - .7 Name of worker (clearly printed) to which the permit is being issued.
 - .8 Time Duration that permit is valid (not to exceed 8 hours). Indicate start time & date and completion time & date.
 - .9 Worker signature with date and time upon hot work termination.
 - .10 Specified time period requiring safety watch.
 - .11 Name and signature of designated Fire Safety Watcher, complete with time & date when safety watch terminated, certifying that surrounding area was under his continual surveillance and inspection during the full watch time period specified in Permit and commenced immediately upon completion of Hot Work.
-

- .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.

<u>1.1 SECTION INCLUDES</u>	.1	Procedures to isolate and lockout electrical facility or other equipment from energy source.
---------------------------------	----	--

<u>1.2 RELATED WORK</u>	.1	Section 01 35 29: Health and Safety
	.2	Section 01 35 24: Fire Safety Requirements

<u>1.3 REFERENCES</u>	.1	CSA C22.1-2002 - Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
	.2	CSA C22.3 No. 1-M87 (R2001) - Overhead Systems.
	.3	CSA C22.3 No. 7-94 (R2000) - Underground Systems.
	.4	COSH, Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.

<u>1.4 DEFINITIONS</u>	.1	Electrical Facility: means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.
	.2	Guarantee of Isolation: means a guarantee by a competent person in control or in charge that a particular facility or equipment is isolated.
	.3	De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).

1.4 DEFINITIONS
(Cont'd)

- .4 Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any person who might touch or go near such item.
- .5 Isolate: means that an electrical facility, mechanical equipment or machinery is separated or disconnected from every source of electrical, mechanical, hydraulic, pneumatic or other kind of energy that is capable of making it dangerous.
- .6 Live/alive: means that an electrical facility produces, contains, stores or is electrically connected to a source of alternating or direct current of an amperage and voltage that is dangerous or contains any hydraulic, pneumatic or other kind of energy that is capable of making the facility dangerous to persons.

1.5 COMPLIANCE
REQUIREMENTS

- .1 Perform lockouts in compliance with:
 - .1 Canadian Electrical Code
 - .2 Federal and Provincial Occupational Health and Safety Acts and Regulations as specified in section 01 35 29.
 - .3 Regulations and code of practice as applicable to mechanical equipment or other machinery being de-energized.
 - .4 Procedures specified herein.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

1.6 SUBMITTALS

- .1 Submit copy of proposed Lockout Procedures and sample form of lockout permit or lockout tags for review.
-

1.6 SUBMITTALS
(Cont'd)

- .2 Submit documentation within 14 calendar days of contract award. Do not proceed with work until submittal has been reviewed by Departmental Representative .
- .3 Submit above documents in accordance with the submittal requirements specified in section 01 33 00.
- .4 Resubmit Lockout Procedures with noted revisions as may result from Departmental Representative 's review.

1.7 LOCKOUTS

- .1 Isolate and lockout electrical facilities, mechanical equipment and machinery from all potential energy sources prior to starting work on such items.
 - .2 Develop and implement lockout procedures to be followed on site as an integral part of the Work.
 - .3 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.
 - .4 Use industry standard lockout tags.
 - .5 Provide appropriate safety grounding and guards as required.
 - .6 Prepare Lockout Procedures in writing. Describe safe work practices, work functions and sequence of activities to be followed on site to safely isolate all potential energy sources and lockout/tagout facilities and equipment.
 - .7 Include within procedures a system of worker request and issuance of individual lockout permit by a person, employed by Contractor, designated to be "in-charge" and being responsible for:
 - .1 Controlling issuance of permits or tags to workers.
 - .2 Determining permit duration.
 - .3 Maintaining record of permits and tags issued.
-

1.7 LOCKOUTS
(Cont'd)

- .7 (Cont'd)
- .4 Submitting a Request for Isolation to Departmental Representative when required in accordance with Clause 1.7 above.
 - .5 Designating a Safety Watcher, when one is required based on type of work.
 - .6 Ensuring equipment or facility has been properly isolated, providing a Guarantee of Isolation to worker(s) prior to proceeding with work.
 - .7 Collecting and safekeeping lockout tags, returned by workers, as a record of the event.
- .8 Clearly establish, describe and allocate, within procedures, the responsibilities of:
- .1 Workers.
 - .2 Designated person controlling issuance of lockout tags/permits.
 - .3 Safety Watcher.
 - .4 Subcontractors and General Contractor.
- .9 Procedures shall meet the requirements of Codes and Regulations specified in clause 1.5 above.
- .10 Generic procedures, if used, must be edited, supplemented with pertinent information and tailored to reflect specific project conditions. Clearly label as being the procedures applicable to this contract.
- .1 Incorporate site specific rules and procedures established by Facility Manager and in force at site. Obtain such procedures through Departmental Representative .
- .11 Procedures to be in typewritten format.
- .12 Submit copy of Lockout Procedures to Departmental Representative , in accordance with submittal requirements of clause 1.6 herein, prior to commencement of work.

1.8 CONFORMANCE

- .1 Ensure that lockout procedures, as established for project on site, are stringently followed. Enforce use and compliance by all workers.
-

1.8 CONFORMANCE
(Cont'd)

- .2 Brief all persons working on electrical facilities, mechanical and other equipment fed by an energy source on requirements of this section.
- .3 Failure to perform lockouts in accordance with regulatory requirements or follow procedures specified herein may result in the issuance of a Non-Compliance Notification at Departmental Representative 's discretion with possible disciplinary measures imposed as specified in section 01 35 29.

1.9 DOCUMENTS ON
SITE

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

- 1.1 RELATED WORK
- .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
 - .5 Work Site: where used in this section shall mean areas, located at the premises where Work is undertaken, used by Contractor to perform all of the activities associated with the performance of the Work.

- 1.3 SUBMITTALS
- .1 Make submittals in accordance with Section 01 33 00.
 - .2 Submit site-specific Health and Safety Plan prior to commencement of Work.
 - .1 Submit within 10 work days of notification of Bid Acceptance. Provide 3 copies.
 - .2 Departmental Representative will review Health and Safety Plan and provide comments.
-

1.3 SUBMITTALS
(Cont'd)

- .2 (Cont'd)
- .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 & 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 New Brunswick, and General Regulations made pursuant to the Act.
 - .2 Comply with Canada Labour Code - Part II Comply with Canada Labour Code - (entitled Occupational Health and Safety) and the Canada Occupational Health and Safety Regulations (COSH) as well as any other regulations made pursuant to the Act.
 - .1 The Canada Labour Code can be viewed at: [www.http://laws.justice.gc.ca/en/L-2/](http://laws.justice.gc.ca/en/L-2/)
-

1.4 COMPLIANCE
REQUIREMENTS
(Cont'd)

- .2 (Cont'd)
 - .2 COSH can be viewed at:
[www.http://laws.justice.gc.ca/eng/SOR-86-304/n e .html](http://laws.justice.gc.ca/eng/SOR-86-304/n e .html)
 - .3 A copy may be obtained at: Canadian Government Publishing Public Works & Government Services Canada Ottawa, Ontario, K1A 0S9 Tel: (819) 956-4800 (1-800-635-7943) Publication No. L31-85/2000 E or F)
- .3 Observe construction safety measures of:
 - .1 Part 8 of National Building Code
 - .2 Municipal by-laws and ordinances.
- .4 In case of conflict or discrepancy between above specified requirements, the more stringent shall apply.
- .5 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof of clearance through submission of Letter in Good Standing.
- .6 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.
-

1.6 SITE CONTROL
AND ACCESS
(Cont'd)

- .1 (Cont'd)
 - .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 for minimum acceptable requirements.
 - .2 Post signage at entry points and other strategic locations indicating restricted access and conditions for access.
 - .3 Use professionally made signs with bilingual message in the 2 official languages or international known graphic symbols.
- .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.
-

<u>1.7 PROTECTION (Cont'd)</u>	.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.
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<u>1.8 FILING OF NOTICE</u>	.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.
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<u>1.9 PERMITS</u>	.1	Post permits, licenses and compliance certificates, specified in section 01 10 10, at Work Site.
	.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.

<u>1.10 HAZARD ASSESSMENTS</u>	.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.

<u>1.11 PROJECT/SITE CONDITIONS</u>	.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 Level 2 Operational during renovation of Levels 1 - 3.
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- 1.11 PROJECT/SITE CONDITIONS (Cont'd)
- .1 (Cont'd)
 - .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.
 - .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.
-

1.13 HEALTH AND
SAFETY PLAN
(Cont'd)

- .2 (Cont'd)
 - .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 fire fighting 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.
-

1.13 HEALTH AND
SAFETY PLAN
(Cont'd)

- .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:

1.14 SAFETY
SUPERVISION
(Cont'd)

- .5 (Cont'd)
 - .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 Wear appropriate PPE pertinent to the Work or assigned task; minimum being hard hat, safety footwear, safety glasses and hearing protection.
 - .2 Immediately report unsafe condition at site, near-miss accident, injury and damage.
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- 1.16 MINIMUM SITE SAFETY RULES
(Cont'd)
- .1 (Cont'd)
- .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 non compliance. 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 \$5000.00.
- .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.
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|---|----|---|
| <u>1.19 HAZARDOUS
PRODUCTS
(Cont'd)</u> | .2 | (Cont'd)
.2 Submit copy to Departmental Representative.
.3 For interior work in an occupied Facility, post additional copy in one or more publically accessible locations. |
| <u>1.20 BLASTING</u> | .1 | Blasting or other use of explosives is not permitted on site . |
| <u>1.21 POWDER
ACTUATED DEVICES</u> | .1 | Use powder actuated fastening devices only after receipt of written permission from Departmental Representative. |
| <u>1.22 CONFINED
SPACES</u> | .1 | Abide by occupational health and safety regulations regarding work in confined spaces. |
| | .2 | 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. |
| <u>1.23 SITE RECORDS</u> | .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. |
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- 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

- | | | |
|---|----|--|
| <u>1.1 RELATED SECTIONS</u> | .1 | Section 01 74 21 - Construction/Demolition Waste Management & Disposal. |
| | .2 | Section 02 41 13 - Selective Site Demolition. |
| | .3 | Section 08 11 14 - Metal Doors and Frames. |
| <u>1.2 RELATED WORK</u> | .1 | This section to be read in conjunction with Section 01 74 21, Construction/Demolition Waste Management & Disposal. |
| <u>1.3 DEFINITIONS</u> | .1 | Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment. |
| <u>1.4 FIRES</u> | .1 | Fires and burning of rubbish on site not permitted. |
| <u>1.5 DISPOSAL OF WASTES AND HAZARDOUS MATERIALS</u> | .1 | Do not bury rubbish and waste materials on site. |
| | .2 | Do not dispose of hazardous waste including volatile materials, such as mineral spirits, paint thinner, oil or fuel into waterways, storm or sanitary sewers or municipal solid waste landfills. |
| | .3 | Store, handle and dispose of hazardous materials and hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines. |
| | .4 | Maintain inventory of hazardous and toxic materials being kept on site, including leftover products and containers resulting from work. List product name, quantity and date when storage began. Maintain WHMIS - MSDS sheets on site as specified in section 01 35 29. |
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1.5 DISPOSAL OF
WASTES AND
HAZARDOUS
MATERIALS
(Cont'd)

- .5 Report spills or accidents immediately to Departmental Representative and other authorities having jurisdiction. Submit a written spill report to Departmental Representative within 24 hours of incident.
- .6 Have appropriate emergency spill response equipment available near hazardous material storage area including personal protective equipment.
- .7 Dispose of construction waste materials and demolition debris to requirements of site specific waste management plan.

1.6 DRAINAGE

- .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
- .2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.7 SITE CLEARING
AND PLANT PROTECTION

- .1 Protect trees and plants on site and adjacent properties where indicated.
- .2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m.
- .3 Minimize stripping of topsoil and vegetation.

1.8 EXCAVATING OR
DUMPING ADJACENT
TO WATERWAYS

- .1 Do not operate construction equipment in waterways.
 - .2 Do not use waterway beds for borrow material. without prior approval from Provincial Department of Environment and Federal Department of Fisheries & Oceans.
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|---|----|--|
| 1.8 EXCAVATING OR
DUMPING ADJACENT
TO WATERWAYS
(Cont'd) | .3 | Do not dump excavated fill, waste material or debris in waterways. |
| | .4 | At borrow sites, design and construct temporary crossings to minimize erosion to waterways in strict conformance with provincial and federal environment protection regulations. |
| 1.9 POLLUTION
CONTROL | .1 | Maintain temporary erosion and pollution control features. |
| | .2 | Control emissions from equipment and plant to local authorities emission requirements. |
| | .3 | Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures. |
| | .4 | Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads and around entire construction site. |

Part 1 General

- | | | |
|---|----|---|
| <u>1.1 CONSTRUCTION
SAFETY MEASURES</u> | .1 | Without restricting other provisions or requirements of the Contract, observe construction safety measures of National Building Code 2010, Part 8, Provincial Government, Workers'/Workmen's Compensation Board and municipal authority provided that in any case of conflict or discrepancy more stringent requirements shall apply. |
| | .2 | Comply with requirements of FCC No. 301. |
| | .3 | Provide fire extinguishers necessary to protect the work in progress and the Contractor's physical plant on site. Do not use specified permanent fire extinguishers for this purpose. |
| <u>1.2 REFERENCES AND
CODES</u> | .1 | Perform Work in accordance with National Building Code of Canada (NBC) 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. |
| | .3 | Contractor responsible for obtaining all necessary building permits from the Town of Shediac. |
| <u>1.3 FALSEWORK</u> | .1 | Design and construct falsework in accordance with CSA S269.1. |
| 1.4 BUILDING
SMOKING
Part 2 Products | .1 | Comply with smoking restrictions and municipal by-laws. |
-

Building Modernization	REGULATORY REQUIREMENTS	Section 01 41 00
Phase II		Page 2
10 Weldon St. Shediac, NB		
Project No. R.039554.001		2013-07-17

2.1 NOT USED .1 Not Used.
Part 3 Execution

3.1 NOT USED .1 Not Used.

Part 1 General

1.1 INSPECTION

- .1 Allow 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. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.2 INDEPENDENT
INSPECTION AGENCIES

- .1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
 - .2 Provide equipment required for executing inspection and testing by appointed agencies.
 - .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
-

<u>1.2 INDEPENDENT INSPECTION AGENCIES (Cont'd)</u>	.4	If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.
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<u>1.3 ACCESS TO WORK</u>	.1	Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
	.2	Co-operate to provide reasonable facilities for such access.

<u>1.4 PROCEDURES</u>	.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.

<u>1.5 REJECTED WORK</u>	.1	Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
	.2	Make good other Contractor's work damaged by such removals or replacements promptly.

<u>1.5 REJECTED WORK (Cont'd)</u>	.3	If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Departmental Representative.
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<u>1.6 REPORTS</u>	.1	Submit 4 copies of inspection and test reports to Departmental Representative.
	.2	Provide copies to Subcontractor of work being inspected or tested and manufacturer or fabricator of material being inspected or tested.

<u>1.7 TESTS AND MIX DESIGNS</u>	.1	Furnish test results and mix designs as may be requested.
	.2	The cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by Departmental Representative and may be authorized as recoverable.

<u>1.8 MOCK-UPS</u>	.1	Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.
	.2	Construct in all locations acceptable to Departmental Representative.
	.3	Prepare mock-ups for Departmental Representative's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.
	.4	Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

- | | | |
|---|----|---|
| <u>1.8 MOCK-UPS</u>
(Cont'd) | .5 | If requested, Departmental Representative will assist in preparing a schedule fixing dates for preparation. |
| | .6 | Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when. |
| <u>1.9 MILL TESTS</u> | .1 | Submit mill test certificates as required of specification Sections. |
| <u>1.10 EQUIPMENT AND SYSTEMS</u> | .1 | Submit adjustment and balancing reports for mechanical, electrical and building equipment systems. |
| | .2 | Refer to appropriate Sections for definitive requirements. |
| Part 2 Products | | |
| <u>2.1 NOT USED</u>
Part 3 Execution | .1 | Not Used. |
| <u>3.1 NOT USED</u> | .1 | Not Used. |

1.1 SITE ACCESS
AND PARKING

- .1 The Departmental Representative will designate Contractor's access to project site as well as parking facilities for equipment and workers.
- .2 Parking facilities at site is limited. Follow all instructions from Departmental Representative in regards to parking facilities.
- .3 Build and maintain temporary access roads and provide snow removal and dust control during period of work.
- .4 Maintain existing roads and parking areas at site, where used by Contractor, for duration of contract.
 - .1 Keep clean and free of mud and dirt by washing on a regular basis.
 - .2 Make good and repair damage resulting from Contractor's use of existing roads, asphalted areas and lawns on site.

1.2 BUILDING ACCESS

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

1.3 CONTRACTOR'S
SITE OFFICE

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

1.4 MATERIAL
STORAGE

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

1.5 SITE ENCLOSURES

- .1 Provide temporary fence to enclose various construction areas of work site.
 - .2 Erect plastic mesh fence constructed as follows:
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- 1.5 SITE ENCLOSURES .2 (Cont'd)
- (Cont'd)
- .1 1200 mm height, constructed of high density polyethylene mesh fence fabric, orange in color.
 - .2 Supported by steel T-bar posts or other similar framing, of sufficient quantity, adequate spacing and set firmly in ground to secure fence against sags.
 - .3 Inspect fence regularly, repairing sags and damaged sections.
 - .4 Incorporate within fence and one pedestrian gate.
 - .3 Make all gates lockable and provide keyed padlocks.
 - .4 Obtain Departmental Representative's approval beforehand of location and layout of all temporary fence enclosures.
 - .5 Provide battery powered lanterns around the perimeter of the site enclosure to clearly mark its location at night.
 - .6 Provide warning signs affixed to all fenced areas, identifying those enclosed areas as "Construction Zones" with access restricted to only those persons so authorized by General Contractor.
 - .7 Do not construe fencing as an acceptable replacement for pedestrian walkway and hoarding requirements specified below.
- 1.6 PEDESTRIAN WALKWAYS AND HOARDING
- HOARDING
- .1 Ensure maximum safety and security to facility users during the course of work.
 - .2 Be responsible for and provide temporary 2.4 metre high plywood construction hoarding when work is adjacent to exterior sidewalks and circulation routes used by facility employees and public.
 - .3 Maintain access and egress to building entrances and fire exits designated by Departmental Representative to remain in use. Provide enclosed walkways when work is adjacent to such doors as follows:
 - .1 Erect wooden pedestrian walkway complete with roof and side covers.
-

1.6 PEDESTRIAN
WALKWAYS AND
HOARDING
(Cont'd)

- .3 (Cont'd)
 - .2 Install walkways as soon as work is in the vicinity of entrance and exit doors and poses a potential danger to facility users.
 - .3 Construct to approximate size of 2.0 metre wide x 2.1 metre high x length as required to fully clear danger zone.
 - .4 Provide signage and lighting.
 - .5 Submit details of walkway size, location, layout and construction to Departmental Representative beforehand and obtain approval.
- .4 Adequately frame and brace hoarding and walkways to resist wind, and other weather or site conditions.
- .5 Erect such protective devices during Facility's non-operational off hour periods.
- .6 Obtain Departmental Representative's concurrence prior to removal of hoarding and walkways.

1.7 INTERIOR
HOARDING

- .1 Erect hoarding inside building to isolate construction areas and protect occupants, public for duration of work.
- .2 Construct hoarding as follows:
 - .1 Height: to underside of ceiling above.
 - .2 Framing type: 38 x 92mm spaced at 400mm oc .
 - .3 Covering: 12 mm thick gypsum board sheathing, finished.
 - .4 Sealed to abutting surfaces.
 - .5 Access Doors: 1 quantity wood pedestrian door dust tight and lockable.
 - .6 Scribed to underside and profile of ceiling above.

1.8 INTERIOR DUST
CONTROL AND
DUST BARRIERS

- .1 Control creation and spread of dust and dirt to building interior and in particular to areas within premises still under use by occupants.
- .2 Develop and implement a dust control plan, addressing effective measures to carry out work with least amount of dust being created and propagated.

- 1.8 INTERIOR DUST CONTROL AND DUST BARRIERS
(Cont'd)
- .2 (Cont'd)
- .1 Carefully evaluate the type of work to be undertaken and the physical layout of each work area on site.
- .2 Provide specifically tailored strategy for each work area.
- .3 Pre-determine location and placement of dust barriers to confine resulting dust to immediate work area.
- .4 Inform Departmental Representative of the proposed dust control measures to be followed at each work area and for each major dust generating activities. Obtain Departmental Representative's approval before proceeding with work.
- .3 Dust control plan to incorporate as a minimum the following dust protection and cleaning requirements:
- .1 Erect dustproof partitions completely around work area to fully isolate construction from other parts of the building.
- .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.
- .2 Use 12 mm thick drywall installed to steel stud framing spaced at 400 o.c. for areas located in public and corridors in use by occupants
- .1 Erect from floor to underside of ceiling above, sheeting applied to occupied side of partition.
- .2 Scribe, cut and fit sheathing tight to shape of structural steel, deck profile and to other obstructions in ceiling space and abutting walls.
- .3 Use compressible neoprene gaskets around perimeter of partition and at all protrusions to achieve airtight construction.
- .4 Where partition is exposed to public view, tape and finish drywall joints and paint surface to color approved by the Departmental Representative.
-

- 1.8 INTERIOR DUST CONTROL AND DUST BARRIERS
(Cont'd)
- .3 (Cont'd)
- .2 (Cont'd)
- .3 Provide a "dust tight" and lockable access door within dust partition or between rooms for worker entry into work area. This is of particular importance for situations where excessive dust will be generated.
- .4 Provide additional dust barriers, placed tightly to underside of the floor/roof deck above, in locations where existing walls are used as part of the dust barrier system but simply terminate at the finished ceiling level resulting in an open space above, or other similar condition, permitting dust to migrate beyond the construction areas.
- .5 Make all dust barriers airtight, effectively blocking and stopping all dust migration.
- .6 Inspect dust barriers at various intervals during each work shift. Immediately fix tears, unsealed edges and maintain barriers effectively sealed for the entire work duration.
- .7 Shut down existing ventilation system feeding construction space, or disconnect and seal-off supply and return air ducts to stop dust from contaminating other areas.
- .8 Immediately clean areas in use by occupants and public contaminated by work.
- .1 Vaccum carpets, wash floors and walls. Remove accumulated dust from all surfaces. Clean and remove smears, scuffs and marks.
- .4 Meager attempts at controlling dust will not be tolerated. Failure to provide effective dust control during work and to perform satisfactory cleaning thereafter 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.
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| <u>1.8 INTERIOR DUST
CONTROL AND
DUST BARRIERS
(Cont'd)</u> | .6 | Construction of dust barriers, enclosures and placement of temporary protective devices to be performed during Facility non-operational off-hour periods. |
| <u>1.9 SANITARY
FACILITIES</u> | .1 | Provide sanitary facilities for work force in accordance with governing regulations and ordinances. |
| | .2 | Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition. |
| | .3 | Sanitary facilities are available at the site and may be used by Contractor's work force. Make arrangements for the use of such facilities through the Departmental Representative. |
| | .4 | When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building. Permanent facilities may be used on approval of Departmental Representative. |
| <u>1.10 ENCLOSURE OF
STRUCTURE</u> | .1 | Provide temporary weathertight enclosures and protection for exterior openings until permanently enclosed. |
| | .2 | Provide weathertight enclosures to conduct exterior work during winter and other inclement weather conditions. Erect to allow accessibility for installation of materials and working inside of enclosure. |
| | .3 | Design enclosures to withstand wind pressure and snow loading. |
| <u>1.11 POWER</u> | .1 | Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances. |
| | .2 | Supply and install all temporary facilities for power such as pole lines, meter socket, underground cables, etc...as required and to approval of local power supply authority. |
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1.11 POWER
(Cont'd)

- .3 Power supply is available and will be provided for construction usage at current cost rates.
- .1 Make arrangements for the use of such services through the Departmental Representative.
- .2 Connect to existing power supply in accordance with Canadian Electrical Code.
- .4 Provide and pay all costs to supply and install temporary cabling, panelboards, switching devices and other equipment as required to connect into power source, provide adequate ground fault protection and extend power supply from existing source to work areas. Perform work and make all connections in accordance with the Canadian Electrical Code, in compliance with the federal and provincial Occupational Health and Safety Regulations as specified in section 01 35 29 and to lockout requirements specified in section 01 35 25.
- .5 Provide and maintain temporary lighting to conduct work. Ensure illumination level is not less than 162 lx in all locations.
- .6 Electrical power and lighting systems installed under this Contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage. Replace lamps which have been used over period of 3 months.

1.12 WATER SUPPLY

- .1 Water supply is available in existing building 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.
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1.13 HEATING AND
VENTILATING

- .1 Supply, install and pay for costs of temporary heat and ventilation used during construction, including costs of installation, fuel, operation, maintenance and removal of equipment. Use of direct-fired heaters discharging waste products into work areas will not be permitted.
 - .2 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of work.
 - .2 Protect work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
 - .3 Maintain minimum temperature of 10 degrees C, or higher where specified, as soon as finishing work is commenced and maintain until acceptance of structure by Departmental Representative.
 - .1 Maintain ambient temperature and humidity levels as required for comfort of office personnel.
 - .4 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
 - .4 Ventilate storage spaces containing hazardous or volatile materials.
 - .5 Ventilate temporary sanitary facilities.
 - .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
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1.13 HEATING AND
VENTILATING
(Cont'd)

- .5 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .6 Submit bid assuming existing or new equipment and systems will not be used for temporary heating and ventilating.
- .7 Upon acceptance of bid, Departmental Representative may permit use of permanent system providing agreement can be reached on:
 - .1 Conditions of use, special equipment, protection and maintenance.
 - .2 Saving on Contract price.
 - .3 Provisions relating to warranties on equipment.

1.14 CONSTRUCTION
SIGN AND NOTICES

- .1 Upon request by Departmental Representative, erect a self supporting project sign in location indicated.
 - .2 Departmental Representative will provide a vinyl sign facing for installation by Contractor on sign framework. Sign frame to be plywood face of approximately 1200 x 2400 mm in size complete with required wood framing at 400 mm o.c and support posts.
 - .3 Install sign plumb and level in neat wood framework and securely anchor in ground by posts to withstand wind pressure of 160 km/h.
 - .4 Contractor or subcontractor advertisement signboards are not permitted on site.
 - .5 Safety and Instruction Signs and Notices:
 - .1 Signs and notices for safety and instruction shall be in both official languages or commonly understood graphic symbols conforming to CAN3-Z321-96(R2006).
 - .6 Maintenance and Disposal of Site Signs:
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1.14 CONSTRUCTION	.6	(Cont'd)
SIGN AND NOTICES		.1 Maintain approved signs and notices in
(Cont'd)		good condition for duration of project and

		dispose of off site on completion of project
		or earlier if directed by Departmental
		Representative.

1.15 REMOVAL OF	.1	Remove temporary facilities from site when
TEMPORARY		directed by Departmental Representative.
FACILITIES		

Part 1 General

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| <u>1.1 SUBMITTALS</u> | .1 | Provide submittals in accordance with Section 01 33 00 - Submittal Procedures. |
| <u>1.2 INSTALLATION AND REMOVAL</u> | .1 | Provide temporary utilities controls in order to execute work expeditiously. |
| | .2 | Remove from site all such work after use. |
| <u>1.3 DEWATERING</u> | .1 | Provide temporary drainage and pumping facilities to keep excavations and site free from standing water. |
| <u>1.4 WATER SUPPLY</u> | .1 | The Departmental Representative shall provide a continuous supply of potable water for construction use in accordance with governing regulations and ordinances, from a designated existing source. |
| | .2 | Provide temporary connections and run all temporary piping or hoses to job locations requiring water service. Disconnect and remove upon completion of Work. |
| <u>1.5 TEMPORARY HEATING AND VENTILATION</u> | .1 | Provide temporary heating required during construction period, including attendance, maintenance and fuel. |
| | .2 | Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted. |
| | .3 | Provide temporary heat and ventilation in enclosed areas as required to:
.1 Facilitate progress of Work.
.2 Protect Work and products against dampness and cold.
.3 Prevent moisture condensation on surfaces. |
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1.5 TEMPORARY
HEATING AND
VENTILATION
(Cont'd)

- .3 (Cont'd)
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
 - .4 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.
 - .5 Ventilating:
 - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
 - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
 - .4 Ventilate storage spaces containing hazardous or volatile materials.
 - .5 Ventilate temporary sanitary facilities.
 - .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
 - .6 The permanent heating system of the building, or portions thereof, may be used when available provided that required start-up and commissioning procedures are completed only upon written approval of the Departmental Representative. Be responsible for damage thereto. Use of the permanent heating system, prior to Substantial Performance will not impact on the warranty obligation as noted in the specifications.
 - .7 Restore to new condition, any portion of the permanent heating system used during construction, prior to the date of Substantial Performance of the Work, and as specified in Division 23. Replace all filters.
-

1.5 TEMPORARY
HEATING AND
VENTILATION
(Cont'd)

- .8 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Departmental Representative.
- .9 Pay costs for maintaining temporary heat, when using permanent heating system Departmental Representative will pay utility charges when temporary heat source is existing building equipment.
- .10 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .11 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.6 TEMPORARY POWER
AND LIGHT

- .1 The Departmental Representative will provide and pay for temporary power required during construction from a designated existing source for temporary lighting and operating power tools, to a maximum of 230 volts 30 amps, in accordance with governing regulations and ordinances.
 - .2 The Departmental Representative is not responsible for interruptions to temporary power which may occur.
 - .3 Provide all connections and power cords, from the designated existing source.
 - .4 Temporary power shall not be used for welding. Use self-generator units for all welding power.
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1.6 TEMPORARY POWER
AND LIGHT
(Cont'd)

- .5 If Departmental Representative supplied power is insufficient, provide and pay for temporary power required during construction for temporary lighting and operating power tools, in accordance with governing regulations and ordinances.
 - .6 Provide centrally located power panels for the use of all Subcontractors. Subcontractors shall provide their own extension cables c/w suitable fittings.
 - .7 Provide and be responsible for necessary switching, fusing, wiring and connections in accordance with the Canadian Electrical Code.
 - .8 Temporary power for electric cranes (where applicable) and other equipment requiring a supply in excess of capacities available, is the responsibility of the Contractor.
 - .9 Provide and maintain temporary lighting throughout the project. Provide a level of illumination on all floors and stairs of not less than 15 foot candles. Provide higher levels of illumination where required by specific sections of the specifications, to control quality of workmanship.
 - .10 When work is performed at night or where daylight is obscured, provide artificial light sufficient to perform work properly and to permit thorough inspection.
 - .11 Permanent electrical power and lighting system may be used for construction requirements provided no damage occurs or guarantees affected. Obtain Departmental Representative's approval before using permanent electrical power and lighting system. Pay all costs for use of permanent electrical power and lighting system during construction, until Substantial Performance of the Work. Burnt out lamps shall be replaced with new lamps, prior to acceptance for substantial performance.
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<u>1.7 TEMPORARY COMMUNICATION FACILITIES</u>	.1	Provide and pay for temporary telephone, fax and data hook up, lines, and equipment necessary for own use and use of Departmental Representative.
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	.2	Cellular telephones are not permitted on site.
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<u>1.8 FIRE PROTECTION</u>	.1	Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
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	.2	Burning rubbish and construction waste materials is not permitted on site.
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Part 2 Products

<u>2.1 NOT USED</u>	.1	Not Used.
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Part 3 Execution

<u>3.1 NOT USED</u>	.1	Not Used.
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Part 1 General

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| <u>1.1 REFERENCES</u> | .1 | Canadian General Standards Board (CGSB)
.1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
.2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel. |
| | .2 | Canadian Standards Association (CSA International)
.1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
.2 CSA-0121-M1978(R2003), Douglas Fir Plywood. |
| | .3 | CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes. |
| | .4 | CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment. |
| <u>1.2 SUBMITTALS</u> | .1 | Provide submittals in accordance with Section 01 33 00 - Submittal Procedures. |
| <u>1.3 INSTALLATION AND REMOVAL</u> | .1 | Provide construction facilities in order to execute work expeditiously. |
| | .2 | Remove from site all such work after use. |
| <u>1.4 SCAFFOLDING</u> | .1 | Scaffolding in accordance with CAN/CSA-S269.2. |
| | .2 | Provide and maintain scaffolding, ramps, ladders, platforms and temporary stairs. |
| <u>1.5 HOISTING</u> | .1 | Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. |
| | .2 | Hoists and cranes shall be operated by qualified operator. |
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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 CONSTRUCTION
PARKING

- .1 Parking will be permitted on site in an area as directed by the Departmental Representative provided it does not disrupt performance of Work.
- .2 Provide and maintain adequate access to project site.
- .3 Build and maintain temporary roads where indicated or directed by Departmental Representative and provide snow removal during period of Work.
- .4 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

1.8 SECURITY

- .1 Refer to Section 01 35 13 - Security Requirements.

1.9 OFFICES

- .1 Provide office heated to 22 oC, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
 - .2 Provide a clearly marked and fully stocked first-aid case in a readily available location.
 - .3 Subcontractors may provide their own offices as necessary.
 - .4 Locate offices where directed by the Departmental Representative.
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<u>1.10 EQUIPMENT, TOOL AND MATERIAL STORAGE</u>	.1	Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
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	.2	Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.
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<u>1.11 SANITARY FACILITIES</u>	.1	Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
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	.2	Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.
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	.3	When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building. Permanent facilities may be used on approval of Departmental Representative.
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<u>1.12 CONSTRUCTION SIGNAGE</u>	.1	No signs or advertisements, other than warning signs, are permitted on site.
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	.2	Signs and notices for safety and instruction shall be in both official languages Graphic symbols shall conform to CAN3-Z321.
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	.3	Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Departmental Representative.
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<u>1.13 PROTECTION AND MAINTENANCE OF TRAFFIC</u>	.1	Provide access and temporary relocated roads as necessary to maintain traffic.
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	.2	Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
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| 1.13 PROTECTION AND
MAINTENANCE OF
TRAFFIC
(Cont'd) | .3 | Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs |
| | .4 | Protect travelling public from damage to person and property. |
| | .5 | Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic. |
| | .6 | Verify adequacy of existing roads and allowable load limit on these roads.
Contractor: responsible for repair of damage to roads caused by construction operations. |
| | .7 | Construct access and haul roads necessary. |
| | .8 | Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. |
| | .9 | Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic. |
| | .10 | Dust control: adequate to ensure safe operation at all times. |
| | .11 | Location, grade, width, and alignment of construction and hauling roads: subject to approval by Departmental Representative. |
| | .12 | Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations. |
| | .13 | Provide snow removal during period of Work. |
| | .14 | Remove, upon completion of work, haul roads designated by Departmental Representative. |
| 1.14 CLEAN-UP | .1 | Remove construction debris, waste materials, packaging material from work site daily. |

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| <u>1.14 CLEAN-UP</u>
(Cont'd) | .2 | Clean dirt or mud tracked onto paved or surfaced roadways. |
| | .3 | Store materials resulting from demolition activities that are salvageable. |
| | .4 | Stack stored new or salvaged material not in construction facilities. |

Part 2 Products

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| <u>2.1 NOT USED</u> | .1 | Not Used. |
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- Part 3 Execution

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| <u>3.1 NOT USED</u> | .1 | Not Used. |
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Part 1 General

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|---------------------------------------|----|---|
| <u>1.1 REFERENCES</u> | .1 | Canadian General Standards Board (CGSB)
.1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
.2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood. |
| | .2 | Canadian Standards Association (CSA International)
.1 CSA-O121-M1978(R2003), Douglas Fir Plywood. |
| <u>1.2 INSTALLATION AND REMOVAL</u> | .1 | Provide temporary controls in order to execute Work expeditiously. |
| | .2 | Remove from site all such work after use. |
| <u>1.3 HOARDING/VISUAL BARRIER</u> | .1 | Erect temporary visual barrier using 38 x 89 mm construction grade lumber framing at 600 mm centres and 1200 x 2400 x 13 mm exterior grade fir plywood to CSA O121. |
| | .2 | Apply plywood panels vertically flush and butt jointed. |
| | .3 | Paint both sides of barrier in selected colours with one coat primer to CGSB 1.189M and one coat exterior paint to CGSB 1.59. Maintain in clean condition. |
| <u>1.4 GUARD RAILS AND BARRICADES</u> | .1 | Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs. |
| | .2 | Provide as required by governing authorities. |
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| <u>1.5 WEATHER
ENCLOSURES</u> | .1 | Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs. |
| | .2 | Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat. |
| | .3 | Design enclosures to withstand wind pressure and snow loading. |
| <u>1.6 DUST TIGHT
SCREENS</u> | .1 | Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public. |
| | .2 | Maintain and relocate protection until such work is complete. |
| <u>1.7 ACCESS TO SITE</u> | .1 | Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work. |
| <u>1.8 FIRE ROUTES</u> | .1 | Maintain access to property including overhead clearances for use by emergency response vehicles. |
| <u>1.9 PROTECTION FOR
OFF-SITE AND PUBLIC
PROPERTY</u> | .1 | Protect surrounding private and public property from damage during performance of Work. |
| | .2 | Be responsible for damage incurred. |
| <u>1.10 PROTECTION OF
BUILDING FINISHES</u> | .1 | Provide protection for finished and partially finished building finishes and equipment during performance of Work. |
| | .2 | Provide necessary screens, covers, and hoardings. |
| | .3 | Confirm with Departmental Representative locations and installation schedule 3 days prior to installation. |
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<u>1.10 PROTECTION OF BUILDING FINISHES (Cont'd)</u>	.4	Be responsible for damage incurred due to lack of or improper protection.
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<u>1.11 WASTE MANAGEMENT AND DISPOSAL</u>	.1	Separate waste materials for reuse and recycling in accordance with Section 01 74 21 Construction / Demolition Waste Management And Disposal.
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Part 2 Products

<u>2.1 NOT USED</u>	.1	Not Used.
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Part 3 Execution

<u>3.1 NOT USED</u>	.1	Not Used.
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Part 1 General

- 1.1 REFERENCES
- .1 Within text of each specifications section, reference may be made to reference standards.
 - .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
 - .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 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.
 - .5 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.
- 1.2 QUALITY
- .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, except where salvaged existing products are specifically noted. 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.
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1.2 QUALITY
(Cont'd)

- .3 Examine existing materials designated for reuse in this Contract. If materials designated for reuse are unfit or damaged, replace with new material.
- .4 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 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.
 - .3 Within 10 days of written request by Departmental Representative, submit following information for materials and equipment proposed for supply:
 - .1 name and address of manufacturer,
 - .2 trade name, model and catalogue number,
 - .3 performance, descriptive and test data,
 - .4 manufacturer's installation or application instructions,
 - .5 evidence of arrangements to procure.
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1.4 STORAGE,
HANDLING AND
PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber and steel 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.

1.5 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
 - .2 Transportation cost of products supplied by Departmental Representative will be paid for by Departmental Representative. Unload, handle and store such products.
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- 1.6 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.

- 1.7 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 or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

- 1.8 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.
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|----------------------------------|----|--|
| <u>1.9 CONCEALMENT</u> | .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. |
| <u>1.10 REMEDIAL WORK</u> | .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. |
| <u>1.11 LOCATION OF FIXTURES</u> | .1 | Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate. |
| | .2 | Inform Departmental Representative of conflicting installation. Install as directed. |
| <u>1.12 FASTENINGS</u> | .1 | Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise. |
| | .2 | Prevent electrolytic action between dissimilar metals and materials. |
| | .3 | Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section. |
| | .4 | Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable. |
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<u>1.12 FASTENINGS (Cont'd)</u>	.5	Keep exposed fastenings to a minimum, space evenly and install neatly.
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	.6	Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.
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<u>1.13 FASTENINGS - EQUIPMENT</u>	.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. Use resilient washers with stainless steel.

<u>1.14 PROTECTION OF WORK IN PROGRESS</u>	.1	Prevent overloading of any part of building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of Departmental Representative.
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<u>1.15 EXISTING UTILITIES</u>	.1	When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or adjacent building occupants.
	.2	Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

<u>2.1 NOT USED</u>	.1	Not Used.
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Part 3 Execution

Building Modernization	COMMON PRODUCT	Section 01 61 00
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10 Weldon St. Shediac, NB		
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3.1 NOT USED .1 Not Used.

Part 1 General

- | | | |
|-----------------------|----|---|
| <u>1.1 GENERAL</u> | .1 | Individual product Sections: cutting and patching incidental to work of section. Advance notification to other sections required. |
| <u>1.2 SUBMITTALS</u> | .1 | Submittals: in accordance with Section 01 33 00 - Submittal Procedures. |
| | .2 | Submit written request in advance of cutting or alteration which affects:
.1 Structural integrity of any element of Project.
.2 Integrity of weather-exposed or moisture-resistant elements.
.3 Efficiency, maintenance, or safety of any operational element.
.4 Visual qualities of sight-exposed elements.
.5 Work of Departmental Representative or separate contractor. |
| | .3 | Include in request:
.1 Identification of Project.
.2 Location and description of affected Work.
.3 Statement on necessity for cutting or alteration.
.4 Description of proposed Work, and products to be used.
.5 Alternatives to cutting and patching.
.6 Effect on Work of Departmental Representative or separate contractor.
.7 Written permission of affected separate contractor.
.8 Date and time work will be executed. |
| <u>1.3 MATERIALS</u> | .1 | Required for original installation. |
| | .2 | Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures. |
-

1.4 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.

1.5 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 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
 - .9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
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|-----------------------------------|-----|---|
| <u>1.5 EXECUTION
(Cont'd)</u> | .10 | Restore work with new products in accordance with requirements of Contract Documents. |
| | .11 | Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. |
| | .12 | At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with fire-stopping material, full thickness of the construction element. |
| | .13 | Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit. |
| | .14 | Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise. |

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| <u>1.6 WASTE
MANAGEMENT AND
DISPOSAL</u> | .1 | Separate waste materials for reuse and recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management And Disposal. |
|--|----|--|

Part 2 Products

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|---------------------|----|-----------|
| <u>2.1 NOT USED</u> | .1 | Not Used. |
| Part 3 Execution | | |

- | | | |
|---------------------|----|-----------|
| <u>3.1 NOT USED</u> | .1 | Not Used. |
|---------------------|----|-----------|

1.1 GENERAL

- .1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
- .2 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .3 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

1.2 MATERIALS

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

1.3 CLEANING DURING CONSTRUCTION

- .1 Maintain the work site and building entrances, corridors, stairwells etc...designated for use by construction workforce in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.
 - .2 Provide on-site containers or dumpster for collection of waste materials and debris.
 - .3 Use separate collection bins, clearly marked as to purpose, for the collection of waste and demolition debris intended for source separation and recycling program of Waste Management Plan specified in section 01 74 21.
 - .4 Remove waste materials, and debris from site on a minimum weekly basis.
 - .5 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building
-

1.3 CLEANING DURING
CONSTRUCTION
(Cont'd)

- .6 Employ dust barriers, dividers, seal doors with tape and provide other means required, and as approved by Departmental Representative, to ensure dust and dirt generated by construction operations are not transmitted to occupied or finished areas of the building. Should dust accidentally migrate to occupied areas of the building, employ such means as may be necessary to immediately clean the affected area(s) to the satisfaction of the Departmental Representative.
- .7 Be responsible to immediately clean construction dust and dirt transferred by foot traffic, or by other means. Carryout cleaning operations, including carpet shampooing and floor washing as necessary to thoroughly clean all soiled surfaces.

1.4 FINAL CLEANING

- .1 In preparation for acceptance of the project on an interim or final certificate of completion perform final cleaning.
- .2 Remove grease, dust, dirt, stains, labels, fingerprints, marks and other foreign materials, from interior and exterior finished surfaces. Clean and polish surfaces including glass, mirrors, hardware, wall tile, stainless steel, chrome, baked enamel, plastic laminate, mechanical and electrical fixtures.
- .3 Replace items with broken pieces, scratches or disfigured.
- .4 Clean lighting reflectors, lenses, and other lighting surfaces.
- .5 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .6 Wax, seal, shampoo or prepare floor finishes as recommended by manufacturer.
- .7 Inspect finishes, fitments and equipment. Ensure specified workmanship and operation.
- .8 Broom clean and wash exterior paved surfaces and walks; rake clean other surfaces of grounds.

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|--------------------------------|-----|--|
| 1.4 FINAL CLEANING
(Cont'd) | .9 | Remove debris and surplus materials from crawl areas, roof areas and other accessible concealed spaces. |
| | .10 | Clean equipment, and washroom fixtures to a sanitary condition. Replace filters of mechanical equipment. |

1.1 RELATED WORK .1 Environment Procedures: Section 01 35 43

1.2 GENERAL .1 Carry out work placing maximum emphasis on the areas of:

- .1 Waste reduction;
- .2 Diversion of waste from landfill and;
- .3 Material Recycling.

1.3 WASTE MANAGEMENT PLAN .1 Prior to commencement of work, prepare waste Management Workplan.

.2 Workplan to include:

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

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

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

.5 Submit copy of Workplan to Departmental Representative for review and approval.

- .1 Make revisions to Plan as directed by Departmental Representative.

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

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

1.4 WASTE AUDIT .1 At project start-up, conduct waste audit of:

- 1.4 WASTE AUDIT
(Cont'd)
- .1 (Cont'd)
 - .1 Site conditions identifying salvageable and non-salvageable items and waste resulting from demolition and removal work.
 - .2 Projected waste resulting from product packaging and from material leftover after installation work.
 - .2 Develop written list. Record type, composition and quantity of various salvageable items and waste anticipated, reasons for waste generation and operational factors which contribute to waste.

- 1.5 WASTE REDUCTION
- .1 Based on waste audit, develop waste reduction program.
 - .2 Structure program to prioritize actions, with waste reduction as first priority, followed by salvage and recycling effort, then disposal as solid waste.
 - .3 Identify materials and equipment to be:
 - .1 Protected and turned over to Departmental Representative when indicated.
 - .2 Salvaged for resale by Contractor.
 - .3 Sent to recycling facility.
 - .4 Sent to waste processing/landfill site for their recycling effort
 - .5 Disposed of in approved landfill site.
 - .4 Reduce construction waste during installation work. Undertake practices which will minimize waste and optimize full use of new materials on site, such as:
 - .1 Use of a central cutting area to allow for easy access to off-cuts;
 - .2 Use of off-cuts for blocking and bridging elsewhere.
 - .3 Use of effective and strategically placed facilities on site for storage and staging of left-over or partially cut materials (such as gypsum board, plywood, ceiling tiles, insulation etc...) to allow for easy incorporation into work whenever possible avoiding unnecessary waste.
 - .5 Develop other strategies and innovative procedures to reduce waste such as minimizing the extent of packaging used for delivery of materials to site etc...
-

1.6 MATERIAL SOURCE
SEPARATION PROCESS

- .1 Develop and implement material source separation process at commencement of work as part of mobilization and waste management at site.
 - .2 Provide on-site facilities to collect, handle and store anticipated quantities of reusable, salvageable and recyclable materials.
 - .1 Use suitable containers for individual collection of items based on intended purpose.
 - .2 Locate to facilitate deposit but without hindering daily operations of existing building tenants.
 - .3 Clearly mark containers and stockpiles as to purpose and use.
 - .3 Perform demolition and removal of existing building components and equipment following a systematic deconstruction process.
 - .1 Separate materials and equipment at source, carefully dismantling, labelling and stockpiling alike items for the following purposes:
 - .1 Reinstallation into the work where indicated.
 - .2 Salvaging reusable items not needed in project which Contractor may sell to other parties. Sale of such items not permitted on site.
 - .3 Sending as many items as possible to locally available recycling facility.
 - .4 Segregating remaining waste and debris into various individual waste categories for disposal in a "non-mixed state" as recommended by waste processing/landfill sites.
 - .4 Isolate product packaging and delivery containers from general waste stream. Send to recycling facility or return to supplier/manufacturer.
 - .5 Send leftover material resulting from installation work for recycling whenever possible.
-

1.6 MATERIAL SOURCE SEPARATION PROCESS (Cont'd)

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

.7 Isolate and store existing materials and equipment identified for re-incorporation into the Work. Protect against damage.

1.7 WORKER TRAINING AND SUPERVISION

.1 Provide adequate training to workforce, through meetings and demonstrations, to emphasize purpose and worker responsibilities in carrying out the Waste Management Plan.

.2 Waste Management Coordinator: designate full-time person on site, experienced in waste management and having knowledge of the purpose and content of Waste Management Plan to:

.1 Oversee and supervise waste management during work.

.2 Provide instructions and directions to all workers and subcontractors on waste reduction, source separation and disposal practices.

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

1.8 CERTIFICATION OF MATERIAL DIVERSION

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

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

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

1.9 DISPOSAL
REQUIREMENTS

- .1 Burying or burning of rubbish and waste materials is prohibited.
- .2 Disposal of waste, volatile materials, mineral spirits, oil, or paint thinner into waterways, storm, or sanitary sewers is prohibited.
- .3 Dispose of waste only at approved waste processing facility or landfill sites approved by authority having jurisdiction.
- .4 Contact the authority having jurisdiction prior to commencement of work, to determine what, if any, demolition and construction waste materials have been banned from disposal in landfills and at transfer stations. Take appropriate action to isolate such banned materials at site of work and dispose in strict accordance with provincial and municipal regulations.
- .5 Transport waste intended for landfill in separated condition, following rules and recommendations of Landfill Operator in support of their effort to divert, recycle and reduce amount of solid waste placed in landfill.
- .6 Collect, bundle and transport salvaged materials to be recycled in separated categories and condition as directed by recycling facility. Ship materials only to approved recycling facilities.
- .7 Sale of salvaged items by Contractor to other parties not permitted on site.

Part 1 General

1.1 INSPECTION AND
DECLARATION

- .1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - .2 Request Departmental Representative's Inspection.
 - .2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
 - .3 Completion: submit written certificate that following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
 - .4 Certificates required by Boiler Inspection Branch, Fire Commissioner and Utility companies have been submitted.
 - .5 Operation of systems have been demonstrated to Owner's personnel.
 - .6 Work is complete and ready for Final Inspection.
 - .4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.
-

- 1.2 CLEANING .1 In accordance with Section 01 74 11 -
Cleaning.
- .2 Remove waste and surplus materials, rubbish
and construction facilities from the site in
accordance with Section 01 74 21 -
Construction/Demolition Waste Management and
Disposal.

Part 2 Products

- 2.1 NOT USED .1 Not Used.
- Part 3 Execution

- 3.1 NOT USED .1 Not Used.

1.1 RELATED
SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 06 47 00 - Plastic Laminates.
- .3 Section 08 71 10 - Door Hardware.
- .4 Section 08 80 50 - Glazing.
- .5 Section 09 51 13 - Acoustical Ceilings.
- .6 Section 09 65 19 - Resilient Tile Flooring.
- .7 Section 09 91 23 - Interior Painting.
- .8 Section 10 28 10 - Toilet and Bath Accessories.

1.2 SECTION
INCLUDES

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

1.3 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 record drawings and specifications in good condition and make available for inspection by the Departmental Representative at any time during construction.
 - .4 As-Built Record Drawings:
-

1.3 PROJECT RECORD .4
DOCUMENTS
(Cont'd)

(Cont'd)

- .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of project and prior to final inspection, neatly transfer notations to second set (also by use of red ink). 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 Depths of various elements of foundation in relation to first floor level.
 - .2 Horizontal and vertical location of exterior underground utilities and appurtenances referenced to permanent surface improvements.
 - .3 Horizontal and vertical location of various elements in relation to Geodetic Datum;
 - .4 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure;
 - .5 Field changes of dimension and detail;
 - .6 Location of all capped or terminated services and utilities.
 - .7 Chases for mechanical, electrical and other services;
 - .8 Ceiling and floor elevations;
 - .9 Reflected ceiling plan condition showing finished layout of all ceiling-mounted services and devices;
 - .10 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;
 - .11 All structural steel installations to be fully dimensioned;
 - .12 All design elevations, sections, floor plans and details dimensioned and marked-up to consistently report finished installation conditions;
-

.1 Compile full sets of all reviewed shop drawings. Provide number of shop drawing sets equal to the required number of final Operations and Maintenance manuals.

1.4 REVIEWED SHOP DRAWINGS (Cont'd)	.2	Submit shop drawing sets at same time and as part of the contents of the Operation and Maintenance manuals as specified in clause 1.5.7.
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1.5 OPERATIONS & MAINTENANCE MANUAL	.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 languages.
	.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.

1.5 OPERATIONS &
MAINTENANCE MANUAL
(Cont'd)

- .5 (Cont'd)
- .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
- .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 Data on all products, equipment and systems as specified in individual sections of the specifications to include:
 - .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.
-

- 1.5 OPERATIONS & .6 (Cont'd)
MAINTENANCE MANUAL .9 (Cont'd)
(Cont'd) .7 Shop drawings:
- .1 Bind separately one complete set of reviewed shop drawings and product data for each operations and maintenance manual required.
 - .2 Bind the shop drawings in a manner such that they correspond with the specification section they relate to.
- .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 colour coded wiring diagrams.
 - .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
 - .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - .6 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.
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1.5 OPERATIONS &
MAINTENANCE MANUAL
(Cont'd)

- .8 (Cont'd)
 - .11 Provide Contractor's coordination drawings, with installed colour 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 colour and texture designations. Provide information for re-ordering custom manufactured products.
 - .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - .3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - .4 Additional Requirements: as specified in individual specifications sections.

1.6 MAINTENANCE
MATERIALS

- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Clearly mark on container or packaging information as to content, quantity, colour, room number, system or area as applicable where item is used.
- .4 Deliver to site. Store in location as directed by Departmental Representative .
- .5 Receive and catalogue all items. Prepare inventory list.

1.6 MAINTENANCE
MATERIALS
(Cont'd)

- .6 Submit copy of inventory list to Departmental Representative . Include approved listings in Operations and Maintenance Manual.

1.7 SPARE PARTS

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to site. Store in location as directed by Departmental Representative.
- .4 Receive and catalogue all items. Prepare inventory list indicating the following:
- .1 Part number.
 - .2 Identification of equipment or system for which parts are applicable.
 - .3 Installation instructions as applicable.
 - .4 Name, address and telephone number of nearest supplier.
- .5 Submit copy of inventory list to Departmental Representative. Include approved listings in Operations and Maintenance Manual.

1.8 SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and for which equipment or system required.
- .3 Provide instructions on intended use of tool.
- .4 Deliver to site. Store in location as directed by Departmental Representative.
- .5 Receive and catalogue all items. Prepare inventory list.
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- | | | |
|-------------------------------|----|---|
| 1.8 SPECIAL TOOLS
(Cont'd) | .6 | Submit copy of inventory list to Departmental Representative. Include approved listings in Operations and Maintenance Manual. |
|-------------------------------|----|---|
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- | | | |
|--|----|---|
| 1.9 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 | Clearly mark on each container or packaging, as to content and quantity. |
| | .4 | Store components subject to damage from weather in weatherproof enclosures. |
| | .5 | Store paints and freezable materials in a heated and ventilated room. |
| | .6 | Remove and replace products damaged during handling or delivery to satisfaction of Departmental Representative. |

<u>1.1 RELATED SECTIONS</u>	.1	Operations and Maintenance Manual: Section 01 78 00.
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<u>1.2 DESCRIPTION</u>	.1	Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel prior to date of final inspection.
	.2	Departmental Representative will provide a list of Owner's personnel to receive instructions,
	.3	Cooperate with Departmental Representative in coordinating time and attendance of Owner's personnel with manufacturer's training Representative(s).

<u>1.3 QUALITY CONTROL</u>	.1	Ensure that only personnel from own forces, Subcontractors or Suppliers competent and fully knowledgeable in the particular material component, equipment or system installation are used to provide training and demonstrations.
	.2	When specified in individual Sections, obtain the manufacturers authorized Representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstration and instructions have been completed.
	.3	Upon request, provide evidence to Departmental Representative of individual Trainor's knowledge and qualifications.

<u>1.4 SUBMITTALS</u>	.1	Submit schedule of time, date and complete list of equipment and systems for which demonstration and training sessions will be provided. Submit schedule a minimum of 2 weeks prior to designated dates, for Departmental Representative's approval.
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<u>1.4 SUBMITTALS (Cont'd)</u>	.2	Submit report within 1 week after completion of demonstration, that demonstration and instructions have been satisfactorily completed. Provide time and date of when each demonstration was actually given, with list of persons present.
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<u>1.5 CONDITIONS FOR DEMONSTRATIONS</u>	.1	Prior to carrying out demonstration and training, ensure that equipment has been inspected and tested, is fully operational, has been performance verified and TAB has been carried out.
	.2	Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

<u>1.6 PREPARATION</u>	.1	Verify that conditions for demonstration and instructions comply with requirements.
	.2	Verify that designated personnel are present.

<u>1.7 DEMONSTRATION AND INSTRUCTIONS</u>	.1	Include the following items within the demonstration and training: .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each of equipment. .2 Instruct personnel in all phases of operation and maintenance using operation and maintenance manuals as the basis of instruction. .3 Review contents of manual in detail to explain all aspects of operation and maintenance. .4 Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instructions. .5 Provide other specific training and instructions as specified in trade sections.
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1.8 TIME ALLOCATED	.1	Observe the allocated time period specified
<u>FOR INSTRUCTIONS</u>		in trade sections. Provide additional time
		when required to ensure all personnel fully
		understand all aspects of the information
		and instructions being provided. Allow for
		questions by participants.

PART 1 - GENERAL

1.1 SUMMARY

- .1 Section Includes:
 - .1 General requirements relating to commissioning of project's components and systems, specifying general requirements to PV of components, equipment, sub-systems, systems, and integrated systems.
- .2 Related Requirements
 - .1 01 33 00 - Submittal Requirements
 - .2 01 79 00 - Demonstration and Training
 - .3 01 91 31 - Commissioning (Cx) Plan
 - .4 01 91 33 - Commissioning Forms
 - .5 01 91 41 - Commissioning: Training
 - .6 01 91 51 - Building Management Manual (BMM)
- .3 Acronyms:
 - .1 AFD - Alternate Forms of Delivery, service provider.
 - .2 BMM - Building Management Manual.
 - .3 Cx - Commissioning.
 - .4 EMCS - Energy Monitoring and Control Systems.
 - .5 O&M - Operation and Maintenance.
 - .6 PI - Product Information.
 - .7 PV - Performance Verification.
 - .8 TAB - Testing, Adjusting and Balancing.

1.2 GENERAL

- .1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:
 - .1 Verify installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and intent.
 - .2 Ensure appropriate documentation is compiled into the BMM.
 - .3 Effectively train O&M staff.
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1.2 GENERAL
(Cont'd)

- .2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.
 - .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.
 - .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.
- .3 Design Criteria: as per client's requirements or determined by designer. To meet Project functional and operational requirements.
- .4 AFD managed projects the term Departmental Representative in Cx specifications to be interpreted as AFD Service Provider.

1.3 COMMISSIONING
OVERVIEW

- .1 Section 01 91 31 - Commissioning (Cx) Plan.
 - .2 For Cx responsibilities refer to Section 01 91 31 - Commissioning (Cx) Plan.
 - .3 Cx to be a line item of Contractor's cost breakdown.
 - .4 Cx activities supplement field quality and testing procedures described in relevant technical sections.
 - .5 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the built facility is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities includes transfer of critical knowledge to facility operational personnel.
 - .6 Departmental Representative will issue Interim Acceptance Certificate when:
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- 1.3 COMMISSIONING OVERVIEW
(Cont'd)
- .6 (Cont'd)
- .1 Completed Cx documentation has been received, reviewed for suitability and approved by Departmental Representative.
 - .2 Equipment, components and systems have been commissioned.
 - .3 O&M training has been completed.
- 1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS
- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Departmental Representative, to ensure effective performance.
- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.
- 1.5 PRE-CX REVIEW
- .1 Before Construction:
- .1 Review contract documents, confirm by writing to Departmental Representative.
 - .1 Adequacy of provisions for Cx.
 - .2 Aspects of design and installation pertinent to success of Cx.
- .2 During Construction:
- .1 Co-ordinate provision, location and installation of provisions for Cx.
- .3 Before start of Cx:
- .1 Have completed Cx Plan up-to-date.
 - .2 Ensure installation of related components, equipment, sub-systems, systems is complete.
 - .3 Fully understand Cx requirements and procedures.
 - .4 Have Cx documentation shelf-ready.
 - .5 Understand completely design criteria and intent and special features.
 - .6 Submit complete start-up documentation to Departmental Representative.
 - .7 Have Cx schedules up-to-date.
-

- 1.5 PRE-CX REVIEW (Cont'd) .3 (Cont'd)
- .8 Ensure systems have been cleaned thoroughly.
 - .9 Complete TAB procedures on systems, submit TAB reports to Departmental Representative for review and approval.
 - .10 Ensure "As-Built" system schematics are available.
- .4 Inform Departmental Representative in writing of discrepancies and deficiencies on finished works.

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

- 1.7 ACTION AND INFORMATIONAL SUBMITTALS .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .1 Submit no later than 4 weeks after award of Contract:
 - .1 Name of Contractor's Cx agent.
 - .2 Draft Cx documentation.
 - .3 Preliminary Cx schedule.
 - .2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at least 8 weeks prior to start of Cx.
 - .3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least 8 weeks prior to start of Cx.
 - .4 Provide additional documentation relating to Cx process required by Departmental Representative.

- 1.8 COMMISSIONING DOCUMENTATION .1 Refer to Section 01 91 33 - Commissioning (Cx) Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms for requirements and instructions for use.
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| 1.8 COMMISSIONING
DOCUMENTATION
(Cont'd) | .2 | Departmental Representative to review and approve Cx documentation. |
| | .3 | Provide completed and approved Cx documentation to Departmental Representative. |
| 1.9 COMMISSIONING
SCHEDULE | .1 | Provide detailed Cx schedule as part of construction schedule in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart. |
| | .2 | Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including: <ul style="list-style-type: none"> .1 Approval of Cx reports. .2 Verification of reported results. .3 Repairs, retesting, re-commissioning, re-verification. .4 Training. |
| 1.10 COMMISSIONING
MEETINGS | .1 | Convene Cx meetings following project meetings: Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart and as specified herein. |
| | .2 | Purpose: to resolve issues, monitor progress, identify deficiencies, relating to Cx. |
| | .3 | Continue Cx meetings on regular basis until commissioning deliverables have been addressed. |
| | .4 | At 60% construction completion stage. Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart. Departmental Representative to call a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include: <ul style="list-style-type: none"> .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. |
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| 1.10 COMMISSIONING
MEETINGS
(Cont'd) | .5 | Thereafter Cx meetings to be held until project completion and as required during equipment start-up and functional testing period. |
| | .6 | Meeting will be chaired by Departmental Representative, who will record and distribute minutes. |
| | .7 | Ensure subcontractors and relevant manufacturer representatives are present at 60% and subsequent Cx meetings and as required. |
| 1.11 STARTING AND
TESTING | .1 | Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment. |
| 1.12 WITNESSING OF
STARTING AND
TESTING | .1 | Provide 14 days notice prior to commencement. |
| | .2 | Departmental Representative to witness of start-up and testing. |
| | .3 | Contractor's Cx Agent to be present at tests performed and documented by sub-trades, suppliers and equipment manufacturers. |
| 1.13 MANUFACTURER'S
INVOLVEMENT | .1 | Factory testing: manufacturer to: <ul style="list-style-type: none"> .1 Coordinate time and location of testing. .2 Provide testing documentation for approval by Departmental Representative. .3 Arrange for Departmental Representative to witness tests. .4 Obtain written approval of test results and documentation from Departmental Representative before delivery to site. |
| | .2 | Obtain manufacturers installation, start-up and operations instructions prior to start-up of components, equipment and systems and review with Departmental Representative |
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- 1.13 MANUFACTURER'S INVOLVEMENT (Cont'd)
- .2 (Cont'd)
 - .1 Compare completed installation with manufacturer's published data, record discrepancies, and review with manufacturer.
 - .2 Modify procedures detrimental to equipment performance and review same with manufacturer before start-up.
 - .3 Integrity of warranties:
 - .1 Use manufacturer's trained start-up personnel where specified elsewhere in other divisions or required to maintain integrity of warranty.
 - .2 Verify with manufacturer that testing as specified will not void warranties.
 - .4 Qualifications of manufacturer's personnel:
 - .1 Experienced in design, installation and operation of equipment and systems.
 - .2 Ability to interpret test results accurately.
 - .3 To report results in clear, concise, logical manner.
- 1.14 PROCEDURES
- .1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Cx.
 - .2 Conduct start-up and testing in following distinct phases:
 - .1 Included in delivery and installation:
 - .1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.
 - .2 Visual inspection of quality of installation.
 - .2 Start-up: follow accepted start-up procedures.
 - .3 Operational testing: document equipment performance.
 - .4 System PV: include repetition of tests after correcting deficiencies.
 - .5 Post-substantial performance verification: to include fine-tuning.
 - .3 Correct deficiencies and obtain approval from Departmental Representative DCC Representative Consultant after distinct phases have been completed and before commencing next phase.
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| <u>1.14 PROCEDURES
(Cont'd)</u> | .4 | Document require tests on approved PV forms. |
| | .5 | Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by Departmental Representative . If results reveal that equipment start-up was not in accordance with requirements, and resulted in damage to equipment, implement following:
.1 Minor equipment/systems: implement corrective measures approved by Departmental Representative.
.2 Major equipment/systems: if evaluation report concludes that damage is minor, implement corrective measures approved by Departmental Representative.
.3 If evaluation report concludes that major damage has occurred, Departmental Representative shall reject equipment.
.1 Rejected equipment to be remove from site and replace with new.
.2 Subject new equipment/systems to specified start-up procedures. |
| <u>1.15 START-UP
DOCUMENTATION</u> | .1 | Assemble start-up documentation and submit to Departmental Representative for approval before commencement of commissioning. |
| | .2 | Start-up documentation to include:
.1 Factory and on-site test certificates for specified equipment.
.2 Pre-start-up inspection reports.
.3 Signed installation/start-up check lists.
.4 Start-up reports,
.5 Step-by-step description of complete start-up procedures, to permit Departmental Representative DCC Representative Consultant to repeat start-up at any time. |
| <u>1.16 OPERATION AND
MAINTENANCE OF
EQUIPMENT AND
SYSTEMS</u> | .1 | After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer. |
| | .2 | With assistance of manufacturer develop written maintenance program and submit Departmental Representative for approval before implementation. |
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| 1.16 OPERATION AND
MAINTENANCE OF
EQUIPMENT AND
SYSTEMS
<u>(Cont'd)</u> | .3 | Operate and maintain systems for length of time required for commissioning to be completed. |
| | .4 | After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance. |
|
<u>1.17 TEST RESULTS</u> | .1 | If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved. |
| | .2 | Provide manpower and materials, assume costs for re-commissioning. |
|
<u>1.18 START OF
COMMISSIONING</u> | .1 | Notify Departmental Representative at least 21 days prior to start of Cx. |
| | .2 | Start Cx after elements of building affecting start-up and performance verification of systems have been completed. |
|
<u>1.19 INSTRUMENTS /
EQUIPMENT</u> | .1 | Submit to Departmental Representative for review and approval:
.1 Complete list of instruments proposed to be used.
.2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date and calibration accuracy. |
| | .2 | Provide the following equipment as required:
.1 2-way radios.
.2 Ladders.
.3 Equipment as required to complete work. |
|
<u>1.20 COMMISSIONING
PERFORMANCE
VERIFICATION</u> | .1 | Carry out Cx:
.1 Under actual operating conditions, over entire operating range, in all modes.
.2 On independent systems and interacting systems. |
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| 1.20 COMMISSIONING
PERFORMANCE
VERIFICATION
(Cont'd) | .2 | Cx procedures to be repeatable and reported results are to be verifiable. |
| | .3 | Follow equipment manufacturer's operating instructions. |
| | .4 | EMCS trending to be available as supporting documentation for performance verification. |
| 1.21 WITNESSING
COMMISSIONING | .1 | Departmental Representative to witness activities and verify results. |
| 1.22 AUTHORITIES
HAVING JURISDICTION | .1 | Where specified start-up, testing or commissioning procedures duplicate verification requirements of authority having jurisdiction, arrange for authority to witness procedures so as to avoid duplication of tests and to facilitate expedient acceptance of facility. |
| | .2 | Obtain certificates of approval, acceptance and compliance with rules and regulation of authority having jurisdiction. |
| | .3 | Provide copies to Departmental Representative within 5 days of test and with Cx report. |
| 1.23 COMMISSIONING
CONSTRAINTS | .1 | Since access into secure or sensitive areas will be very difficult after occupancy it is necessary to complete Cx of occupancy, weather, and seasonal sensitive equipment and systems in secure areas before issuance of the Interim Certificate, using, if necessary, simulated thermal loads. |
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1.24 EXTRAPOLATION
OF RESULTS .1 Where Cx of weather, occupancy, or seasonal-sensitive equipment or systems cannot be conducted under near-rated or near-design conditions, extrapolate part-load results to design conditions when approved by Departmental Representative in accordance with equipment manufacturer's instructions, using manufacturer's data, with manufacturer's assistance and using approved formulae.

1.25 EXTENT OF
VERIFICATION .1 Laboratory areas:
.1 Provide manpower and instrumentation to verify up to 100 % of reported results.
.2 Elsewhere:
.1 Provide manpower and instrumentation to verify up to 30 % of reported results, unless specified otherwise in other sections.
.3 Number and location to be at discretion of Departmental Representative.
.4 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, instrumentation.
.5 Review and repeat commissioning of systems if inconsistencies found in more than 20% of reported results.
.6 Perform additional commissioning until results are acceptable to Departmental Representative.

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

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| <u>1.27 SUNDRY CHECKS
AND ADJUSTMENTS</u> | .1 | Make adjustments and changes which become apparent as Cx proceeds. |
| | .2 | Perform static and operational checks as applicable and as required. |
| <u>1.28 DEFICIENCIES,
FAULTS, DEFECTS</u> | .1 | Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative. |
| | .2 | Report problems, faults or defects affecting Cx to Departmental Representative in writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative. |
| <u>1.29 COMPLETION OF
COMMISSIONING</u> | .1 | Upon completion of Cx leave systems in normal operating mode. |
| | .2 | Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion. |
| | .3 | Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Departmental Representative. |
| <u>1.30 ACTIVITIES
UPON COMPLETION OF
COMMISSIONING</u> | .1 | When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item. |
| <u>1.31 TRAINING</u> | .1 | In accordance with Section 01 91 41 - Commissioning (Cx) - Training. |
| <u>1.32 MAINTENANCE
MATERIALS, SPARE
PARTS, SPECIAL
TOOLS</u> | .1 | Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract. |
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- 1.33 OCCUPANCY .1 Cooperate fully with Departmental Representative during stages of acceptance and occupancy of facility.
- 1.34 INSTALLED INSTRUMENTATION .1 Use instruments installed under Contract for TAB and PV if:
.1 Accuracy complies with these specifications.
.2 Calibration certificates have been deposited with Departmental Representative.
.2 Calibrated EMCS sensors may be used to obtain performance data provided that sensor calibration has been completed and accepted.
- 1.35 PERFORMANCE VERIFICATION TOLERANCES .1 Application tolerances:
.1 Specified range of acceptable deviations of measured values from specified values or specified design criteria. Except for special areas, to be within +/- 10% of specified values.
.2 Instrument accuracy tolerances:
.1 To be of higher order of magnitude than equipment or system being tested.
.3 Measurement tolerances during verification:
.1 Unless otherwise specified actual values to be within +/- 2 % of recorded values.
- 1.36 OWNER'S PERFORMANCE TESTING .1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

PART 2 - PRODUCTS

- 2.1 NOT USED .1 Not Used.
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PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

1.1 SUMMARY

- .1 Section Includes:
 - .1 Commissioning forms to be completed for equipment, system and integrated system.
- .2 Related Requirements
 - .1 01 33 00 - Submittal Requirments
 - .2 01 79 00 - Demonstration and Training
 - .3 01 91 13 - General Commissioning Requirements
 - .4 01 91 31 - Commissioning (Cx)Plan
 - .5 01 91 41 - Commissioning: Training
 - .6 01 91 51 - Building Management Manual (BMM)

1.2 INSTALLATION/
START-UP CHECK
LISTS

- .1 Include the following data:
 - .1 Product manufacturer's installation instructions and recommended checks.
 - .2 Special procedures as specified in relevant technical sections.
 - .3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.
 - .2 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by Departmental Representative supplemental additional data lists will be required for specific project conditions.
 - .3 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.
 - .4 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to Departmental Representative. Check lists will be required during Commissioning and will be included in Building Maintenance Manual (BMM) at completion of project.
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<u>1.2 INSTALLATION/ START-UP CHECK LISTS (Cont'd)</u>	.5	Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.
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<u>1.3 PRODUCT INFORMATION (PI) REPORT FORMS</u>	.1	Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the BMM at completion of work.
	.2	Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Departmental Representative's approval.

<u>1.4 PERFORMANCE VERIFICATION (PV) FORMS</u>	.1	PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.
	.2	PV report forms include those developed by Contractor records measured data and readings taken during functional testing and Performance Verification procedures.
	.3	Prior to PV of integrated system, complete PV forms of related systems and obtain Departmental Representative's approval.

<u>1.5 SAMPLES OF COMMISSIONING FORMS</u>	.1	Departmental Representative will develop and provide to Contractor required project-specific Commissioning forms in electronic format complete with specification data.
	.2	Revise items on Commissioning forms to suit project requirements.

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| <u>1.5 SAMPLES OF
COMMISSIONING FORMS
(Cont'd)</u> | .3 | Samples of Commissioning forms and a complete index of produced to date will be attached to this section. |
| <u>1.6 CHANGES AND
DEVELOPMENT OF NEW
REPORT FORMS</u> | .1 | When additional forms are required, but are not available from Departmental Representative develop appropriate verification forms and submit to Departmental Representative for approval prior to use.
.1 Additional commissioning forms to be in same format as provided by Departmental Representative |
| <u>1.7 COMMISSIONING
FORMS</u> | .1 | Use Commissioning forms to verify installation and record performance when starting equipment and systems. |
| | .2 | Strategy for Use:
.1 Departmental Representative provides Contractor project-specific Commissioning forms with Specification data included.
.2 Contractor will provide required shop drawings information and verify correct installation and operation of items indicated on these forms.
.3 Confirm operation as per design criteria and intent.
.4 Identify variances between design and operation and reasons for variances.
.5 Verify operation in specified normal and emergency modes and under specified load conditions.
.6 Record analytical and substantiating data.
.7 Verify reported results.
.8 Form to bear signatures of recording technician and reviewed and signed off by Departmental Representative.
.9 Submit immediately after tests are performed.
.10 Reported results in true measured SI unit values.
.11 Provide Departmental Representative with originals of completed forms.
.12 Maintain copy on site during start-up, testing and commissioning period. |
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<u>1.7 COMMISSIONING FORMS (Cont'd)</u>	.2	(Cont'd) .13 Forms to be both hard copy and electronic format with typed written results in Building Management Manual in accordance with Section 01 91 51 - Building Management Manual (BMM).
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<u>1.8 LANGUAGE</u>	.1	To suit the language profile of the awarded contract.
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PART 2 - PRODUCTS

<u>2.1 NOT USED</u>	.1	Not Used.
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PART 3 - EXECUTION

<u>3.1 NOT USED</u>	.1	Not Used.
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PART 1 - GENERAL

- 1.1 SUMMARY
- .1 Section Includes:
 - .1 This Section specifies roles and responsibilities of Commissioning Training.
 - .2 Related Requirements
 - .1 01 33 00 - Submittal Requirements
 - .2 01 79 00 - Demonstration and Training
 - .3 01 91 13 - General Commissioning Requirements
 - .4 01 91 31 - Commissioning (Cx)Plan
 - .5 01 91 33 - Commissioning Forms
 - .6 01 91 51 - Building Management Manual (BMM)

- 1.2 TRAINEES
- .1 Trainees: personnel selected for operating and maintaining this facility. Includes Facility Manager, building operators, maintenance staff, security staff, and technical specialists as required.
 - .2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

- 1.3 INSTRUCTORS
- .1 Departmental Representative will provide:
 - .1 Descriptions of systems.
 - .2 Instruction on design philosophy, design criteria, and design intent.
 - .2 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.
 - .3 Contractor and equipment manufacturer to provide instruction on:
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1.3 INSTRUCTORS <u>(Cont'd)</u>	.3	(Cont'd) .1 Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.
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1.4 TRAINING OBJECTIVES <u></u>	.1	Training to be detailed and duration to ensure: .1 Safe, reliable, cost-effective, energy-efficient 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. .5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.
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1.5 TRAINING MATERIALS <u></u>	.1	Instructors 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 TAB and PV Reports.
	.3	Project Manager, Commissioning Manager and Facility Manager will review training manuals.
	.4	Training materials to be in a format that permits future training procedures to same degree of detail.
	.5	Supplement training materials: .1 Transparencies for overhead projectors. .2 Multimedia presentations. .3 Manufacturer's training videos. .4 Equipment models.

1.6 SCHEDULING

- .1 Include in Commissioning Schedule time for training.
- .2 Deliver training during regular working hours, training sessions to be 3 hours in length.
- .3 Training to be completed prior to acceptance of facility.

1.7 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.

1.8 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.
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<u>1.8 TRAINING CONTENT (Cont'd)</u>	.3	Provide specialized training as specified in relevant Technical Sections of the construction specifications.
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<u>1.9 VIDEO-BASED TRAINING</u>	.1	Manufacturer's videos to be used as training tool with Departmental Representative's review and written approval 3 months prior to commencement of scheduled training.
	.2	On-Site training videos: .1 Video record training sessions for use during future training. .2 To be performed after systems are fully commissioned. .3 Organize into several short modules to permit incorporation of changes.
	.3	Production methods to be high quality.

PART 2 - PRODUCTS

<u>2.1 NOT USED</u>	.1	Not Used.
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PART 3 - EXECUTION

<u>3.1 NOT USED</u>	.1	Not Used.
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PART 1 - GENERAL

1.1 SUMMARY

- .1 Section Includes:
 - .1 This section is limited to portions of the Building Management Manual (BMM) provided to Departmental Representative by Contractor.
- .2 Related Requirements
 - .1 01 33 00 - Submittal Requirments
 - .2 01 79 00 - Demonstration and Training
 - .3 01 91 13 - General Commissioning Requirements
 - .4 01 91 31 - Commissioning (Cx)Plan
 - .5 01 91 33 - Commissioning Forms
 - .6 01 91 41 - Commissioning: Training
- .3 Acronyms:
 - .1 BMM - Building Management Manual.
 - .2 Cx - Commissioning.
 - .3 HVAC - Heating, Ventilation and Air Conditioning.
 - .4 PI - Product Information.
 - .5 PV - Performance Verification.
 - .6 TAB - Testing, Adjusting and Balancing.
 - .7 WHMIS - Workplace Hazardous Materials Information System.

1.2 GENERAL REQUIREMENTS

- .1 Standard letter size paper 216 mm x 279 mm.
- .2 Methodology used to facilitate updating.
- .3 Drawings, diagrams and schematics to be professionally developed.
- .4 Electronic copy of data to be in a format accepted and approved by Departmental Representative.

1.3 APPROVALS

- .1 Prior to commencement, co-ordinate requirements for preparation, submission and approval with Departmental Representative.
-

1.4 GENERAL
INFORMATION

- .1 Provide Departmental Representative the following for insertion into appropriate Part and Section of BMM:
- .1 Complete list of names, addresses, telephone and fax numbers of contractor, sub-contractors that participated in delivery of project - as indicated in Section 1.2 of BMM.
 - .2 Summary of architectural, structural, fire protection, mechanical and electrical systems installed and commissioned - as indicated in Section 1.4 of BMM.
 - .1 Including sequence of operation as finalized after commissioning is complete as indicated in Section 2.0 of BMM.
 - .3 Description of building operation under conditions of heightened security and emergencies as indicated in Section 2.0 of BMM.
 - .4 System, equipment and components Maintenance Management System (MMS) identification - Section 2.1 of BMM..
 - .5 Information on operation and maintenance of architectural systems and equipment installed and commissioned - Section 2.0 of BMM.
 - .6 Information on operation and maintenance of fire protection and life safety systems and equipment installed and commissioned - Section 2.0 of BMM.
 - .7 Information on operation and maintenance of mechanical systems and equipment installed and commissioned - Section 2.0 of BMM.
 - .8 Operating and maintenance manual - Section 3.2 of BMM.
 - .9 Final commissioning plan as actually implemented.
 - .10 Completed commissioning checklists.
 - .11 Commissioning test procedures employed.
 - .12 Completed Product Information (PI) and Performance Verification (PV) report forms, approved and accepted by Departmental Representative.
 - .13 Commissioning reports.

1.5 CONTENTS OF
OPERATING AND
MAINTENANCE MANUAL

- .1 For detailed requirements refer to Section 01 78 00 - Closeout Submittals.

1.5 CONTENTS OF
OPERATING AND
MAINTENANCE MANUAL
(Cont'd)

- .2 Departmental Representative to review and approve format and organization within 12 weeks of award of contract.
- .3 Include original manufactures brochures and written information on products and equipment installed on this project.
- .4 Record and organize for easy access and retrieval of information contained in BMM.
- .5 Include completed PI report forms, data and information from other sources as required.
- .6 Inventory directory relating to information on installed systems, equipment and components.
- .7 Approved project shop-drawings, product and maintenance data.
- .8 Manufacturer's data and recommendations relating: manufacturing process, installation, commissioning, start-up, O&M, shutdown and training materials.
- .9 Inventory and location of spare parts, special tools and maintenance materials.
- .10 Warranty information.
- .11 Inspection certificates with expiration dates, which require on-going re-certification inspections.
- .12 Maintenance program supporting information including:
 - .1 Recommended maintenance procedures and schedule.
 - .2 Information to removal and replacement of equipment including, required equipment, points of lift and means of entry and egress.

1.6 LIFE SAFETY
COMPLIANCE (LSC)
MANUAL

- .1 Samples of LSC Manual will be available from Departmental Representative.
 - .2 Content of Manual:
-

1.6 LIFE SAFETY COMPLIANCE (LSC) MANUAL
(Cont'd)

.2 (Cont'd)

- .1 All possible Emergency situations modes including: presence of fire and smoke, power failure, lose of water or pressure, chemical spills and refrigerant release.
- .2 Failure of elevators and escalators.
- .3 HVAC emergencies and fuel supply failures.
- .4 Intrusion and security breach.
- .5 Emergency provisions for natural disasters, bomb threats and other disruptive situations.
- .6 Dedicated emergency generators for high security projects, medical facilities and computer systems.
- .7 Emergency control procedures for fire, power and major equipment failure.
- .8 Emergency contacts and numbers.
- .9 Manual to be readily available and comprehensible to non- technical readers.

1.7 SUPPORTING DOCUMENTATION FOR INSERTION INTO SUPPORTING APPENDICES
APPENDICES

.1 Provide Departmental Representative supporting documentation relating to installed equipment and system, including:

- .1 General:
 - .1 Finalized commissioning plan.
 - .2 WHMIS information manual.
 - .3 Approved "as-built" drawings and specifications.
 - .4 Procedures used during commissioning.
 - .5 Cross-Reference to specification sections.
- .2 Architectural and structural:
 - .1 Inspection certificates, construction permits.
 - .2 Roof anchor log books.
 - .3 PV reports.
- .3 Fire prevention, suppression and protection:
 - .1 Test reports.
 - .2 Smoke test reports.
 - .3 PV reports.
- .4 Mechanical:
 - .1 Installation permits, inspection certificates.
 - .2 Piping pressure test certificates.
 - .3 Ducting leakage test reports.
 - .4 TAB and PV reports.
 - .5 Charts of valves and steam traps.
 - .6 Copies of posted instructions.

- 1.7 SUPPORTING DOCUMENTATION FOR INSERTION INTO SUPPORTING APPENDICES
(Cont'd)
- .1 (Cont'd)
 - .4 (Cont'd)
 - .5 Electrical:
 - .1 Installation permits, inspection certificates.
 - .2 TAB and PV reports.
 - .3 Electrical work log book.
 - .4 Charts and schedules.
 - .5 Locations of cables and components.
 - .6 Copies of posted instructions.
 - .2 Assist Departmental Representative with preparation of BMM.

- 1.8 LANGUAGE
- .1 English is the language to be used for this document.

- 1.9 IDENTIFICATION OF FACILITY
- .1 When submitting information to Departmental Representative for incorporation into BMM, use following system for identification of documentation:
 - .1 Facility;
 - .2 Building;
 - .3 Integrates systems;
 - .4 Systems
 - .5 Sub-systems;
 - .6 Components;
 - .7 Control points for components.

- 1.10 USE OF CURRENT TECHNOLOGY
- .1 Use current technology for production of documentation. Emphasis on ease of accessibility at all times, maintain in up-to-date state, compatibility with user's requirements.
 - .2 Obtain Departmental Representative's approval before starting Work.

PART 2 - PRODUCTS

- 2.1 NOT USED
- .1 Not used.
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PART 3 - EXECUTION

3.1 NOT USED .1 Not used.