

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises renovation and interior fit-up of office space for PWGSC Meeting Rooms and Support Space, located at 191 Great George Street; and further identified as the Jean Canfield Building.

1.2 WORK BY OTHERS

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from the Departmental Representative.
- .2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Departmental Representative, in writing, any defects which may interfere with proper execution of Work.
- .3 Work of Project which will be executed after completion of Work of this Contract, and which is specifically excluded from this Contract:
 - .1 Moving and assembly of existing furniture or fittings.
- .4 Work of this Project must include provisions for co-ordinating related work, identified in Contract Documents, for following principal items.
 - .1 Work to accommodate adjacent building tenants to ensure continuity of their operations.

1.3 FUTURE WORK

- .1 Insure that Work avoids encroachment into areas required for future work.

1.4 WORK SEQUENCE

- .1 Construct Work in stages to accommodate Owner's continued use of premises during construction.
 - .2 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.
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- .3 Required stages:
 - .1 Removal and storage of existing starwall demountable wall system.
 - .2 Installation of dust barrier.
 - .3 Construction.
 - .4 Clean up.

1.5 CONTRACTOR USE OF PREMISES

- .1 Description: The work of this project is located at two areas within the Jean Canfield Government of Canada Building.
 - .1 Meeting Rooms 100, 101, 102, 103, 104, 105, 106 and 108:
 - .1 This location is currently occupied by storage and the mail room.
 - .2 The Contractor is required to work with and coordinate the removal of existing 'starwall' demountable panels, flooring and construction of a dust barrier between the area of new construction and the remainder of the building.
 - .3 Storage of materials (ie. Starwall partitions) will be available on site. Location to be coordinated with the Departmental Representative.
 - .4 Storage of new construction materials must be accommodated elsewhere and brought to site on an as-needed basis. Storage in the Lobby area is not permitted.
 - .2 Meeting Room 107:
 - .1 This location is currently occupied by the canteen.
 - .2 Access to Exit must be maintained.
 - .2 Limit use of premises for Work, for storage, and for access, to allow:
 - .1 Owner occupancy.
 - .2 Partial owner occupancy.
 - .3 Public usage.
 - .3 Co-ordinate use of premises under direction of Departmental Representative.
 - .4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
 - .5 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
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- .6 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
- .7 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.6 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations or occupants, public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.
- .2 Use only elevators existing in building for moving workers and material.
 - .1 Protect walls of passenger elevators, to approval of Departmental Representative prior to use.
 - .2 Accept liability for damage, safety of equipment and overloading of existing equipment.

1.7 EXISTING SERVICES

- .1 Notify Departmental Representative of intended interruption of services and obtain required permission.
 - .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to tenant operations.
 - .3 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
 - .4 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
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- .5 Provide temporary services when directed by Departmental Representative to maintain critical building and tenant systems.
- .6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .8 Record locations of maintained, re-routed and abandoned service lines.
- .9 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.8 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .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 specified.

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 RELATED SECTIONS

- .1 Section 01 11 00 - Summary of Work.
- .2 Section 01 32 16.07 - Construction Progress Schedule

1.2 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.3 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security. Contractor is responsible to pay for additional security required during off hours.
- .4 Departmental Representative will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.
- .5 Use only elevators existing in building for moving workers and material.
 - .1 Protect walls of passenger elevators, to approval of Departmental Representative prior to use.
 - .2 Accept liability for damage, safety of equipment and overloading of existing equipment.
- .6 Closures: protect work temporarily until permanent enclosures are completed.

1.4 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

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

1.5 EXISTING SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for personnel traffic.
- .4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures

1.6 SPECIAL REQUIREMENTS

- .1 Paint and carpet areas Monday to Friday from 18:00 to 07:00 hours only and on Saturdays, Sundays, and statutory holidays.
- .2 Carry out noise generating Work Monday to Friday from 18:00 to 07:00 hours and on Saturdays, Sundays and statutory holidays:.
- .3 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
- .4 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .5 Keep within limits of work and avenues of ingress and egress.
- .6 Ingress and egress of Contractor vehicles at site is not available.
- .7 Deliver materials outside of peak traffic hours 17:00 to 07:00 and 13:00 to 15:00 unless otherwise approved by Departmental Representative.

1.7 SECURITY CLEARANCES

- .1 Personnel employed on this project will be subject to security check. Obtain clearance,
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- .1 (Cont'd)
as instructed, for each individual who will
require to enter premises.
- .2 Personnel will be checked daily at start of
work shift and provided with pass which must
be worn at all times. Pass must be returned at
end of work shift and personnel checked out.

1.8 SECURITY ESCORT

- .1 Personnel employed on this project must be
escorted when executing work in non-public
areas during normal working hours. Personnel
must be escorted in all areas after normal
working hours.
- .2 Submit an escort request to Departmental
Representative at least 14 days before service
is needed. Cost incurred by late request will
be Contractor's responsibility.
- .3 Any escort request may be cancelled free of
charge if notification of cancellation is
given at least 4 hours before scheduled time
of escort. Cost incurred by late request will
be Contractor's responsibility.
- .4 Calculation of costs will be based on average
hourly rate of security officer for minimum of
eight hours per day for late service request
and of four hours for late cancellations.

1.9 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is
not allowed.

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 ADMINISTRATIVE

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

1.2 PRECONSTRUCTION MEETING

- .1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
 - .2 Senior representatives of 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 5 days before meeting.
 - .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
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- .5 Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart .
 - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Delivery schedule of specified equipment in accordance with Section.
 - .5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures
 - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .7 Owner provided products.
 - .8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
 - .10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
 - .11 Monthly progress claims, administrative procedures, photographs, hold backs.
 - .12 Appointment of inspection and testing agencies or firms.
 - .13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During course of Work schedule progress meetings b-weekly.
 - .2 Contractor, major Subcontractors involved in Work and Departmental Representative, are to be in attendance.
 - .3 Notify parties minimum 4 days prior to meetings.
 - .4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 4 days after meeting.
 - .5 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
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- .5 Agenda to include the following:(Cont'd)
 - .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.
 - .11 Review proposed changes for affect on construction schedule and on completion date.
 - .12 Other business.

PART 2 - PRODUCTS

2.1	NOT USED	
		.1 Not Used.

PART 3 - EXECUTION

3.1	NOT USED	
		.1 Not Used.

PART 1 - GENERAL

1.1 DEFINITIONS

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

1.4 MASTER PLAN

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

1.5 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .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 Interior Architecture (Walls, Floors and Ceiling).
 - .6 Plumbing.
 - .7 Lighting.
 - .8 Electrical.
 - .9 Piping.
 - .10 Controls.
 - .11 Heating, Ventilating, and Air Conditioning.
 - .12 Millwork.
 - .13 Fire Systems.
 - .14 Testing and Commissioning.
 - .15 Supplied equipment long delivery items.

1.6 PROJECT SCHEDULE REPORTING

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

1.7 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
 - .2 Weather related delays with their remedial measures will be discussed and negotiated.
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PART 2 - PRODUCTS

<u>2.1</u>	<u>NOT USED</u>	
		.1 Not used.

PART 3 - EXECUTION

<u>3.1</u>	<u>NOT USED</u>	
		.1 Not used.

PART 1 - GENERAL

1.1 ADMINISTRATIVE

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 Refer to CCDC 2 2008 GC 3.10.
 - .2 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
 - .3 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or licensed in Province of Prince Edward Island, Canada.
 - .4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
 - .5 Allow 5 days for Departmental Representative's review of each submission.
 - .6 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
 - .7 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
 - .8 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
 - .9 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
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- .9 Submissions include:(Cont'd)
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
 - .10 After Departmental Representative's review, distribute copies.
 - .11 Shop Drawings:
 - .1 Submit 1 electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
 - .2 Submit required print copies as part of O & M Manuals.
 - .12 Product Data Sheets:
 - .1 Submit 1 electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
 - .2 Submit required print copies as part of O & M Manuals.
 - .13 Test Reports:
 - .1 Submit 1 electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .2 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or
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- .13 Test Reports:(Cont'd)
 - .2 (Cont'd)
system to be provided has been tested in
accord with specified requirements.
 - .3 Testing must have been within 3 years of
date of contract award for project.
 - .4 Submit required print copies as part of
O & M Manuals.
 - .14 Certificates:
 - .1 Submit 1 electronic copy of certificates
for requirements requested in specification
Sections and as requested by Departmental
Representative.
 - .2 Statements printed on manufacturer's
letterhead and signed by responsible officials
of manufacturer of product, system or material
attesting that product, system or material
meets specification requirements.
 - .3 Certificates must be dated after award
of project contract complete with project
name.
 - .4 Submit required print copies as part of
O & M Manuals.
 - .15 Manufacturers Instructions:
 - .1 Submit 1 electronic copy of
manufacturers instructions for requirements
requested in specification Sections and as
requested by Departmental Representative.
 - .2 Pre-printed material describing
installation of product, system or material,
including special notices and Material Safety
Data Sheets concerning impedances, hazards and
safety precautions.
 - .3 Submit required print copies as part of
O & M Manuals.
 - .16 Manufacturer's Field Reports:
 - .1 Submit 1 electronic copy of
Manufacturer's Field Reports for requirements
requested in specification Sections and as
requested by Departmental Representative.
 - .2 Documentation of the testing and
verification actions taken by manufacturer's
representative to confirm compliance with
manufacturer's standards or instructions.
 - .3 Submit required print copies as part of
O & M Manuals.
 - .17 Submit 6 prints and 1 electronic copies of
Operation and Maintenance Data for
requirements requested in specification
Sections and as requested by Departmental
Representative.
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- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by Departmental Representative no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .21 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 SAMPLES

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

1.4 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 REFERENCES

- .1 American Society of Heating Refrigeration and Air-Conditioning (ASHRAE)
 - .1 ASHRAE 52.2-99, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size (ANSI approved).
- .2 Canada Green Building Council (CaGBC)
 - .1 LEED Green Building Rating System - For New Construction and Major Renovations. LEED Canada-NC - Version 1.0 - December 2004.
- .3 Carpet and Rug Institute (CRI)
 - .1 CRI Green Label Indoor Air Quality Test Program - Green Label Testing Program.
- .4 United States Forest Stewardship Council
 - .1 Principles and Criteria for Forest Stewardship-00.
- .5 Green Seal Environmental Standards
 - .1 Standard GC-03-93, Anti-Corrosive Paints.
 - .2 Standard GS-11-97, Architectural Paints.
- .6 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113-04, Architectural Coatings.
 - .2 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.
- .7 Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
 - .1 IAQ Guideline for Occupied Buildings Under Construction.
- .8 United States Federal Trade Commission (US Federal Trade Commission)
 - .1 16 CFR 260.7 Trade Commission Guidelines for the Use of Environmental Marketing Claims.

1.2 DEFINITIONS

- .1 FSC - Forest Stewardship Council.
 - .2 SFM - Sustainable Forest Management.
 - .3 CFC - Chlorofluorocarbons.
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- .4 Chain-of-Custody Certification - certificates signed by manufacturers certifying that wood used to make products was obtained from FSC certified forests. Certificates include evidence that mill is certified for chain-of-custody by FSC-accredited certification body.
- .5 HCFC - Hydro Chlorofluorocarbons.
- .6 LEED - Leadership in Energy and Environmental Design.
- .7 IAQ - Indoor Air Quality.
- .8 Rapidly Renewable Materials - materials made from agricultural products that are typically harvested within a ten-year or shorter cycle. Rapidly renewable materials include but are not limited to products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, and wool.
- .9 Regionally Manufactured Materials - materials that are manufactured within a radius of 800 km from project location. Manufacturing refers to the final assembly of components into the building product that is installed at project site.
- .10 Recycled Content - percentage by weight of constituents that have been recovered or otherwise diverted from solid waste stream, either pre-consumer or post-consumer.
 - .1 Wastes and scraps from manufacturing process that are combined with other materials after minimal amount of reprocessing for use in further production of same product are not recycled materials.
 - .2 Discarded materials from one manufacturing process that are used as materials in another manufacturing process are pre-consumer recycled materials.

1.3 SUBMITTALS

- .1 General: The Jean Canfield Building is registered with the CaGBC and LEED Canada as a "Gold" Building. All materials and construction methodology for the work described in this specification and drawings is to meet LEED requirements in support of the Gold rating. It is not the intention of the
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- .1 General:(Cont'd)
Owner to make a special application to the CaGBC on the account of these renovations.
 - .2 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .3 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Shop drawings: stamped and signed by professional architect or engineer registered or licensed in Province of Prince Edward Island, Canada.
 - .4 Submit required letters, calculations, spreadsheets and templates prepared by Departmental Representative suitable for submittal to CaGBC.
 - .5 Submit additional LEED submittal requirements included in other sections in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 When submitted items are duplicated to that submitted to comply with other requirements, submit duplicate copies as separate submittals for compliance with indicated LEED requirements.
 - .6 Submit:
 - .1 Submit product data for Energy and Atmosphere Credit EA-4 Ozone Protection. Submit product data for new HVAC equipment indicating absence of HCFC refrigerants and for clean-agent fire-extinguishing systems indicating absence of HCFC and Halon.
 - .2 Submit product data for Energy and Atmosphere Credit EA-5 Measurement and Verification. Submit product data and wiring diagrams for sensors and data collection systems for metering of building energy and water consumption performance.
 - .3 Submit Construction Waste Management Plan for Materials and Resources Credit MR-2.1 Construction Waste Management :Divert 50% From Landfill and MR 2.2 Construction and Waste Management: Divert 75% From Landfill. Comply with Section 01 35 73 - Procedures for Deconstruction of Structures. Include the following submittals:
 - .1 Submit receipts for Materials and Resources Credit MR-3.1 Resource Reuse: 5% and MR-3.2 Resource Reuse: 10%. Submit receipts for salvaged and refurbished materials used for project, indicating
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- .6 Submit:(Cont'd)
 - .3 (Cont'd)
 - .1 (Cont'd)
sources and costs for salvaged and refurbished materials.
 - .2 Submit product data and certification letters for Materials and Resources Credit MR-4.1 Recycled Content: 7.5% and MR-4.2 Recycled Content: 15%. Submit product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for products having recycled content.
 - .3 Submit product data for Materials and Resources Credit MR-5.1 Regional Materials: 10% Extracted and Manufactured Regionally and MR-5.2 Regional Materials: 20% Extracted and Manufactured Regionally. Submit product data indicating location of material manufacturer for regionally manufactured materials. Include the following:
 - .1 Statement indicating cost and distance from manufacturer to project for each regionally manufactured material.
 - .2 Statement indicating cost and distance from point of extraction, harvest, or recovery to project for each raw material used in regionally manufactured materials.
 - .4 Submit product data for Materials and Resources Credit MR-6 Rapidly Renewable Materials. Submit product data for rapidly renewable materials.
 - .1 Include statement indicating costs for each rapidly renewable material.
 - .5 Submit product data and certificates for Materials and Resources Credit MR-7 Certified Wood. Submit product data and certificates of chain-of-custody for products containing certified wood.
 - .1 Include statement indicating costs for products containing certified wood.
 - .2 Include statement indicating total cost for wood-based materials used for project, including non-rented temporary construction.

- .6 Submit:(Cont'd)
 - .3 (Cont'd)
 - .6 Provide submittals for Indoor Environmental Quality Credit EQ-3.1 Construction IAQ Management Plan. Include the following:
 - .1 Construction indoor air quality management plan.
 - .2 Product data for temporary filtration media.
 - .3 Product data for filtration media used during occupancy.
 - .4 Construction documentation submit 6 photographs at 3 different times during construction along with description of utilized IAQ measures in accordance with SMACNA, documenting protection of ducts and on-site stored or installed absorptive materials from moisture.
 - .7 Submit product data for Indoor Environmental Quality Credit EQ-4.1 Low-Emitting Materials: Adhesives and Sealants. Submit product data for interior adhesives and sealants indicating VOC content of product used. Indicate VOC content in g/L calculated in accordance with SCAQMD Rule 1168.
 - .8 Submit product data for Indoor Environmental Quality Credit EQ-4.2 Low-Emitting Materials: Paints and Coatings. Submit product data for interior paints and coatings indicating chemical composition and VOC content for products used. Indicate VOC content in g/L calculated in accordance with SCAQMD Rule 1113.
 - .9 Submit product data for Indoor Environmental Quality Credit EQ-4.4 Low-Emitting Materials: Composite Wood and Laminates Adhesives. Submit product data for composite wood and agrifiber products indicating products contain no urea-formaldehyde resins.
 - .1 Include statement for adhesives use in fabrication of laminated assemblies.

PART 2 - PRODUCTS

2.1 SALVAGED AND REFURBISHED MATERIALS

- .1 Materials and Resources Credit MR-3.1
Resource Reuse: 5% and MR-3.2 Resource Reuse:
10%. Supply salvaged or refurbished materials
for 10 percent of building materials by cost.
.1 Following materials to be refurbished
and/or recycled materials:
 - .1 Carpet.
 - .2 Wall Systems.
 - .3 Cabinet Work (Existing Health
Canada Cabinet).

2.2 RECYCLED CONTENT OF MATERIALS

- .1 Materials and Resources Credit MR-4.1
Recycled Content: 7.5% (post-consumer + ½ post
industrial). Supply building materials with a
minimum post-consumer recycled content of 5%
of cost of project materials or with a minimum
post-consumer recycled content plus 1/2
pre-consumer recycled content of 10% of cost
of project materials.

2.3 REGIONAL MATERIALS

- .1 Materials and Resources Credit MR5-1 Regional
Materials: 10% Extracted and Manufactured
Regionally. Supply 20% of building materials
(by cost) that are regionally manufactured.
- .2 Materials and Resources Credit MR5-2 Regional
Materials: 20% Extracted and Manufactured
Regionally. Regionally manufactured materials
required by paragraph 2.3.1, supply 50 % (by
cost) of building materials that are
regionally extracted, harvested, or recovered.

2.4 CERTIFIED WOOD

- .1 Materials and Resources Credit MR-7 Certified
Wood. Supply a minimum of 50% (by cost) of
wood-based materials that are produced from
wood obtained from forests certified by an
FSC-accredited certification body to comply
with FSC Principles and Criteria.
.1 Wood-based materials include but not
limited to the following materials when made
from made wood, engineered wood products, or
wood-based panel products:
 - .1 Miscellaneous carpentry.
 - .2 Architectural woodwork.
 - .3 Wood flooring.

- .1 (Cont'd)
 - .1 (Cont'd)
 - .4 Non-rented temporary construction, including bracing, concrete formwork, pedestrian barriers, and temporary protection.

2.5 LOW-EMITTING MATERIALS

- .1 Indoor Environmental Quality Credit EQ4-1 Low-Emitting Materials: Adhesives and Sealants. Interior applications requiring adhesives, sealants and sealant primers must comply with the following content limits for VOC of the State of California's South Coast Air Quality Management District (SCAQMD) Rule 1168.
 - .1 Wood Glues: 30 g/L.
 - .2 Metal to Metal Adhesives: 30 g/L.
 - .3 Adhesives for Porous Materials (Except Wood): 50 g/L.
 - .4 Carpet Adhesives: 50 g/L.
 - .5 Cove Base Adhesives: 50 g/L.
 - .6 Gypsum Board and Panel Adhesives: 50 g/L.
 - .7 Multipurpose Construction Adhesives: 70 g/L.
 - .8 Contact Adhesive: 250 g/L.
 - .9 Plastic Cement Welding Compounds: 350 g/L.
 - .10 ABS Welding Compounds: 400 g/L.
 - .11 CPVC Welding Compounds: 490 g/L.
 - .12 PVC Welding Compounds: 510 g/L.
 - .13 Adhesive Primer for Plastic: 650 g/L.
 - .14 Sealants: 250 g/L.
 - .15 Sealant Primers for Nonporous Substrates: 250 g/L.
 - .16 Sealant Primers for Porous Substrates: 775 g/L.
- .2 Indoor Environmental Quality Credit EQ4-2 Low-Emitting Materials: Paints and Coatings. Interior applications use paints and coatings must comply with the following limits for VOC content when calculated according to SCAQMD Rule 1113.
 - .1 Flat Paints and Coatings: VOC not more than 50 g/L.
 - .2 Non-Flat Paints and Coatings: VOC not more than 150 g/L.
 - .3 Varnishes and Sanding Sealers: VOC not more than 350 g/L.
 - .4 Stains: VOC not more than 250 g/L.
 - .5 Aromatic Compounds: paints and coatings not to contain more than 1.0% by weight total

- .2 (Cont'd)
 - .5 Aromatic Compounds:(Cont'd)
aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 - .6 Restricted Components: paints and coatings not to contain the following:
 - .1 Acrolein.
 - .2 Acrylonitrile.
 - .3 Antimony.
 - .4 Benzene.
 - .5 Butyl benzyl phthalate.
 - .6 Cadmium.
 - .7 Di (2-ethylhexyl) phthalate.
 - .8 Di-n-butyl phthalate.
 - .9 Di-n-octyl phthalate
 - .10 1,2-dichlorobenzene.
 - .11 Diethyl phthalate.
 - .12 Dimethyl phthalate.
 - .13 Ethylbenzene.
 - .14 Formaldehyde.
 - .15 Hexavalent chromium.
 - .16 Isophorone.
 - .17 Lead.
 - .18 Mercury.
 - .19 Methyl ethyl ketone.
 - .20 Methyl isobutyl ketone.
 - .21 Methylene chloride.
 - .22 Naphthalene.
 - .23 Toluene (methylbenzene).
 - .24 1,1,1-trichloroethane.
 - .25 Vinyl chloride.
- .3 Indoor Environmental Quality Credit EQ4-4 Low Emitting Materials: Composite Wood and Laminate Adhesives. Do not use composite wood and agrifiber products that contain urea-formaldehyde resin.

PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT

- .1 Credit MR-2.1 Construction Waste Management: Divert 50% From Landfill and MR-2.2 Divert 75% From Landfill. Comply with. Section 01 35 73 - Procedures for Deconstruction of Structures.

3.2 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT

- .1 Credit EQ3-1 Construction IAQ Management Plan: During Construction. Comply with SMACNA IAQ Guideline for Occupied Buildings under Construction.

- .2 Existing air ventilation systems will continue in operation during the process of construction. The Contractor is to cover and protect all floor openings to prevent dust and debris in the access floor system.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Health and safety considerations required to ensure that PWGSC shows due diligence towards health and safety on construction sites, and meets the requirements laid out in PWGSC/RPB Departmental Policy DP 073 - Occupational Health and Safety - Construction.

1.2 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Province of Prince Edward Island
 - .1 Occupational Health and Safety Act, R.S.P.E.I. 2004.

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
 - .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative.
 - .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
 - .5 Submit copies of incident and accident reports.
 - .6 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 47 17 -
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- .6 (Cont'd)
Sustainable Requirements: Contractor's
Verification.
- .7 Departmental Representative will review
Contractor's site-specific Health and Safety
Plan and provide comments to Contractor within
days after receipt of plan. Revise plan as
appropriate and resubmit plan to Departmental
Representative within 4 days after receipt of
comments from Departmental Representative.
- .8 Departmental Representative's review of
Contractor's final Health and Safety plan
should not be construed as approval and does
not reduce the Contractor's overall
responsibility for construction Health and
Safety.
- .9 Medical Surveillance: where prescribed by
legislation, regulation or safety program,
submit certification of medical surveillance
for site personnel prior to commencement of
Work, and submit additional certifications for
any new site personnel to Departmental
Representative.
- .10 On-site Contingency and Emergency Response
Plan: address standard operating procedures to
be implemented during emergency situations.

1.4 SAFETY ASSESSMENT

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

1.5 MEETINGS

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

1.6 GENERAL REQUIREMENTS

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

- .2 (Cont'd)
noted and may request re-submission with
correction of deficiencies or concerns.

1.7 RESPONSIBILITY

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

1.8 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety
Act, Occupational Health and Safety Act
Regulations, P.E.I..
- .2 Comply with Canada Labour Code, Canada
Occupational Safety and Health Regulations.

1.9 UNFORSEEN HAZARDS

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

1.10 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices
and orders are posted in conspicuous location
on site in accordance with Acts and
Regulations of Province having jurisdiction,
and in consultation with Departmental
Representative.

1.11 CORRECTION OF NON-COMPLIANCE

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

1.12 BLASTING

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

1.13 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.
 - .1 Contractors are to note power activated devices are not permitted to penetrate concrete floors or ceilings more than 25 mm.

1.14 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not used.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-December 2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System For New Construction and Major Renovations.
- .2 Federal Legislation
 - .1 Canadian Environmental Protection Act, 1999, c. 33 (CEPA).
 - .2 Canadian Environmental Assessment Act, 1992, c. 37 (CEAA).
 - .3 Transportation of Dangerous Goods Act 1992, c. 34 (TDGA).
 - .4 Motor Vehicle Safety Act 1993, c. 16 (MVSA).

1.2 DEFINITIONS

- .1 Alternate Disposal: reuse and recycling of materials by designated facility, user or receiving organization which has valid Certificate of Approval to operate. Alternative to landfill disposal.
 - .2 Deconstruction: systematic dismantling of structure to salvage materials for reuse. What cannot be reused is considered subsequently for recycling. Ultimate objective is to recover potentially valuable resources while diverting from landfill what has traditionally been significant portion of waste stream.
 - .3 Demolition: rapid destruction of structure with or without prior removal of hazardous materials.
 - .4 Disassembly: physical detachment of materials from structure and may include: prying, pulling, cutting, unscrewing.
 - .5 Hauler: company (possessing appropriate and valid Certificate of Approval) contracted to transport waste, reusable or recyclable materials off site to designated facility, user or receiving organization.
 - .6 Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and
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- .6 Hazardous Materials:(Cont'd)
hazardous products, may include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well being or environment if handled improperly.
 - .7 Processing: tasks which are subsequent to disassembly and may include: moving materials, denailing, cleaning, separating and stacking.
 - .8 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.
 - .9 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
 - .10 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
 - .11 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from remodelling projects before the demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .2 Returning reusable items may include pallets and unused products to vendors.
 - .12 Salvage: removal of structural and non-structural structure materials from industrial, commercial and institutional structure deconstruction/disassembly projects for purpose of reuse or recycling.
 - .13 Source Separation: acts of keeping different types of waste materials separate beginning from first time they become waste.
 - .14 Used Building Material Receipt: receipt issued at end destination for materials designated for alternate disposal.
 - .15 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying
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- .15 Waste Audit (WA):(Cont'd)
(by volume or weight) amounts of materials and wastes generated during deconstruction. Indicates quantities of reuse, recycling and landfill.
- .16 Waste Management Co-ordinator (WMC) :
contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
- .17 Waste Reduction Workplan (WRW): written report which outlines actions to be taken to reduce, reuse and recycle materials during course of deconstruction. Actions based on finding of the Waste Audit (WA).
- .18 Weigh Bill: receipt received from recycling facility indicating weight and content of each load/bin of material.

1.3 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 WMC is responsible for fulfillment of reporting requirements.
 - .3 Prior to start of Work on site, submit detailed Waste Audit indicating descriptions of and anticipated quantities of materials to be reused, recycled and landfilled in accordance. municipal and Provincial bylaws.
 - .4 Based on findings of Waste Audit submit Waste Reduction Workplan indicating schedule of selective demolition, material descriptions and quantities to be salvaged, number and location of bins, anticipated frequency of tipping, and names and addresses of haulers facilities receiving organizations..
 - .5 Submit copies of certified weigh bills used building material receipts from authorized disposal sites and reuse and recycling facilities for material removed from site to Departmental Representative at specified project milestones.
 - .1 Written authorization from Departmental Representative is required to deviate from haulers facilities listed in Waste Reduction Workplan.
-

- .6 Workers, haulers and subcontractors must possess current, applicable Certificates of Approval, permits to remove, handle and dispose of wastes categorized provincially or municipally as hazardous.
 - .1 Provide proof of compliance within 24 hours upon receipt of written request of Departmental Representative.

1.4 SITE CONDITIONS

- .1 Existing Conditions:
 - .1 As the building is and will continue to be occupied during the time of construction it will be mandatory that deconstruction and waste removal activities take place during off-hours. Waste containers are not permitted on the site during normal working hours without the express written permission of the Departmental Representative.
- .2 Storage:
 - .1 Store materials salvaged for reuse and recycling in locations as directed by Departmental Representative.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 SELECTIVE DEMOLITION

- .1 Reuse of Building Elements: this project has been designed to result in end of project rates for reuse of building elements as follows: Do not demolish building elements beyond what is indicated on drawings without approval by Departmental Representative.

3.2 SITE VERIFICATION OF CONDITIONS

- .1 Investigate site and structures to determine dismantling, processing and storage logistics required prior to beginning of Work.
 - .2 Develop strategy for deconstruction to facilitate optimum salvage of reusable and recyclable materials.
-

3.3 PREPARATION

- .1 Obtain necessary permits and approvals
 - .1 Provide copies to Departmental Representative prior to start of Work on site.

3.4 REMOVAL FROM SITE

- .1 Transport material designated for alternate disposal using approved facilities listed in Waste Reduction Workplan and in accordance with applicable regulations.
 - .1 Written authorization from Departmental Representative is required to deviate from facilities or receiving organizations listed in Waste Reduction Workplan.
- .2 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.
 - .1 Disposal facilities must be those approved of and listed in Waste Reduction Workplan.
 - .2 Written authorization from Departmental Representative is required to deviate from disposal facilities listed in Waste Reduction Workplan.

PART 1 - GENERAL

1.1 REFERENCES AND CODES

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

1.2 HAZARDOUS MATERIAL DISCOVERY

- .1 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative.

1.3 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.
- .2 Smoking is not permitted.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

- .1 Not Used.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-2008, Stipulated Price Contract.

1.2 INSPECTION

- .1 Refer to CCDC 2, 2008 GC 2.3.
- .2 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.
- .3 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.
- .4 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.
- .5 Departmental Representative will order 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.

1.3 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 Engineer Consultant.
 - .2 Provide equipment required for executing inspection and testing by appointed agencies.
-

- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.4 ACCESS TO WORK

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

1.5 PROCEDURES

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

1.6 REJECTED WORK

- .1 Refer to CCDC-2-2008, GC 2.4.
 - .2 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.
 - .3 Make good other Contractor's work damaged by such removals or replacements promptly.
-

- .4 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.7 REPORTS

- .1 Submit 4 copies of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested manufacturer or fabricator of material being inspected or tested.

1.8 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

1.9 EQUIPMENT AND SYSTEMS

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

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.
-

PART 3 - EXECUTION

.1 Not Used.

PART 1 - GENERAL

1.1 PRECEDENCE

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

1.2 SECTION INCLUDES

- .1 This Section includes opportunities for verification of performance requirements and expected results.

1.3 REFERENCES

- .1 American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
 - .1 ASHRAE 55-1992, Thermal Environmental Conditions for Human Occupancy.
 - .2 ASHRAE 62-2001, Ventilation for Acceptable Indoor Air Quality.
 - .3 ASHRAE 129-1997, Measuring Air Change Effectiveness.

1.4 GENERAL BUILDING DESIGN

- .1 Indicate in writing to Departmental Representative:
 - .1 Compliance Report: List energy efficient and environmentally benign products purchased for this project:
 - .2 Use Report: List materials and methods of construction used, which improved:
 - .1 Energy and water efficiency:.
 - .2 Reduced hazardous by-products:.
 - .3 Products, materials or systems purchased that used recycled materials:
 - .4 Products, materials or systems purchased that are constructed of materials which can be reused.
 - .5 Post-consumer content of used or recycled, materials and assemblies.
 - .3 Energy Report: List Energuide ratings for new equipment and appliances:
 - .4 List purchased assemblies and systems designed for disassembly:
 - .5 Provide written report describing how construction of building has been done to comply with design intent for building to be

- .1 (Cont'd)
- .5 (Cont'd)
- adaptable to future alterations and changes: footprint.
 - .1 Adaptable and flexible to future uses:
 - .1 Space planning and zoning.
 - .6 Reuse of existing buildings: Provide pre-construction and post construction plans indicating reused structure and envelope components.

1.5 INDOOR AIR QUALITY

- .1 Indoor Environmental Quality
 - .1 Provide written report indicating strategies, methods and materials that were incorporated into project to control mould growth.
 - .2 Provide floor plan indicating areas that will generate high contaminates and indicate dedicated exhaust points.
- .2 IAQ Performance
 - .1 Provide inspection report from Engineer Consultant indicating that project complies with ASHRAE 62.
- .3 Environmental Tobacco Smoke (ETS) control
 - .1 Provide confirmation letter from Departmental Representative indicating that smoking is prohibited inside building.
- .4 Construction IAQ Management Plan
 - .1 Provide written report indicating:
 - .1 Measures taken to minimize impacts on interior air during construction as defined in Sheet Metal and Air Conditioning National Contractors Association Indoor Air Quality Guideline for Occupied Buildings Under Construction Guideline.
 - .2 Efficiency of filtration media efficiency used during construction phase and dates filtration media was changed.
 - .3 Provisions taken to protect HVAC system from contamination during construction procedures.

1.6 GENERAL CONSTRUCTION MATERIALS/PRACTICES

- .1 Materials and Resources
-

- .2 Construction Waste Management
 - .1 Submit copy of the waste audit and waste management workplan developed for project.
 - .2 Submit waybills for waste materials removed from site during construction along with destination point.
 - .3 Resource Reuse
 - .1 Provide written report including specifications:
 - .1 Describing salvaged and refurbished materials used during construction, including origin of salvaged materials.
 - .2 Showing calculations that indicate what percentage of total project's materials were salvaged or refurbished.
 - .4 Recycled Content
 - .1 Provide product specification and data sheets for products containing recycled content indicating the percentage of post consumer post industrial content.
 - .2 Provide calculations indicating what percentage of total project's materials contained recycled content.
 - .5 Local/Regional Materials
 - .1 Provide product specification and data sheets for locally manufactured materials installed.
 - .2 Provide calculations indicating what percentage of total project's materials were locally manufactured.
 - .6 Rapidly Renewable Materials
 - .1 Provide product specification and data sheets for products containing rapidly renewable materials installed.
 - .2 Provide calculations indicating what percentage of total project's materials contained rapidly renewable materials.
 - .7 Wood
 - .1 Provide documentation from supplier declaring that wood materials were harvested from sustainable forestry practices.
 - .2 Provide calculations indicating what percentage of total project's wood materials were certified as sustainably harvested.
 - .8 Low-Emitting Materials
-

- .8 (Cont'd)
 - .1 Provide MSDS sheets or testing results indicating VOC emission rates for following materials:
 - .1 Adhesives.
 - .2 Sealants.
 - .3 Caulkings.
 - .4 Paints and coatings.
 - .5 Textile floor coverings.
 - .2 Provide MSDS sheets indicating resin type for composite wood and agrifibre materials.

1.7 INSULATION

- .1 Provide product specification and data sheets indicating:
 - .1 Recycled content of each type of insulation material installed.

1.8 CEILINGS

- .1 Provide product specification sheets indicating:
 - .1 Noise reduction coefficient of installed ceiling tiles.
 - .2 Average recycled content.

1.9 PAINTS, STAINS, VARNISHES

- .1 Provide MSDS sheets for paints, stains and varnishes indicating VOC emission rate and chemical composition.

1.10 SEALANTS, ADHESIVES AND COMPOUNDS

- .1 Provide MSDS sheets for sealants, adhesives and other compounds indicating VOC emission rate and chemical composition.

1.11 JANITORIAL SERVICES

- .1 Provide MSDS sheets for janitorial products.
 - .2 Provide manufacturer's literature indicating percentage of recycled content.
 - .3 Provide copy of plan for implementation of integrated pest management plan.
-

PART 2 - PRODUCTS

<u>2.1</u>	<u>NOT USED</u>	
		.1 Not Used.

PART 3 - EXECUTION

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

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-2008, Stipulated Price Contract.
- .2 Canadian Green Building Council (CaGBC)
 - .1 LEED Canada-NC most current version, LEED (Leadership in Energy and Environmental Design): Green Building Rating System For New Construction and Major Renovations.
- .3 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.
- .4 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.
- .5 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.

1.2 SUBMITTALS

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

1.3 INSTALLATION AND REMOVAL

- .1 Indicate use of supplemental or other staging area.
 - .2 Provide construction facilities in order to execute work expeditiously.
 - .3 Remove from site all such work after use.
-

1.4 SCAFFOLDING

- .1 Scaffolding in accordance with CAN/CSA-S269.2.
- .2 Provide and maintain scaffolding ramps ladders swing staging platforms temporary stairs.

1.5 ELEVATORS

- .1 Designated existing elevators may be used by construction personnel and transporting of materials. Co-ordinate use with Departmental Representative.
- .2 Provide protective coverings for finish surfaces of cars and entrances.

1.6 SITE STORAGE/LOADING

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

1.7 CONSTRUCTION PARKING

- .1 Parking will not be permitted on site.
- .2 Provide and maintain adequate access to project site.

1.8 SECURITY

- .1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.9 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

1.10 SANITARY FACILITIES

- .1 On-site facilities are available.

1.11 CONSTRUCTION SIGNAGE

- .1 Direct requests for approval to erect Consultant/Contractor signboard to Departmental Representative. For consideration general appearance of Consultant/Contractor signboard must conform to project identification site sign. Wording in both official languages.
- .2 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .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.

1.12 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Store materials resulting from demolition activities that are salvageable.
- .3 Stack stored new or salvaged material not in construction facilities.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.
-

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

PART 1 - GENERAL

1.1 REFERENCES

- .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.
- .3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

1.2 INSTALLATION AND REMOVAL

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

1.3 DUST TIGHT SCREENS

- .1 Provide dust tight screen 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.

1.4 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

1.5 PROTECTION OF BUILDING FINISHES

- .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.
- .4 Be responsible for damage incurred due to lack of or improper protection.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 35 73 - Procedures for Deconstruction of Structures.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-2008, Stipulated Price Contract.
- .2 Within text of each specifications section, reference may be made to reference standards. List of standards reference writing organizations is contained in Section.
- .3 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .4 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.
- .5 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.

1.2 QUALITY

- .1 Refer to CCDC 2-2008.
 - .2 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
 - .3 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
 - .4 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is
-

- .4 (Cont'd)
precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .5 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.
- .6 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .7 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 STORAGE, HANDLING AND PROTECTION

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

- .8 Remove and replace damaged products at own expense and to satisfaction of 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.

1.4 TRANSPORTATION

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

1.5 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will 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.

1.6 QUALITY OF WORK

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

- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

1.7 CO-ORDINATION

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

1.8 CONCEALMENT

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

1.9 REMEDIAL WORK

- .1 Refer to CCDC 2 and Section 01 73 00 - Execution Requirements.
- .2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 LOCATION OF FIXTURES

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

1.11 FASTENINGS

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

1.12 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.13 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

1.14 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or 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

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC-2 - 2008, Stipulated Price Contract.

1.2 EXISTING SERVICES

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.

1.3 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative of impending installation and obtain approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.4 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
 - .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
 - .3 Record locations of maintained, re-routed and abandoned service lines.
-

1.5 SUBMITTALS

- .1 On request of Departmental Representative, submit documentation to verify accuracy of field engineering work.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 SUBMITTALS

- .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 elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Owner 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 Owner or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 MATERIALS

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

1.3 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
 - .2 After uncovering, inspect conditions affecting performance of Work.
-

- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove samples of installed Work for testing
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.
- .10 Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 07 84 00 - Firestopping, full thickness of the construction element.

- .12 Refinish surfaces to match adjacent finishes:
Refinish continuous surfaces to nearest
intersection. Refinish assemblies by
refinishing entire unit.
- .13 Conceal pipes, ducts and wiring in floor,
wall and ceiling construction of finished
areas except where indicated otherwise.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and
recycling in accordance with Section 01 35 73
- Procedures for Deconstruction of Structures.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-2008, Stipulated Price Contract.
- .2 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions "C", In Effect as Of: May 14, 2004.

1.2 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
 - .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
 - .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
 - .4 Provide and use marked separate bins for recycling. Refer to Section 01 35 73 - Procedures for Deconstruction of Structures.
 - .5 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
 - .6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
 - .7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
 - .8 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
 - .9 Schedule cleaning operations so that resulting dust, debris and other contaminants
-

- .9 (Cont'd)
will not fall on wet, newly painted surfaces
nor contaminate building systems.

1.3 FINAL CLEANING

- .1 Refer to CCDC 2 - 2008, GC 3.13.
 - .2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
 - .3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
 - .4 Prior to final review remove surplus products, tools, construction machinery and equipment.
 - .5 Remove waste products and debris including that caused by Owner or other Contractors.
 - .6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative Engineer Consultant. Do not burn waste materials on site.
 - .7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
 - .8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
 - .9 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
 - .10 Clean lighting reflectors, lenses, and other lighting surfaces.
 - .11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
 - .12 Clean floor finishes, as recommended by manufacturer.
-

- .13 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .14 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 35 73 - Procedures for Deconstruction of Structures.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 WASTE
MANAGEMENT GOALS

- .1 Accomplish maximum control of solid construction waste.
- .2 Preserve environment and prevent pollution and environment damage.

1.2 DEFINITIONS

- .1 Class III: non-hazardous waste - construction renovation and demolition waste.
 - .2 Inert Fill: Inert waste - exclusively asphalt and concrete.
 - .3 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
 - .4 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
 - .5 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
 - .6 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
 - .7 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .2 Returning reusable items including pallets or unused products to vendors.
 - .8 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
-

- | | | |
|---|-----|--|
| <u>1.2 DEFINITIONS
(Cont'd)</u> | .9 | Separate Condition: Refers to waste sorted into individual types. |
| | .10 | Source Separation: acts of keeping different types of waste materials separate beginning from first time they became waste. |
| <u>1.3 DOCUMENTS</u> | .1 | Maintain at job site, one copy of following documents:
.1 Material Source Separation Plan. |
| <u>1.4 SUBMITTALS</u> | .1 | Submittals in accordance with Section 01 33 00 - Submittal Procedures. |
| <u>1.5 STORAGE,
HANDLING AND
PROTECTION</u> | .1 | Store, materials to be reused, recycled and salvaged in locations asrequired by Provincial and Municipal by-laws. |
| | .2 | Unless specified otherwise, materials for removal become Contractor's property. |
| <u>1.6 DISPOSAL OF
WASTES</u> | .1 | Do not bury rubbish or waste materials. |
| | .2 | Do not dispose of waste, volatile materials, mineral spirits, oil, or paint thinner into waterways, storm, or sanitary sewers. |
| <u>1.7 USE OF SITE
AND FACILITIES</u> | .1 | Execute work with least possible interference or disturbance to normal use of premises. |
| <u>1.8 SCHEDULING</u> | .1 | Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work. |
-

PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 APPLICATION .1 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 CLEANING .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

3.3 DEPARTMENT FOR THE ENVIRONMENT .1 Schedule E - Government Chief Responsibility for the Environment: Department of Environmental Resources 11 Kent Street, 4th Floor, Charlottetown PE C1A 7N8 902-368-5000.

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canadian Construction Documents Committee (CCDC)
 - .1 CCDC 2-2008, Stipulated Price Contract.

1.2 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: Contractor and Subcontractors: conduct 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 Inspection.
- .2 Departmental Representative Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to 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 Operation of systems have been demonstrated to Owner's personnel.
 - .5 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 reinspection.

1.3 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 35 73 - Procedures for Deconstruction of Structures.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .3 Copy will be returned after final inspection with Departmental Representative's comments.
- .4 Revise content of documents as required prior to final submittal.
- .5 One week prior to Substantial Performance of the Work, submit to the Departmental Representative four final copies of operating and maintenance manuals in English.
- .6 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .7 Furnish evidence, if requested, for type, source and quality of products provided.
- .8 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .9 Pay costs of transportation.

1.2 FORMAT

- .1 Organize data as instructional manual.
 - .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
 - .3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.
 - .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
-

- .5 Arrange content by systems, process flow, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on CD.

1.3 CONTENTS - EACH VOLUME

- .1 Table of Contents: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .6 Training: refer to Section 01 91 41 - Commissioning: Training.

1.4 AS-BUILTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.5 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings, provided by Departmental Representative.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and

- .4 Contract Drawings and shop drawings:(Cont'd)
 - .2 (Cont'd)
appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.6 EQUIPMENT AND SYSTEMS

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination 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 as specified in Section 01 45 00 - Quality Control and 01 91 13 - General Commissioning (Cx) Requirements.
- .15 Additional requirements: as specified in individual specification sections.

1.7 MATERIALS AND FINISHES

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
- .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

- .3 (Cont'd)
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.

1.8 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; place and store.
- .4 Obtain receipt for delivered products and submit prior to final payment.

1.9 SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to site; place and store.

1.10 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.

1.11 WARRANTIES AND BONDS

- .1 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
- .2 Assemble approved information in binder and submit upon acceptance of work. Organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

- .2 (Cont'd)
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties and bonds until time specified for submittal.
- .3 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

PART 2 - PRODUCTS

2.1 NOT USED

- .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

- .1 Not Used.

PART 1 - GENERAL

1.1 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 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.
 - .2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.
 - .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.
 - .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.
-

- .3 Design Criteria: as per client's requirements or determined by designer. To meet Project functional and operational requirements.

1.3 COMMISSIONING OVERVIEW

- .1 Cx to be a line item of Contractor's cost breakdown.
- .2 Cx activities supplement field quality and testing procedures described in relevant technical sections.
- .3 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the built facility is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities includes transfer of critical knowledge to facility operational personnel.
- .4 Departmental Representative will issue Interim Acceptance Certificate when:
 - .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.
 - .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 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Submit no later than 3 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 2 weeks prior to start of Cx.
 - .3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least 2 weeks prior to start of Cx.
 - .4 Provide additional documentation relating to Cx process required by Departmental Representative.

1.8 COMMISSIONING DOCUMENTATION

- .1 Departmental Representative to review and approve Cx documentation.
- .2 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:
 - .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:
 - .1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.
 - .2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.
- .5 Thereafter Cx meetings to be held until project completion and as required during equipment start-up and functional testing period.
- .6 Meeting will be chaired by 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 5 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 Obtain manufacturers installation, start-up and operations instructions prior to start-up
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- .1 (Cont'd)
of components, equipment and systems and review with Departmental Representative.
 - .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.
- .2 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.
- .3 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 after distinct phases have been completed and before commencing next phase.
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- .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.

1.15 START-UP DOCUMENTATION

- .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 to repeat start-up at any time.

1.16 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

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

1.17 TEST RESULTS

- .1 If start-up, testing and/or PV produce unacceptable results, repair, replace or
-

- .1 (Cont'd)
repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide manpower and materials, assume costs for re-commissioning.

1.18 START OF COMMISSIONING

- .1 Notify Departmental Representative at least 5 days prior to start of Cx.
- .2 Start Cx after elements of building affecting start-up and performance verification of systems have been completed.

1.19 INSTRUMENTS/ EQUIPMENT

- .1 Submit to 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.

1.20 COMMISSIONING PERFORMANCE VERIFICATION

- .1 Carry out Cx:
 - .1 Under actual operating conditions, over entire operating range, in all modes.
 - .2 On independent systems and interacting systems.
- .2 Cx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.
- .4 EMCS trending to be available as supporting documentation for performance verification.

1.21 WITNESSING COMMISSIONING

- .1 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 EXTENT OF VERIFICATION

- .1 Number and location to be at discretion of Departmental Representative.
- .2 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, instrumentation.
- .3 Review and repeat commissioning of systems if inconsistencies found in more than 20 % of reported results.
- .4 Perform additional commissioning until results are acceptable to Departmental Representative.

1.24 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.

1.25 SUNDRY CHECKS AND ADJUSTMENTS

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

1.26 DEFICIENCIES, FAULTS, DEFECTS

- .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.

1.27 COMPLETION OF COMMISSIONING

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

1.28 ACTIVITIES UPON COMPLETION OF COMMISSIONING

- .1 When changes are made to baseline components or system settings established during Cx process, provide updated Cx form for affected item.

1.29 TRAINING

- .1 In accordance with Section 01 91 41 - Commissioning (Cx) - Training.

1.30 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

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

1.31 OCCUPANCY

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

1.32 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 and Engineer.
- .2 Calibrated EMCS sensors may be used to obtain performance data provided that sensor calibration has been completed and accepted.

1.33 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.

1.34 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.
-

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.

PART 1 - GENERAL

1.1 SUMMARY

- .1 Section Includes:
 - .1 This Section specifies roles and responsibilities of Commissioning Training.

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:
 - .1 Start-up, operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

1.4 TRAINING OBJECTIVES

- .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.

1.5 TRAINING MATERIALS

- .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.
- .3 Training to be completed prior to acceptance of facility.

1.7 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.
- .3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

1.9 VIDEO-BASED TRAINING

- .1 Manufacturer's videotapes to be used as training tool with Departmental Representative's review and written approval 1 months prior to commencement of scheduled training.
 - .2 On-Site training videos:
 - .1 Videotape training sessions for use during future training.
-

- .2 On-Site training videos:(Cont'd)
 - .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</u> | <u>NOT USED</u> | |
| | | .1 Not Used. |

PART 3 - EXECUTION

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