

1.1 DESCRIPTION OF WORK

- .1 Work under this contract consists of construction of a new Cook Chill Food Service Production facility at Westmorland Institution. The work is generally described as follows:
 - .2 New 700+ m² one-storey steel-framed building, sprinklered with partial basement and exterior loading dock bay.
 - .3 Site work such as, but not limited to, new site grading, exterior stairs, ramps, asphalt paving and driveway to loading dock, landscaping.
 - .4 Site work such as, but not limited to: excavation and grading, exterior stairs, ramps, asphalt paving and driveway to loading dock, landscaping, temporary construction fence and laydown yard.
 - .5 Site services work for new building such as, but not limited to: new water, sewer, storm water, natural gas, electrical and site hot water piping.
 - .6 Mechanical such as but not limited to:
 - .1 HVAC system complete with ventilation equipment, distribution ductwork and balancing.
 - .2 Connection to the medium hot water heating system in Building B-7 extending the service to the food services building.
 - .3 Hydronic perimeter heating system.
 - .4 Gas-fired steam boiler for cooking.
 - .5 Compressed air system for packaging.
 - .6 Plumbing system.
 - .7 Controls.
 - .8 Fire protection.
 - .7 Electrical such as but not limited to:
 - .1 Electrical and telecommunications site services to building.
 - .2 Supply and installation of electrical distribution equipment, and electrical wiring devices
 - .3 Supply and installation of interior and exterior lighting systems, control devices and emergency lighting and exit signs.
 - .4 Supply and installation of special systems such as telecommunications, fire alarm, security, personal protection alarm, public address and CCTV.
 - .5 Electrical and special systems connections to mechanical, kitchen and refrigeration equipment and door hardware.
 - .8 Kitchen food service equipment such as but not limited to:
 - .1 Supply and install food service equipment, exhaust hoods, refrigerated cold rooms and other food service equipment items as specified and indicated on drawings (see drawings).
 - .2 Obtain from the Owner (CSC) and install certain items of Cook-Chill related food service equipment supplied by CSC, as indicated on drawings (see drawings).
 - .7 Interior signage, building signage and road / traffic signage.
 - .8 Commissioning of all base building services and all food service equipment.
 - .9 Including all other work indicated on the drawings and/or required in the specifications.
- .2 Site of Work is at CSC Facility - Westmorland Institute, Dorchester, New Brunswick.

1.2 FAMILIARIZATION WITH SITE

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

1.3 CODES AND STANDARDS

- .1 Perform work in accordance with the 2010 National Building Code of Canada and any other code of provincial or local application, including all amendments up to bid closing date, provided that in any case of conflict or discrepancy, the more stringent requirement(s) shall apply.
- .2 Materials and workmanship must meet or exceed requirements of specified standards, codes and referenced documents.

1.4 INTERPRETATION OF DOCUMENTS

- .1 Supplementary to the Order of Precedence article of the General Conditions of the Contract, the Division 01 sections take precedence over the technical specification sections in other Divisions of the Specification Manual.

1.5 TERM ENGINEER

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

1.6 SETTING OUT WORK

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

1.7 COST BREAKDOWN

- .1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. Required forms will be provided for application of progress payment.
- .2 List items of work numerically following the same division/section number system of the specification manual and thereafter sub-divide into major work components and building systems as directed by Departmental Representative.

- .3 Upon approval by Departmental Representative, cost breakdown will be used as basis for progress payment.

1.8 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each of the following:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other modifications to Contract.
 - .8 Field Test Reports.
 - .9 Copy of Approved Work Schedule.
 - .10 Health and Safety Plan and other safety related documents.
 - .11 Other documents as stipulated elsewhere in the Contract Documents.

1.9 PERMITS

- .1 In accordance with the General Conditions, obtain, pay for and pick up building permit, certificates, licenses and other permits as required by municipal, provincial and federal authorities.
 - .1 Authority Having Jurisdiction for building permits for the Village of Dorchester, NB is the Tantramar District Planning Commission, 131 H Main Street, Sackville, N.B.
- .2 Provide appropriate notifications of project to municipal and provincial inspection authorities.
- .3 Obtain compliance certificates as prescribed by legislative and regulatory provisions of municipal, provincial and federal authorities as applicable to the performance of work.
- .4 Submit to Departmental Representative, copy of application forms and approval documents received for above referenced authorities.
- .5 Maintain one copy of all issued permits at the site office.

1.10 CONTRACTORS USE OF SITE

- .1 Use of site: limited to the portion of the site in which work of this contract is to be carried out.
- .2 Confine construction equipment, storage of materials and operations of workmen to the immediate area of construction and the designated contractor's area of operations under this contract.
- .3 Coordinate the use of the site with the Departmental Representative to conform to the security requirements specified in Section 01 35 59 – Security Requirements at Corrections Services Canada Facilities.

1.11 ADJACENT EXISTING BUILDINGS

- .1 Execute work with least possible interference or disturbance to adjacent existing buildings, operations occupants, and regular use of premises and adjacent areas. Arrange with Departmental Representative to facilitate execution of work.

- .2 Where security has been reduced by work of Contract, provide temporary means to maintain security.
- .3 Provide temporary dust screens, barriers, warning signs in locations where renovation and alteration work is adjacent to areas which will be operative during such work.

1.12 ROUGHING-IN

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

1.13 CUTTING, FITTING AND PATCHING

- .1 Ensure that cutting and patching required by all trades is included in total tender bid price submitted for the work.
- .2 Obtain Departmental Representative's approval before cutting, boring or sleeving any load-bearing members.
- .3 Execute cutting, including excavation, fitting and patching required to make work fit properly.
- .4 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work. This includes patching of openings in existing work resulting from removal of existing services.
- .5 Do not cut, bore, or sleeve load-bearing members, except where specifically approved by Departmental Representative.
- .6 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- .7 Fit work airtight to pipes, sleeves ducts and conduits.

1.14 EXISTING SERVICES

- .1 Notify Departmental Representative and/or utility companies of intended interruption of services and obtain required permission.
- .2 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian, vehicular traffic, and the Institution.
- .3 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.
- .4 Submit schedule to and obtain approval from Departmental Representative for any temporary interruption of active service or facility. This includes connections to electrical power and communication services to any operational areas of the Institution. Adhere to approved schedule, provide notice to all affected parties, and co-operate fully with requirements of the Institution.
- .5 Provide temporary services to maintain critical building systems.

- .6 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .7 Protect, relocate or maintain existing active services as required. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction over service.

1.15 CONCEALMENT

- .1 Conceal pipes, conduits, wiring etc. in wall construction except where indicated otherwise.

1.16 LOCATION OF FIXTURES

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

1.17 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. No smoking.

1.18 BILINGUAL NOTATIONS

- .1 Any items supplied and installed under this contract which have operating instructions on them and which can be expected to be used by the building tenants, must have such operating instructions in bilingual format – English and French.
- .2 Factory embossed or recessed symbols illustrating equipment operation is an acceptable alternate to lettering.
- .3 Items supplied with factory - embossed or recessed lettering in one official language with an applied sticker or decal representing the second official language is not acceptable unless the Departmental Representative gives prior approval before any such items are ordered.
- .4 Internationally recognized colour coding such as red and blue center pieces for plumbing brass is acceptable.
- .5 No extra costs will be paid for re-stocking or re-ordering of materials and equipment due to Contractor's failure to fully meet bilingual signage requirements specified herein.

- .6 Ensure that all trades are made aware of above requirements.

1.19 ASBESTOS DISCOVERY

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

END OF SECTION

1.1 SUBMITTALS

- .1 Upon acceptance of bid and prior to commencement of work, submit to Departmental Representative the following work management documents:
 - .1 Work Schedule as specified herein.
 - .2 Shop Drawing Submittal Schedule specified in Section 01 33 00.
 - .3 Hot Work Procedures specified in Section 01 35 24.
 - .4 Lockout Procedures specified in Section - 01 35 25.
 - .5 Health and Safety Plan specified in Section 01 35 29.
 - .6 Environmental Plan specified in Section 01 35 43.
 - .7 List of Workers requiring security clearance and those to be placed on Site Security Control List as specified in Section 01 35 59.
 - .8 Dust Control Plan specified in Section - 01 50 00.
 - .9 Waste Management Plan specified in Section 01 74 22.
 - .10 Common Product Requirements specified in Section 01 61 00.
 - .11 Commissioning of systems specified in Section 01 91 00, 01 91 01, 01 91 41, 23 05 02, 23 05 03, 25 01 11, 25 01 12, 26 10 01, 26 10 02, and Preliminary Commissioning Plan.

1.2 PROJECT SCHEDULE DATES

- .1 Following are the key dates for construction completion and food service operation for the Facility:
 - .1 **October 31, 2014:** Building and site work completed, all food service equipment installed, and commissioning for all base building systems and services completed.
 - .2 **November 30, 2014:** Commissioning of all food service equipment completed.
 - .3 **January 2, 2015:** Facility fully operational and able to commence food cooking and preparation.

1.3 WORK SCHEDULE

- .1 Upon acceptance of bid submit:
 - .1 Preliminary work schedule within 7 calendar days of contract award.
 - .2 Detailed work schedule within 14 calendar days of contract award.
- .2 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted bid.
- .3 Provide sufficient details to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .4 Commissioning of systems and food service equipment is mandatory – refer to Commissioning specification sections and Preliminary Commissioning Plan for estimated time requirements.
 - .1 Prepare a Commissioning Schedule, in conjunction with Construction Schedule, to be submitted for review to the Departmental Representative.

- .5 Work schedule content to include as a minimum the following:
 - .1 Bar (GANTT) Charts, indicating all work activities, tasks and other project elements, their anticipated durations, planned dates for achieving key activities and major project milestones supported with;
 - .2 Written narrative on key elements of work illustrated in bar chart, providing sufficient details to demonstrate a reasonable implementation plan for completion of project within designated time.
 - .3 Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
- .6 Work schedule must take into consideration and reflect the Work required, commissioning schedule for building systems and food service equipment, special conditions and operational restrictions as specified below and indicated on drawings.
- .7 Schedule Work in cooperation with the Departmental Representative. Incorporate within Work Schedule, items identified by Departmental Representative during review of preliminary schedule.
- .8 Completed schedule shall be approved by Departmental Representative. When approved, take necessary measures to complete work within scheduled time. Do not change schedule without Departmental Representative's approval.
- .9 Ensure that all subtrades and subcontractors are made aware of the work restraints and operational restrictions specified.
- .10 Schedule Updates:
 - .1 Submit when requested by Departmental Representative.
 - .2 Provide information and pertinent details explaining reasons for necessary changes to implementation plan.
 - .3 Identify problem areas, anticipated delays, impact on schedule and proposed corrective measures to be taken.
- .11 Departmental Representative will make interim reviews and evaluate progress of work based on approved schedule. Frequency of such reviews will be as decided by Departmental Representative. Address and take corrective measures on items identified by reviews and as directed by Departmental Representative. Update schedule accordingly.
- .12 In every instance, change or deviation from the Work Schedule, no matter how minimal the risk or impact on safety or inconvenience to tenant or public might appear, will be subject to prior review and approval by the Departmental Representative.

1.4 OPERATIONAL RESTRICTIONS

- .1 The Contractor must recognize that site personnel and residents will be affected by implementation of this contract. The Contractor must perform the work with utmost regard to the safety and convenience of site personnel and residents. All work activities must be planned and scheduled with this in mind.

- .2 The Contractor will not be permitted to disturb any portion of the site or existing buildings without providing temporary facilities as necessary to ensure safe and direct passage through disturbed or otherwise affected areas.
- .3 Contractor to meet with the Departmental Representative on a weekly basis to identify intended work areas, activities and scheduling for the coming week.
- .4 See Section 01 35 59 in regards to:
 - .1 Special security requirements which must be observed in the course of work.
 - .2 Provision of security personnel by Contractor as part of the Work.
- .4 Limit Maneuvering Space on Site: To area indicated on drawings. Staging area for placement of construction trailer, goods storage and portable toilets will be on the Institution's site, in the location designated by the Institution.
- .5 Facility and site circulation maintained:
 - .1 Ensure that roads, sidewalks, building entrances, corridors, stairwells, fire exits and other circulation routes are maintained free and clear providing safe and uninterrupted passage for Facility users at all times during the entire work.
 - .2 Maintain those areas clean and free of construction materials and equipment. Provide temporary dust barriers and other suitable enclosures to ensure users are not exposed to construction activities and are protected from exposure to dust, noise and hazardous conditions.
 - .3 Maintain fire escape routes accessible and firefighting access open all times for the duration of the project.
 - .4 Do not under any circumstances block fire exit doors. Do not leave construction materials or debris in corridors, stairwells building entrances and exits.
- .6 Safety Signage:
 - .1 Provide onsite, and erect as required during progress of work, proper bilingual signage. Mount where directed and as required on self-supporting stands or on fixed walls warning residents of construction activities in progress and alerting need to exercise caution in proceeding through disturbed areas of the facility, and directing residents through any detours which may be required.
 - .2 Signage to be professionally printed and mounted on wooden backing, coloured and to express messages as directed by the Departmental Representative.
 - .3 Generally maximum size of sign should be in the order of 1.0 square meters. Number of signs required will be decided in conjunction with the Institution and as directed by Departmental Representative.
 - .4 Include costs for the supply, installation, and removal of these signs, and associated patching and making good of associated walls, in the bid price.

- .7 Dust and Dirt Control:
 - .1 See Section 01 50 00 and Section 01 74 11 for dust control and cleaning requirements.
 - .2 Effectively plan and implement dust control measures and cleaning activities as an integral part of all construction activities. Review all measures with the Departmental Representative before undertaking work, especially for major dust generating activities.
 - .3 Do not allow demolition debris and construction waste to accumulate on site and contribute to the propagation of dust.
 - .4 As work progresses, maintain construction areas in a tidy condition at all times. Remove gross dust accumulations by cleaning and vacuuming immediately following the completion of any major dust generating activity.
 - .5 Avoid situations and practices which results in dust and dirt being brought from the construction areas or from the exterior and tracked inside the building.
 - .6 Stop workers with soiled footwear from entering building.
 - .7 Inform workers and make them sensitive to the need for dust and dirt control. Stringently enforce rules and regulations, immediately address non-compliance.
 - .8 Keep access doors to work areas closed at all times. Use only designated doors for entry or egress.

1.5 PROJECT MEETINGS

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

1.6 WORK COORDINATION

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

- .1 (continued)
 - .1 Designate one person from own employ having overall responsibility to review contract documents and shop drawings, plan and manage such coordination.
- .2 The General Contractor shall convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required.
 - .1 Provide each trade with the plans and specs of the interfacing trade, as required, to assist them in planning and carrying out their respective work.
 - .2 Develop coordination drawings when deemed required illustrating potential interference between work of various trades and distribute to all affected parties including structural trade.
 - .1 Pay attention to overhead work above ceilings and within or near to building structural elements.
 - .2 Coordination drawings to identify all building elements, services lines, rough-in points and indicate from where various services are coming.
 - .3 Review coordination drawings at purposely called meetings. Have subcontractors sign-off on drawings and publish minutes of each meeting.
 - .4 Plan and coordinate work in such a way to minimize quantity of service line offsets.
- .3 Submission of shop drawings and ordering of prefabricated equipment or prebuilt components shall only occur once coordination meeting for such items has taken place between trades and all conditions affecting the work of the interfacing trades has been made known and accounted for.
- .4 Work Cooperation:
 - .1 Ensure cooperation between trades in order to facilitate the general progress of the work and avoid situations of spatial interference.
 - .2 Ensure that each trade provides all other trades reasonable opportunity for the completion of the work and in such a way as to prevent unnecessary delays, cutting, patching and the need to remove and replace completed work.
- .5 No extra costs to the Contract will be considered by the Departmental Representative as a result of Contractor's failure to effectively coordinate all portions of the Work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor to be resolved at own cost.

END OF SECTION

1.1 GENERAL

- .1 The Departmental Representative will supply certain material and equipment in the Contract for installation and incorporation into the Work by the Contractor.

1.2 EQUIPMENT SUPPLIED

- .1 Departmental Representative will supply the following equipment to the Contract. Item number refers to the Food Service Equipment List on the drawings.
 - .1 Item # 10: Cook-Chill tilting kettle, 100 gal, capacity with non tilt-out agitator.
 - .1 Manufacturer and Model: Capkold; INA/2-100 TW with lip strainer.
 - .2 Quantity: two (2).
 - .2 Item # 11: Utility raceways to support the Cook-Chill kettles and pump stations.
 - .1 Manufacturer and Model: Avtec; E Series Raceway, Model EID.
 - .2 Quantity: one (1).
 - .3 Item # 12: Kettle control panel on pedestal.
 - .1 Manufacturer and Model: Capkold; CKCP-2-HMI/CKCP-3 HMI
 - .2 Quantity: one (1).
 - .4 Item # 26: Rapid product chiller/cook tank, 500 lbs. capacity.
 - .1 Manufacturer and Model: Capkold; CKWJ-100.
 - .2 Quantity: one (1).
 - .5 Item # 32: Mobile pump / fill station.
 - .1 Manufacturer and Model: Capkold; CKPF/3.
 - .2 Quantity: one (1).
 - .6 Item # 33: Vacuum clipper with vertical vacuum nozzle.
 - .1 Manufacturer and Model: Capkold; CKCVW.
 - .2 Quantity: one (1).
 - .7 Item # 40: Air cooled remote refrigeration package for chill tanks.
 - .1 Manufacturer and Model: Capkold; CK-83.
 - .2 Quantity: one (1).
 - .8 Item # 42: Air compressor.
 - .1 Manufacturer and Model: Capkold; CKAC 10-12H & Champion Centurion.
 - .2 Quantity: one (1).
- .2 The above noted items will be delivered to the Contractor at the site of work.
- .3 At the project Start-up meeting, Departmental Representative will provide Contractor with product technical information on the Supplied Equipment. Contractor is responsible to ensure new construction and services are coordinated with supplied equipment requirements so as to install and incorporate the supplied equipment into the Work.

1.3 DELIVERY REQUIREMENTS

- .1 Items supplied by the Departmental Representative will be turned over to the Contractor immediately upon delivery.
- .2 Within three (3) calendar days of receipt of items supplied by Departmental Representative, the Contractor must:
 - .1 Conduct a complete audit to verify that all items have been received, including loose parts and accessories associated with a particular item;
 - .2 Acknowledge receipt, identify any missing or damaged items, in writing;
 - .3 Provide copy of delivery slips submitted by manufacturer and shipping company.
- .3 Unless shortages or damaged items are identified in writing to the Departmental Representative within the above specified period, the Contractor will become responsible to supply all missing materials and repair or replace damaged items and missing parts discovered thereafter at own expense.
- .4 Failure to make a complete check of supplied items or to acknowledge receipt of same shall not relieve Contractor's responsibility to replace or repair any item subsequently found to be missing or damaged.
- .5 Departmental Representative will make final determination as to whether an item can be repaired or must be replaced.
- .6 In the event of failure on the part of the Contractor to submit written proof within the specified verification period, Departmental Representative reserves the right to:
 - .1 Proceed with the supply or repair of missing items through independent sources and;
 - .2 Charge costs of such items, including related shipping charges, to the General Contractor through financial holdback assessments against the Contract.

1.4 CONTRACTOR'S DUTIES

- .1 At project start-up meeting, obtain from Departmental Representative product technical data for all Owner Supplied Equipment. Ensure new construction and services are coordinated with supplied equipment requirements so as to install and incorporate supplied equipment into the Work.
- .2 Take possession of the supplied items immediately upon delivery to the site by shipping company.
- .3 Promptly inspect delivered items. Report missing, damaged or defective items in writing to Departmental Representative in accordance with delivery requirements specified above.

- .4 Obtain and pay costs to unload, handle and install in work area. Unload and handle at site, including lifting, uncrating, etc.
 - .1 Workers undertaking the work of unloading, handling and installation of Food Service Equipment must be trained Food Service Equipment Installers and they must be certified for this work by the equipment manufacturer and must be on the manufacturer's approved installers list.
- .5 Store items on site at a location designated by Departmental Representative. Protect against inclement weather and site damage by use of appropriate covers.
- .6 Make all arrangements and pay associated costs to provide temporary storage from date of receipt and until ready for incorporation into the work. Type and location of storage to meet with Departmental Representative's approval.
- .7 Be responsible for protection of all such items against damage, loss, theft and fire from date of receipt, during loading, unloading, and until final installation of work is accepted by Departmental Representative.
- .8 Any damage or loss of such items shall result in the Contractor being responsible for replacement or repair of equipment at no additional cost to the Contract.
- .9 The decision as to whether damaged items may be repaired or must be replaced with new equipment shall be the Departmental Representative's decision.
- .10 Install such material and equipment and incorporate into the Work. Perform assembly, make all connections required to make item functional, and provide commissioning and training for such material and equipment.
- .11 Dispose of containers, crating and protective covering as directed by the Departmental Representative.

END OF SECTION

1.1 RELATED SECTIONS

- .1 Section 01 14 10 – Scheduling and Management of Work
- .2 Section 01 45 00 – Testing and Quality Control.
- .3 Section 01 78 00 - Closeout Submittals.
- .4 Section 01 91 00 – Commissioning.

1.2 SUBMITTAL GENERAL REQUIREMENTS

- .1 Submit to Departmental Representative for review requested submittals specified in various sections of the specifications including shop drawings, samples, permits, compliance certificates, test reports, work management plans and other data required as part of the work.
- .2 Submit with reasonable promptness and in orderly sequence so as to allow for Departmental Representative's review and not cause delay in Work. Failure to submit in ample time will not be considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.
- .3 Do not proceed with work until relevant submissions have been reviewed.
- .4 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .5 Where items or information is not produced in SI Metric units, provide soft converted values.
- .6 Review submittals prior to submission.
 - .1 Ensure that necessary requirements have been determined and verified and that each submittal has been checked and coordinated with requirements of Work and Contract Documents.
 - .2 Submittals not stamped as reviewed by General Contractor, dated and identified as to specific project will be returned unexamined by Departmental Representative and considered rejected.
- .7 Verify that field measurements and affected adjacent Work are coordinated.
- .8 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .9 Contractor's responsibility for errors, omissions or deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative's review.

- .10 Submittal format for shop drawings:
 - .1 Paper originals, or alternatively clear and fully legible photocopies of originals.
 - .2 Electronic submissions: PDF submissions may be acceptable particularly to expedite review of time-sensitive materials and/or equipment. Decision to accept PDF shop drawing submissions is the responsibility of the Departmental Representative.
 - .3 Poorly printed, non-legible electronic submissions (photocopies or pdfs) will not be accepted and will be returned for resubmission.
 - .4 Facsimiles are not acceptable.
- .11 Make changes or revision to submissions which Departmental Representative may require, consistent with Contract Documents and resubmit as directed by Departmental Representative. When resubmitting, identify in writing of any revisions other than those requested.
- .12 Keep one reviewed copy of each submittal document on site for duration of Work.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means fabrication drawings, erection drawings, diagrams, illustrations, schedules, performance charts, technical product data, brochures, specifications, test reports installation instructions and other data which are to be provided by Contractor to illustrate compliance with specified materials and details of a portion of work.
- .2 Shop Drawing Submittal Schedule:
 - .1 Within 10 working days of acceptance of bid, submit a schedule listing all shop drawings to be submitted for project.
 - .2 Schedule shall be in format acceptable to Departmental Representative and indicate proposed submission date for each item, status of review and anticipated product delivery date to site. Track all submissions for entire project.
 - .3 Revise schedule as work progresses. Identify items which have been reviewed and finalized and indicating those outstanding.
 - .4 Update schedule at stipulated dates or project time intervals predetermined and agreed upon with Departmental Representative at commencement of Work.
- .3 Shop Drawing Quantities:
 - .1 Hard copy print submissions: submit minimum eight (8) copies for distribution to Departmental Representative and other reviewers, or more as may be required to provide sufficient returned copies required by the General Contractor and sub-contractors plus four (4) copies which will be retained for by Departmental Representative.
 - .2 Electronic submissions (PDF): one electronic submission sent to Departmental Representative for review by all required reviewers. General Contractor to be responsible to make four (4) copies of the final reviewed copies of electronic submissions which will be retained by the Departmental Representative.

- .4 Shop Drawings Format:
 - .1 Opaque white prints or photocopies of original drawings or standard drawings modified to clearly illustrate work specific to project requirements. Maximum sheet size to be 1000 x 707 mm.
 - .2 Product Data from manufacturer's standard catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products, to be original full colour brochures, clearly marked indicating applicable data and deleting information not applicable to project.
 - .3 Non or poorly legible drawings, poor quality PDF submittals will not be accepted and returned not reviewed.
 - .4 Facsimile submittals are not acceptable.
- .5 Shop Drawings Content:
 - 1. Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where items or equipment attach or connect to other items or equipment, confirm that all interrelated work have been coordinated, regardless of section or trade from which the adjacent work is being supplied and installed.
 - 2. Supplement manufacturer's standard drawings and literature with additional information to provide details applicable to project.
 - 3. Delete information not applicable to project on all submittals.
- .6 Allow 10 business days for Departmental Representative's review of each submission.
- .7 Adjustments or corrections made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, advise Departmental Representative in writing prior to proceeding with Work.
- .8 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections and comments are made, fabrication and installation may proceed upon receipt of shop drawings. If shop drawings are rejected and noted to be Resubmitted, do not proceed with that portion of work until resubmission and review of corrected shop drawings, through same submission procedures indicated above.
- .9 Be advised that costs and expenses incurred by Departmental Representative to conduct more than one review of incorrectly prepared shop drawing submittal for a particular material, equipment or component of work may be assessed against the Contractor in the form of a financial holdback to the Contract.
- .10 Accompany each submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and project number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.

- .11 Submissions shall include:
 - .1 Date and revision dates.
 - .2 Project title and project number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized Representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Cross references to particular details of contract drawings and specifications section number for which shop drawing submission addresses.
 - .6 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .12 After Departmental Representative's review, distribute copies.
- .13 The review of shop drawings by the Departmental Representative or by an authorized Consultant or designate is for sole purpose of ascertaining conformance with general concept. This review shall not mean that Canada approves the detail design inherent in the shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of the construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.4 SAMPLES

- .1 Submit for review samples as specified in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples to Departmental Representative's office or to other address as directed. Do not drop off samples at construction site except for pre-approved circumstances previously approved by Departmental Representative.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.

- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments will result in a cost increase to the Contract notify Departmental Representative in writing 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.

END OF SECTION

1.1 SECTION INCLUDES

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

1.2 RELATED WORK

- .1 Section 01 35 25 – Special Procedures on Lockout Requirements.
- .2 Section 01 35 29 - Health and Safety Requirements.

1.3 REFERENCES

- .1 Fire Protection Standards issued by Fire Protection Services of Human Resources Development Canada as follows:
 - .1 FCC No. 301-June 1982 Standard for Construction Operations.
 - .2 FCC No. 302-June 1982 Standard for Welding and Cutting.
- .2 FCC standards, may be viewed at :
 - .1 <http://www.hrsdc.gc.ca/en/lp/lo/fp/standards/commissioner.shtm>.
 - .2 Fire Protection Services – Atlantic Region Office, Halifax, N.S., Tel. (902) 426-6053.

1.4 DEFINITIONS

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

1.5 SUBMITTALS

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

1.6 FIRE SAFETY REQUIREMENTS

- .1 Implement and follow fire safety measures during Work. Comply with following:
 - .1 National Fire Code.
 - .2 Fire Protection Standards FCC 301 and FCC 302.
 - .3 Federal and Provincial Occupational Health and Safety Acts and Regulations.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action to be followed.

1.7 HOT WORK AUTHORIZATION

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

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

1.8 HOT WORK PROCEDURES

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
- .2 Procedures to include:
 - .1 Requirement to perform hazard assessment of site and immediate hot work area for each hot work event in accordance with Safety Plan requirements of Section 01 35 29 – Health and Safety Requirements.
 - .2 Use of a Hot Work Permit system with individually issued permit by Contractor's Superintendent to worker or subcontractor granting permission to proceed with Hot Work
 - .3 Permit required for each Hot Work event.
 - .4 Designation of a person on site as a Fire Safety Watcher responsible to conduct a fire safety watch for a minimum duration of 60 minutes immediately following the completion of the Hot Work.
 - .5 Compliance with fire safety codes and standards and occupational health and safety regulations specified.
 - .6 Site specific rules and procedures in force at the site as provided by the Facility Manager

- .3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Label Document as being the Hot Work Procedures applicable to this contract.
- .4 Procedures shall clearly establish worker instructions and allocate responsibilities of:
 - .1 Worker performing Hot Work,
 - .2 Person issuing the Hot Work Permit,
 - .3 Fire Safety Watcher,
 - .4 Subcontractor(s) and Contractor.
- .5 Brief all workers and subcontractors on Hot Work Procedures and Permit system established for project. Stringently enforce compliance.

1.9 HOT WORK PERMIT

- .1 Hot Work Permit to include, as a minimum, the following data:
 - .1 Project name and project number;
 - .2 Building name, address and specific room or area where hot work will be performed;
 - .3 Date of issue;
 - .4 Description of hot work type needed;
 - .5 Special precautions to be followed including type of fire extinguisher needed;
 - .6 Name and signature of permit user;
 - .7 Name of worker to which the permit is being issued;
 - .8 Permit validity period not to exceed 8 hours. Indicate start time /date and completion time / date;
 - .9 Worker signature with time /date upon hot work termination;
 - .10 Stipulated time period of safety watch;
 - .11 Fire Safety Watcher's, signature with time & date.
- .1 Permit to be typewritten form. Industry Standard forms shall only be used if all data specified above is included on form.
- .2 Each Hot Work Permit to be completed in full, signed and returned to Contractor's Superintendent for safe keeping on site.

1.10 FIRE PROTECTION AND ALARM SYSTEMS

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

1.11 DOCUMENTS ON SITE

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

END OF SECTION

1.1 SECTION INCLUDES

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

1.2 RELATED WORK

- .1 Section 01 35 24 – Special Procedures on Fire Safety Requirements.
- .2 Section 01 35 29 - Health and Safety Requirements.

1.3 REFERENCES

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

1.4 DEFINITIONS

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

1.5 COMPLIANCE REQUIREMENTS

- .1 Perform lockouts in compliance with:
 - .1 Canadian Electrical Code.
 - .2 Federal and Provincial Occupational Health and Safety Acts and Regulations.

- .3 Regulations and code of practise as applicable to mechanical equipment or other machinery being de-energized.
- .4 Procedures specified herein.
- .2 In event of conflict between any provisions of above authorities the most stringent provision will apply.

1.6 SUBMITTALS

- .1 Submit copy of proposed Lockout Procedures and sample form of lockout permit and lockout tags proposed for use in accordance with Section 01 33 00 – Submittal Procedures. Submit with 14 calendar days of acceptance of bid.

1.7 ISOLATION OF EXISTING SERVICES

- .1 Obtain Departmental Representative's written authorization prior to conducting work on an existing live or active electrical facilities and equipment and before proceeding with isolation of such item.
- .2 To obtain authorization, submit to Departmental Representative following documentation:
 - .1 Written Request for Isolation of the service or facility and;
 - .2 Copy of Contractor's Lockout Procedures.
- .3 Make a Request for Isolation for each event, unless directed otherwise by Departmental Representative, and as follows:
 - .1 Fill-out standard forms in current use at the Facility when so directed by Departmental Representative or;
 - .2 Where no forms exist at Facility, make written request indicating:
 - .1 The equipment, system or services to be isolated and it's location.
 - .2 Duration of isolation period, i.e: start time & date and completion time & date.
 - .3 Voltage of service feed to system or equipment being isolated.
 - .4 Name of person making the request.
- .4 Do not proceed with isolation until receipt of written notification from Departmental Representative granting the Isolation Request and authorization to proceed with the work.
 - .1 Note that Departmental Representative may designate another person at the Facility being authorized to grant the Isolation Request.
- .5 Conduct safe, orderly shutdown of equipment or facilities, de-energize, isolate and lock out power and other sources of energy feeding the equipment or facility.
- .6 Determine in advance, as much as possible, in cooperation with the Departmental Representative, the type and frequency of situations which will require isolation of existing services.

- .7 Plan and schedule shut down of existing services in consultation with the Departmental Representative and the Facility Manager. Minimize impact and downtime of facility operations. Follow Departmental Representative's directives in this regard.
- .8 Conduct hazard assessment as part of the process in accordance with healthy and safety requirements specified Section 01 35 29 – Health and Safety Requirements.

1.8 LOCKOUTS

- .1 De-energize, Isolate and lockout electrical facility, mechanical equipment and machinery from all potential sources of energy prior to working on such items.
- .2 Develop and implement clear and specific lockout procedures to be followed as part of the Work.
- .3 Prepare type written Lockout Procedures describing safe work practices, procedures, worker responsibilities and sequence of activities to be followed on site by workforce to safely isolate an active piece of equipment or electrical facility and effectively lockout and tag out it's sources of energy.
- .4 Include as part of the lockout procedures a system of lockout permits managed by Contractor's Superintendent or other qualified person designated by him/her as being "in-charge" a the site.
 - .1 A lockout permit shall be issued to specific worker providing a Guarantee of Isolation before each event when work must be performed on a live equipment or electrical facility.
 - .2 Duties of person managing the permit system to include:
 - .1 Issuance of permits and lockout tags to workers.
 - .2 Determining permit duration.
 - .3 Maintaining record of permits and tags issued.
 - .4 Making a Request for Isolation to Departmental Representative when required as specified above.
 - .5 Designating a Safety Watcher, when one is required based on type of work.
 - .6 Ensuring equipment or facility has been properly isolated, providing
 - .7 Collecting and safekeeping lockout tags, returned by workers, as a record of the event.
- .5 Clearly establish, describe and allocate, the responsibilities of:
 - .1 Workers.
 - .2 Persons managing the lockout permit system.
 - .3 Safety Watcher.
 - .4 Subcontractor(s) and General Contractor.
- .6 Generic procedures, if used, must be edited, supplemented with pertinent information to reflect specific project requirements.
 - .1 Incorporate site specific rules and procedures in force at site as provided by Facility Manager through Departmental Representative.
 - .2 Clearly label the document as being the Lockout procedures applicable to work of this contract.
- .7 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.

- .8 Use industry standard lockout tags.
- .9 Provide appropriate safety grounding and guards as required.

1.9 CONFORMANCE

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

1.10 DOCUMENTS ON SITE

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

END OF SECTION

1.1 RELATED WORK

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

1.2 DEFINITIONS

- .1 COSH: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
- .2 Competent Person: means a person who is:
 - .1 Qualified by virtue of personal knowledge, training and experience to perform assigned work in a manner that will ensure the health and safety of persons in the workplace, and;
 - .2 Knowledgeable about the provisions of occupational health and safety statutes and regulations that apply to the Work and;
 - .3 Knowledgeable about potential or actual danger to health or safety associated with the Work.
- .3 Medical Aid Injury: any minor injury for which medical treatment was provided and the cost of which is covered by Workers' Compensation Board of the province in which the injury was incurred.
- .4 PPE: personal protective equipment
- .5 Work Site: where used in this section shall mean areas, located at the premises where Work is undertaken, used by Contractor to perform all of the activities associated with the performance of the Work.

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan prior to commencement of Work.
 - .1 Submit within ten (10) working days of notification of Bid Acceptance. Provide 3 copies.
 - .2 Departmental Representative will review Health and Safety Plan and provide comments.
 - .3 Revise the Plan as appropriate and resubmit within five (5) working days after receipt of comments.
 - .4 Departmental Representative's review and comments made of the Plan shall not be construed as an endorsement, approval or implied warranty of any kind by Canada and does not reduce Contractor's overall responsibility for Occupational Health and Safety of the Work.
 - .5 Submit revisions and updates made to the Plan during the course of Work.
- .3 Submit name of designated Health & Safety Site Representative and support documentation specified in the Safety Plan.
- .4 Submit building permit, compliance certificates and other permits obtained.

- .5 Submit copy of Letter in Good Standing from Provincial Workers Compensation or other department of labour organization.
 - .1 Submit update of Letter of Good Standing whenever expiration date occurs during the period of Work.
- .6 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .7 Submit copies of incident reports.
- .8 Submit WHMTS MSDS - Material Safety Data Sheets.

1.4 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act for Province of New Brunswick, and General Regulations made pursuant to the Act.
- .2 Comply with Canada Labour Code - Part II (entitled Occupational Health and Safety) and the Canada Occupational Health and Safety Regulations (COSH) as well as any other regulations made pursuant to the Act.
 - .1 The Canada Labour Code can be viewed at:
[www.http://laws.justice.gc.ca/en/L-2/](http://laws.justice.gc.ca/en/L-2/)
 - .2 COSH can be viewed at:
[www.http://laws.justice.gc.ca/eng/SOR-86-304/n_e.html](http://laws.justice.gc.ca/eng/SOR-86-304/n_e.html)
 - .3 A copy may be obtained at:
Canadian Government Publishing Public Works &
Government Services Canada
Ottawa, Ontario, K1A 0S9
Tel: (819) 956-4800 (1-800-635-7943)
Publication No. L31-85/2000 E or F
- .3 Observe construction safety measures of:
 - .1 Part 8 of National Building Code
 - .2 Municipal by-laws and ordinances.
- .4 In case of conflict or discrepancy between above specified requirements, the more stringent shall apply.
- .5 Maintain Workers Compensation Coverage in good standing for duration of Contract. Provide proof of clearance through submission of Letter in Good Standing.
- .6 Medical Surveillance: Where prescribed by legislation or regulation, obtain and maintain worker medical surveillance documentation.

1.5 RESPONSIBILITY

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

1.6 SITE CONTROL AND ACCESS

- .1 Control the Work and entry points to Work Site. Approve and grant access only to workers and authorized persons. Immediately stop and remove non-authorized persons.
 - .1 Departmental Representative will provide names of those persons authorized by Departmental Representative to enter onto Work Site and will ensure that such authorized persons have the required knowledge and training on Health and Safety pertinent to their reason for being at the site, however, Contractor remains responsible for the health and safety of authorized persons while at the Work Site.
- .2 Isolate Work Site from other areas of the premises by use of appropriate means.
 - .1 Erect fences, hoarding, barricades and temporary lighting as required to effectively delineate the Work Site, stop non-authorized entry, and to protect pedestrians and vehicular traffic around and adjacent to the Work and create a safe environment. See Section 01 50 00 – Temporary Facilities for minimum acceptable requirements.
 - .2 Post signage at entry points and other strategic locations indicating restricted access and conditions for access.
 - .3 Use professionally made signs with bilingual message in the 2 official languages or international known graphic symbols.
- .3 Provide safety orientation session to persons granted access to Work Site. Advise of hazards and safety rules to be observed while on site.
- .4 Ensure persons granted site access wear appropriate PPE. Supply PPE to inspection authorities who require access to conduct tests or perform inspections.
- .5 Secure Work Site against entry when inactive or unoccupied and to protect persons against harm. Provide security guard where adequate protection cannot be achieved by other means.

1.7 PROTECTION

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

1.8 FILING OF NOTICE

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

1.9 PERMITS

- .1 Post permits, licenses and compliance certificates, specified in Section 01 10 10 – General Instructions, at Work Site.
- .2 Where a particular permit or compliance certificate cannot be obtained, notify Departmental Representative in writing and obtain approval to proceed before carrying out applicable portion of work.

1.10 HAZARD ASSESSMENTS

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

1.11 PROJECT/SITE CONDITIONS

- .1 Following are potential health, environmental and safety hazards at the site for which Work may involve contact with:
 - .1 Facility on-going operations:
 - .1 potential for contact with resident inmate population.
- .2 Above items shall not be construed as being complete and inclusive of potential health and safety hazards encountered during Work.
- .3 Include above items in the hazard assessment of the Work.
- .4 MSDS Data sheets of pertinent hazardous and controlled products stored on site can be obtained from Departmental Representative.

1.12 MEETINGS

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

1.13 HEALTH AND SAFETY PLAN

- .1 Prior to commencement of Work, develop written Health and Safety Plan specific to the Work. Implement, maintain, and enforce Plan for entire duration of Work and until final demobilization from site.

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

1.14 SAFETY SUPERVISION

- .1 Employ Health & Safety Site Representative responsible for daily supervision of health and safety of the Work.

- .2 Health & Safety Site Representative may be the Superintendent of the Work or other person designated by Contractor and shall be assigned the responsibility and authority to:
 - .1 Implement, monitor and enforce daily compliance with health and safety requirements of the Work
 - .2 Monitor and enforce Contractor's site-specific Health and Safety Plan.
 - .3 Conduct site safety orientation session to persons granted access to Work Site.
 - .4 Ensure that persons allowed site access are knowledgeable and trained in health and safety pertinent to their activities at the site or are escorted by a competent person while on the Work Site.
 - .5 Stop the Work as deemed necessary for reasons of health and safety.

- .3 Health & Safety Site Representative must:
 - .1 Be qualified and competent person in occupational health and safety.
 - .2 Have site-related working experience specific to activities of the Work.
 - .3 Be on Work Site at all times during execution of the Work.
 - .4 All supervisory personnel assigned to the Work shall also be competent persons.
 - .5 Inspections:
 - .1 Conduct regularly scheduled safety inspections of the Work on a minimum bi-weekly basis. Record deficiencies and remedial action taken.
 - .2 Conduct Formal Inspections on a minimum monthly basis. Use standardized safety inspection forms. Distribute to subcontractors.
 - .3 Follow-up and ensure corrective measures are taken.
 - .6 Cooperate with Facility's Occupational Health and Safety representative should one be designated by Departmental Representative.
 - .7 Keep inspection reports and supervision related documentation on site.

1.15 TRAINING

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

1.16 MINIMUM SITE SAFETY RULES

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

.1 (continued):

- .1 Wear appropriate PPE pertinent to the Work or assigned task; minimum being hard hat, safety footwear, safety glasses and hearing protection.
- .2 Immediately report unsafe condition at site, near-miss accident, injury and damage.
- .3 Maintain site and storage areas in a tidy condition free of hazards causing injury.
- .4 Obey warning signs and safety tags.

- .2 Brief persons of disciplinary protocols to be taken for non-compliance. Post rules on site.

1.17 CORRECTION OF NON-COMPLIANCE

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

1.18 INCIDENT REPORTING

- .1 Investigate and report the following incidents to Departmental Representative:
 - .1 Incidents requiring notification to Provincial Department of Occupational Safety and Health, Workers Compensation Board or to other regulatory Agency.
 - .2 Medical aid injuries.
 - .3 Property damage in excess of \$10,000.00,
 - .4 Interruptions to Facility operations resulting in an operational lost to a Federal department in excess of \$5000.00.
- .2 Submit report in writing.

1.19 HAZARDOUS PRODUCTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS).
- .2 Keep MSDS data sheets for all products delivered to site.
 - .1 Post on site.
 - .2 Submit copy to Departmental Representative.

1.20 BLASTING

- .1 Blasting or other use of explosives is not permitted on site without prior receipt of written permission and instructions from Departmental Representative).

1.21 CONFINED SPACES

- .1 Abide by occupational health and safety regulations regarding work in confined spaces.

1.22 SITE RECORDS

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

1.23 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on Work Site in accordance with Acts and Regulations of Province having jurisdiction.
- .2 Post other documents as specified herein, including:
 - .1 Site specific Health and Safety Plan
 - .2 WFIMIS data sheets

END OF SECTION

1.1 RELATED WORK

- .1 Section 01 74 22 – Building Construction /Demolition Waste Management and Disposal.

1.2 DEFINITIONS

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

1.3 FIRES

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

1.4 HAZARDOUS MATERIAL HANDLING

- .1 Store and handle hazardous materials in accordance with applicable federal and provincial laws, regulations, codes and guidelines. Store in location that will prevent spillage into the environment.
- .2 Label containers to WHMIS requirements and keep MSDS data sheets on site for all hazardous materials.
- .3 Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when storage began.
- .4 Store and handle flammable and combustible materials in accordance with National Fire Code.
- .5 Transport hazardous materials in accordance with federal Transportation of Dangerous Goods Regulations and applicable Provincial regulations.

1.5 DISPOSAL OF WASTES

- .1 Do not bury rubbish and waste materials on site. Dispose in accordance with project waste management requirements specified in Section 01 74 21 - Building Construction /Demolition Waste Management and Disposal.
- .2 Do not dispose of hazardous waste or volatile materials, such as mineral spirits, paints, thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites.
- .3 Dispose of hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.

1.6 POLLUTION CONTROL

- .1 Control emissions from equipment and plant to local authorities emission requirements.
- .2 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
- .3 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

1.6 **POLLUTION CONTROL** (continued)

- .4 Have appropriate emergency spill response equipment and rapid clean-up kit on site located adjacent to hazardous materials storage area. Provide personal protective equipment required for clean-up.
- .5 Report, spills of petroleum and other hazardous materials as well as accidents having potential of polluting the environment to Federal and Provincial Department of the Environment.
 - .1 Notify Departmental Representative and submit a written spill report to Departmental Representative within 24 hours of occurrence.

END OF SECTION

- 1.1 **GENERAL**
- .1 Work of this Contract must not disrupt the daily operations of the Institution and shall be carried out in such a way to ensure that security at the Institution is maintained at all times.
 - .2 Abide by all rules and procedures specified herein and with all directives given by the Warden.
- 1.2 **DEFINITIONS**
- .1 Where used, the following terms shall be deemed to have the meaning stated herein.
 - .2 Institution: means the Penitentiary or Correctional Facility where the Work will be carried out.
 - .3 Warden: means the person in charge of the Correctional Institution or Penitentiary where the Work will be carried out and includes any authorized person at the Facility, as designated by the Warden, to provide directions on his/her behalf.
 - .4 Contraband: means any of the following:
 - .1 An intoxicant, including alcoholic beverages, drugs and narcotics;
 - .2 A weapon or a component thereof, ammunition for a weapon, and any other object that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling a person, when possessed without prior authorization;
 - .3 An explosive or a bomb or a component thereof;
 - .4 Currency over the prescribed limit of 50.00 dollars and;
 - .5 Any other item, as deemed by the Warden, to pose a risk to the security of a Penitentiary or to the safety of persons, when that item is possessed without prior authorization from the Warden.
 - .5 **Smoking not permitted on Institutional property. Unauthorized smoking items: means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing or snuffing tobacco, cigarette making machines, matches and lighters.**
 - .6 Commercial vehicle: means any motor vehicle used to transport materials, equipment and tools to the site as required for construction purposes.
 - .7 CSC: means the Department of Correctional Service Canada.
 - .8 Construction employee: means any person working for the General Contractor or subcontractor(s), commercial vehicle or equipment operator, material supplier and personnel from testing, inspection or regulatory agencies who needs to circulate on the Institution's property as part of the Work.
 - .9 Departmental Representative: means the person as defined in the General Conditions of the Contract for projects managed by Public Works and Government Services Canada (PWGSC) or the Project Manager for projects managed by Correctional Service Canada (CSC).

- .10 Perimeter: means the fenced or walled area of the Institution that restrains the movement of the inmates.
- .11 Construction zone: means the area as shown on the contract drawings and as described below where the Contractor will be allowed to work. This area may or may not be isolated from the security area of the Institution.
 - .1 In general, Contractor's work activities and movement is limited to the yard beside the building B6 and the masonry security wall around the Institution, and the area designated by the Institution during the startup meeting.
- 1.3 **PRELIMINARY PROCEEDINGS**
 - .1 Prior to commencement of work, the Contractor shall meet with the Warden to:
 - .1 Discuss the nature and extent of all activities involved in the work of this contract.
 - .2 Obtain security rules, regulations and procedures in force at the Institution and directives to be followed by Contractor and all construction employees during the entire course of the work.
 - .2 The Departmental Representative will coordinate a pre-construction meeting between Contractor, the Warden and Facility security personnel who will provide details on site security requirements.
 - .3 The Contractor shall:
 - .1 Ensure that all construction employees are aware of the CSC security requirements.
 - .2 Ensure that a copy of the CSC security requirements is prominently displayed at the work site at all times.
 - .3 Co-operate with Institutional staff in ensuring that security requirements and procedures are stringently followed by all construction employees.
 - .4 Any infraction of site security requirements by the Contractor or by a construction employee could result in the immediate removal of the offending party or person from the site.
- 1.4 **WORKER SECURITY CLEARANCE**
 - .1 Security clearance must be obtained from Correctional Service Canada (CSC) for all construction employees who needs to circulate on the Institution's property during the course of the Work.
 - .1 Applicable security application forms will be provided by the Departmental Representative.
 - .2 Have forms filled out by each worker.
 - .2 Submit to the Warden:
 - .1 A list of the names with date of birth of all construction employees;
 - .2 Completed security clearance form for each person.

- .3 No person will be admitted inside the Institution without a valid CSC Security Clearance in place and a recent picture identification, such as a provincial driver's permit, to show proof of his identity.
 - .1 Security clearances obtained from other CSC Institutions are not valid at the Institution where the work of this contract will take place.
- .4 Allow two (2) weeks for processing of security clearances.
- .5 Be aware that facial photographs of security cleared construction employees may be taken as deemed required by the Warden.
 - .1 These photographs may be posted for display at appropriate locations in the Institution or placed into an electronic database for identification purposes.
 - .2 Photo ID cards may also be issued to each construction employee to be donned while on site. ID cards will be left at the designated security entrance to be picked by each person upon arrival at the Institution and must be prominently displayed on the person's clothing at all times.
- .6 CSC Security Clearance will be denied and entry into the Institution will be refused to any person which the Warden has reason to believe may be a security risk to the Facility's operations.
 - .1 Also, a person will be subject to the immediate removal from the Institution if he/she:
 - .1 Appears to be under the influence of alcohol, drugs or narcotics.
 - .2 Behaves in an unusual disorderly manner.
 - .3 Is found in possession of contraband.
- .7 Facilitate security clearance application process:
 - .1 Provide copy of security clearance form to all workers including those of sub-contractors.
 - .2 Provide a list of names and birth dates for all persons who require security clearance to the Departmental Representative.
 - .3 Coordinate and expedite submissions from the various subcontractors.
 - .4 Brief and assist applicants in preparing and submitting the required application form and related documentation.
 - .5 Review application form of each applicant for completeness before submission.
 - .6 Have each worker keep a copy of their completed application form in case the initial submission gets lost.
 - .7 Submit documentation in an organized manner with transmittal letter clearly identifying the project for which worker security clearance is being requested.
 - .8 Send submission(s) to the approved mailing address provided by the Departmental Representative.

1.5 VEHICLES

- .1 All unattended vehicles on the Institution's property shall have their windows, doors and trunks closed and locked at all times. Keys must be removed and kept securely in the possession of the vehicle's owner or with an employee of the Contractor or subcontractor who owns the vehicle.

- .2 The Warden may limit at any time the number and type of vehicles allowed within the Institution.
 - .3 Drivers of vehicles simply delivering materials to the site do not require security clearance but shall remain inside their vehicle for the entire duration that the vehicle is on the Institution's property. This is of particular importance for vehicles entering the Institution's secure perimeter area in which case the vehicle must be escorted by Institutional staff or Commissionaires while in that area.
 - .4 If the Warden permits office and/or storage trailers to be left inside the secure perimeter area of the Institution, their exterior doors shall be kept locked at all times and windows securely locked when trailer is unoccupied. Additionally, windows shall be covered with expanded metal mesh secured in place. All storage trailers, whether inside and outside of the secure perimeter area must be kept locked when not in use.
- 1.6 **PARKING OF VEHICLES**
- .1 Warden will designate a location on site, outside the secure perimeter area, where construction employee vehicles may be parked during workshifts.
 - .2 All other areas are prohibited and vehicles are subject to being removed by the Institution with towing costs borne by their owner.
- 1.7 **SHIPMENTS**
- .1 All shipments of materials, equipment and tools shall be clearly marked, addressed to the attention of the project title and Contractor's name to avoid confusion with the Institution's own shipments.
 - .2 Contractor shall have designated employee(s) on site to receive and take possession of all deliveries and shipments.
 - .3 **Under no circumstances will personnel of the Institution accept delivery of materials, equipment and tools designated for use by the Contractor in the Work.**
- 1.8 **TELEPHONES**
- .1 Telephone landlines, facsimile machines and computers with internet connections are not permitted within the secure perimeter of the Institution unless prior approval is obtained from the Warden.
 - .2 If approved, locate telephones, facsimile machines and computers with internet connections only where designated by the Warden and in such location where they are not accessible to Inmates.
 - .1 Equip all computers with approved password protection features which will block internet connection to unauthorized computer users
 - .3 Wireless cellular and digital telephones, including but not limited to devices for telephone messaging, pagers, BlackBerries, telephone used as 2-way radios, are not permitted within the secure perimeter of the Institution unless prior approval is obtained from the Warden.
 - .1 Should wireless cellular telephones be permitted, the owner/user of such device shall not permit it's use by any Inmate.

- .4 The Warden may approve but limit the use of two way radios.
- 1.9 WORK HOURS**
- .1 Be aware that for security reasons the days and hours which Contractor will be permitted to perform work at the site are limited to:
- .1 Weekdays only from Monday to Friday and between the hours of 07:30 and 16:00.
- .2 **Work will not be permitted during evenings, night time, weekends and on statutory holidays without the permission of the Warden. A minimum of two days (48 hours) advance notice will be required to obtain the necessary permission.**
- 1.10 OVERTIME WORK**
- .1 No overtime work will be allowed at the end of a work shift.
- .2 Where overtime work is deemed necessary at the end of a work shift to complete a critical component of the work, it shall be planned and requested a minimum of 48 hours beforehand for approval by the Warden.
- .3 Should unplanned overtime work occur due to an emergency situation, such as to complete a concrete pour or to make the work site safe and secure, the Contractor shall immediately advise the Warden of this pending situation and stringently follow all directions given by the Warden.
- .4 **Extra Costs:** Note that when overtime work or off-hour work on weekends and statutory holidays is approved by the Warden, be aware that extra CSC security staff or commissionaires may need to be posted at the Institution to maintain security surveillance. The costs for such service will be charged to the Contractor in the form of a financial assessment to the Contract.
- 1.11 TOOLS AND EQUIPMENT**
- .1 Make a complete list of all tools and equipment brought on site for use in the work. Provide copy of the list to the Warden and to Departmental Representative.
- .2 Maintain and update list during the entire course of the Work.
- .3 Keep all tools and equipment under constant supervision. This is of particular importance for power-driven and cartridge-driven tools, cartridges, files, saw blades, rod saws, wire, rope, ladders as well as all types of jacking devices.
- .4 Store all tools and equipment in lockable tool boxes and place in approved and secure locations.
- .5 Lock tool boxes when not in use. Keys shall remain in the possession of employees designated by Contractor.
- .6 **Scaffolding:** Store and securely lock scaffolding components when not erected. When erected, secure against unauthorized disassembly in manner approved by the Warden.
- .7 Immediately report to the Warden any missing tools and equipment.

- .8 Tool Check: Be aware that CSC security personnel will conduct tool/equipment checks during the course of the Work against the list provided by Contractor. Frequency of checks to be as follows:
 - .1 At commencement and completion of the project.
 - .2 Weekly basis when the construction period is greater than 1 week.

- .9 Controlled items: entry and use of certain tools and equipment, such as cartridges and hacksaw blades, are highly controlled at the Institution. The Warden will determine and advise which items are to be controlled.
 - .1 Controlled items will be given to the Contractor at the beginning of each workday in quantities as required for 1 day's work.
 - .2 All controlled items must be returned to CSC security personnel at the end of each day including used blades, cartridges etc...

- .10 When propane or natural gas is used as fuel for construction heaters, the Contractor shall provide an employee to supervise that work site during non-working hours.

- .11 Powder actuated tools may be permitted to be used as determined by the Departmental Representative.
 - .1 Where use of powder actuated tools is permitted, the following site specific procedure must be followed. Failure to follow the site specific procedure may result in revoking permission for use.
 - .2 Site Specific Procedure:
 - .1 Only one designated employee (authorized operator) may use powder actuated device.
 - .2 Maximum number of powder actuated tools: 2.
 - .3 Maximum number of live cartridges permitted on site at a time: 2000.
 - .4 Number of cartridges permitted to the authorized operator is limited to 100 at a time. Upon return of 100 used cartridges to Corp Commissionaire, authorized operator can receive 100 more.
 - .5 A log of issues and returned cartridges will be maintained by the Commissionaires. Log will record the following:
 - .1 When issuing cartridges: the number of cartridges issued with signature of issuing person (Corp Commissionaire) and signature of recipient (authorized operator).
 - .2 Upon return of used cartridges: the signature of Commissionaire and the authorized operator both, to verify the number of returned cartridges.
 - .6 Disposal procedures of used cartridges: used cartridges will be immersed in a bucket of water for 24 hours and then removed from site by the Contractor.

- .7 Cartridges must be kept locked in two locked containers; one locked container placed in a second locked container. Restricted access to this locker is by the Corp Commissionaire. This Corp Commissionaire will oversee the issue and control of cartridges and numbers of powder actuated tools on site.
- .8 In the event of loss or missing cartridges, the site will be closed and the Contractor will be responsible to search for the missing cartridges. In the event the Contractor cannot locate the missing cartridges, the site will be closed for a maximum of one day and Corrections Service Canada will conduct a search of the area.
- .3 Safety Measures:
 - .1 The manufacturer's detailed operating instructions are to be followed at all times.
 - .2 Manufacturer's instructions together with standards and regulations specifically set out for the use of powder actuated devices are to be closely adhered to at all times. Refer to General Regulations, NB Reg 91-191.
 - .3 Following general recommendations apply to all explosive / powder actuated tools:
 - .1 Only properly trained and qualified operators are to use this type of tool. Section 1 to 9 of ANSI Standard A10.3-2006 "American National Standard, Safety Requirements for Powder-Actuated Fastening Systems" applies.
 - .2 The tool must be CSA standard approved for Explosive Actuated Fastening Tools.
 - .3 Ensure opposite side of wall or horizontal substrate is clear prior to firing.
 - .4 The tool should be loaded just prior to use with the correct load for the job anticipated. Tools should never be loaded and left to site or to be moved to an alternate work site after being loaded.
 - .5 Fire a test shot to verify the correct shot is being used in a safe zone away from other workers.
 - .6 The tool should never be pointed at anyone, whether loaded or unloaded. Hands should be kept clear of the barrel end at all times.
 - .7 Explosive / powder actuated tools should always be stored in their proper lockable boxes.
 - .8 Explosive / powder actuated tools should never be used in an explosive environment.
 - .9 When used, the tool must be held firmly and at right angles to the surface being driven into.

.3 (continued)

- .10 Eye protection must be worn by the authorized operator. Where there is risk of spilling, full face protection must be worn. Hearing protection must also be worn.
- .11 To prevent free-flying studs, ensure that the material being driven into will not allow the stud to completely pass through it.
- .12 Manufacturers' recommendations should be consulted and followed whenever there is doubt about materials being driven into, maintenance procedures or load strength to be used.
- .13 Always be aware of other workers. Where a hazard to other workers is created by this operation, signs and barricades identifying this hazard are mandatory. Hearing protection for workers in the area is also mandatory.

1.12 KEYS

- .1 Security Hardware Keys:
 - .1 Arrange and ensure that keys for security door hardware are delivered directly by the hardware Supplier/Installer to the Institution's designated Security Maintenance Officer (SMO).
 - .2 The SMO will provide written receipt to Contractor for security keys received.
 - .3 Provide a copy of such receipt to the Departmental Representative.
- .2 Construction Keys:
 - .1 Supply and install construction cylinders on all new doors and keep such doors locked during the entire construction period.
 - .2 Instruct construction employees on the care and safekeeping of keys assigned to them to ensure safe custody of construction keys.
 - .3 Construction cylinders shall only be removed and be replaced with operational cylinders at such time as deemed appropriate by the Warden. The SMO will, in conjunction with the lockset manufacturer:
 - .1 Prepare an operational keying schedule.
 - .2 Accept the operational keys and cylinders directly from the lockset manufacturer.
 - .3 Arrange for removal and return of the construction cylinders and install the operational cylinders in all locks.
 - .4 Upon putting operational security keys into use, an approved security escort designated by the Warden will thereafter obtain specific keys from the SMO and open those doors as required by Contractor to access work areas.
 - .5 Contractor shall issue instructions to all construction employees advising them that all security keys must always remain with the security escort.

**1.13 SECURITY
HARDWARE**

- .1 Turn over to Warden all security hardware removed as part of the work. This includes all items intended for disposal as well as those for temporary safekeeping until ready for reinstallation as part of the work.

- 1.14 **PRESCRIPTION DRUGS** .1 Construction employees who are required to take prescription drugs during the workday shall obtain approval from the Warden beforehand and shall only bring on site a one days supply each day.
- 1.15 **SMOKING RESTRICTIONS** .1 Contractor and construction employees are not permitted to:
.1 Smoke inside the Institution or outdoors within the secure perimeter of the Facility and;
.2 Must not possess unauthorized smoking items within the secure perimeter of the Institution.
- .2 All persons found in violation of this directive shall immediately cease smoking and dispose of any unauthorized smoking items. If violations persist, such persons will be removed from the Institution's property.
- .3 Smoking on the Institution's property is only permitted outdoors, outside of the secure perimeter of the Institution and in a location designated by the Warden.
- 1.16 **CONTRABAND** .1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are considered contraband by the Institution and are strictly prohibited on the Institution's property.
- .2 The discovery of contraband on the construction site and the identification of the person(s) responsible for the contraband shall be reported immediately to the Warden.
- .3 Contractor shall be vigilant with all construction employees and suppliers in ensuring that no contraband items are brought on site. Advise all persons that the discovery of contraband will result in the cancellation of their security clearance and their immediate removal from the site. Serious infractions may result in the removal of the Contractor or subcontractor from the Institution's property for the duration of the Contract.
- .4 Presence of arms and ammunition found in vehicles owned by Contractor, subcontractors, suppliers and construction employees will result in the immediate cancellation of security clearance for the driver of that vehicle.
- 1.17 **SEARCHES** .1 All vehicles and persons entering Institutional property may be subject to search.
- .2 When the Warden suspects, on reasonable grounds, that a construction employee is in possession of contraband, he/she may order that person to be searched.
- .3 Be aware that persons entering the Institution may be subject to screening of personal effects for traces of contraband drug residue.
- 1.18 **OFF-HOURS SITE ACCESS** .1 Construction personnel and commercial vehicles will not be permitted access to the Institution outside of the stipulated work hours specified, unless approved by the Warden.

**1.19 MOVEMENT
OF VEHICLES**

- .1 Be aware that commercial vehicles will only be allowed to enter or leave the secure perimeter of the Institution (ie: pass through the designated vehicle security gate) between the following hours of each day:
 - .1 From 07:45 AM to 11:00 AM and;
 - .2 From 13:00 PM to 15:30 AM.
- .2 Vehicles shall not be allowed to leave the Institution until an inmate count has been completed.
- .3 Vehicles must be escorted by approved CSC Staff or Commissionaire while inside the secure perimeter of the Institution.
- .4 Contractor shall provide 24 hours advance notice to the Warden of the arrival of heavy equipment such as excavator, cranes, concrete trucks, etc., to the site.
- .5 Vehicles being loaded with soil or other debris at site, or any vehicle considered impossible to search, must be under continuous supervision by Institutional staff or Commissionaires working under the authority of the Warden.
- .6 Commercial vehicles will only be allowed access onto the Institution's property when their contents are certified by the Contractor, or his representative, as being strictly necessary to the execution of the work.
- .7 Vehicles shall be refused access to Institutional property if, in the opinion of the Warden, they contain any article which jeopardizes the security of the Institution.
- .8 Private vehicles of construction employees will NOT be allowed inside the secure perimeter area of a medium or maximum security Institution, except for a special situation as may be authorized by the Warden.
- .9 Subject to approval from the Warden, a vehicle may be used in the morning and evening of each day to transport construction employees to and from work areas inside the secure perimeter of the Institution. However the vehicle shall not be allowed to remain parked inside that area during the remainder of the workday.
- .10 Subject to prior approval from the Warden, certain construction equipment may be permitted to remain in the work areas during night time or weekend provided such equipment is securely locked and has its battery removed. The Warden may also require that the equipment be tied by chain and padlocked to a solid unmovable object.

END OF SECTION

1.1 RELATED SECTIONS

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

1.2 INSPECTION

- .1 Facilitate Departmental Representative's access to Work.
- .2 Give timely notice requesting inspection of Work designated for special tests, inspections or approvals by Departmental Representative or by inspection authorities having jurisdiction.
- .3 If Contractor covers or permits to be covered Work designated for special tests, inspections or approvals before such is made, uncover Work until particular inspections or tests have been fully and satisfactorily completed and until such time as Departmental Representative gives permission to proceed. Pay costs to uncover and make good such work.
- .4 In accordance with the General Conditions, Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents.

1.3 INDEPENDENT AGENCIES INSPECTION

- .1 Departmental Representative will engage and pay for service of Independent Inspection and Testing Agencies for purpose of inspecting and testing portions of Work except for the following which remain part of Contractor's responsibilities:
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Testing and adjustment of conveying systems.
 - .4 Mill tests and certificates of compliance.
 - .5 Tests as specified within various sections designated to be carried out by Contractor under the supervision of Departmental Representative.
 - .6 Additional tests specified in Clause 1.3.2 below.
- .2 Where tests or inspections by designated Testing authority reveal work not in accordance with contract requirements, Contractor shall pay costs for additional tests and inspections as Departmental Representative may require to verify acceptability of corrected work.
- .3 Employment of inspection and testing agencies by Departmental Representative does not relax responsibility to perform Work in accordance with Contract Documents.

1.4 ACCESS TO WORK

- .1 Facilitate Departmental Representative's access to Work.
- .2 Furnish labour and facility to provide access to the work being inspected and tested.
- .3 Co-operate to facilitate such inspections and tests.

- .4 Make good work disturbed by inspections and tests.

1.5 PROCEDURES

- .1 Notify Departmental Representative sufficiently well in advance of when the Work is ready for testing, in order for Departmental Representative to make attendance arrangements with Testing Agency. When directed by Departmental Representative notify the Testing Agency directly.
- .2 Submit Representative samples of materials, in required quantities, to Testing Agency for testing purposes. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

1.6 REJECTED WORK

- .1 Remove and replace defective Work, whether result of poor workmanship, use of defective or damaged products and whether incorporated in Work or not, which has been identified by Departmental Representative as failing to conform to Contract Documents.
- .2 Make good damages to existing or new work resulting from removal or replacement of defective work.

1.7 TESTING BY CONTRACTOR

- .1 Provide all necessary instruments, equipment and qualified personnel to perform tests designated as Contractor's responsibilities herein or elsewhere in the Contract Documents.
- .2 At completion of tests, turn over 2 sets of fully documented tests reports to the Departmental Representative. Submit in accordance with Section 01 33 00. Additionally, obtain other copies in sufficient quantities to enable on complete set of test reports to be placed in each of the maintenance manuals specified in Section 01 78 00.
- .3 Submit mill test certificates and other certificates as specified in various sections.
- .4 Submit adjustment and balancing reports for mechanical, electrical and other equipment systems specified in various trade sections.
- .5 Furnish test results.

1.8 MOCK-UPS

- .1 Prepare mock-ups of certain work as specified in various sections of the Specifications. Include in each mock-up all related work components representative of final assembly.
- .2 Construct in locations acceptable to Departmental Representative.
- .3 Prepare mock-ups for Departmental Representative's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

- .5 If requested, Departmental Representative will assist in preparing a schedule fixing dates for preparation.
- .6 Dismantle and remove mock-up when directed by Departmental Representative, unless approval is given for mock-up to remain as part of the Work.

END OF SECTION

1.1 SITE ACCESS AND PARKING

- .1 The Departmental Representative will designate Contractor's access to project site. Site plan drawing indicates proposed location and extent of space for Contractor's equipment and work yard.
- .2 Use of existing parking lot adjacent to construction area is not permitted.
- .3 The Contractor is advised that while parking facilities for his workers and subcontractors will be on property, such parking facilities may be remote from the actual site of work. In any case, follow all instructions from the Departmental Representative in regards to parking facilities.
- .4 Contractor is responsible to provide temporary gravel surfacing in locations indicated by Departmental Representative for construction-related parking area. Contractor is responsible to remove temporary gravel at temporary construction parking area and reinstate and sod existing grass surfaces at temporary construction parking area and Contractor's equipment and work yard after the work is completed.

1.2 BUILDING ACCESS

- .1 Use only access doors, and circulation routes within site as designated by Departmental Representative to access construction site.

1.3 CONSTRUCTION SITE OFFICE

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

1.4 COMMISSIONAIRE'S SITE OFFICE

- .1 Be responsible for and provide site office for Commissionaire. This office could be in a separate trailer or it could be part of the Contractor's site office.
- .2 Commissionaire's office requirements are:
 - .1 Minimum space requirement of 2440mm by 2440mm in area, with space for chair and work table or desk, with power, heat and light sufficient to carry out office type work.
 - .2 Maintain power, heat and lights to Commissionaire's office for the duration of the Contract.
 - .3 Locate Commissionaire's trailer or work space within Contractor's site trailer with a window positioned so as to provide a view of both gates.
- .3 All visitors to site must first come to and register at Commissionaire's Site Office.

1.5 MATERIAL STORAGE

- .1 Locate site storage trailers where directed by Departmental Representative. Place in location of least interference with existing Facility operations.
- .2 Material storage space on site is limited. Coordinate delivery to minimize storage period on site before being needed for incorporation into work.

- .3 Be responsible for security of material stored on site. Provide secure enclosure around material storage area to a minimum standard as outlined in sentence 1.5 - Site Enclosures.

1.6 SITE ENCLOSURES

- .1 Provide temporary construction fence where designated by Departmental Representative and as agreed to by Site Representative to enclose various construction areas of work site.
- .2 Temporary construction fence must be, at a minimum, 2440 mm high (8'-0" high) chain link fencing with posts set in concrete. Make all temporary fence gates, for pedestrians and vehicles, lockable and provide keyed padlocks.
- .3 Obtain Departmental Representative's approval beforehand of location and layout of all temporary fence enclosures.
- .4 Provide warning signs affixed to all fenced areas, identifying those enclosed areas as "Construction Zones" with access restricted to only those persons so authorized by General Contractor. Signs to be in both official languages.
- .5 Do not construe fencing as an acceptable replacement for pedestrian walkway and hoarding requirements specified below.

1.7 PEDESTRIAN WALKWAYS AND HOARDING

- .1 Ensure maximum safety and security to facility users during the course of work.
- .2 Be responsible for and provide temporary 2.4 metre high chain link security fencing when work is adjacent to exterior sidewalks and circulation routes used by facility employees and inmates.
- .3 Maintain access and egress to building entrances and fire exits designated by Departmental Representative to remain in use.
- .4 Adequately frame and brace hoarding and walkways to resist wind, and other weather or site conditions.
- .5 Erect such protective devices during Facility's non-operational off hour periods.
- .6 Obtain Departmental Representative's concurrence prior to removal of hoarding and walkways.

1.8 SANITARY FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances, and in locations directed by Departmental Representative.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.9 ENCLOSURE OF STRUCTURE

- .1 Provide temporary weathertight enclosures and protection for exterior openings and /or modifications to roofing, flashing, etc. which may permit water entry until permanently enclosed.
- .2 Provide weathertight and heated enclosures to conduct exterior work during winter and other inclement weather conditions. Erect to allow accessibility for installation of materials and working inside of enclosure.
- .3 Design enclosures to withstand wind pressure and snow loading.

1.10 POWER

- .1 Power supply is available and will be provided for construction usage at no cost.
 - .1 Make arrangements for the use of such services through the Departmental Representative.
 - .2 Departmental Representative will designate and approve each location of existing power source to which connections can be made to obtain temporary power service.
 - .3 Connect to existing power supply in accordance with Canadian Electrical Code.
- .2 Provide and pay all costs to supply and install temporary cabling, panelboards, switching devices and other equipment as required to connect into power source, provide adequate ground fault protection and extend power supply from existing source to work areas. Perform work and make all connections in accordance with the Canadian Electrical Code, in compliance with the federal and provincial Occupational Health and Safety Regulations as specified in Section 01 35 29 and to lockout requirements specified in Section 01 35 25.
- .3 Provide and maintain temporary lighting to conduct work. Ensure illumination level is not less than 162 lx in all locations.
- .4 Electrical power and lighting systems installed under this Contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage.

1.11 WATER SUPPLY

- .1 Water supply is available and will be provided for construction usage at no cost. Make arrangements for the use and transportation of such services to work area through the Departmental Representative.
- .2 Permanent water supply system installed under this Contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage.

1.12 SCAFFOLDING

- .1 Design, construct and maintain scaffolding in rigid, secure and safe manner in accordance with CAN/CSA-S269.2-M87 (R2003) and CSA Z797-09.
- .2 Submit in accordance with Section 01 33 00 requirements, scaffolding shop drawing prepared by a Structural Engineer licensed to practice in the Province of New Brunswick.

- .3 Erect scaffolding independent of walls. Remove scaffolding when no longer required.

1.13 HOISTING

- .1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Hoists to be operated by qualified operators.

1.14 HEATING AND VENTILATING

- .1 Supply, install and pay for costs of temporary heat and ventilation used during construction, including costs of installation, fuel, operation, maintenance and removal of equipment. Use of direct-fired heaters discharging waste products into work areas will not be permitted.
- .2 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of work.
 - .2 Protect work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .3 Maintain strict supervision of operation of temporary heating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .4 Upon acceptance of bid, Departmental Representative may permit use of permanent system providing agreement can be reached on:
 - .1 Conditions of use, special equipment, protection and maintenance.
 - .2 Saving on Contract price.
 - .3 Provisions relating to warranties on equipment.

1.15 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Contractor's traffic on roads for deliveries or hauling of materials to and from site to interfere as little as possible with traffic to Institution.
- .2 Verify adequacy of existing roads and allowable load limit on these roads. Contractor to be responsible for repair of damage to roads caused by construction activities.
- .3 Provide snow removal during period of Work.

1.16 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction or requirements of Institution, whichever is more stringent.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

1.17 CONSTRUCTION SIGN AND NOTICES

- .1 Contractor or subcontractor advertisement signboards are not permitted on site.
- .2 Safety and Instruction Signs and Notices:
 - .1 Signs and notices for safety and instruction shall be in both official languages or commonly understood graphic symbols conforming to CAN3-Z321-96(R2006).
- .3 Maintenance and Disposal of Site Signs:
 - .1 Maintain approved signs and notices in good condition for duration of project and dispose of offsite on completion of project or earlier if directed by Departmental Representative.

1.18 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging materials from work site daily.
- .2 Clean mud or dirt tracked onto paved or surfaced roadways and sidewalks daily.
- .3 Provide snow removal during period of Work, and comply with directions from Departmental Representative as to location of snow piles.

1.19 REMOVAL OF TEMPORARY FACILITIES

- .1 Remove temporary facilities promptly from site when directed by Departmental Representative.
- .2 Be responsible to repair and make good all damage, to match existing condition of, existing roads, sidewalks, grassed areas, etc. caused by new work and removal of temporary facilities.

END OF SECTION

1.1 GENERAL

- .1 Use new material and equipment unless otherwise specified.
- .2 Within 7 days of written request by Departmental Representative, submit following information for any materials and products proposed for supply:
 - .1 Name and address of manufacturer.
 - .2 Trade name, model and catalogue number.
 - .3 Performance, descriptive and test data.
 - .4 Compliance to specified standards.
 - .5 Manufacturer's installation or application instructions.
 - .6 Evidence of arrangements to procure.
 - .7 Evidence of manufacturer delivery problems or unforeseen delays.
- .3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.
- .4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.2 PRODUCT QUALITY

- .1 Contractor shall be solely responsible for submitting relevant technical data and independent test reports to confirm whether a product or system proposed for use meets contract requirements and specified standards.
- .2 Final decision as to whether a product or system meets contract requirements rest solely with the Departmental Representative in accordance with the General Conditions of the Contract.

1.3 ACCEPTABLE MATERIALS AND ALTERNATIVES

- .1 **Acceptable Materials:** When materials specified include trade names or trademarks or manufacturer's or supplier's name as part of the material description, select and only use one of the names listed for incorporation into the Work.
- .2 **Alternative Materials:** Submission of alternative materials to trade names or manufacturer's names specified must be done during the bidding period following procedures indicated in the Instructions to Bidders.
- .3 **Substitutions:** After contract award, substitution of a specified material will be dealt with as a change to the Work in accordance with the General Conditions of the Contract.

1.4 MANUFACTURERS INSTRUCTIONS

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods to be used. Do not rely on labels or enclosure provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing of any conflict between these specifications and manufacturer's instructions, so that Departmental Representative will designate which document is to be followed.

1.5 AVAILABILITY

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

1.6 WORKMANSHIP

- .1 Ensure quality of work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed.
- .2 Remove unsuitable or incompetent workers from site as stipulated in the General Conditions of the Contract.
- .3 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision on site at all times.
- .4 Coordinate work between trades and subcontractors.
- .5 Coordinate placement of openings, sleeves and accessories.

1.7 FASTENINGS – GENERAL

- .1 Provide metal fastenings and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non- corrosive fasteners, anchors and spacers for securing exterior work and in humid areas.
- .2 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood or organic material plugs not acceptable.
- .3 Keep exposed fastenings to minimum, space evenly and lay out neatly.
- .4 Fastenings which cause spalling or cracking of material to which anchorage is made, are not acceptable.

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

1.8 FASTENINGS – EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur and, use resilient washers with stainless steel.

1.9 STORAGE, HANDLING AND PROTECTION

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

1.10 CONSTRUCTION EQUIPMENT AND PLANT

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

END OF SECTION

1.1 GENERAL

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

1.2 MATERIALS

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

1.3 CLEANING DURING CONSTRUCTION

- .1 Maintain work areas in a tidy condition, free from accumulations of waste material and debris. Clean areas on a daily basis.
- .2 Keep building entrances, and occupied areas of building in a clean dust free condition at all times. Conduct thorough cleaning of these areas at end of each work shift when used by workers or affected by the Work.
- .3 Provide on-site lockable metal containers for collection of waste materials and debris. Locate where approved and directed by Departmental Representative.
- .4 Use separate collection bins, clearly marked as to purpose, for source separation and recycling of waste and debris in accordance with waste management requirements specified.
- .5 Remove waste materials, and debris from site on a daily basis.
- .6 Clear snow and ice from access to building. Bank / pile snow in only in designated areas as directed by Departmental Representative.
- .7 Clean interior areas prior to start of finishing work and maintain areas free of dust and other contaminants during finishing operations.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned as recommended by cleaning materials manufacturer.

- .11 Schedule cleaning operations prior to start of finishing work so that dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .12 Provide dust barriers, dividers, seals on doors and employ other dust control measures as required to ensure that dust and dirt, generated by work, are not transmitted to other existing areas of building. Should dust migrate into adjacent areas of building, employ such means as may be necessary to immediately clean all contaminated surfaces to the satisfaction of the Departmental Representative.

1.4 FINAL CLEANING

- .1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 In preparation for acceptance of the completed work perform final cleaning.
- .4 Clean and polish surfaces including glass, mirrors, hardware, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .5 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture, food service equipment and other fittings, walls, floors and ceilings.
- .6 Remove grease, dust, dirt, stains, labels, fingerprints, marks and other foreign materials, from interior and exterior finished surfaces.
- .7 Clean lighting reflectors, lenses, and other lighting surfaces.
- .8 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .9 Wax, seal, shampoo or prepare floor finishes as recommended by manufacturer.
- .10 Inspect finishes, food service equipment and other fittings. Ensure specified workmanship and operation.
- .11 Broom clean and wash exterior walks, steps and surfaces. Rake clean other surfaces and grounds.
- .12 Remove dirt and debris and other disfiguration from exterior surfaces.
- .13 Clean and sweep roofs, gutters, areaways and sunken wells.

- .14 Clean equipment and fixtures to sanitary conditions; clean or replace filters of mechanical equipment.
- .15 Clean roofs, downspouts and drainage systems.
- .16 Remove debris and surplus materials from crawl areas, and other accessible concealed spaces.
- .17 Remove snow and ice from access to building.

END OF SECTION

1.1 RELATED WORK

- .1 Section 01 35 43 - Environment Procedures.

1.2 GENERAL

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

1.3 DEFINITIONS

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

1.4 WASTE MANAGEMENT PLAN

- .1 Prior to commencement of work, prepare waste Management Workplan.
- .2 Divert as much waste as possible from landfill.
- .3 Coordinate work of subtrades and subcontractors to ensure all possible waste reduction and recycling opportunities are taken. Follow waste management requirements specified in trade sections of the Specifications.
- .4 Reduce waste during installation of new materials. Undertake practices which will optimize full use of materials and minimize waste.
- .5 Develop innovative procedures to reduce quantity of waste generated by construction such as by delivering materials to site with minimal packaging etc.
- .6 Provide on-site facilities to collect, handle and store anticipated quantities of reusable, salvageable and recyclable materials.
- .7 During demolition and removal work separate materials and equipment at source, carefully dismantling, labelling and stockpiling alike items for the following purposes:
 - .1 Reinstallation into the work where indicated.
 - .2 Salvaging reusable items not needed in project which Contractor may sell to other parties.
 - .3 Sending as many items as possible to locally available recycling facility.
 - .4 Segregating remaining waste and debris into various individual waste categories for disposal in a "non-mixed state" as recommended by waste processing/landfill sites.
- .8 Isolate product packaging and delivery containers from general waste stream. Send to recycling facility or return to supplier/manufacturer.
- .9 Send leftover material resulting from installation work for recycling whenever possible.

- .10 Recycle asphalt removed as part of the work.
- .11 Establish methods whereby hazardous and toxic materials, and their containers used on site are properly handled, stored and disposed in accordance with applicable federal, provincial and municipal laws and regulations.

1.5 DISPOSAL REQUIREMENTS

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

END OF SECTION

1.1 SECTION INCLUDES

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

1.2 RELATED SECTIONS

- .1 Section 01 78 00 - Closeout Submittals.

1.3 INSPECTION AND DECLARATION

- .1 Contractor's Inspection: Coordinate and perform, in concert with subcontractors, an inspection and check of all Work. Identify and correct deficiencies, defects, repairs and perform outstanding items as required to complete work in conformance with Contract Documents.
 - .1 Notify Departmental Representative in writing when deficiencies from Contractor's inspection have been rectified and that Work is deemed to be complete and ready for Departmental Representative's inspection of the completed work.
- .2 Departmental Representative's Inspection: Accompany Departmental Representative during all substantial and final inspections of the Work.
 - .1 Address defects, faults and outstanding items of work identified by such inspections.
 - .2 Advise Departmental Representative when all deficiencies identified have been rectified.
- .3 Note that Departmental Representative will not issue a Certificate of Substantial Performance of the work until such time that Contractor performs following work and turns over the specified documents:
 - .1 Project record as-built documents;
 - .2 Final Operations and Maintenance manuals;
 - .3 Maintenance materials, parts and tools;
 - .4 Compliance certificates from applicable authorities;
 - .5 Reports resulting from designated tests complete with submission of test reports;
 - .6 Demonstration and training complete with user manuals;
 - .7 Manufacturer's guarantee certificates;
 - .8 Testing, adjusting and balancing of equipment and systems complete with submission of test reports.
 - .9 Commissioning of equipment and systems specified.
- .4 Correct all discrepancies before Departmental Representative will issue the Certificate of Completion.

END OF SECTION

1.1 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 01 77 00 - Closeout Procedures.

1.2 SECTION INCLUDES

- .1 Project Record Documents.
- .2 Operations and Maintenance data.

1.3 PROJECT RECORD DOCUMENTS

- .1 Departmental Representative will provide two (2) white print sets of contract drawings and two (2) copies of Specifications Manual specifically for "as-built" purposes.
- .2 Maintain at site one set of the contract drawings and specifications to record actual as-built site conditions.
- .3 Maintain up-to-date, real time as-built drawings and specifications in good condition and make available for inspection by the Departmental Representative upon request.
- .4 'As-Built' Drawings:
 - .1 Record changes in red ink on the prints. Mark only on one set of prints and at completion of work, neatly transfer notations to second set (also by use of red ink).
 - .2 Submit both sets to Departmental Representative at completion of Work.
 - .3 Stamp all drawings with "As-Built Drawings". Label and place Contractor's signature and date.
 - .4 Show all modifications, substitutions and deviations from what is shown on the contract drawings or in specifications.
- .5 Record following information:
 - .1 Depths of various elements in relation to a specified datum.
 - .2 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure;
 - .3 Field changes of dimension and detail;
 - .4 Location of all capped or terminated services and utilities;
 - .5 Chases for mechanical, electrical and other services;
 - .6 All design details dimensions and marked-up to consistently report finished installation conditions;
 - .7 Any details produced in the course of the contract by the Departmental Representative to supplement or to change existing design drawings;
 - .8 All change orders issued over the course of the contract must be documented on the finished as-built documents, accurately and consistently depicting the changed condition as it applies to all affected drawing details.

- .6 'As-Built' Specifications: legibly mark in red each item to record actual construction.
- .7 Maintain 'As-Built' documents current as the contract progresses. Departmental Representative will conduct reviews and inspections of the documents on a regular basis. Failure to maintain as-builts current and complete to satisfaction of Departmental Representative shall be subject to financial penalties in the form of progress payment reductions and holdback assessments.

1.4 REVIEWED SHOP DRAWINGS

- .1 Provide a complete set of all shop drawings reviewed for project to incorporate into each copy of the Operations & Maintenance manuals.
- .2 Submit full sets at same time and as part of the contents of the Operation and Maintenance manuals specified.

1.5 OPERATIONS AND MAINTENANCE MANUAL

- .1 Operations & Maintenance Manual - Definition: an organized compilation of operating and maintenance data including detailed technical information, documents and records describing operation and maintenance of individual products or systems as specified in individual sections of the specifications.
- .2 Manual Language: final manuals to be in English language.
- .3 Number of O&M Manual copies required:
 - .1 Submit two (2) interim copies of the manual for review and inspection by Departmental Representative. Make revisions and additions as directed and resubmit.
 - .2 Upon review and acceptance by Departmental Representative, submit four (4) final hard copies plus 1 electronic copy in DVD format.
 - .3 Interim copies are not to be considered as part of the final copies unless they have been fully revised and are identical to the final approved version.
- .4 Submission Date: submit complete operation and maintenance manual to Departmental Representative 3 weeks prior to application for Certificate of Substantial Performance of the work.
- .5 Binding:
 - .1 Assemble, coordinate, bind and index required data into Operation and Maintenance Manual.
 - .2 Use vinyl, hard covered, 3 "D" ring binders, loose leaf, sized for 215 x 280 mm paper, with spine pocket.
 - .3 Where multiple binders are needed, correlate data into related consistent groupings.
 - .4 Identify contents of each binder on spine.
 - .5 Organize and divide data following same numerical system as the section numbers of the Specification Manual.

- .6 Dividers: separate each section by use of cardboard dividers and labels. Provide tabbed fly leaf for each individual product and system and give description of product or component.
- .7 Type lists and notes. Do not hand write.
- .8 Drawings, diagrams and manufacturers' literature must be legible. Provide with reinforced, punched binder tab. Bind in with text; fold larger drawings to size of text pages.

- .6 Manual Contents:
 - .1 Cover sheet containing:
 - .1 Date submitted.
 - .2 Project title, location and project number.
 - .3 Names and addresses of Contractor, and all Sub-contractors.
 - .2 Table of Contents: provide full table of contents in each binder(s), clearly indicate which contents are in each binder.
 - .3 List of maintenance materials.
 - .4 List of spare parts.
 - .5 List of special tools.
 - .6 Original or certified copy of warranties and product guarantees.
 - .7 Copy of approval documents and certificates issued by Inspection Authorities.
 - .8 Copy of reports and test results performed by Contractor as specified.
 - .9 Product Information (PI Data) on materials, equipment and systems as specified in various sections of the specifications. Data to include:
 - .1 List of equipment including manufacturer's name, supplier, local source of supplies and service depot(s). Provide full addresses and telephone numbers.
 - .2 Nameplate information including equipment number, make, size, capacity, model number and serial number.
 - .3 Parts list.
 - .4 Installation details.
 - .5 Operating instructions.
 - .6 Maintenance instructions for equipment.
 - .7 Maintenance instructions for finishes.

- .7 Shop drawings:
 - .1 Include complete set of reviewed shop drawings into each copy of the operations and maintenance manual.
 - .2 Fold and bind material professionally in a manner that corresponds with the specification section numbering system.
 - .3 When large quantity of data is submitted, place into separate binders of same size as Operations & Maintenance binders.

- .8 Equipment and Systems Data: the following list indicates the type of data and extent of information required to be included for each item of building and food service equipment and for each system:
 - .1 Description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include complete nomenclature and commercial number of replaceable parts.
 - .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

- .8 (continued)
 - .3 Include installed colour coded wiring diagrams
 - .4 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - .5 Manufacturer's printed operation and maintenance instructions.
 - .6 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
 - .7 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
 - .8 Include test and balancing reports.
 - .9 Additional requirements as specified in individual specification sections.

- .9 Materials and Finishes Maintenance Data:
 - .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
 - .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - .3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
 - .4 Additional Requirements: as specified in individual specifications sections.

- .10 Maintenance Materials:
 - .1 Extra stock Materials:
 - .1 Provide maintenance materials, in quantities specified in individual specification Sections.
 - .2 Maintenance materials to be from same manufacturer, product line and run as items installed in the Work.
 - .3 Deliver maintenance materials to site and store in location as directed by Departmental Representative.
 - .4 Maintenance materials are not to be used to correct deficiencies.
 - .2 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification Sections.
 - .2 Provide tags identifying their associated function and equipment.
 - .3 Deliver to site and store in location as directed by Departmental Representative.

1.6 OPERATIONS AND MAINTENANCE MANUAL

- .1 Provide spare parts, special tools and extra materials for maintenance purposes in quantities specified in individual specification sections.
- .2 Tag all items with associated function or equipment.

- .3 Provide items of same manufacture and quality as items in Work.
- .4 Deliver to site in well packaged condition. Store in location as directed by Departmental Representative.
- .5 Clearly mark as to contents indicating:
 - .1 Part number.
 - .2 Identification of equipment or system for which parts are applicable.
 - .3 Installation instructions or intended use as applicable.
 - .4 Name, address and telephone number of nearest supplier.
 - .5 Prepare and submit complete inventory list of items supplied. Include list within Maintenance Manual.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Commissioning, testing and documentation.
- .2 Audit testing and the commissioning auditor.

1.2 RELATED SECTIONS

- .1 All Sections of Division 01 – General Requirements.
- .2 This section describes requirements applicable to respective Sections within Divisions 02 to 33.
- .3 Section 01 91 01 – General Commissioning Requirements
- .4 Section 01 91 41 – Commissioning Training
- .5 Section 11 40 10 – Food Service Stock Equipment
- .6 Section 11 40 20 – Food Service Custom Equipment
- .7 Section 11 41 10 – Walk-in Coolers and Freezers
- .8 Section 23 05 02 – Mechanical Systems Commissioning
- .9 Section 23 05 03 – Mechanical Testing Requirements
- .10 Section 25 01 11 – EMCS: Startup, Verification and Commissioning
- .11 Section 25 01 12 – EMCS: Training
- .12 Section 26 10 01 – Electrical Systems Commissioning
- .13 Section 26 10 02 – Electrical Testing Requirements
- .14 Commissioning Plan

1.3 DEFINITIONS

- .1 Commissioning: The process for achieving, verifying, and documenting that the facility and its systems are planned, designed, installed, and tested to ensure that they meet the original project requirements established by the Owner.
- .2 Commissioning Team:
 - .1 Owner's Representative: Representative of the Owner, as defined in the Agreement.
 - .2 Consultant/Engineer, as defined in the Agreement.
 - .3 Commissioning Agent / Authority: Party engaged by the Owner to lead commissioning activities, and coordinate other team members.
 - .4 Contractor Representatives: Representatives of the Contractor, including any sub-contractors whose scope of work includes items requiring commissioning.

1.3 DEFINITIONS – (Cont'd)

.5 Testing Agency: Specialty agency engaged by the Owner to perform tests on components or systems to verify conformance to Owner's requirements or specified requirements.

.3 Commissioning Documents:

.1 Commissioning Plan: A project-specific document which defines the scope and approach to commissioning of this facility.

.2 Submittal: Contract submittal, as specified in Contract Documents.

.3 Static check certificate: A document used to verify equipment data actually installed, prior to start up or operation.

.4 Operating check certificate. A document used to verify equipment operation, including performance statistics.

.5 Start up Reports: Report prepared by equipment start up personnel, including start-up sequence, and performance statistics. Refer to Division 01 – General Requirements.

.6 Balancing Report: Report prepared by the balancing agency, indicating initial and final system performance, to Division 01 – General Requirements.

.7 Maintenance Manual: A document containing detailed descriptions and technical information about start-up, operation and maintenance of equipment, to Division 01 – General Requirements.

1.4 SCOPE/WORK INCLUDED

.1 Provide material, labour, tools and supervision for: commissioning of systems outlined in General Commissioning Requirements Section 01 91 01, subsection 1.5 Commissioned Systems.

.2 Systems commissioning shall be done in accordance with the Commissioning Plan which is attached to these specifications in Appendix .

.3 Once systems have been commissioned, provide material, labour, tools and supervision to verify in detail with the commissioning agent that systems have been commissioned in accordance with the outline for verification of commissioning contained in the commissioning plan.

1.5 REGULATORY REQUIREMENTS

.1 Arrange for regulatory authorities to witness those commissioning start up procedures which are also required by regulatory authorities.

.2 Obtain certificates of approval and for compliance with regulations from Authorities Having Jurisdiction; include copies of certificates with start up reports.

1.6 CONTRACT COMMISSIONING REQUIREMENTS

.1 Participate in and cooperate to the fullest extent possible in commissioning coordination meetings chaired by the Commissioning Agent. These will be initiated approximately 60% into the project construction schedule and will typically be held following construction coordination meetings. Incorporate commissioning and verification of commissioning activities in the construction schedule and provide copies to all parties.

.2 Witnessing: Allow commissioning team members to witness starting, testing, adjusting, and balancing procedures.

1.6 CONTRACT COMMISSIONING REQUIREMENTS – (Cont'd)

- .3 Allow Commissioning Agent free access to the site.
- .4 Costs: Pay costs associated with starting, testing, adjusting, and relevant instruments and supplies required to perform those duties.
- .5 Employ experienced personnel for equipment start up and commissioning, who are able to interpret results of readings and tests, and report the system status in a clear and concise manner.
- .6 Provide all equipment required to perform testing, balancing, and commissioning of systems. Calibrate instruments used in start up as accurate; provide calibration certificates if requested by the Commissioning Agent.
- .7 Utilize equipment check certificates and other commissioning documents required by the Commissioning Agent.
- .8 Verify that equipment is installed in accordance with Contract Documents, and reviewed shop drawings. Sign and date static check certificates.
- .9 Do not start up equipment unless static check sheets have been completed and submitted.
- .10 Complete in detail and sign operating check certificates.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 COMMISSION TESTING

- .1 Allow for work, effort, and associated costs necessary to assist an Owner appointed and remunerated Commissioning Agent, for fulfillment of a commission testing process of the facility and Work.
- .2 Coordinate, cooperate, and harmonize efforts with the Commissioning Agent.
- .3 Commission testing will include a random testing and evaluation process as determined by the Commissioning Agent.
- .4 System and device checks to be suitably logged, tabulated, signed, and incorporated into project Operating and Maintenance Manuals:
 - .1 Prior to start of testing, provide two (2) complete sets of up-to-date contract drawings and specifications including addenda to the Commissioning Agent.
 - .2 Provide two (2) copies of each approved notice of change and clarification.
 - .3 Coordinate site visits by the Commissioning Agent and the affected parties during warranty periods.

3.1 COMMISSION TESTING – *(Cont'd)*

- .5 The commissioning process will not:
 - .1 Preclude the duties and responsibilities described in the Contract Documents nor the requirements and obligations of the Contract,
 - .2 Circumvent any required warranties,
 - .3 Relieve the Contractor from warranty requirements, responsibilities, or obligations.

- .6 Prior to commissioning testing, perform the following and provide copies to the Commissioning Agent, of component and assembly Contract Document compliance:
 - .1 Static test certificates.
 - .2 Equipment operating certificates.
 - .3 Two (2) copies of valve tag list.
 - .4 Inspection certificates from authorities having jurisdiction.
 - .5 Required copies of shop drawings.
 - .6 Manufacturer's operating and maintenance brochures of all major equipment.

- .7 Ensure all systems have been started, adjusted to design criteria, and are functionally operational, ready for independent testing.

- .8 Cooperate with the Commissioning Agent in advance of activating operating systems.

- .9 Test results that illustrate failure to conform to the Contract Documents, will result in the Owner arranging and paying to correct the Work at the Owner's discretion, and recovering all associated costs from the Contractor.

END OF SECTION

PART 1 GENERAL

1.1 ABBREVIATIONS AND DEFINITIONS

.1 The following are common abbreviations used in this document.

A/E-	Architect and design engineers	FT-	Functional performance test
CxA -	Commissioning Agent / Authority	GC-	General contractor
CC-	Controls contractor	MC-	Mechanical contractor
CM-	Construction Manager	PC-	Pre-functional checklist
Cx-	Commissioning	PM-	Project manager (GSA)
Cx Plan-	Commissioning Plan document	Subs-	Subcontractors to General
EC-	Electrical contractor	TAB-	Test and balance contractor

1.2 RELATED SECTIONS

.1 All Sections of Division 01 – General Requirements.

.2 This section describes requirements applicable to respective Sections within Divisions 02 to 33.

.3 Section 01 91 00 – Commissioning.

.4 Section 01 91 41 – Commissioning Training.

.5 Section 11 40 10 – Food Service Stock Equipment

.6 Section 11 40 20 – Food Service Custom Equipment

.7 Section 11 41 10 – Walk-in Coolers and Freezers

.8 Section 23 05 02 – Mechanical Systems Commissioning.

.9 Section 23 05 03 – Mechanical Testing Requirements.

.10 Section 25 01 11 – EMCS: Startup, Verification and Commissioning

.11 Section 25 01 12 – EMCS: Training

.12 Section 26 10 01 – Electrical Systems Commissioning.

.13 Section 26 10 02 – Electrical Testing Requirements.

.14 Commissioning Plan

1.3 PURPOSE OF THE COMMISSIONING PLAN

The commissioning plan will be prepared by the Commissioning Agent. The purpose of the commissioning plan is to:

.1 Provide direction for the development of the Cx specifications by A/E, during the latter part of the design phase.

- .2 Provide direction for the commissioning process during construction, particularly providing resolution for issues and providing details that cannot be, or were not, fully developed during design, such as scheduling, participation of various parties of this particular project, actual lines of reporting and approvals, coordination, etc.

1.4 COMMISSIONING SCOPE

- .1 Commissioning is a systematic process of ensuring that all building systems perform interactively according to the design intent and the owner's operational needs. This is achieved by beginning in the design phase, documenting the design intent and continuing through construction, acceptance and the warranty period with actual verification of performance.

Commissioning during the construction of this project is intended to achieve the following specific objectives:

According to the Contract Documents:

- Ensure that applicable equipment and systems are installed properly and receive adequate operational checkout by installing contractors.
- Verify and document proper performance of equipment and systems.
- Ensure that O&M documentation left on site is complete.
- Ensure that the Owner's operating personnel are adequately trained.

1.5 COMMISSIONED SYSTEMS

- .1 The following systems will be commissioned in this project. Refer to Preliminary Commissioning Plan for additional details. All general references to equipment in this document refer only to equipment that is to be commissioned.

Mechanical Systems (and all integral equipment controls)

- Air and water testing and balancing
- Steam boilers
- Heating boilers
- Air handling units
- Energy recovery ventilator
- Exhaust fans
- Domestic water heaters
- Heat exchanger
- Cabinet unit heaters and baseboards
- Door Air Curtain
- Pumps and heating loops
- HVAC zones
- Energy management control system (EMCS)

Electrical Systems

- Interior and exterior lighting and lighting controls
- Main service entrance board
- Panelboards
- Emergency lighting
- Feeders
- Exit signs
- Wiring devices

Life Safety Systems

- Fire alarm system
- Fire suppression system
- Security access and alarm system

1.6 FORMS

- .1 Forms will be provided at commencement of construction.

PART 2 ROLES AND RESPONSIBILITIES

2.1 LOCATIONS OF ROLE DESCRIPTIONS

- .1 Descriptions and explanations of the roles and responsibilities of those in the commissioning process are found in the following places in the Contract Documents:

- | | | |
|----|--------------------------|---------|
| .1 | List of team members: | Cx Plan |
| .2 | Management plan outline: | Cx Plan |
| .3 | General roles: | Cx Plan |

2.2 TEAM MEMBERS

- .1 The members of the commissioning team consist of the CxA, GSA PM, assigned members of the CM, GC, A/E, the mechanical contractor, electrical contractor, TAB representative, controls contractor, any other installing subcontractors or suppliers of equipment. If known, the Owner's building or plant operator/ engineer is also a member of the commissioning team. The General Contractor shall establish a commissioning team with representation from each sub-contractor required to participate. This team shall remain in place for the duration of the project. Each sub trade shall have one representative to coordinate all work with the CxA and provide all documentation necessary to the CxA.

2.3 GENERAL MANAGEMENT PLAN

- .1 In general, the CxA coordinates the commissioning activities and reports to the Owner and team. The CxA's responsibilities, along with all other contractors' commissioning responsibilities are detailed in the specifications. The Specifications will take precedence over the Cx Plan. All members work together to fulfill their contracted responsibilities and meet the objectives of the Contract Documents. Refer to the management protocols section below.

2.4 GENERAL DESCRIPTIONS OF ROLES

- .1 General descriptions of the commissioning roles are as follows:
- CxA: Coordinates the Cx process, writes tests, oversees and documents performance tests.
- CM: Facilitates the Cx process. Approves test plans and signs-off on performance, if the CxA was not hired by the CM.
- GC: Facilitates the Cx process, ensures that Subs perform their responsibilities and integrates Cx into the construction process and schedule.
- Subs: Demonstrate proper system performance.
- A/E: Perform construction observation, approve O&M manuals and assist in resolving problems.

- PM: Facilitates and supports the Cx process and gives final approval of the Cx work.
Mfr.: The equipment manufacturers and vendors provide documentation to facilitate the commissioning work and perform contracted startup.

PART 3 COMMISSIONING PROCESS

This section sequentially details the commissioning process by commissioning task or activity.

3.1 COMMISSIONING SCOPING MEETING

- .1 A commissioning scoping meeting is planned and conducted by the CxA within 30 days of the beginning of construction. In attendance are the respective representatives of the GC, CM, CxA, PM, A/E and the mechanical, electrical, controls, and TAB subs. At the meeting commissioning parties are introduced and the commissioning process reviewed, management and reporting lines determined. The flow of documents, how much submittal data the CxA will receive, etc. is also discussed. The Cx Plan is reviewed, process questions are addressed, lines of reporting and communications determined and the work products list discussed.

Also covered is the general list of each party's responsibilities, who is responsible to develop the startup plan for each piece of equipment and the proposed commissioning schedule. The outcome of the meeting is increased understanding by all parties of the commissioning process and their respective responsibilities. The meeting provides the CxA additional information needed to finalize the Cx Plan, including the commissioning schedule.

Prior to this meeting the CxA is given, by the GC, all drawings and specifications and the construction schedule by trade. The CxA keeps notes from the meeting and distributes them to each team member.

3.2 FINAL COMMISSIONING PLAN – CONSTRUCTION PHASE

- .1 The CxA finalizes the draft Cx Plan using the information gathered from the scoping meeting. The initial commissioning schedule is also developed (Section 5.2 Table 7-1) along with a detailed timeline. The timeline is fine-tuned as construction progresses. Prior to startup of the primary equipment, the CxA meets with the GC and CM and develops a detailed commissioning schedule. The commissioning plan is approved by the CM.

3.3 SITE OBSERVATION

- .1 The CxA, and CM if applicable, makes periodic visits to the site, as necessary, to witness equipment and system installations.

3.4 MISCELLANEOUS MEETINGS

- .1 The CxA attends selected planning and job-site meetings in order to remain informed on construction progress and to update parties involved in commissioning.

The CM and GC provide the CxA with information regarding substitutions, change orders and any Architect's Supplemental Instructions (ASI) that may affect commissioning equipment, systems or the commissioning schedule. The CxA may review construction meeting minutes, change orders or ASIs for the same purpose.

Later during construction, necessary meetings between various commissioning team parties will be scheduled by the CxA, through the CM, as required.

3.5 MISCELLANEOUS MANAGEMENT PROTOCOLS

.1 The following protocols will be used on this project.

<u>Issue</u>	<u>Protocol</u>
For requests for information (RFI) or formal documentation requests:	The CxA goes through GC.
For minor or verbal information and clarifications:	The CxA goes direct to the informed party.
For notifying contractors of deficiencies:	The CxA documents deficiencies through the CM, but may discuss deficiency issues with contractors prior to notifying the CM.
For scheduling functional tests or training:	The CxA may provide input for and do some coordination of training and testing, but does not do any scheduling.
For scheduling commissioning meetings:	The CxA selects the date and schedules through the GC.
For making a request for significant changes:	The CxA has no authority to issue change orders.
For making small changes in specified sequences of operations:	The CxA may not make changes to specified sequences without approval from the A/E.
Subcontractors disagreeing with requests or interpretations by the CxA shall:	Try and resolve with the CxA first. Then work through GC who will work with CxA directly or through the CM to resolve the situation.

3.6 PROGRESS REPORTING AND LOGS

.1 The CxA provides the CM with monthly commissioning progress reports. The CxA may adjust the reporting frequency as needed. The progress reports contain: an update of the schedule with list of requested schedule changes and new items added to the schedule, a list of new and outstanding deficiencies, a description of commissioning progress corresponding to the plan.

The CxA keeps a log of all commissioning-related issues that require current or future attention, tracks the status of documentation and tests for each piece of equipment and system (e.g., installer, party responsible for startup, approval dates for checklist and testing forms, their completion, training, O&M documentation review, etc.).

The CxA regularly communicates with all members of the commissioning team, keeping them apprised of commissioning progress and scheduling issues through memos, progress reports, etc. The CxA will keep all commissioning materials in an organized notebook.

3.7 INITIAL SUBMITTALS AND DOCUMENTATION

.1 Standard Submittals

The CxA manages the contractor's duty of providing all Subs responsible for commissioned equipment with commissioning documentation requirements for their respective equipment and systems through the CM. This data request typically coincides with the normal A/E submittal process. At minimum, this equipment data includes installation and start-up procedures, O&M data, performance data and control drawings. The CxA reviews and approves submissions relative to commissioning issues expressed in the contract documents, not for general contract compliance (which is the A/E's responsibility), unless specifically directed by the owner to do so. CxA recommendations are provided to the A/E, owner or CM as directed.

.2 Special Submittals, Notifications and Clarifications

The Subs, GC or A/E notify the CxA of any new design intent or operating parameter changes, added control strategies and sequences of operation, or other change orders that may affect commissioned systems. The controls contractor provides the CxA a full points list with details requested by the CxA.

Thirty (30) days prior to performing owner-contracted tests, the Subs provide the CxA full details of the procedures. As the phases of the TAB are completed, the draft TAB report is provided to the CxA with full explanations of approach, methods, results, data table legends, etc. The final TAB report is provided to the CxA upon completion.

These submittals to the CxA do not constitute compliance for submittals for the O&M manuals. Documentation requirements for the O&M manuals are discussed in Section 3.11, herein.

The CxA may request additional design narrative from the A/E and from the controls contractor depending on how complete the documentation was which was provided with the bid documents. The CxA may submit written RFIs to contractors through the CM or address them directly for clarifications, as needed.

3.8 PREFUNCTIONAL CHECKLISTS, TESTS AND STARTUP

.1 Pre-functional checklists (PC) are important to ensure that the equipment and systems are hooked up and operational and that functional performance testing may proceed without unnecessary delays. Each piece of equipment receives full pre-functional checkout by the Contractor. No sampling strategies are used. In general, the pre-functional testing for a given system, must be successfully completed prior to formal functional performance testing of equipment or subsystems of the given system.

Pre-functional checklists are primarily static inspections and procedures to prepare the equipment or system for initial operation (e.g., oil levels OK, fan belt tension, labels affixed, gages in place, sensor calibration, etc.). However, some pre-functional checklist items entail simple testing of the function of a component, a piece of equipment or system (such as measuring the voltage imbalance on a three phase pump motor of a chiller system). The word pre-functional refers to before functional testing. Pre-functional checklists augment and are combined with the manufacturer's start-up checklist.

Contractors typically already perform some, if not many, of the pre-functional checklist items the commissioning authority will recommend. However, few contractors document in writing the execution of these checklist items. This project requires that the procedures be documented in writing by the installing technician. The CxA is not obligated to witness the pre-functional check listing, with the possible exception of testing of larger or more critical pieces of equipment and some spot-checking.

3.8 PREFUNCTIONAL CHECKLISTS, TESTS AND STARTUP – (Cont'd)

.1 – (Cont'd)

.1 Start-up Plan

The CxA assists the commissioning team members responsible for startup in developing detailed start-up plans for all equipment. The parties responsible for each part of startup and initial checkout should be listed on the pre-functional checklists.

The following procedures will be used for this project: (the CxA is responsible for the plan development):

1. The CxA adapts and enhances, if necessary, the representative pre-functional checklists (PC) and procedures, and develops new, as necessary.
2. The contractor provides manufacturer installation, startup and checkout data, including actual field checkout sheets used by the field technicians to the CxA.
3. The CxA copies all pages with important instructional data and procedures from the startup and checkout manuals not covered in manufacturer field checkout sheets and add a signature line in the column by each procedure.
4. The copied pages from (2), along with the pre-functional checklist provided by the CxA and the manufacturer field checkout sheets become the "Startup and Checkout Plan."
5. For systems that may not have adequate manufacturer startup and checkout procedures, particularly for components being integrated with other equipment, the Sub should provide the added necessary detail and documenting format to the CxA for approval, prior to execution.
6. The CxA transmits the full Startup Plan to the GC, who designates which trade or contractor is responsible to fill out each line item (mark in the "Contr" column) on the Pre-functional Checklist from the CA. The GC then transmits the full start-up plan to the Subs for their review and use. (This usually means that the Pre-functional Checklist, alone, will go to more than one Sub, while the full plan will go to the primary installing contractor.

.2 Execution of Checklists and Startup

Prior to startup, the Subs and vendors schedule startup and initial checkout with the CM, GC and CxA. The startup and initial checkout are directed and executed by the Sub or vendor. The CxA, and CM if necessary, observe, at minimum, the procedures for each piece of primary equipment, unless there are multiple units, when a sampling strategy is used. For components of equipment, (e.g., VAV boxes), the CxA observes a sampling of the pre-functional and start-up procedures.

To document the process of startup and checkout, the site technician performing the line item task initials and dates each paragraph of procedures in the "Startup Plan" and checks off items on the pre-functional and manufacturer field checkout sheets, as they are completed. Only individuals having direct knowledge of a line item being completed shall check or initial the forms.

The Subs and vendors execute the checklists and tests and submit a signed copy of the completed start-up and pre-functional tests and checklists to the CxA. The CxA may review pre-functional checklists in progress, as necessary. On smaller equipment or projects, the checklists (which all contain more than one trade's responsibility), may be passed around to the Subs to fill out. For larger projects, each trade may need a full form and the CxA will consolidate them later.

3.8 PREFUNCTIONAL CHECKLISTS, TESTS AND STARTUP – (Cont'd)

.1 – (Cont'd)

.3 Sampling Strategy for CxA Observation of Pre-functional Checkout and Startup

The following table provides a tentative list of the equipment and how much of the pre-functional checkout and startup work will be witnessed by the commissioning authority.

<u>Equipment or System</u>	<u>Fraction to be Observed by CA or Site Engineer</u>
Water side TAB Work	20%
Air side TAB Work	20%
Steam Boilers	100%
Heating Boilers	100%
Air Handling Units	100%
Energy Recovery Ventilators	100%
Exhaust Fans	100%
DHW Heating System	100%
Heat Exchanger	100%
Cabinet Heaters and Baseboards	50%
Door Air Curtain	100%
Pumps	100%
HVAC Zones	50%
Heating Loops	100%
Building Automation System	per mechanical functional tests.
Lighting Controls/Lighting Levels	50%
Panelboards	100%
Main Service Entrance Board	100%
Feeders	100%
Wiring Devices	20%
Emergency Lighting	100%
Exit Signs/Exterior Lighting	100%
Fire Alarm System	100%
Fire Suppression System	100%
Security Access and Alarm System	100%

.4 Deficiencies and Non-Conformance

The Subs clearly list any outstanding items of the initial start-up and pre-functional procedures that were not completed successfully at the bottom of the procedures form or on an attached sheet. The procedures form and deficiencies are provided to the CxA within two days of test completion. The CxA works with the Subs and vendors to correct and retest deficiencies or uncompleted items, involving the CM and others as necessary. The installing Subs or vendors correct all areas that are deficient or incomplete according to the checklists and tests. The CxA recommends approval of the startup and initial checkout of each system to the CM.

.5 TAB

The TAB contractor submits the outline of the TAB plan and approach to the CxA and the controls contractor eight weeks prior to starting the TAB. Included in the approach, is an explanation of the intended use of the building control system. The CxA reviews the plan and approach for understanding and coordination issues and may comment, but does not “approve.” The controls contractor reviews the feasibility of using the building control system for assistance in the TAB work. The TAB submits weekly written reports of discrepancies, contract

3.8 PREFUNCTIONAL CHECKLISTS, TESTS AND STARTUP – (Cont'd)

.1 – (Cont'd)

interpretation requests and lists of completed tests to the CxA and CM. This facilitates quicker resolution of problems and will result in a more complete TAB before functional testing begins.

TAB work will not begin until the control system has been pre-functionally tested and selective functional tests have been performed and approved by the CxA.

.6 Controls Checkout Plan

The controls contractor develops and submits a written step-by-step plan to the CxA which describes the process they intend to follow in checking out the control system and the forms on which they will document the process. The controls contractor will also meet with the TAB contractor prior to the start of TAB and review the TAB plan to determine the capabilities of the control system for use in TAB. The controls contractor will provide the TAB with any necessary unique instruments for setting terminal unit boxes and instruct TAB in their use (handheld control system interface for use around the building during TAB, etc.). The controls contractor shall also provide a technician qualified to operate the controls to assist the TAB contractor in performing TAB.

All CxA required controls pre-functional checklists, calibrations, start-up and selected functional tests of the system shall be completed and approved by the CxA prior to TAB. The controls contractor shall execute the tests and trend logs and remain on site for assistance for mechanical system functional tests as specified in the same sections.

3.9 DEVELOPMENT OF FUNCTIONAL TEST AND VERIFICATION PROCEDURES

.1 Overview

Functional testing is the dynamic testing of systems (rather than just components) under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint). Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc.

The systems are run through all of the control system's sequences of operation and components are verified to be responding as the sequences state. The CxA develops the functional test procedures in a sequential written form, coordinates, oversees and documents the actual testing, which is usually performed by the installing contractor or vendor.

.2 Scope of Testing

The specification sections "*Mechanical Systems Commissioning Requirements*" (Section 23 05 02), "*EMCS: Startup, Verification and Commissioning*" (Section 25 01 11) and "*Electrical Systems Commissioning Requirements*" (Section 26 10 01) provide specific functional testing scope for each piece of commissioned equipment.

.3 Development Process

Before test procedures are written, the CxA obtains all requested documentation and a current list of change orders affecting equipment or systems, including an updated points list, control sequences and setpoints. The CxA develops specific test procedures to verify proper operation of each piece of equipment and system, using the testing requirements in the Specifications. The CxA obtains clarification, as needed, from contractors and the

3.9 DEVELOPMENT OF FUNCTIONAL TEST AND VERIFICATION PROCEDURES –
(Cont'd)

A/E regarding sequences and operation to develop these tests. Prior to execution, the CxA provides a copy of the primary equipment tests to the installing Sub (via the GC) who reviews the tests for feasibility, safety, warranty and equipment protection. Blank copies of the procedures are input into the O&M manuals for later use by operations staff.

Functional testing and verification may be achieved by manual testing (persons manipulate the equipment and observe performance) or by monitoring the performance and analyzing the results using the control system's trend log capabilities or by stand-alone data loggers. The CxA follows the Specifications when given and uses judgment where needed to determine which method is most appropriate. According to the Specifications, not all pieces of identical equipment receive in-depth testing. The CxA reviews owner-contracted, factory or required owner acceptance tests and determines what further testing may be required to comply with the Specifications. Redundancy is minimized.

The CxA reviews and approves documentation format of these tests prior to execution, but does not develop the procedures or document their execution, unless so requested by the CM.

.4 Testing Plan Overview

The CxA shall provide an overview outlining where functional testing lies in the schedule, what issues are preventing the start of testing, which contractors are needed for each test and how much time might be expected from them.

3.10 EXECUTION OF FUNCTIONAL TESTING PROCEDURES

.1 Overview and Process

The CxA schedules functional tests through the CM, GC and affected Subs. For any given system, prior to performing functional testing, the CxA waits until the prefunctional checklist has been submitted with the necessary signatures, confirming that the system is ready for functional testing. The CxA oversees, witnesses and documents the functional testing of all equipment and systems according to the Specifications and the Cx Plan. The Subs execute the tests. The control system is tested before it is used to verify performance of other components or systems. The air balancing and water balancing is completed and debugged before functional testing of air-related or water-related equipment or systems.

Testing proceeds from components to subsystems to systems and finally to interlocks and connections between systems. Refer to Section 6 for details on functional testing scope.

.2 Deficiencies and Retesting

The CxA documents the results of the test. Corrections of minor deficiencies identified are made during the tests at the discretion of the CxA. The CxA records the results of the test on the procedure or test form. Deficiencies or non-conformance issues are noted and reported to the CM. Subs correct deficiencies and notify the CxA. The CxA schedules retesting through the CM. Decisions regarding deficiencies and corrections are made at as low a level as possible, preferably between CxA or CM and the Sub. For areas in dispute, final authority, besides the Owner's, resides with the A/E. The CxA recommends acceptance of each test to the CM. The CM gives final approval on each test.

3.10 EXECUTION OF FUNCTIONAL TESTING PROCEDURES – (Cont'd)

.3 Facility Staff Participation

The Owner's facilities operating staff are encouraged to attend and participate in the testing process. The CxA will notify the CM, who will then notify the facility staff when the commissioning events will occur.

.4 Deferred / Phased / Seasonal Testing

Deferred, phased or seasonal testing is performing Functional Performance Tests after substantial completion. Systems performance testing should occur prior to the owner accepting the systems from the contractors, however, there are some instances where testing at the end of construction is either impractical or not meaningful due to uncontrollable factors. If any check or functional test cannot be completed during the scheduled commissioning timeline, execution of checklists and functional testing may be delayed upon approval of the A/E. These tests will be conducted in the same manner and as soon as possible.

.5 Sampling

Multiple identical pieces of non-life-safety or otherwise non-critical equipment may be functionally tested using a sampling strategy.

3.11 O & M MANUALS AND WARRANTIES

.1 Standard O & M Manuals

The CxA reviews the O&M manuals, documentation and redline as-builts for systems that were commissioned to verify compliance with the Specifications. The CxA recommends approval and acceptance of these sections of the O&M manuals to the CM.

The CxA also reviews each equipment warranty and verifies that all requirements to keep the warranty valid are clearly stated.

.2 Commissioning Record

The CxA will compile, organize and index the following commissioning data by equipment into labeled, indexed and tabbed, three-ring binders and deliver it to the GC, to be included with the O&M manuals. The correspondence, meeting minutes and progress reports, miscellaneous notes, etc. kept in the Commissioning Record Book during construction will not be retained into this record and the O&M manuals.

3.12 TRAINING AND ORIENTATION OF OWNER PERSONNEL

.1 Owner training and orientation on equipment and systems provided by the Contractor is accomplished in three general steps using three forms.

.1 Overall Plan. After reviewing the specifications, and after interviewing facility staff, if necessary, the Owner and Commissioning Authority (CxA) fill out a table listing all the equipment for which training or orientation will be provided. This form shall list, among other things, the type and number of trainees, rigor of training desired by the Owner, the primary responsible subcontractor, the trainer's company and columns for tracking training agendas. The Commissioning Authority provides this form to the Contractor for reference.

.2 Specific Training Agendas. For each piece of equipment or system for which training is provided, information regarding the scope of training and the intended audience, for reference by the trainer in developing the training agenda. The CxA develops a plan for including in the training session contractors / trainers from different disciplines. In particular, the controls contractor will provide brief training on controls in the same session with the mechanical training for equipment controlled by the building automation system.

3.12 TRAINING AND ORIENTATION OF OWNER PERSONNEL– (Cont'd)

The Owner and CxA review the agenda; make comments; and approve the agenda subject to the comments; and submit back to the Contractor. The Contractor provides the approved agenda to the trainer to use during the training. The trainer provides a copy of the agenda to each trainee.

- .3 Training Record. For each piece of equipment, prior to training, the trainer documents each training session (duration and general subjects covered). The trainer signs for the session and obtains the signature of each trainee. The trainer also checks off subjects covered on the Agenda. When the training is complete, the Contractor provides a copy of the Training and Orientation Record, and the trainer's Agenda, to the Owner and CxA. The Owner and CxA make final approval by signing it. The CxA may witness any of the training sessions.

.2 Special Training and Orientation

The following orientation and trainings will be completed by the CxA and A/E according to the specifications:

Re-commissioning. The commissioning authority will provide instruction on the use of blank functional test forms for periodic re-commissioning of equipment and systems, per the specification.

Architect. The architect will provide a general overview of the facility, its use, special features, tenant and public considerations, etc.

Mechanical Design Engineer. The mechanical designer will provide an overview of the major systems and equipment in the facility, including for each system: the design intent, why the system was chosen, an overview of its operation, and interactions with other systems, any special areas to be aware of, issues regarding future expansion and remodeling, etc.

Electrical Design Engineer. The electrical designer will provide an overview of the major electrical systems and equipment in the facility, particularly the lighting control systems, fire alarm, security and emergency power, focusing on the design intent, why the system was chosen, an overview of its operation, and interactions with other systems, any special areas to be aware of, issues regarding future expansion and remodeling, etc.

3.13 WARRANTY PERIOD

- .1 During the warranty period, seasonal testing and other deferred testing required is completed according to the Specifications. The CxA coordinates this activity. Tests are executed and deficiencies corrected by the appropriate Subs, witnessed by facilities staff and the CxA. Any final adjustments to the O&M manuals and as-builts due to the testing are made. In addition the CxA will return to the project approximately 10 months into the 12 month warranty period. During this visit(s) the CxA will review with facility staff the current building operation and the condition of outstanding issues related to the original and seasonal commissioning. The CxA will also interview facility staff and identify problems or concerns they have operating the building as originally intended. The CxA will make suggestions for improvements and for recording these changes in the O&M manuals. The CxA will identify areas that may come under warranty or under the original construction contract. The CxA will also assist facility staff in developing reports and documents and requests for services to remedy outstanding problems.

PART 4 WRITTEN WORK PRODUCTS

The written work products from all parties are described in Formal Written Work Products. The table describes each product, who is responsible for producing it, the general due date, the parties who receive it and who approves it, etc.

4.1 SUMMARY REPORT

- .1 A final summary report by the CxA will be provided to the CM or PM. The report shall include an executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope and a general description of testing and verification methods.

For each piece of commissioned equipment, the report should contain the disposition of the commissioning authority regarding the adequacy of the equipment, documentation and training meeting the contract documents in the following areas:

- .1 Equipment meeting the equipment specifications.
- .2 Equipment installation.
- .3 Functional performance and efficiency.
- .4 Equipment documentation and design intent.
- .5 Operator training.

All outstanding non-compliance items shall be specifically listed. Recommendations for improvement to equipment or operations, future actions, commissioning process changes, etc. shall also be listed. Each non-compliance issue shall be referenced to the specific functional test, inspection, trend log, etc. where the deficiency is documented.

The functional performance and efficiency section for each piece of equipment shall include a brief description of the verification method used (manual testing, BAS trend logs, data loggers, etc.) and include observations and conclusions from the testing.

Appendices shall contain acquired sequence documentation, logs, meeting minutes, progress reports, deficiency lists, site visit reports, findings, unresolved issues, communications, etc. Pre-functional checklists and functional tests (along with blanks for the operators) and monitoring data and analysis will be provided in a separate labeled binder.

The commissioning plan, the pre-functional checklists, functional tests and monitoring reports will not be part of the final report, but will be stored in the Commissioning Record in the O&M manuals.

PART 5 SCHEDULE

5.1 GENERAL ISSUES

.1 The following sequential priorities are followed:

- .1 Equipment is not “temporarily” started (for heating or cooling), until pre-start checklist items and all manufacturers’ pre-start procedures are completed and moisture, dust and other environmental and building integrity issues have been addressed.
- .2 Functional testing is not begun until pre-functional and start-up and TAB is completed, for a given system (this does not preclude a phased approach).
- .3 The controls system and equipment it controls are not functionally tested until all points have been calibrated and pre-functional testing completed.
- .4 TAB is not performed until the controls system has been sufficiently functionally tested and approved by the CxA for TAB work
- .5 TAB is not performed until the envelope is completely enclosed and ceiling complete, unless the return are is ducted.

5.2 PROJECT SCHEDULE

.1 The initial commissioning schedule is summarized in Table 7-1.

Table 7-1. Initial Commissioning Schedule Summary

Task / Activity	Estimated Start Date	Estimated End Date
Initial scoping meeting and final plan	February 1, 2014	October 31, 2014
Submittals obtained and reviewed	February 1, 2014	October 31, 2014
Begin construction site visits/inspections	April 1, 2014	October 31, 2014
Prefunctional forms developed and distributed	April 1, 2014	October 31, 2014
Startup and initial checkout plans	April 1, 2014	October 31, 2014
Startup and initial checkout executed	April 1, 2014	October 31, 2014
TAB	July 1, 2014	October 31, 2014
Water	July 1, 2014	October 31, 2014
Air	July 1, 2014	October 31, 2014
Functional performance tests	October 1, 2014	October 31, 2014
O&M documentation review and verification	November 1, 2014	November 30, 2014
Training and training verification	November 1, 2014	November 30, 2014
Final commissioning report	November 1, 2014	November 30, 2014

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Specifications for roles and responsibilities for training of Owner's personnel.

1.2 RELATED SECTIONS

- .1 This section describes requirements applicable to respective sections within Division 02 to 33.
- .2 All Sections of Division 01 – General Requirements.
- .3 Section 01 91 00 – Commissioning.
- .4 Section 01 91 01 – General Commissioning Requirements.
- .5 Section 11 40 10 – Food Service Stock Equipment
- .6 Section 11 40 20 – Food Service Custom Equipment
- .7 Section 11 41 10 – Walk-in Coolers and Freezers
- .8 Section 23 05 02 – Mechanical Systems Commissioning.
- .9 Section 23 05 03 – Mechanical Testing Requirements.
- .10 Section 25 01 11 – EMCS: Startup, Verification and Commissioning
- .11 Section 25 01 12 – EMCS: Training
- .12 Section 26 10 01 – Electrical Systems Commissioning.
- .13 Section 26 10 02 – Electrical Testing Requirements.
- .14 Commissioning Plan

1.3 SCOPE/WORK INCLUDED

- .1 Provide material, labour, tools and supervision for training associated with systems outlined in General Commissioning Requirements Section 01 91 01 subsection 1.5 Commissioned Systems and in accordance with the outline for instruction/training contained in the commissioning plan.

1.4 TRAINEE

- .1 Trainees: personnel selected for operating and maintaining this facility.
- .2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

1.5 INSTRUCTORS

- .1 Mechanical and Electrical Consultants will provide:
 - .1 Description 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 safety devices.
 - .3 Instructions on servicing, maintenance and adjustment of system, 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.

1.6 TRAINING SESSIONS

- .1 No training will take place without the contractor submitting the following information to the Project Manager two (2) weeks in advance.
 - .1 The qualifications of the instructors.
 - .2 The written agenda for the training session(s).
 - .3 The training manuals, tools and O & M Manuals for review.
- .2 As a minimum, the training sessions shall cover the following information as applicable:
 - .1 Description of the system with factory personnel being involved at appropriate times.
 - .2 In depth review of EMCS sequences.
 - .3 Instructions on start-up procedures including seasonal procedures, system check-lists and emergency procedures.
 - .4 A review of the written O&M instructions emphasizing safe and proper operating requirements, preventative maintenance, special tools need and spare parts inventory suggestions. The training shall include start-up, operation in all modes possible, shut-down, seasonal changeover and any emergency procedures.
 - .5 Instruction on system shutdowns, including checklists.
 - .6 Instructions on all aspects of system maintenance, including routine servicing lubrication, overhaul and factory servicing.
 - .7 Discussion of relevant health and safety issues and concerns.
 - .8 Common troubleshooting problems and solutions.
 - .9 Information concerning the warranties and their use and the location of all guarantees.
 - .10 A description of spare parts in stock and their service.
 - .11 A description of normal tools required for servicing the systems/equipment
 - .12 Service contacts/protocols
- .3 Use of a room with overhead or table mount projector and screen in concert with laptop computer containing control software, graphics, sequences etc specific to this project is considered a prerequisite for most effective demonstration and presentation of the materials herein.

- .4 Commissioning Agent will maintain records of each training session including instructor, attendance and material covered.
 - .5 All training session attendees will be required to complete a sign-up sheet confirming their attendance at the training session. A sign-up sheet will be provided for each session.
- 1.7 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 Commissioning Agent 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
- 1.8 SCHEDULING
- .1 Incorporate training activities into the training schedule and provide copies to all parties.
 - .2 Deliver training during regular working hours, training sessions to be in accordance with the Outline for Instruction/Training incorporated in the commissioning plan.
 - .3 Training shall be completed prior to acceptance of facility
- PART 2 PRODUCTS**
- 2.1 NOT USED
- PART 3 EXECUTION**
- 3.1 NOT USED

END OF SECTION