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PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS .1 Work of this Contract comprises of the replacement of one dehumidifier and the installation of one additional dehumidifier at Joyceville Institution, Kingston, ON.

1.2 CONTRACT METHOD .1 Construct Work under lump sum contract.

1.3 CONTRACTOR USE OF PREMISES .1 Contractor shall limit use of premises for Work, for storage, and for access, to allow:  
.1 Owner occupancy.  
.2 Co-ordinate use of premises under direction of owner.  
.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.  
.4 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.  
.5 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.4 OWNER OCCUPANCY .1 Owner will occupy premises during entire construction period for execution of normal operations.  
.2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

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1.5 ALTERATIONS,  
ADDITIONS OR  
REPAIRS TO EXISTING  
BUILDING

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

1.6 EXISTING  
SERVICES

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

1.7 DOCUMENTS  
REQUIRED

- .1 Maintain at job site, one copy each document as follows:
- .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Reviewed Shop Drawings.

- 1.7 DOCUMENTS .1 (Cont'd)  
REQUIRED  
(Cont'd)
- .5 List of Outstanding Shop Drawings.
  - .6 Change Orders.
  - .7 Other Modifications to Contract.
  - .8 Field Test Reports.
  - .9 Copy of Approved Work Schedule.
  - .10 Health and Safety Plan and Other Safety  
Related Documents.
  - .11 Other documents as specified.

PART 1 - GENERAL

1.1 ACCESS AND  
EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.
- .2 Work shall be performed during regular working hours of 0800 - 1600, Monday to Friday, with consideration given to the hours of operation of Sally Port.

1.2 USE OF SITE AND  
FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Departmental Representative will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.

1.3 ALTERATIONS,  
ADDITIONS OR  
REPAIRS TO EXISTING  
BUILDING

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

1.4 EXISTING  
SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
  - .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work.
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- 1.4 EXISTING SERVICES  
(Cont'd) .2 (Cont'd)  
Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- 1.5 SPECIAL REQUIREMENTS  
REQUIREMENTS .1 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .2 Keep within limits of work and avenues of ingress and egress.
- .3 Deliver materials outside of peak traffic hours unless otherwise approved by Departmental Representative.
- 1.6 SECURITY  
SECURITY .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security.
- .2 Security clearances:  
.1 Personnel employed on this project will be subject to security check. Obtain clearance, as instructed, for each individual who will require to enter premises.  
.2 Obtain requisite clearance, as instructed, for each individual required to enter premises.  
.3 Personnel will be checked daily at start of work shift and provided with pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.
- 1.7 BUILDING SMOKING ENVIRONMENT  
SMOKING ENVIRONMENT .1 Comply with smoking restrictions. Smoking is not permitted.

PART 1 - GENERAL

- 1.1 ADMINISTRATIVE
- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
  - .2 Do not proceed with Work affected by submittal until review is complete.
  - .3 Present shop drawings, and product data in SI Metric units.
  - .4 Where items or information is not produced in SI Metric units converted values are acceptable.
  - .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
  - .6 Notify Departmental Representative , in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
  - .7 Verify field measurements and affected adjacent Work are co-ordinated.
  - .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's nor Consultant's review of submittals.
  - .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative nor Consultant review.
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- 1.1 ADMINISTRATIVE .10 Keep one reviewed copy of each submission on  
(Cont'd) site.
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- 1.2 SHOP DRAWINGS .1 The term "shop drawings" means drawings,  
AND PRODUCT DATA diagrams, illustrations, schedules,  
performance charts, brochures and other data  
which are to be provided by Contractor to  
illustrate details of a portion of Work.
- .2 Indicate materials, methods of construction  
and attachment or anchorage, erection  
diagrams, connections, explanatory notes and  
other information necessary for completion of  
Work. Where articles or equipment attach or  
connect to other articles or equipment,  
indicate that such items have been  
co-ordinated, regardless of Section under  
which adjacent items will be supplied and  
installed. Indicate cross references to design  
drawings and specifications.
- .3 Adjustments made on shop drawings by  
Departmental Representative or Consultant are  
not intended to change Contract Price. If  
adjustments affect value of Work, state such  
in writing to Departmental Representative  
prior to proceeding with Work.
- .4 Make changes in shop drawings as Departmental  
Representative or Consultant may require,  
consistent with Contract Documents. When  
resubmitting, notify Departmental  
Representative and Consultant in writing of  
revisions other than those requested.
- .5 Accompany submissions with transmittal  
letter, in duplicate, containing:
- .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop  
drawing, product data and sample.
  - .5 Other pertinent data.
- .6 Submissions include:
- .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
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- 1.2 SHOP DRAWINGS .6 Submissions include:(Cont'd)  
AND PRODUCT DATA .3 Name and address of:(Cont'd)  
(Cont'd) .3 Manufacturer.  
.4 Contractor's stamp, signed by  
Contractor's authorized representative  
certifying approval of submissions,  
verification of field measurements and  
compliance with Contract Documents.  
.5 Details of appropriate portions of Work  
as applicable:  
.1 Fabrication.  
.2 Layout, showing dimensions,  
including identified field dimensions,  
and clearances.  
.3 Setting or erection details.  
.4 Capacities.  
.5 Performance characteristics.  
.6 Standards.  
.7 Operating weight.  
.8 Wiring diagrams.  
.9 Single line and schematic diagrams.  
.10 Relationship to adjacent work.
- .7 After Departmental Representative's and  
Consultant's review, distribute copies.
- .8 Submit 6 prints or electronic copy of shop  
drawings for each requirement requested in  
specification Sections and as Departmental  
Representative or Consultant may reasonably  
request.
- .9 Submit 6 electronic copies of product data  
sheets or brochures for requirements requested  
in specification Sections and as requested by  
Departmental Representative DCC Representative  
Consultant where shop drawings will not be  
prepared due to standardized manufacture of  
product.
- .10 Submit electronic copies of certificates for  
requirements requested in specification  
Sections and as requested by Departmental  
Representative.  
.1 Statements printed on manufacturer's  
letterhead and signed by responsible officials  
of manufacturer of product, system or material  
attesting that product, system or material  
meets specification requirements.  
.2 Certificates must be dated after award  
of project contract, complete with project  
name.
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1.2 SHOP DRAWINGS  
AND PRODUCT DATA  
(Cont'd)

- .11 Submit 6 electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .12 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .13 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .14 Delete information not applicable to project.
- .15 Supplement standard information to provide details applicable to project.
- .16 If upon review by Departmental Representative and Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3 PHOTOGRAPHIC  
DOCUMENTATION

- .1 Submit electronic copy of colour digital photography in jpg format, standard resolution as directed by Departmental Representative.
  - .2 Project identification: name and number of project and date of exposure indicated.
  - .3 Number of viewpoints: 2 locations.
    - .1 Viewpoints and their location as determined by Departmental Representative.
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- 1.3 PHOTOGRAPHIC DOCUMENTATION  
(Cont'd)
- .4 Frequency of photographic documentation: as directed by Departmental Representative.  
.1 Upon completion of: framing and services before concealment, and as directed by Departmental Representative.
- 1.4 CERTIFICATES AND TRANSCRIPTS
- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

PART 1 - GENERAL

- 1.1 PURPOSE .1 To ensure that both the construction project and the institutional operations may proceed without undue disruption or hindrance and that the security of the Institution is maintained at all times.
- 1.2 DEFINITIONS .1 "Contraband" means:  
.1 An intoxicant, including alcoholic beverages, drugs and narcotics.  
.2 Tobacco or associated tobacco products.  
.3 An igniting device, lighter or matches.  
.4 A weapon or a component thereof, ammunition for a weapon, and anything 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.  
.5 An explosive or a bomb or a component thereof.  
.6 Currency over \$25.00 when possessed by an inmate without prior authorization.  
.7 Any item not described in paragraphs 1.2.1.1 to 1.2.1.6 that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization.
- .2 "Unauthorized Smoking and related Items" means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing tobacco, cigarette making machines, matches and lighters.
- .3 "Commercial Vehicle" means any motor vehicle used for the shipment of material, equipment and tools required for the construction project.
- .4 "CSC" means Correctional Service Canada.
- .5 "Director" means Director, Warden or Superintendent of the Institution as applicable.
- .6 "Construction Employees" means persons working for the General Contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies.
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1.2 DEFINITIONS (Cont'd) .7 "Departmental Representative" means the project manager from Public Works and Government Services Canada.

.8 "Perimeter" means the fenced or walled area of the Institution that restrains the movement of the inmates.

.9 "Construction Limits" means the area as shown on the contract drawings that the Contractor will be allowed to work. This area may or may not be isolated from the security area of the Institution.

.1 Construction limits for this project consist of rooms, crawlspaces, electrical and mechanical rooms as shown on the drawings. Inmate areas are not included within the construction areas, except if required to pass through to reach the construction areas listed above, as directed by the Director.

1.3 PRELIMINARY PROCEEDINGS .1 Prior to the commencement of work, the Contractor shall meet with the Director or his/her representative to:

.1 Discuss the nature and extent of all activities involved in the Project.  
.2 Establish mutually acceptable security procedures in accordance with this instruction and the institution's particular requirements.

.2 Contractor shall:  
.1 Ensure that all Construction Employees are aware of the security requirements.  
.2 Ensure that a copy of the security requirements is always prominently on display at the job site.  
.3 Co-operate with institutional personnel in ensuring that security requirements are observed by all Construction Employees.

1.4 CONSTRUCTION EMPLOYEES .1 Submit to the Director a list of the names with date of birth of all Construction Employees to be employed on the construction site and a security clearance form for each employee.

.2 Allow two (2) weeks for processing of security clearances. Employees will not be admitted to the Institution without a valid security

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- 1.4 CONSTRUCTION EMPLOYEES  
(Cont'd)
- .2 (Cont'd)  
clearance in place and a recent picture identification such as a provincial driver's license. Security clearances obtained from other CSC Institutions are not valid at this Institution.
- .3 The Director may require that facial photographs may be taken of Construction Employees and these photographs may be displayed at appropriate locations in the Institution or in an electronic database for identification purposes. The Director may require that Photo ID cards be provided for all Construction Employees. ID cards will then be left at the designated entrance to be picked upon arrival at the institution and shall be displayed prominently on the Construction Employees' clothing at all time while Construction Employees are in the institution.
- .4 Entry to Institutional Property will be refused to any person there may be reason to believe may be a security risk.
- .5 Any person employed on the construction site will be subject to immediate removal from Institutional Property if they:  
.1 Appear to be under the influence of alcohol, drugs or narcotics.  
.2 Behave in an unusual or disorderly manner.  
.3 Are in possession of contraband.
- .6 Smoking is prohibited anywhere on CSC property.
- 1.5 VEHICLES
- .1 All unattended vehicles on CSC property shall have windows closed; doors and trunks shall be locked and keys removed. The keys shall be securely in the possession of the owner or an employee of the company that owns the vehicle.
- .2 The Director may limit at any time the number and type of vehicles allowed within the Institution.
- .3 Drivers of delivery vehicles for material required by the project will not require security clearances but must remain with their vehicle the entire time that the vehicle is in the Institution. The Director may require that
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- 1.5 VEHICLES .3 (Cont'd)  
(Cont'd) these vehicles be escorted by Institutional Staff or Commissionaires while in the Institution.
- .4 If the Director permits trailers to be left inside the secure perimeter of the Institution, these trailer doors will be locked at all times. All windows will be securely locked when left unoccupied. All trailer windows shall be covered with expanded metal mesh. All storage trailers inside and outside the perimeter shall be locked when not in use.
- 1.6 PARKING .1 Parking area(s) to be used by Construction Employees will be designated by the Director. Parking in other locations will be prohibited and vehicles may be subject to removal.
- 1.7 SHIPMENTS .1 All shipments of project material, equipment and tools shall be addressed in the Contractor's name to avoid confusion with the Institution's own shipments. The Contractor must have his/her own employees on site to receive any deliveries or shipments. CSC staff will NOT accept receipt of deliveries or shipments of any material, equipment or tools.
- 1.8 TELEPHONES .1 There will be no installation of telephones, Facsimile machines and computers with Internet connections permitted within the perimeter of the Institution unless prior approval of the Director is received.
- .2 The Director will ensure that approved telephones, facsimile machine and computers with internet connections are located where they are not accessible to inmates. All computers will have an approved password protection that will stop an internet connection to unauthorized personnel.
- .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
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- 1.8 TELEPHONES (Cont'd) .3 (Cont'd) permitted within the Institution unless approved by the Director. If wireless cellular telephones are permitted, the user will not permit their use by any inmate.
- .4 The Director may approve but limit the use of two way radios.
- 1.9 WORK HOURS .1 Normal work hours within the Institution are: Monday to Friday 07:30 a.m. to 4:00 p.m. through ID, and 07:30 a.m. to 3:30 p.m. through Sallyport.
- .2 Work will not be permitted during weekends and statutory holidays without the permission of the Director. A minimum of seven days advance notice will be required to obtain the required permission. In case of emergencies or other special circumstances, this advance notice may be waived by the Director.
- 1.10 OVERTIME WORK AND OVERNIGHT WORK .1 No overtime work will be allowed without permission of the Director. Give a minimum forty-eight (48) hours advance notice when overtime work on the construction project is necessary and approved. If overtime work is required because of an emergency such as the completion of a concrete pour or work to make the construction safe and secure, the Contractor shall advise the Director as soon as this condition is known and follow the directions given by the Director. Costs to the Crown for such events may be attributed to the Contractor.
- .2 When overtime work, weekend, or statutory holiday work is required and approved by the Director, extra staff members may be posted by the Director or his/her designate, to maintain the security surveillance. The Departmental Representative may post extra staff for inspection of construction activities. The actual cost of this extra staff may be subject to reclamation by the Crown.
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1.11 TOOLS AND  
EQUIPMENT

- .1 Maintain a complete list of all tools and equipment to be used during the construction project. Make this inventory available for inspection when required.
  - .2 Throughout the construction project maintain up-to-date the list of tools and equipment specified above.
  - .3 Keep all tools and equipment under constant supervision, particularly power-driven and cartridge-driven tools, cartridges, files, saw blades, rod saws, wire, rope, ladders and any sort of jacking device.
  - .4 Store all tools and equipment in approved secure locations.
  - .5 Lock all tool boxes when not in use. Keys to remain in the possession of the employees of the Contractor. Scaffolding shall be secured and locked when not erected and when erected, will be secured in a manner agreed upon with the Institutional designate.
  - .6 All missing or lost tools or equipment shall be reported immediately to the Director.
  - .7 The Director will ensure that the security staff members carry out checks of the Contractor's tools and equipment against the list provided by the Contractor. These checks may be carried out at the following intervals:
    - .1 At the beginning and conclusion of every construction project.
    - .2 Weekly, when the construction project extends longer than a one week period.
    - .3 The Contractor may be subject to random checks by security staff to ensure proper storage and security of tools throughout the project.
  - .8 Certain tools/equipment such as cartridges and hacksaw blades are highly controlled items. The Contractor will be given at the beginning of the day, a quantity that will permit one day's work. Used blades/cartridges will be returned to the Director's representative at the end of each day.
  - .9 If propane or natural gas is used for heating the construction, the Institution will require
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- 1.11 TOOLS AND EQUIPMENT  
(Cont'd)
- .9 (Cont'd)  
that an employee of the Contractor supervise the construction site during non-working hours.
- .10 If torches or grinders are required tools to perform Work, Contractor must complete a Hot Work Permit as supplied by CSC. Completed original form(s) are copied and posted on the work site in a conspicuous location. Original documents are to remain with the Institutional Fire Chief.
- 1.12 KEYS
- .1 Security Hardware Keys:  
.1 The Contractor shall arrange with the security hardware supplier/installer to have the keys for the security hardware to be delivered directly to Institution, specifically the Security Maintenance Officer (SMO).  
.2 The Security Maintenance Officer (SMO) will provide a receipt to the Contractor for security hardware keys.  
.3 The Contractor will provide a copy of the above-mentioned receipt to the Departmental Representative.
- .2 Other Keys:  
.1 The Contractor will use standard construction cylinders for locks for his/her use during the construction period.  
.2 The Contractor will issue instructions to his/her employees and sub-trades, as necessary, to ensure safe custody of the construction set of keys.  
.3 Upon completion of each phase of the construction, the CSC representative will, in conjunction with the lock manufacturer:  
.1 Prepare an operational keying schedule.  
.2 Accept the operational keys and cylinders directly from the lock manufacturer  
.3 Arrange for removal and return of the construction cores and install the operational core in all locks.
- .3 Upon putting operational security keys into use, the CSC construction escort shall obtain these keys as they are required from the Security Maintenance Officer (SMO) and open doors as required by the Contractor. The
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- 1.16 CONTRABAND      .3      (Cont'd)  
(Cont'd)      result in cancellation of the security clearance of the affected employee. Serious infractions may result in the removal of the company from the Institution for the duration of the construction.
- .4      Presence of arms and ammunition in vehicles of Contractors, sub-contractors and suppliers or employees of these will result in the immediate cancellation of security clearances for the driver of the vehicle.
- 1.17 SEARCHES      .1      All vehicles and persons entering Institutional property may be subject to search.
- .2      When the Director suspects, on reasonable grounds, that an employee of the Contractor is in possession of Contraband or unauthorized items, he/she may order that person to be searched.
- .3      All employees entering the Institution may be subject to screening of personal effects for traces of Contraband drug residue.
- 1.18 ACCESS TO AND      .1      Construction personnel and commercial vehicles  
REMOVAL FROM      will not be admitted to the Institution after  
INSTITUTION      normal working hours, unless approved by the  
PROPERTY      Director.
- 1.19 MOVEMENT OF      .1      Escorted commercial vehicles will be allowed to  
VEHICLES      enter or leave the Institution through the  
                                 vehicle access gate during the following hours:  
                                 .1      07:45 a.m. to 11:55 a.m.  
                                 .2      12:30 p.m. to 3:30 p.m.
- .2      Construction vehicles shall not leave the Institution until an inmate count is completed.
- .3      The Contractor shall advise the Director forty-eight (48) hours in advance to the arrival on the site of heavy equipment such as concrete trucks, cranes, etc.
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- 1.19 MOVEMENT OF VEHICLES  
(Cont'd)
- .4 Vehicles being loaded with soil or other debris, or any vehicle considered impossible to search, must be under continuous supervision by CSC Staff or Commissionaires working under the authority of the Director.
  - .5 Commercial Vehicles will only be allowed access to Institutional Property when their contents are certified by the Contractor or his/her representative as being strictly necessary to the execution of the construction project.
  - .6 Vehicles shall be refused access to Institutional Property if, in the opinion of the Director, they contain any article which may jeopardize the security of the Institution.
  - .7 Private vehicles of Construction Employees will not be allowed within the security wall or fence of medium or maximum security Institutions without the permission of the Director.
  - .8 With prior approval of the Director, a vehicle may be used in the morning and evening to transport a group of employees to the work site. This vehicle will not remain within the Institution the remainder of the day.
  - .9 With the approval of the Director, certain equipment may be permitted to remain on the construction site overnight or over the weekend. This equipment must be securely locked, with the battery removed. The Director may require that the equipment be secured with a chain and padlock to another solid object.
- 1.20 MOVEMENT OF CONSTRUCTION EMPLOYEES ON INSTITUTIONAL PROPERTY  
PROPERTY
- .1 Subject to the requirements of good security, the Director will permit the Contractor and his/her employees as much freedom of action and movement as is possible.
  - .2 However, notwithstanding paragraph above, the Director may:
    - .1 Prohibit or restrict access to any part of the Institution.
    - .2 Require that in certain areas of the Institution, either during the entire construction project or at certain intervals, Construction Employees only be allowed access
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1.20 MOVEMENT OF .2 (Cont'd)  
CONSTRUCTION .2 (Cont'd)  
EMPLOYEES ON when accompanied by a member of the CSC security  
INSTITUTIONAL staff.  
PROPERTY  
(Cont'd) .3

During the lunch and coffee/health breaks, all employees will remain within the construction site. Employees are not permitted to eat in the officer's lounge and dining room.

1.21 SURVEILLANCE .1 Construction activities and all related  
AND INSPECTION movement of personnel and vehicles will be  
subject to surveillance and inspection by CSC  
security staff members to ensure that  
established security requirements are met.

.2 CSC staff members will ensure that an understanding of the need to carry out surveillance and inspections, as specified above, is established among Construction Employees and maintained throughout the construction project.

1.22 STOPPAGE OF .1 The Director may request at any time that the  
WORK Contractor, his/her employees, sub-contractors  
and their employees not enter or leave the work  
site immediately due to a security situation  
occurring within the Institution. The  
Contractor's site supervisor shall note the name  
of the staff member making the request and the  
time of the request and obey the order as  
quickly as possible.

.2 The Contractor shall advise the Departmental Representative within 24 hours of this delay to the progress of the work.

1.23 CONTACT WITH .1 Unless specifically authorized, it is forbidden  
INMATES to come into contact with inmates, to talk with  
them, to receive objects from them or to give  
them objects. Any employee doing any of the  
above will be removed from the site and his/her  
security clearance revoked.

.2 It is forbidden to take pictures of inmates, of CSC staff members or of any part of the

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1.23 CONTACT WITH .2 (Cont'd)  
INMATES  
(Cont'd) Institution other than those required as part of  
this Contract.

1.24 COMPLETION OF .1  
CONSTRUCTION  
PROJECT Upon completion of the construction project or,  
when applicable, the takeover of a facility, the  
Contractor shall remove all remaining  
construction material, tools and equipment that  
are not specified to remain in the Institution  
as part of the construction contract.

PART 1 - GENERAL

1.1 REFERENCES

- .1 National Building Code 2010 (NBC):
  - .1 NBC 2010, Division B, Part 8 Safety Measures at Construction and Demolition Sites.
- .2 National Fire Code 2010 (NFC):
  - .1 NFC 2010, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.
- .3 Province of Ontario:
  - .1 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended.
  - .2 O. Reg. 490/09, Designated Substances.
  - .3 Workplace Safety and Insurance Act, 1997.
  - .4 Municipal statutes and authorities.
- .4 Treasury Board of Canada Secretariat (TBS):
  - .1 Treasury Board, Fire Protection Standard April 1, 2010 [www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316&section=text](http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=17316&section=text).
- .5 Fire Commissioner of Canada (FCC):
  - .1 FC-301 Standard for Construction Operations, June 1982.
  - .2 FC-302 Standard for Welding and Cutting, June 1982.

1.2 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00.
  - .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
    - .1 Results of site specific safety hazard assessment.
    - .2 Results of safety and health risk or hazard analysis for site tasks and operations.
    - .3 Measures and controls to be implemented to address identified safety hazards and risks.
    - .4 Provide a Fire Safety Plan, specific to the work location, in accordance with NBC, Division B, Article 8.1.1.3 prior to commencement of work. The plan shall be
-



1.2 SUBMITTALS  
(Cont'd)

- .2 (Cont'd)
- .4 (Cont'd)  
coordinated with, and integrated into, the existing Institution's Emergency Procedures and Evacuation Plan in place at the site. Departmental Representative will provide Institution's Emergency Procedures and Evacuation Plan. Deliver two copies of the Fire Safety Plan to the Departmental Representative not later than 14 days before commencing work.
- .5 Contractor's and Sub-contractors' Safety Communication Plan.
- .6 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations. Coordinate plan with existing Institution's Emergency Response requirements and procedures provided by Departmental Representative.
- .3 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 7 days after receipt of comments from Departmental Representative.
- .4 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .5 Submit names of personnel and alternates responsible for site safety and health.
- .6 Submit records of Contractor's Health and Safety meetings when requested.
- .7 Submit 3 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.
- .8 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.
- .9 Submit copies of incident and accident reports.
- .10 Submit Material Safety Data Sheets (MSDS).
-

- 1.2 SUBMITTALS  
(Cont'd)
- .11 Submit Workplace Safety and Insurance Board (WSIB)- Experience Rating Report.
- 1.3 FILING OF NOTICE
- .1 File Notice of Project with Provincial authorities prior to commencement of Work.
- 1.4 WORK PERMIT
- .1 Obtain building permits related to project prior to commencement of Work.
- .2 Obtain 'Permit to Work Form' from Department Representative.
- .3 Obtain Hot Work Permit from Department Representative.
- 1.5 SAFETY ASSESSMENT
- .1 Perform site specific safety hazard assessment related to project.
- 1.6 MEETINGS
- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.
- 1.7 REGULATORY REQUIREMENTS
- .1 Comply with the Acts and regulations of the Province of Ontario.
- .2 Comply with specified standards and regulations to ensure safe operations at site.
- 1.8 PROJECT/SITE CONDITIONS
- .1 Work at site will involve contact with:
- .1 Silica in concrete and/or concrete block, concrete brick, stucco, ceramic tile.
  - .2 Asbestos in pipe covering.
  - .3 Lead in paint.
-

1.9 GENERAL  
REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.
- .3 Relief from or substitution for any portion or provision of minimum Health and Safety standards specified herein or reviewed site-specific Health and Safety Plan shall be submitted to Departmental Representative in writing.

1.10 COMPLIANCE  
REQUIREMENTS

- .1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990 Chapter 0.1, as amended.

1.11 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act for the Province of Ontario.

1.12 UNFORSEEN  
HAZARDS

- .1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise Departmental Representative verbally and in writing.
-

1.12 UNFORSEEN HAZARDS  
(Cont'd) .2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.

1.13 HEALTH AND SAFETY CO-ORDINATOR .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:  
.1 Have working knowledge of occupational safety and health regulations.  
.2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.  
.3 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.  
.4 Be on site during execution of Work and report directly to and be under direction of site supervisor.

1.14 POSTING OF DOCUMENTS .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province of Ontario, and in consultation with Departmental Representative.  
.1 Contractor's Safety Policy.  
.2 Constructor's Name.  
.3 Notice of Project.  
.4 Name, trade, and employer of Health and Safety Representative or Joint Health and Safety Committee members (if applicable).  
.5 Ministry of Labour Orders and reports.  
.6 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.  
.7 Address and phone number of nearest Ministry of Labour office.  
.8 Material Safety Data Sheets.  
.9 Written Emergency Response Plan.  
.10 Site Specific Safety Plan.  
.11 Valid certificate of first aider on duty.  
.12 WSIB "In Case of Injury At Work" poster.  
.13 Location of toilet and cleanup facilities.

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- 1.15 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 may stop Work if non-compliance of health and safety regulations is not corrected.
- 1.16 BLASTING
- .1 Blasting or other use of explosives is not permitted.
- 1.17 WORK STOPPAGE
- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.
  - .2 Assign responsibility and obligation to Health and Safety Coordinator to stop or start Work when, at Health and Safety Coordinator's discretion, it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

PART 1 - GENERAL

1.1 REFERENCE  
STANDARDS

- .1 U.S. Environmental Protection Agency (EPA)/Office of Water
  - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.
  - .2 EPA General Construction Permit (GCP) 2012.

1.2 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.3 ACTION AND  
INFORMATIONAL  
SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Product Data:
    - .1 Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
    - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29 - Health and Safety Requirements 01 35 43 - Environmental Procedures.
  - .3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.
  - .4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
-

1.3 ACTION AND  
INFORMATIONAL  
SUBMITTALS  
(Cont'd)

- .5 Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .6 Include in Environmental Protection Plan:
  - .1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.
  - .2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
  - .3 Names and qualifications of persons responsible for training site personnel.
  - .4 Descriptions of environmental protection personnel training program.
  - .5 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
    - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
  - .6 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
  - .7 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
  - .8 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
  - .9 Waste Water Management Plan identifying methods and procedures for management and/ or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, hydrostatic test water, and water used in flushing of lines.
  - .10 Pesticide treatment plan to be included and updated, as required.

1.4 FIRES

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

- 1.5 NOTIFICATION
- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
  - .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
    - .1 Take action only after receipt of written approval by Departmental Representative.
  - .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
  - .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

PART 3 - EXECUTION

- 3.1 CLEANING
- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
    - .1 Leave Work area clean at end of each day.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
  - .3 Waste Management: separate waste materials for reuse and recycling.
    - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.



PART 1 - GENERAL

- 1.1 REFERENCES TO REGULATORY REQUIREMENTS .1 Perform Work in accordance with 2015 National Building Code of Canada (NBC), and Ontario Building Code (OBC), including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:  
.1 Contract documents.  
.2 Specified standards, codes and referenced documents.
- 1.2 HAZARDOUS MATERIAL DISCOVERY .1 Stop work immediately and notify Department Representative if materials which may contain designated substances or PCB's, other than those previously identified are discovered in the course of the work.
- 1.3 BUILDING SMOKING ENVIRONMENT .1 Comply with smoking restrictions and municipal by-laws.
- 1.4 TAXES .1 Pay applicable Federal, Provincial and Municipal taxes.
- 1.5 EXAMINATION .1 Examine existing conditions and determine conditions affecting work.

PART 1 - GENERAL

1.1 ACTION AND  
INFORMATIONAL  
SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
  - .1 Structural integrity of elements of project.
  - .2 Integrity of weather-exposed or moisture-resistant elements.
  - .3 Efficiency, maintenance, or safety of operational elements.
  - .4 Visual qualities of sight-exposed elements.
  - .5 Work of Owner or separate contractor.
- .3 Include in request:
  - .1 Identification of project.
  - .2 Location and description of affected Work.
  - .3 Statement on necessity for cutting or alteration.
  - .4 Description of proposed Work, and products to be used.
  - .5 Alternatives to cutting and patching.
  - .6 Effect on Work of Owner or separate contractor.
  - .7 Written permission of affected separate contractor.
  - .8 Date and time work will be executed.

1.2 MATERIALS

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

1.3 PREPARATION

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

1.3 PREPARATION  
(Cont'd)

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

1.4 EXECUTION

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

1.4 EXECUTION  
(Cont'd)

- .11 (Cont'd)  
intersection. Refinish assemblies by  
refinishing entire unit.
- .12 Conceal pipes, ducts and wiring in floor,  
wall and ceiling construction of finished  
areas except where indicated otherwise.

1.5 WASTE  
MANAGEMENT AND  
DISPOSAL

- .1 Separate waste materials for reuse and  
recycling.

PART 1 - GENERAL

1.1 PROJECT  
CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
  - .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative . Do not burn waste materials on site.
  - .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
  - .4 Provide on-site containers for collection of waste materials and debris.
  - .5 Provide and use marked separate bins for recycling.
  - .6 Dispose of waste materials and debris off site.
  - .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, and as recommended by cleaning material manufacturer.
  - .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
-

- 1.2 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 Prior to final review remove surplus products, tools, construction machinery and equipment.
  - .4 Remove waste products and debris other than that caused by Owner or other Contractors.
  - .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
  - .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
  - .7 Clean and polish hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures.
  - .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
  - .9 Clean lighting reflectors, lenses, and other lighting surfaces.
  - .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
  - .11 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
  - .12 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
  - .13 Remove dirt and other disfiguration from exterior surfaces.
  - .14 Sweep and wash clean paved areas.
-

- 1.2 FINAL CLEANING (Cont'd)
- .15 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
  - .16 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- 1.3 WASTE MANAGEMENT AND DISPOSAL
- .1 Separate waste materials for reuse and recycling.

PART 1 - GENERAL

1.1 ADMINISTRATIVE  
REQUIREMENTS

- .1 Pre-warranty Meeting:
  - .1 Convene meeting one week prior to contract completion with contractor's representative and Departmental Representative to:
    - .1 Verify Project requirements.
    - .2 Review manufacturer's installation instructions and warranty requirements.
  - .2 Departmental Representative to establish communication procedures for:
    - .1 Notifying construction warranty defects.
    - .2 Determine priorities for type of defects.
    - .3 Determine reasonable response time.
  - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
  - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 ACTION AND  
INFORMATIONAL  
SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four final copies of operating and maintenance manuals in English.
  - .3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
  - .4 Provide evidence, if requested, for type, source and quality of products supplied.
-



- 1.3 FORMAT
- .1 Organize data as instructional manual.
  - .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
  - .3 When multiple binders are used correlate data into related consistent groupings.
    - .1 Identify contents of each binder on spine.
  - .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
  - .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
  - .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
  - .7 Text: manufacturer's printed data, or typewritten data.
  - .8 Drawings: provide with reinforced punched binder tab.
    - .1 Bind in with text; fold larger drawings to size of text pages.
- 1.4 CONTENTS - PROJECT RECORD DOCUMENTS
- .1 Table of Contents for Each Volume: provide title of project;
    - .1 Date of submission; names.
    - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
    - .3 Schedule of products and systems, indexed to content of volume.
  - .2 For each product or system:
    - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
  - .3 Product Data: mark each sheet to identify specific products and component parts, and
-



1.6 RECORDING  
INFORMATION ON  
PROJECT RECORD  
DOCUMENTS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
  - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - .2 Field changes of dimension and detail.
  - .3 Changes made by change orders.
  - .4 Details not on original Contract Drawings.
  - .5 Referenced Standards to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.7 EQUIPMENT AND  
SYSTEMS

- .1 For each item of equipment and each system include description of unit or system, and component parts.
    - .1 Give function, normal operation characteristics and limiting conditions.
-

1.7 EQUIPMENT AND .1  
SYSTEMS  
(Cont'd)

- .1 (Cont'd)
  - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
  - .1 Include regulation, control, stopping, shut-down, and emergency instructions.
  - .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .13 Include test and balancing reports.

- 1.7 EQUIPMENT AND SYSTEMS  
(Cont'd)
- .14 Additional requirements: as specified in individual specification sections.
- 1.8 MATERIALS AND FINISHES
- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.  
.1 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.
- 1.9 MAINTENANCE MATERIALS
- .1 Spare Parts:  
.1 Provide spare parts, in quantities specified in individual specification sections.  
.2 Provide items of same manufacture and quality as items in Work.  
.3 Deliver to location as directed; place and store.  
.4 Receive and catalogue items.  
.1 Submit inventory listing to Departmental Representative.  
.2 Include approved listings in Maintenance Manual.  
.5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:  
.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.  
.2 Provide items of same manufacture and quality as items in Work.
-

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- 1.9 MAINTENANCE .2 Extra Stock Materials:(Cont'd)  
MATERIALS .3 Deliver to location as directed; place  
(Cont'd) and store.  
.4 Receive and catalogue items.  
.1 Submit inventory listing to  
Departmental Representative DCC  
Representative Consultant.  
.2 Include approved listings in  
Maintenance Manual.  
.5 Obtain receipt for delivered products  
and submit prior to final payment.
- 1.10 DELIVERY, .1 Store spare parts and maintenance materials,  
STORAGE AND in manner to prevent damage or deterioration.  
HANDLING .2 Store in original and undamaged condition  
with manufacturer's seal and labels intact.  
.3 Remove and replace damaged products at own  
expense and for review by Departmental  
Representative.
- 1.11 WARRANTIES AND .1 Develop warranty management plan to contain  
BONDS information relevant to Warranties.  
.2 Submit warranty management plan, 30 days  
before planned pre-warranty conference, to  
Departmental Representative approval.  
.3 Warranty management plan to include required  
actions and documents to assure that  
Departmental Representative receives  
warranties to which it is entitled.  
.4 Provide plan in narrative form and contain  
sufficient detail to make it suitable for use  
by future maintenance and repair personnel.  
.5 Submit, warranty information made available  
during construction phase, to Departmental  
Representative for approval prior to each  
monthly pay estimate.  
.6 Assemble approved information in binder,  
submit upon acceptance of work and organize  
binder as follows:
-

1.11 WARRANTIES AND .6  
BONDS  
(Cont'd)

(Cont'd)

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- .4 Verify that documents are in proper form, contain full information, and are notarized.
- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittal.
- .7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint 4 month and 9 month warranty inspection, measured from time of acceptance, by Departmental Representative.
- .9 Include information contained in warranty management plan as follows:
  - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
  - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include HVAC balancing, pumps, and motors.
  - .3 Provide list for each warranted equipment, item, feature of construction or system indicating:
    - .1 Name of item.
    - .2 Model and serial numbers.
    - .3 Location where installed.
    - .4 Name and phone numbers of manufacturers or suppliers.
    - .5 Names, addresses and telephone numbers of sources of spare parts.
    - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have





- 1.12 WARRANTY TAGS .4 Indicate following information on tag:  
(Cont'd)
- .1 Type of product/material.
  - .2 Model number.
  - .3 Serial number.
  - .4 Contract number.
  - .5 Warranty period.
  - .6 Inspector's signature.
  - .7 Construction Contractor.

PART 1 - GENERAL

1.1 REFERENCE  
STANDARDS

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- .1 CSA B52, Mechanical Refrigeration Code
- .2 ANSI/ASHRAE 09.1, Energy Standard for Buildings Except Low Rise Residential Buildings
- .3 CSA or ETL certification and labelling for all electrical components.
- .4 CAN/CSA B149, Natural Gas and Propane Code
- .5 CSA C838, Energy Efficiency Test Method for Three-Phase Variable Frequency Drive Systems.

1.2 ACTION AND  
INFORMATIONAL  
SUBMITTALS

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- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Product Data:
    - .1 Submit manufacturer's instructions, printed product literature and data sheets for dehumidifiers and include product characteristics, performance criteria, physical size, finish and limitations.
  - .3 Shop Drawings:
    - .1 Indicate on drawings:
      - .1 Mounting arrangements.
      - .2 Operating and maintenance clearances.
    - .2 Shop drawings and product data accompanied by:
      - .1 Detailed drawings of bases, supports, and anchor bolts.
      - .2 Acoustical sound power data, where applicable.
      - .3 Points of operation on performance curves.
      - .4 Manufacturer to certify current model production.
      - .5 Certification of compliance to applicable codes.
    - .3 In addition to transmittal letter referred to in Section 01 33 00 - Submittal Procedures: use MCAC "Shop Drawing Submittal Title Sheet". Identify section and paragraph number.
-

- 1.3 CLOSEOUT  
SUBMITTALS
- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
  - .2 Operation and Maintenance Data: submit operation and maintenance data for dehumidifiers for incorporation into manual.
    - .1 Operation and maintenance manual approved by, and final copies deposited with, Departmental Representative before final inspection.
    - .2 Operation data to include:
      - .1 Control schematics for systems including environmental controls.
      - .2 Description of systems and their controls.
      - .3 Description of operation of systems at various loads together with reset schedules and seasonal variances.
      - .4 Operation instruction for systems and component.
      - .5 Description of actions to be taken in event of equipment failure.
    - .3 Approvals:
      - .1 Submit 2 copies of draft Operation and Maintenance Manual to Departmental Representative for approval. Submission of individual data will not be accepted unless directed by Departmental Representative.
      - .2 Make changes as required and re-submit as directed by Departmental Representative.
    - .4 Additional data:
      - .1 Prepare and insert into operation and maintenance manual additional data when need for it becomes apparent during specified demonstrations and instructions.
    - .5 Site records:
      - .1 Departmental Representative will provide 1 set of reproducible mechanical drawings. Provide sets of white prints as required for each phase of work. Mark changes as work progresses and as changes occur. Include changes to existing mechanical systems, control systems and low voltage control wiring.
      - .2 Transfer information to reproducibles, revising reproducibles to show work as actually installed.
      - .3 Make available for reference purposes and inspection.
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- 1.3 CLOSEOUT SUBMITTALS (Cont'd) .2 Operation and Maintenance Data:(Cont'd)  
.6 Submit copies of as-built drawings for inclusion in final TAB report.
- 1.4 MAINTENANCE MATERIAL SUBMITTALS .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.  
.2 Furnish spare parts as follows:  
.1 One filter cartridge or set of filter media for each filter or filter bank in addition to final operating set.
- 1.5 DELIVERY, STORAGE AND HANDLING .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.  
.2 Storage and Handling Requirements:  
.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.  
.2 Store and protect from nicks, scratches, and blemishes.  
.3 Replace defective or damaged materials with new.

PART 2 - EXECUTION

- 2.1 EXAMINATION .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for installation in accordance with manufacturer's written instructions.  
.1 Visually inspect substrate in presence of Departmental Representative.  
.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.  
.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
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- 2.2 PAINTING REPAIRS AND RESTORATION .1 Prime and touch up marred finished paintwork to match original.
- .2 Restore to new condition, finishes which have been damaged.
- 2.3 SYSTEM CLEANING .1 Clean interior and exterior of all systems including strainers. Vacuum interior of ductwork and air handling units.
- 2.4 DEMONSTRATION .1 Departmental Representative will use equipment and systems for test purposes prior to acceptance. Supply labour, material, and instruments required for testing.
- .2 Trial usage to apply to following equipment and systems:  
.1 Dehumidifier.
- .3 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .4 Use operation and maintenance manual, as-built drawings, and audio visual aids as part of instruction materials.
- 2.5 CLEANING .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.  
.1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- 2.6 PROTECTION .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

PART 1 - GENERAL

- 1.1 SUMMARY
- .1 Section Includes:
    - .1 Control wiring and conduit is specified in Division 26 except for conduit, wiring and connections below 50 V which are related to control systems specified in Division 22 and 23. Refer to Division 26 for quality of materials and workmanship.
  - .2 Related Requirements
    - .1 Section 23 05 00.
- 1.2 REFERENCE STANDARDS
- .1 American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE)
    - .1 ASHRAE 90.1-01, Energy Standard for Buildings Except Low-Rise Residential Buildings (IESNA cosponsored; ANSI approved; Continuous Maintenance Standard).
  - .2 Electrical Equipment Manufacturers' Association Council (EEMAC)
  - .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
    - .1 Material Safety Data Sheets (MSDS).
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Closeout Submittals
    - .1 Provide maintenance data for motors and drives for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- 1.4 QUALITY ASSURANCE
- .1 Regulatory Requirements: work to be performed in compliance with applicable Provincial regulations.
  - .2 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29 - Health and Safety Requirements.
-

1.5 DELIVERY,  
STORAGE, AND  
HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 GENERAL

.1 Motors: high efficiency, in accordance with local Hydro company standards and to ASHRAE 90.1.

2.2 MOTORS

- .1 Provide motors for mechanical equipment as specified.
- .2 Motors under 373 W 1/2 HP: speed as indicated, continuous duty, built-in overload protection, resilient mount, single phase, 120 V, unless otherwise specified or indicated.
- .3 Motors 373 W 1/2 HP and larger: EEMAC Class B, squirrel cage induction, speed as indicated, continuous duty, drip proof, ball bearing, maximum temperature rise 40 degrees C, 3 phase, 600 V, unless otherwise indicated.

2.3 TEMPORARY  
MOTORS

.1 If delivery of specified motor will delay completion or commissioning work, install motor approved by Departmental Representative for temporary use. Work will only be accepted when specified motor is installed.

2.4 BELT DRIVES

- .1 Fit reinforced belts in sheave matched to drive. Multiple belts to be matched sets.
- .2 Use cast iron or steel sheaves secured to shafts with removable keys unless otherwise indicated.
- .3 For motors under 7.5 kW 10 HP: standard adjustable pitch drive sheaves, having plus or
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- 2.4 BELT DRIVES (Cont'd)
- .3 For motors under 7.5 kW 10 HP: (Cont'd) minus 10% range. Use mid-position of range for specified r/min.
  - .4 For motors 7.5 kW 10 HP and over: sheave with split tapered bushing and keyway having fixed pitch unless specifically required for item concerned. Provide sheave of correct size to suit balancing.
  - .5 Correct size of sheave determined during commissioning.
  - .6 Minimum drive rating: 1.5 times nameplate rating on motor. Keep overhung loads within manufacturer's design requirements on prime mover shafts.
  - .7 Motor slide rail adjustment plates to allow for centre line adjustment.
  - .8 Supply one set of spare belts for each set installed in accordance with Section 01 78 00 - Closeout Submittals.
- 2.5 DRIVE GUARDS
- .1 Provide guards for unprotected drives.
  - .2 Guards for belt drives;
    - .1 Expanded metal screen welded to steel frame.
    - .2 Minimum 1.2 mm thick sheet metal tops and bottoms.
    - .3 38 mm dia holes on both shaft centres for insertion of tachometer.
    - .4 Removable for servicing.
  - .3 Provide means to permit lubrication and use of test instruments with guards in place.
  - .4 Install belt guards to allow movement of motors for adjusting belt tension.
  - .5 Guard for flexible coupling:
    - .1 "U" shaped, minimum 1.6 mm thick galvanized mild steel.
    - .2 Securely fasten in place.
    - .3 Removable for servicing.
-



- 2.5 DRIVE GUARDS      .6    Unprotected fan inlets or outlets:  
(Cont'd)
- .1    Wire or expanded metal screen, galvanized, 19 mm mesh.
  - .2    Net free area of guard: not less than 80% of fan openings.
  - .3    Securely fasten in place.
  - .4    Removable for servicing.

PART 3 - EXECUTION

- 3.1 MANUFACTURER'S INSTRUCTIONS      .1    Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

- 3.2 INSTALLATION      .1    Fasten securely in place.
- .2    Make removable for servicing, easily returned into, and positively in position.

- 3.3 CLEANING      .1    Proceed in accordance with Section 01 74 11 - Cleaning.
- .2    Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS
- .1 Section 23 05 00.
- 1.2 REFERENCE STANDARDS
- .1 American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- .2 ASTM International
- .1 ASTM A 480/A 480M-12, Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.
- .2 ASTM A 635/A 635M-09b, Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Alloy, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, General Requirements for.
- .3 ASTM A 653/A 653M-11, Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- .3 National Fire Protection Association (NFPA)
- .1 NFPA 90A-12, Standard for the Installation of Air-Conditioning and Ventilating Systems.
- .2 NFPA 90B-12, Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.
- .3 NFPA 96-11, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations.
- .4 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)
- .1 SMACNA HVAC Duct Construction Standards - Metal and Flexible, 2005.
- .2 SMACNA HVAC Air Duct Leakage Test Manual, 2012.
- .3 IAQ Guideline for Occupied Buildings Under Construction 2007.
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- 1.2 REFERENCE STANDARDS (Cont'd)
- .5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards  
.1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- 1.4 DELIVERY, STORAGE AND HANDLING
- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:  
.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.  
.2 Store and protect metal ducts from nicks, scratches, and blemishes.  
.3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return of pallets, crates, padding, and packaging materials.

PART 2 - PRODUCTS

2.1 SEAL CLASSIFICATION

.1 Classification as follows:

Maximum Pressure Pa	SMACNA Seal Class
500	C
250	C
125	C
125	Unsealed

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- 2.1 SEAL CLASSIFICATION (Cont'd) .2 Seal classification:
- .1 Class A: longitudinal seams, transverse joints, duct wall penetrations and connections made airtight with sealant and tape.
  - .2 Class B: longitudinal seams, transverse joints and connections made airtight with sealant tape or combination thereof.
  - .3 Class C: transverse joints and connections made air tight with gaskets sealant tape or combination thereof. Longitudinal seams unsealed.
  - .4 Unsealed seams and joints.
- 2.2 SEALANT .1 Sealant: oil resistant, water borne, polymer type flame resistant duct sealant. Temperature range of minus 30 degrees C to plus 93 degrees C.
- 2.3 TAPE .1 Tape: polyvinyl treated, open weave fiberglass tape, 50 mm wide.
- 2.4 DUCT LEAKAGE .1 In accordance with SMACNA HVAC Air Duct Leakage Test Manual.
- 2.5 FITTINGS .1 Fabrication: to SMACNA.
- .2 Radiused elbows:
    - .1 Rectangular: standard radius short radius with single thickness turning vanes centreline radius: 1.5 times width of duct
    - .
    - .2 Round: smooth radius five piece, centreline radius: 1.5 times diameter.
  - .3 Mitred elbows, rectangular:
    - .1 To 400 mm: with single double thickness turning vanes.
    - .2 Over 400 mm: with double thickness turning vanes.
  - .4 Branches:
-

- 2.5 FITTINGS  
(Cont'd)
- .4 Branches: (Cont'd)
    - .1 Rectangular main and branch: with radius on branch 1.5 times width of duct 45 degrees entry on branch.
    - .2 Round main and branch: enter main duct at 45 degrees with conical connection.
    - .3 Provide volume control damper in branch duct near connection to main duct.
    - .4 Main duct branches: with splitter damper.
  - .5 Transitions:
    - .1 Diverging: 20 degrees maximum included angle.
    - .2 Converging: 30 degrees maximum included angle.
  - .6 Offsets:
    - .1 Full Short radiused elbows as indicated.
  - .7 Obstruction deflectors: maintain full cross-sectional area.
    - .1 Maximum included angles: as for transitions.
- 2.6 FIRE STOPPING
- .1 Retaining angles around duct, on both sides of fire separation.
  - .2 Fire stopping material and installation must not distort duct.
- 2.7 GALVANIZED STEEL
- .1 Lock forming quality: to ASTM A 653/A 653M, Z90 zinc coating.
  - .2 Thickness, fabrication and reinforcement: to ASHRAE SMACNA.
  - .3 Joints: to ASHRAE SMACNA proprietary manufactured duct joint. Proprietary manufactured flanged duct joint to be considered to be a class A seal.
- 2.8 STAINLESS STEEL
- .1 To ASTM A 480/A 480M, Type 304.
  - .2 Finish: number 4.
-

2.8 STAINLESS STEEL (Cont'd) .3 Thickness, fabrication and reinforcement: to ASHRAE SMACNA as indicated.

.4 Joints: to ASHRAE and SMACNA be continuous inert gas welded.

2.9 ALUMINUM .1 To ASHRAE and SMACNA. Aluminum type: 3003-H-14.

.2 Thickness, fabrication and reinforcement: to ASHRAE SMACNA as indicated.

.3 Joints: to ASHRAE SMACNA be continuous weld.

2.10 BLACK STEEL .1 To ASTM A 635/A 635M.

.2 Thickness: 1.2 mm or as indicated.

.3 Fabrication: ducts and fittings to ASHRAE SMACNA.

.4 Reinforcement: as indicated.

.5 Joints: continuous weld.

2.11 HANGERS AND SUPPORTS .1 Hangers and Supports:

.1 Strap hangers: of same material as duct but next sheet metal thickness heavier than duct.

.1 Maximum size duct supported by strap hanger: 500.

.2 Hanger configuration: to ASHRAE and SMACNA.

.3 Hangers: black galvanized steel angle with black galvanized steel rods to ASHRAE and SMACNA following table:

Duct Size (mm)	Angle Size (mm)	Rod Size (mm)
up to 750	25 x 25 x 3	6
751 to 1050	40 x 40 x 3	6
1051 to 1500	40 x 40 x 3	10
1501 to 2100	50 x 50 x 3	10
2101 to 2400	50 x 50 x 5	10
2401 and over	50 x 50 x 6	10

- 2.11 HANGERS AND SUPPORTS  
(Cont'd)
- .1 (Cont'd)
  - .4 Upper hanger attachments:
    - .1 For concrete: manufactured concrete inserts.
    - .2 For steel joist: manufactured joist clamp steel plate washer.
    - .3 For steel beams: manufactured beam clamps:

PART 3 - EXECUTION

- 3.1 EXAMINATION
- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for metal duct installation in accordance with manufacturer's written instructions.
    - .1 Visually inspect substrate in presence of Departmental Representative.
    - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
    - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- 3.2 GENERAL
- .1 Do work in accordance with ASHRAE as indicated.
  - .2 Do not break continuity of insulation vapour barrier with hangers or rods.
    - .1 Insulate strap hangers 100 mm beyond insulated duct. Ensure diffuser is fully seated.
  - .3 Support risers in accordance with ASHRAE SMACNA as indicated.
  - .4 Install breakaway joints in ductwork on sides of fire separation.
  - .5 Install proprietary manufactured flanged duct joints in accordance with manufacturer's instructions.
-

- 3.2 GENERAL (Cont'd) .6 Manufacture duct in lengths and diameter to accommodate installation of acoustic duct lining.
- 3.3 HANGERS .1 Strap hangers: install in accordance with SMACNA.
- .2 Angle hangers: complete with locking nuts and washers.
- .3 Hanger spacing: in accordance with ASHRAE SMACNA as follows:
- | Duct Size<br>(mm) | Spacing<br>(mm) |
|-------------------|-----------------|
| to 1500           | 3000            |
| 1501 and over     | 2500            |
- 3.4 WATERTIGHT DUCT .1 Provide watertight duct for:
- .1 Dishwasher exhaust.
  - .2 Fresh air intake.
  - .3 Minimum 3000 mm from duct mounted humidifier in all directions.
  - .4 As indicated.
- .2 Form bottom of horizontal duct without longitudinal seams.
- .1 SolderWeld joints of bottom and side sheets.
  - .2 Seal other joints with duct sealer.
- .3 Slope horizontal branch ductwork down towards fume hoods served.
- .1 Slope header ducts down toward risers.
- .4 Fit base of riser with 150 mm deep drain sump and 32 mm drain connected, with deep seal trap and valve trap primer and discharging to open funnel drain as indicated.
- 3.5 SEALING AND TAPING .1 Apply sealant in accordance with and to manufacturer's recommendations.
- .2 Bed tape in sealant and recoat with minimum of 1 coat of sealant to manufacturers recommendations.



- 3.6 CLEANING
- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
    - .1 Leave Work area clean at end of each day.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
  - .3 Waste Management: separate waste materials for reuse and recycling.
    - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS .1 Section 23 05 00.
- 1.2 REFERENCE STANDARDS .1 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)  
.1 SMACNA - HVAC Duct Construction Standards - Metal and Flexible, 2005.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.  
.2 Product Data:  
.1 Submit manufacturer's instructions, printed product literature and data sheets for air duct accessories and include product characteristics, performance criteria, physical size, finish and limitations.  
.2 Indicate:  
.1 Flexible connections.  
.2 Duct access doors.  
.3 Turning vanes.  
.4 Instrument test ports.
- 1.4 DELIVERY, STORAGE AND HANDLING .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.  
.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.  
.3 Storage and Handling Requirements:  
.1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.  
.2 Store and protect air duct accessories from nicks, scratches, and blemishes.  
.3 Replace defective or damaged materials with new.
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1.4 DELIVERY, STORAGE AND HANDLING (Cont'd) .4 Packaging Waste Management: remove for reuse and return of pallets, crates, padding, and packaging materials.

PART 2 - PRODUCTS

2.1 GENERAL .1 Manufacture in accordance with SMACNA - HVAC Duct Construction Standards.

2.2 FLEXIBLE CONNECTIONS .1 Frame: galvanized sheet metal frame mm thick with fabric clenched by means of double locked seams.  
.2 Material:  
.1 Fire resistant, self extinguishing, neoprene coated glass fabric, temperature rated at minus 40 degrees C to plus 90 degrees C, density of 1.3 kg/m<sup>2</sup>.

2.3 ACCESS DOORS IN DUCTS .1 Non-Insulated Ducts: sandwich construction of same material as duct, one sheet metal thickness heavier, minimum 0.6 mm thick complete with sheet metal angle frame.  
.2 Gaskets: neoprene foam rubber.  
.3 Hardware:  
.1 Up to 300 x 300 mm: two sash locks complete with safety chain.  
.2 301 to 450 mm: four sash locks complete with safety chain.  
.3 451 to 1000 mm: piano hinge and minimum two sash locks.  
.4 Doors over 1000 mm: piano hinge and two handles operable from both sides.  
.5 Hold open devices.  
.6 300 x 300 mm glass viewing panels.

2.4 TURNING VANES .1 Factory or shop fabricated single thickness double thickness with without trailing edge, to recommendations of SMACNA and as indicated.

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- 2.5 INSTRUMENT TEST .1 1.6 mm thick steel zinc plated after manufacture.
- .2 Cam lock handles with neoprene expansion plug and handle chain.
- .3 28 mm minimum inside diameter. Length to suit insulation thickness.
- .4 Neoprene mounting gasket.
- 2.6 SPIN-IN COLLARS .1 Conical galvanized sheet metal spin-in collars with lockable butterfly damper.
- .2 Sheet metal thickness to co-responding round duct standards.

PART 3 - EXECUTION

- 3.1 EXAMINATION .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for air duct accessories installation in accordance with manufacturer's written instructions.
- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.
- 3.2 INSTALLATION .1 Flexible Connections:
- .1 Install in following locations:
- .1 Inlets and outlets to supply air units and fans.
- .2 Inlets and outlets of exhaust and return air fans.
- .3 As indicated.
- .2 Length of connection: 100 mm.
- .3 Minimum distance between metal parts when system in operation: 75 mm.
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- 3.2 INSTALLATION .1 (Cont'd)
- (Cont'd)
- .4 Install in accordance with recommendations of SMACNA.
  - .5 When fan is running:
    - .1 Ducting on sides of flexible connection to be in alignment.
    - .2 Ensure slack material in flexible connection.
  - .2 Turning Vanes:
    - .1 Install in accordance with recommendations of SMACNA and as indicated.
- 3.3 CLEANING .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .1 Leave Work area clean at end of each day.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
  - .3 Waste Management: separate waste materials for reuse and recycling.

PART 1 - GENERAL

- 1.1 REFERENCE STANDARDS
- .1 CSA Group
    - .1 CSA C22.1-2015, Canadian Electrical Code, Part 1 (26th Edition), Safety Standard for Electrical Installations.
    - .2 CSA C22.2 No.0-10, R2015.
  - .2 Institute of Electrical and Electronics (IEEE)/National Electrical Safety Code Product Line (NESC)
    - .1 IEEE SP1122-2000, The Authoritative Dictionary of IEEE Standards Terms, 7th Edition.
- 1.2 DEFINITIONS
- .1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Product Data:
    - .1 Submit manufacturer's instructions, printed product literature and data sheets for circuit breakers and disconnect switches and include product characteristics, performance criteria, physical size, finish and limitations.
  - .3 Shop drawings:
    - .1 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
    - .2 Indicate of drawings clearances for operation, maintenance, and replacement of operating equipment devices.
    - .3 Submit electronic copies of product data to Departmental Representative.
    - .4 If changes are required, notify Departmental Representative of these changes before they are made.
-



PART 2 - PRODUCTS

- 2.1 DESIGN REQUIREMENTS
- .1 Operating voltages: to CAN3-C235.
  - .2 Motors, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.
- 2.2 MATERIALS AND EQUIPMENT
- .1 Provide material and equipment.
  - .2 Material and equipment to be CSA certified.
  - .3 Factory assemble control panels and component assemblies.
- 2.3 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS
- .1 Verify installation and co-ordination responsibilities related to motors, equipment and controls, as indicated.
  - .2 Control wiring and conduit: wiring and connections below 50 V which are related to control systems are specified in mechanical sections.
- 2.4 WARNING SIGNS
- .1 Warning Signs: in accordance with requirements of Departmental Representative.
  - .2 Decal signs, minimum size 175 x 250 mm.
- 2.5 WIRING TERMINATIONS
- .1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.
- 2.6 EQUIPMENT IDENTIFICATION
- .1 Identify electrical equipment with nameplates and labels as follows:
    - .1 Nameplates: plastic laminate 3 mm thick plastic engraving sheet , black face, white core, lettering accurately aligned and
-



2.6 EQUIPMENT  
IDENTIFICATION  
(Cont'd)

- .1 (Cont'd)  
.1 Nameplates: (Cont'd)  
engraved into core mechanically attached with  
self tapping screws.  
.2 Sizes as follows:

NAMEPLATE SIZES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

- .2 Labels: embossed plastic labels with 6 mm  
high letters unless specified otherwise.
- .3 Wording on nameplates and labels to be  
approved by Departmental Representative prior  
to manufacture.
- .4 Allow for minimum of twenty-five (25) letters  
per nameplate and label.
- .5 Nameplates for disconnect switches to  
indicate system and/or voltage  
characteristics.
- .6 Identify equipment with Size 3 labels  
engraved "ASSET INVENTORY NO. \*TBD\* " as  
directed by Departmental Representative.
- .7 Disconnects, starters and contactors:  
indicate equipment being controlled and  
voltage.

- 2.7 WIRING IDENTIFICATION
- .1 Identify wiring with permanent indelible identifying markings, coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
  - .2 Maintain phase sequence and colour coding throughout.
  - .3 Colour coding: to CSA C22.1.
  - .4 Use colour coded wires in communication cables, matched throughout system.

- 2.8 FINISHES
- .1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two coats of finish enamel.
    - .1 Paint indoor switchgear and distribution enclosures light gray.

PART 3 - EXECUTION

- 3.1 INSTALLATION
- .1 Do complete installation in accordance with CSA C22.1 except where specified otherwise.

- 3.2 NAMEPLATES AND LABELS
- .1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

- 3.3 CO-ORDINATION OF PROTECTIVE DEVICES
- .1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

- 3.4 FIELD QUALITY CONTROL
- .1 Conduct following tests:
    - .1 Circuits originating from branch distribution panels.
    - .2 Insulation resistance testing:
      - .1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.
-

- 3.4 FIELD QUALITY CONTROL  
(Cont'd)
- .1 (Cont'd)
  - .2 Insulation resistance testing: (Cont'd)
    - .2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.
    - .3 Check resistance to ground before energizing.
  - .2 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
- 3.5 CLEANING
- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
    - .1 Leave Work area clean at end of each day.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
  - .3 Waste Management: separate waste materials for reuse and recycling.

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS .1 Section 26 05 00.

1.2 PRODUCT DATA .1 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.

PART 2 - PRODUCTS

2.1 BUILDING WIRES .1 Conductors: stranded for 10 AWG and larger. Minimum size: 12 AWG.  
.2 Copper/Aluminum conductors: size as indicated, with 600 V insulation of cross-linked thermosetting polyethylene material rated RW90 XLPE.

2.2 TECK 90 CABLE .1 Cable: in accordance with Section 26 05 00 - Common Work Results for Electrical.  
.2 Conductors:  
.1 Grounding conductor: copper.  
.2 Circuit conductors: copper, size as indicated.  
.3 Insulation:  
.1 Cross-linked polyethylene XLPE.  
.2 Rating: 600 V.  
.4 Inner jacket: polyvinyl chloride material.  
.5 Armour: flat aluminum.  
.6 Overall covering: thermoplastic polyvinyl chloride, compliant to applicable Building Code classification for this project.  
.7 Fastenings:  
.1 One hole malleable iron steel straps to secure surface cables 50 mm and smaller. Two hole steel straps for cables larger than 50 mm.

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- 2.2 TECK 90 CABLE .8 Connectors:  
(Cont'd) .1 Watertight, approved for TECK cable.
- 2.3 CONTROL CABLES .1 Type: LVT: soft annealed copper conductors,  
sized as indicated:  
.1 Insulation: thermoplastic.  
.2 Sheath: thermoplastic jacket.
- .2 Type: low energy 300 V control cable: solid  
annealed copper conductors sized as indicated  
LVT: soft annealed copper conductors, sized as  
indicated:  
.1 Insulation: PVC or polyethylene.  
.2 Overall covering: PVC jackets or  
polyethylene jackets.

PART 3 - EXECUTION

- 3.1 GENERAL CABLE .1 Cable Colour Coding: to Section 26 05 00 -  
INSTALLATION Common Work Results for Electrical.
- 3.2 INSTALLATION OF .1 Install wiring as follows:  
BUILDING WIRES .1 In conduit systems in accordance with  
Section 26 05 34 - Conduits, Conduit  
Fastenings and Conduit Fittings.
- 3.3 INSTALLATION OF .1 Install cable exposed, securely supported by  
TECK90 CABLE (0  
-1000 V) hangers.
- 3.4 INSTALLATION OF .1 Install control cables in conduit.  
CONTROL CABLES

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS .1 Section 26 05 00.
- 1.2 ACTION AND INFORMATIONAL SUBMITTALS .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:  
.1 Submit manufacturer's instructions, printed product literature and data sheets for hangers and supports and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.3 DELIVERY, STORAGE AND HANDLING .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:  
.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.  
.2 Store and protect hangers and supports from nicks, scratches, and blemishes.  
.3 Replace defective or damaged materials with new.
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PART 2 - PRODUCTS

- 2.1 SUPPORT CHANNELS .1 U shape, size 41 x 41 mm, 2.5 mm thick, surface mounted or suspended.

PART 3 - EXECUTION

- 3.1 INSTALLATION .1 Secure equipment to solid masonry surfaces with anchors.
- .2 Secure equipment to poured concrete with expandable inserts.
- .3 Secure equipment to hollow masonry walls with toggle bolts.
- .4 Fasten exposed conduit or cables to building construction or support system using straps.  
.1 One-hole steel straps to secure surface conduits and cables 50 mm and smaller.  
.2 Two-hole steel straps for conduits and cables larger than 50 mm.  
.3 Beam clamps to secure conduit to exposed steel work.
- .5 Suspended support systems.  
.1 Support individual cable or conduit runs with 6 mm diameter threaded rods and spring clips.  
.2 Support 2 or more cables or conduits on channels supported by 6 mm diameter threaded rod hangers where direct fastening to building construction is impractical.
- .6 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.
- .7 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.
- .8 Do not use wire lashing or perforated strap to support or secure raceways or cables.
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- 3.1 INSTALLATION      .9    Do not use supports or equipment installed  
    (Cont'd)                      for other trades for conduit or cable support.
- .10    Install fastenings and supports as required  
                                 for each type of equipment cables and  
                                 conduits, and in accordance with  
                                 manufacturer's installation recommendations.
- 3.2 CLEANING            .1    Progress Cleaning: clean in accordance with  
                                 Section 01 74 11 - Cleaning.  
                                 .1    Leave Work area clean at end of each  
                                 day.
- .2    Final Cleaning: upon completion remove  
                                 surplus materials, rubbish, tools and  
                                 equipment in accordance with Section 01 74 11  
                                 - Cleaning.
- .3    Waste Management: separate waste materials  
                                 for reuse and recycling.



PART 1 - GENERAL

1.1 RELATED REQUIREMENTS .1 Section 26 05 00.

1.2 REFERENCE STANDARDS .1 Canadian Standards Association (CSA International)  
.1 CAN/CSA C22.2 No. 18, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware, A National Standard of Canada.  
.2 CSA C22.2 No. 45, Rigid Metal Conduit.  
.3 CSA C22.2 No. 56, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.  
.4 CSA C22.2 No. 83, Electrical Metallic Tubing.  
.5 CSA C22.2 No. 211.2, Rigid PVC Conduit.

PART 2 - PRODUCTS

2.1 CABLES AND REELS .1 Provide cables on reels or coils.  
.1 Mark or tag each cable and outside of each reel or coil, to indicate voltage rating and conductor size.  
.2 Each coil or reel of cable to contain only one continuous cable without splices.

2.2 CONDUITS .1 Rigid metal conduit: to CSA C22.2 No. 45, galvanized steel threaded.  
.2 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.  
.3 Rigid pvc conduit: to CSA C22.2 No. 211.2.

2.3 CONDUIT FASTENINGS .1 One hole steel straps to secure surface conduits 50 mm and smaller.  
.1 Two hole steel straps for conduits larger than 50 mm.

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- 2.3 CONDUIT FASTENINGS (Cont'd)
- .2 Beam clamps to secure conduits to exposed steel work.
  - .3 Threaded rods, 6 mm diameter, to support suspended channels.
- 2.4 CONDUIT FITTINGS
- .1 Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified. Coating: same as conduit.
  - .2 Ensure factory "ells" where 90 degrees bends for 25 mm and larger conduits.
  - .3 Watertight connectors and couplings for EMT.
    - .1 Set-screws are not acceptable.
- 2.5 EXPANSION FITTINGS FOR RIGID CONDUIT
- .1 Weatherproof expansion fittings with internal bonding assembly suitable for linear expansion.
  - .2 Watertight expansion fittings with integral bonding jumper suitable for linear expansion and 19 mm deflection.
- 2.6 FISH CORD
- .1 Polypropylene.

PART 3 - EXECUTION

- 3.1 MANUFACTURER'S INSTRUCTIONS
- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.
- 3.2 INSTALLATION
- .1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
  - .2 Conceal conduits except in unfinished areas.

- 3.2 INSTALLATION  
(Cont'd)
- .3 Use rigid galvanized steel threaded conduit except wheresubject to mechanical damage.
  - .4 Use electrical metallic tubing (EMT) excpet where not subject to mechanical injury, concrete embedment or moisture.
  - .5 Use rigid pvc conduit where subject to corrosive areas or high moisture.
  - .6 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment in damp, wet or corrosive locations.
  - .7 Minimum conduit size for power circuits: 19 mm.
  - .8 Bend conduit cold:
    - .1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.
  - .9 Mechanically bend steel conduit over 19 mm diameter.
  - .10 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.
  - .11 Install fish cord in empty conduits.
  - .12 Remove and replace blocked conduit sections.
    - .1 Do not use liquids to clean out conduits.
  - .13 Dry conduits out before installing wire.
- 3.3 SURFACE CONDUITS
- .1 Run parallel or perpendicular to building lines.
  - .2 Locate conduits behind infrared or gas fired heaters with 1.5 m clearance.
  - .3 Run conduits in flanged portion of structural steel.
  - .4 Do not pass conduits through structural members except as indicated.
  - .5 Do not locate conduits less than 75 mm parallel to steam or hot water lines with minimum of 25 mm at crossovers.
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- 3.4 CLEANING .1 Proceed in accordance with Section 01 74 11 -  
Cleaning.
- .2 On completion and verification of performance  
of installation, remove surplus materials,  
excess materials, rubbish, tools and  
equipment.

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS .1 Section 26 05 00.
- 1.2 REFERENCE STANDARDS .1 CSA International  
.1 CSA C22.2 No. 5, Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.  
.2 Product Data:  
.1 Submit manufacturer's instructions, printed product literature and data sheets for circuit breakers and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.4 DELIVERY, STORAGE AND HANDLING .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.  
.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.  
.3 Storage and Handling Requirements:  
.1 Store circuit breakers indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.  
.2 Store and protect circuit breakers from nicks, scratches, and blemishes.  
.3 Replace defective or damaged materials with new.
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PART 2 - PRODUCTS

2.1 BREAKERS  
GENERAL

- .1 Moulded-case circuit breakers, : to CSA C22.2 No. 5
- .2 Bolt-on moulded case circuit breaker: for automatic operation with temperature compensation for 40 degrees C ambient.
- .3 Common-trip breakers: with single handle for multi-pole applications.
- .4 Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting.
- .5 Circuit breakers with interchangeable trips as indicated.
- .6 Circuit breakers to have minimum 10,000 A symmetrical rms interrupting capacity rating.

2.2 THERMAL  
MAGNETIC BREAKERS

- .1 Moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Install circuit breakers as indicated.

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
    - .1 Leave Work area clean at end of each day.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
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3.2 CLEANING .3 Waste Management: separate waste materials  
(Cont'd) for reuse and recycling.

PART 1 - GENERAL

- 1.1 RELATED REQUIREMENTS .1 Section 26 05 00.
- 1.2 REFERENCE STANDARDS .1 CSA Group  
.1 CAN/CSA-C22.2 No.4, Enclosed and Dead-Front Switches.
- 1.3 ACTION AND INFORMATIONAL SUBMITTALS .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.  
.2 Product Data:  
.1 Submit manufacturer's instructions, printed product literature and data sheets for disconnect switches and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.4 DELIVERY, STORAGE AND HANDLING .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.  
.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.  
.3 Storage and Handling Requirements:  
.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.  
.2 Store and protect disconnect switches from nicks, scratches, and blemishes.  
.3 Replace defective or damaged materials with new.
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PART 2 - PRODUCTS

- 2.1 DISCONNECT SWITCHES
- .1 Non-fusible, disconnect switch in CSA enclosure, to CAN/CSA-C22.2 No.4 size as indicated.
  - .2 Provision for padlocking in off switch position by 3 locks.
  - .3 Mechanically interlocked door to prevent opening when handle in ON position.
  - .4 Quick-make, quick-break action.
  - .5 ON-OFF switch position indication on switch enclosure cover.
- 2.2 EQUIPMENT IDENTIFICATION
- .1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results for Electrical.
  - .2 Indicate name of load controlled on size 4 nameplate.

PART 3 - EXECUTION

- 3.1 INSTALLATION
- .1 Install disconnect switches.
- 3.2 CLEANING
- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
    - .1 Leave Work area clean at end of each day.
  - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
  - .3 Waste Management: separate waste materials for reuse and recycling.