

**MODIFICATIONS TO UNIT 4**  
**Atlantic Institution, Renous, NB**  
**PWGSC Project No. R.061888.001**

**SPECIFICATIONS**  
**Tender Submission**



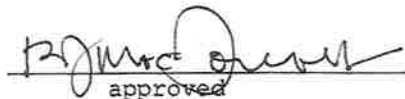
**June 24, 2016**

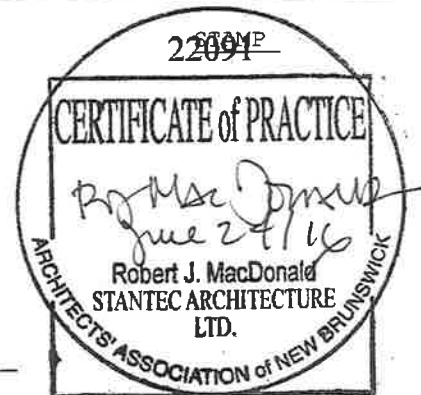
DISCIPLINE

SIGNATURE

**Architectural  
Specifications:**

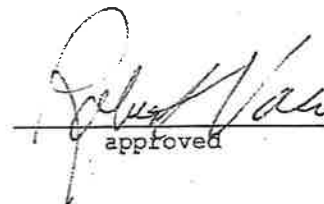
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Specifications:**

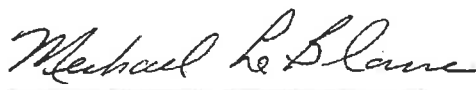
Paul Dyer  
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Specifications:**

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Robert Wharton A SPM  
PWPC

Aug 12, 2016

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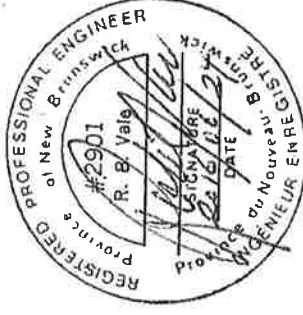
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approved



Robert Wharton      A SPM      Aug 13, 2016  
PWPC

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END OF SECTION

1.1 DESCRIPTION OF  
WORK

- .1 In general, work under this contract consists of but not limited to:
  - .1 Removal of wall dividing cells to create Pinel cells.
  - .2 Replacement of cell doors.
  - .3 Removal of cell furniture.
  - .4 Painting of cells and corridor.
  - .5 Supply and installation of chair lift.
  - .6 Supply and installation of washer / dryer unit and affiliated services.
- .2 Site of Work is at: Unit 4, Atlantic Institution, Renous, NB.

1.2 FAMILIARIZATION  
WITH SITE

- .1 Before submitting a bid, it is recommended that bidders visit the site to review and verify the form, nature and extent of the work, materials needed, the means of access and the temporary facilities required to perform the Work.
- .2 Obtain prior permission from the Departmental Representative before carrying out such site inspection. Security clearance required prior to entry to site.

1.3 CODES AND  
STANDARDS

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

1.4 INTERPRETATION  
OF DOCUMENTS

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

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

1.6 SETTING OUT WORK .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

.2 Provide devices needed to lay out and construct work.

.3 Supply such devices as straight edges and templates required to facilitate Departmental Representative's inspection of work.

1.7 COST BREAKDOWN .1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. Required forms will be provided for application of progress payment.

.2 List items of work numerically following the same division/section number system of the specification manual and thereafter sub-divide into major work components and building systems as directed by Departmental Representative.

.3 Upon approval, cost breakdown will be used as basis for progress payment.

1.8 DOCUMENTS REQUIRED .1 Maintain at job site, one copy each of the following:

.1 Contract Drawings

.2 Specifications

.3 Addenda

.4 Reviewed Shop Drawings

- .5 List of outstanding shop drawings
- .6 Change Orders
- .7 Other modifications to Contract
- .8 Field Test Reports
- .9 Copy of Approved Work Schedule
- .10 Health and Safety Plan and other safety related documents
- .11 Other documents as stipulated elsewhere in the Contract Documents.

1.9 PERMITS

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

1.10 ALTERATIONS,  
ADDITIONS OR  
REPAIRS TO EXISTING  
BUILDING

- .1 Execute work with least possible interference or disturbance to building operations occupants, and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.
- .2 Where security has been reduced by work of Contract, provide temporary means to maintain security.
- .3 Provide temporary dust screens, barriers, warning signs in locations where renovation and alteration work is adjacent to areas which will be operative during such work.

1.11 ROUGHING-IN

- .1 Be responsible for obtaining manufacturer's

literature and for correct roughing-in and hook-up of equipment, fixtures and appliances.

1.12 CUTTING,  
FITTING AND  
PATCHING

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

1.13 EXISTING  
SERVICES

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to tenant operations.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify Departmental Representative of findings.
- .3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. This includes disconnection of electrical power and communication services to tenant's operational areas. Adhere to approved schedule and provide notice to affected parties.
- .4 Provide temporary services to maintain critical building and tenant systems.
- .5 Where unknown services are encountered, immediately advise Departmental Representative

and confirm findings in writing.

- .6 Protect, relocate or maintain existing active services as required. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction over service. Record locations of maintained, re-routed and abandoned service lines.

1.14 BILINGUAL  
NOTATIONS

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

1.15 BUILDING  
SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. No smoking.

1.16 CONTRACTORS REQUEST  
FOR INFORMATION

Contractor's Request for Information (RFI's) submitted by the Contractor is to be used for

Clarification purposes only.

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

END OF SECTION

PART 1 General

1.1 WORK COVERED BY  
CONTRACT DOCUMENTS .1 Work of this Contract comprises of renovations  
to Unit 4 as indicated on the Drawings.

1.2 CONTRACT METHOD .1 Construct Work under single, stipulated price  
contract.

1.3 CONTRACTOR USE  
OF PREMISE .1 Use of site is restricted to area of contract.

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

PART 2 Products

2.1 NOT USED .1 Not Used.

PART 3 Execution

3.1 NOT USED .1 Not Used.

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Modifications to Unit 4	Summary of Work	Section 01 11 00
Atlantic Institution		Page 2
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END OF SECTION

PART 1 General

1.1 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 Where security is reduced by work provide temporary means to maintain security.
- .3 Refer to article 1.10 in Section 01 52 00 - Construction Facilities for information on sanitary facilities.
- .4 Closures: protect work temporarily until permanent enclosures are completed.

1.2 ALTERATIONS,  
ADDITIONS OR  
REPAIRS TO  
EXISTING BUILDING

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

1.3 EXISTING  
SERVICE

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions to a minimum.
- .3 Provide for personnel and vehicular traffic.

1.4 INSTITUTION  
REQUIREMENTS

- .1 Comply with the document "Correctional Service Canada Security Requirements" for Contractors Working at the Institution distributed by the Departmental Representative at the pre-tender site meeting. These Security Requirements generally cover restrictions/requirements

including, but not necessarily limited to contraband, prescription drugs, vehicles and their use, vehicle and worker searches, construction limits, security clearances, shipments to and from the site, tools and their use, and security and other hardware keys. Refer to Section 01 35 13 and 01 35 59.

<u>1.5 BUILDING</u>	.1	Comply with smoking restrictions. See Section 01
<u>SMOKING ENVIRONMENT</u>		35 13 - Security Requirements.

PART 2 Products

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

<u>3.1 NOT USED</u>	.1	Not Used.
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END OF SECTION

#### 1.1 SUBMITTALS

- .1 Upon acceptance of bid and prior to commencement of work, submit to Departmental Representative the following work management documents:
  - .1 Work Schedule as specified herein.
  - .2 Shop Drawing Submittal Schedule specified in Section 01 33 00.
  - .3 Hot Work Procedures specified in Section 01 35 24.
  - .4 Lockout Procedures specified in Section 01 35 25.
  - .5 Health and Safety Plan specified in Section 01 35 29.06.
  - .6 List of workers requiring security clearance and those to be placed on Site Security Control list as specified in Section 01 35 13.
  - .7 Dust Control Plan specified in Section 01 50 00.
  - .8 Waste Management Plan specified in Section 01 74 21.

#### 1.2 WORK SCHEDULE

- .1 Upon acceptance of bid submit:
  - .1 Preliminary work schedule within 7 calendar days of contract award.
  - .2 Detailed work schedule within 14 calendar days of contract award.
- .2 Schedule to indicate all calendar dates from commencement to completion of all work within the time stated in the accepted bid.
- .3 Provide sufficient details to clearly illustrate entire implementation plan, depicting efficient coordination of tasks and resources, to achieve completion of work on time and permit effective monitoring of work progress in relation to established milestones.
- .4 Work schedule content to include as a minimum the following:
  - .1 Bar (GANTT) Charts, indicating all work activities, tasks and other project elements, their anticipated durations, planned dates for achieving key activities and major project milestones supported with;
  - .2 Written narrative on key elements of work

- illustrated in bar chart, providing sufficient details to demonstrate a reasonable implementation plan for completion of project within designated time.
- .3 Generally Bar Charts derived from commercially available computerized project management system are preferred but not mandatory.
  - .5 Schedule work in cooperation with the Departmental Representative. Incorporate within Detailed Work Schedule, items identified by Departmental Representative during review of preliminary schedule.
  - .6 Completed schedule shall be reviewed by Departmental Representative. When reviewed, take necessary measures to complete work within scheduled time. Do not change schedule without Departmental Representative's approval.
  - .7 Ensure that all subtrades and subcontractors are made aware of the work restraints and operational restrictions specified.
  - .8 Schedule Updates:
    - .1 Submit a revised schedule (if applicable) with each progress billing submission.
    - .2 Provide information and pertinent details explaining reasons for necessary changes to implementation plan.
    - .3 Identify problem areas, anticipated delays, impact on schedule and proposed corrective measures to be taken.
  - .9 Departmental Representative will make interim reviews and evaluate progress of work based on reviewed schedule. Frequency of such reviews will be as decided by Departmental Representative. Address and take corrective measures on items identified by reviews and as directed by Departmental Representative. Update schedule accordingly.
  - .10 In every instance, change or deviation from the Work Schedule, no matter how minimal the risk or impact on safety or inconvenience to tenant or public might appear, will be subject to prior review and approval by the Departmental Representative.

1.3 OPERATIONAL  
RESTRICTIONS

- .1 Contractor to meet with the Departmental Representative on a weekly basis to identify intended work areas, activities and scheduling for the coming week.
- .2 See Section 01 35 13 in regards to:
  - .1 Special security requirements which must be observed in the course of work.
  - .2 Provision of security personnel by Contractor as part of the Work.
- .3 Limit Maneuvering Space on Site: To area indicated on drawings. Staging area for placement of construction trailer, goods storage and portable toilet will be on the Institution's site, outside the security wall, in the location designated by the Institution.
- .4 Facility circulation maintained:
  - .1 Ensure that entrances, corridors, stairwells, fire exits and other circulation routes are maintained free and clear providing safe and uninterrupted passage for Facility users at all times during the entire work.
  - .2 Maintain those areas clean and free of construction materials and equipment. Provide temporary dust barriers and other suitable enclosures to ensure users are not exposed to construction activities and are protected from exposure to dust, noise and hazardous conditions.
  - .3 Maintain fire escape routes accessible and firefighting access open all times for the duration of the project.
  - .4 Do not under any circumstances block fire exit doors. Do not leave construction materials or debris in corridors, stairwells building entrances and exits.
- .5 Safety Signage:
  - .1 Provide on site, and erect as required during progress of work, proper bilingual signage. Mount where directed and as required on self-supporting stands, or on fixed walls warning the building occupants of construction activities in progress and

- alerting need to exercise caution in proceeding through disturbed areas of the facility, and directing building occupants through any detours which may be required.
- .2 Signage to be professionally printed and mounted on wooden backing, coloured and to express messages as directed by the Departmental Representative.
- .3 Generally maximum size of sign should be in the order of 1.0 square meters. Number of signs required will be decided in conjunction with Institution and as directed by departmental representative.
- .4 Include costs for the supply and installation as well as removal of these signs and the related patching and making good of associated walls in the bid price.
- .6 Dust and Dirt Control:
  - .1 See Section 01 50 00 for dust control and cleaning requirements.
  - .2 Effectively plan and implement dust control measures and cleaning activities as an integral part of all construction activities. Review all measures with the Departmental Representative before undertaking work, especially for major dust generating activities.
  - .3 Do not allow demolition debris and construction waste to accumulate on site and contribute to the propagation of dust.
  - .4 As work progresses, maintain construction areas in a tidy condition at all times. Remove dust accumulations by cleaning and vacuuming immediately following the completion of any major dust generating activity.
  - .5 Immediately remove all debris and dust from within occupied areas as generated by work therein during a given workshift.
  - .6 Disconnect and seal-off ductwork of HVAC servicing the construction area to stop spread of dust into other areas of Facility.
  - .7 Avoid situations and practices which results in dust and dirt being brought from the construction areas or from the exterior and tracked inside the building into occupied areas.
  - .8 Stop workers with soiled footwear from entering building.

- .9 Inform workers and make them sensitive to the need for dust and dirt control. Stringently enforce rules and regulations, immediately address non-compliance.
- .10 Keep access doors to work areas closed at all times. Use only designated doors for entry or egress.
- .7 Cleaning of occupied areas used by Contractor:
  - .1 Clean circulation routes used by workers to gain access to work by conducting cleaning, vacuuming and washing of floors, walls and other soiled surfaces.
  - .2 Meager attempts at controlling dust and ineffective unprofessional cleaning procedures will not be tolerated.
  - .3 Failure to provide effective dust control, allowing construction dust and dirt to escape beyond construction areas and contaminate occupied areas and building circulation areas will result in Contractor being ordered to immediately provide professional cleaning services without delay to remedy the situation and conduct all cleaning to the extent as determined by Departmental Representative.
- .8 Ensure that all sub-trades are made aware of and abide by the contents of this section and in particularly the work restrictions specified herein due to tenant operational requirements.

1.4 PROJECT MEETINGS

- .1 Schedule and administer project meetings, held on a minimum bi-weekly basis, for entire duration of work and more often when directed by Departmental Representative as deemed necessary due to progress of work or particular situation.
- .2 Prepare agenda for meetings.
- .3 Notify participants in writing 4 days in advance of meeting date.
  - .1 Ensure attendance of all subcontractors.
  - .2 Departmental Representative will provide list of other attendees to be notified.
- .4 Hold meetings at project site or where approved by Departmental Representative.

- .5 Preside at meetings and record minutes.
  - .1 Indicate significant proceedings and decisions. Identify action items by parties.
  - .2 Distribute to participants by mail or by facsimile within 3 calendar days after each meeting.
  - .3 Make revisions as directed by Departmental Representative.
  - .4 Departmental Representative will advise whether submission of minutes by Email is acceptable. Decision will be based on compatibility of software among participants.

1.5 WORK  
COORDINATION

- .1 The General Contractor is responsible for coordinating the work of the various trades and predetermining where the work of such trades interfaces with each other.
  - .1 Designate one person from own employ having overall responsibility to review contract documents and shop drawings, plan and manage such coordination.
- .2 The General Contractor shall convene meetings between trades whose work interfaces and ensure that they are fully aware of the areas and the extent of where interfacing is required.
- .3 Submission of shop drawings and ordering of prefabricated equipment or prebuilt components shall only occur once coordination meeting for such items has taken place between trades and all conditions affecting the work of the interfacing trades has been made known and accounted for.
- .4 Work Cooperation:
  - .1 Ensure cooperation between trades in order to facilitate the general progress of the work and avoid situations of spatial interference.
  - .2 Ensure that each trade provides all other trades reasonable opportunity for the completion of the work and in such a way as to prevent unnecessary delays, cutting, patching and the need to remove and replace completed work.

- .5 No extra costs to the Contract will be considered by the Departmental Representative as a result of Contractor's failure to effectively coordinate all portions of the Work. Disputes between the various trades as a result of their not being informed of the areas and extent of interface work shall be the sole responsibility of the General Contractor to be resolved at own cost.

END OF SECTION



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## PART 1General

### 1.1 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Work affected by submittal shall not proceed until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated 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 shall be considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Allow 15 days for Departmental Representative's review of submittals.
- .8 Verify field measurements and affected adjacent Work are coordinated.
- .9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .10 Contractor's responsibility for deviations in

submission from requirements of Contract Documents is not relieved by Departmental Representative review.

- .11 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS  
AND PRODUCT DATA

- .1 Submit 6 prints of shop drawings for each requirement requested in specification Sections and as consultant may reasonably request.
- .2 Submit 6 copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .3 Delete information not applicable to project.
- .4 Supplement standard information to provide details applicable to project.
- .5 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .6 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept. This review shall not mean that Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for

co-ordination of Work of all sub-trades.

- .7 For all sections of Work which require the Contractor or Sub Contractor to provide professional engineering services, the Contractor's or Sub Contractor's Registered Professional Engineer in the Province of New Brunswick shall design and engineer components for the project which the Contractor's or Sub Contractor's Registered Professional Engineer is responsible for, and shall sign and seal all shop drawings and supporting documentation. The Contractor's or Sub Contractor's Registered Professional Engineer shall review all fabrication and installation of such components. At completion of the Work, each of the Contractor's and/or Sub Contractor's Registered Professional Engineers shall provide to the Consultant, a letter confirming that:
- .1 All structural, architectural, mechanical, electrical and other components are fabricated and erected in conformance with their design.
- .2 All components are capable of supporting all the loads or capable of performance specified or indicated on the reviewed shop drawings.
- .3 All changes to the contract documents have been reviewed and are acceptable.
- .4 All components have been designed, fabricated and installed to substantially comply with the applicable requirements of the National Building Code.
- .5 All components have been designed and installed to conform with the seismic restraint requirements of the National Building Code 2010.
- .6 The fabrication and installation of such components has been reviewed and accepted by the Contractor's and/or Sub Contractor's Registered Professional Engineers.
- .7 All components are fabricated and erected in accordance with the reviewed shop drawings.

### 1.3 SAMPLES

- .1 Submit for review samples in triplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative's business address.

- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 MOCK-UPS

- .1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.5 PROGRESS  
PHOTOGRAPHS

- .1 Employ a competent individual to take all photographs.
- .2 Upon commencement of Work and at monthly intervals thereafter, email to the Departmental Representative, digital electronic copies of photographs, of eight (8) different views to clearly indicate progress of all parts of the Work. Provide photos from locations as directed by the Departmental Representative. Electronic copies to indicate date when photos were taken.
- .3 Progress Photographs (Digital Format):
  - .1 Sizes: minimum 5 mega pixels image file size or 600 dpi print density.
  - .2 Type: digital colour with binding margin at one end.
  - .3 Format: jpeg.
  - .4 Number of copies: 1 set per month.
  - .5 Identification: Rich Text Format (\*.rtf) reference to photo file with name, location, purpose, and number of project and date of

exposure.

.6 Viewpoints: interior locations. Viewpoints determined by Departmental Representative.

.4 Distribution of Photographs:

.1 Submit one set of progress photographs to the Departmental Representative.

.2 Submit photographs with each Progress Claim, and continuing until Final Certificate.

.3 Submit progress photographs on CDROM, files compressed with file names referencing progress time when each photograph was prepared, e.g. 2010-10-15 Foundation 1, placement of reinforcing steel.

.4 Include all photographs in the final submission and submit on a CDROM files compressed with file names referencing progress time when each photograph was prepared e.g. 2010-10-15 Roof 10, Installation of roof vents.

PART 2 Products

2.1 NOT USED .1 Not Used.

PART 3 Execution

3.1 NOT USED .1 Not Used.

END OF SECTION



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 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,
  - .3 an explosive or a bomb or a component thereof,
  - .4 currency over \$25, when possessed by an inmate without prior authorization, and
  - .5 any item not described in paragraphs (1) to (4) that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization
- .2 "Unauthorized Smoking Items" means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing or snuffing tobacco, electronic cigarettes, 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 "Construction employees" means persons working for the general Contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies.
- .6 "Departmental Representative" means the Public

Works and Government Services Canada (PWGSC) or the Correctional Service Canada (CSC) project manager depending on project.

- .7 "Perimeter" means the fenced or walled area of the institution that restrains the movement of the inmates.
- .8 "Construction zone" means the area as shown on the contract drawings where the contractor will be allowed to work. This area may or may not be isolated from the security area of the institution.

#### 1.3 PRELIMINARY PROCEEDINGS

- .1 Prior to the commencement of work, the Contractor will meet with the Departmental 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 The Contractor will:
  - .1 Ensure that all construction employees are aware of the CSC security requirements.
  - .2 Ensure that a copy of the CSC 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 Departmental Representative 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. (Institutional Access CPIC Clearance Request form CSC/SCC 1279).
- .2 Allow two (2) weeks for processing of security clearances. Construction employees will not be admitted to the Institution without a valid security 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 the institution where the project is taking place.

- .3 The Departmental Representative requires that facial photographs be taken of construction employees and these photographs be displayed at appropriate locations in the institution or in an electronic database for identification purposes. The Departmental Representative requires that Photo ID cards be provided for all construction workers. 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 employees are at 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.

#### 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 Departmental Representative 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 shall require security clearances and must remain with their vehicle the entire time that the vehicle is in the Institution. The director may require that these vehicles be escorted by Institutional staff or Commissionaires while in the Institution.

1.6 PARKING

- .1 The parking area(s) to be used by construction employees will be designated by the Departmental Representative. 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 own construction 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 Departmental Representative is received.
- .2 The Departmental Representative 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 permitted within the perimeter of the Institution unless approved by the Departmental Representative. If wireless cellular telephones are permitted, the user will not permit their use by any inmate. Cellular telephones approved by the Departmental Representative must be signed in and out of the institution.
- .4 The Departmental Representative may approve and limit the use of two-way radios.

1.9 WORK HOURS

- .1 Work hours within the Institution are: Monday to Friday 7:30 a.m. to 6:00 p.m.
- .2 Work will not be permitted during weekends and statutory holidays without the permission of the Departmental Representative. A minimum of three (3) 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 Departmental Representative.

1.10 OVERTIME WORK

- .1 No overtime work will be allowed without permission of the Departmental Representative. Give a minimum twenty-four (24) hours advance notice when overtime work on the construction project is necessary and approved. If overtime work is required because of an emergency such the completion of a concrete pour or work to make the construction safe and secure, the contractor shall advise the Departmental Representative as soon as this condition is known and follow the directions given by the Departmental Representative. Costs to Canada for such events may be attributed to the contractor.
- .2 When overtime work, weekend statutory holiday work is required and approved by the Departmental Representative, extra staff members may be posted by the Departmental Representative or his designate, to maintain the security surveillance. The actual cost of this extra staff may be attributed to the contractor.

1.11 TOOLS AND EQUIPMENT

- .1 Maintain on site 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 toolboxes when not in use. Keys to remain in the possession of the construction employees of the Contractor.
- .6 Scaffolding shall be secured and locked when not erected and when erected, shall be secured in a manner agreed upon with the Departmental Representative.
- .7 All missing or lost tools or equipment shall be reported immediately to the Departmental Representative.
- .8 The Departmental Representative 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.
- .9 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 Departmental Representative at the end of each day. All power "shot", Ram-set, Hilti or any other power-driven tool must have all cartridges accounted for including those which have been used. The correct count of these tools must be verified entering and leaving the institution at the beginning and end of each day. All broken blades and tools must be accounted for and broken tools are not to be thrown away. Particular attention must be given to power driven tools, files, saw blades, rod saws, wire, rope and ladders. Tool kits must be locked when the area is unattended.
- .10 If propane or natural gas is used for heating the construction, the institution will require that an employee of the contractor supervise the

construction site during non-working hours.

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 the Institution, specifically the Security Maintenance Officer (SMO).
  - .2 The 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 use during the construction period.
  - .2 The Contractor will issue instructions to his construction 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.
  - .4 Upon putting operational security keys into use, the CSC construction escort shall obtain these keys as they are required from the SMO and open doors as required by the Contractor. The Contractor shall issue instructions to his construction employees advising them that all security keys shall always remain with the CSC construction escort.

1.13 SECURITY  
HARDWARE

- .1 Turn over all removed security hardware to the Departmental Representative of the Institution

for disposal or for safekeeping until required for re-installation.

1.14 PRESCRIPTION  
DRUGS

- .1 Employees of the Contractor who are required to take prescription drugs during the workday shall obtain approval of the Departmental Representative to bring a one-day supply only into the Institution.

1.15 SMOKING  
RESTRICTIONS

- .1 Contractors and construction employees are not permitted to smoke inside correctional facilities or outdoors within the perimeter of a correctional facility and must not possess unauthorized smoking items within the perimeter of a correctional facility.
- .2 Contractors and construction employees who are in violation of this policy will be requested to immediately cease smoking or dispose of any unauthorized smoking items and, if they persist, will be directed to leave the institution.
- .3 Smoking is only permitted outside the perimeter of a correctional facility in an area to be designated by the Departmental Representative.

1.16 CONTRABAND

- .1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are prohibited on institutional property.
- .2 The discovery of contraband on the construction site and the identification of the person(s) responsible for the contraband shall be reported immediately to the Departmental Representative.
- .3 Contractors should be vigilant with both their staff and the staff of their sub-contractors and suppliers that the discovery of contraband may 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 Departmental Representative suspects, on reasonable grounds, that an employee of the Contractor is in possession of contraband or unauthorized items, he 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  
REMOVAL FROM  
INSTITUTIONAL  
PROPERTY

- .1 Construction personnel and commercial vehicles will not be admitted to the institution after normal working hours, unless approved by the Departmental Representative.

1.19 MOVEMENT OF  
VEHICLES

- .1 Escorted commercial vehicles will be allowed to enter or leave the institution through the vehicle access gate during the following hours:
  - .1 07:30 a.m. to 11:00 a.m.
  - .2 1:00 p.m. to 3:30 p.m.
- .2 Construction vehicles shall not leave the Institution until an inmate count is completed.
- .3 Commercial vehicles will only be allowed access to institutional property when their contents are certified by the Contractor or his representative as being strictly necessary to the execution of the construction project.
- .4 Vehicles shall be refused access to institutional property if, in the opinion of the Departmental Representative, they contain any article which may jeopardize the security of the institution.
- .5 Private vehicles of construction employees will

not be allowed within the security perimeter of medium or maximum security institutions without the authorization of the Departmental Representative. Contractor's employees will park their vehicles in a designated area outside the perimeter of the institution.

- .6 With the approval of the Departmental Representative, 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 Departmental Representative may require that the equipment be secured with a chain and padlock to another fixed object.

1.20 MOVEMENT OF  
CONSTRUCTION  
EMPLOYEES ON  
INSTITUTIONAL  
PROPERTY

- .1 Subject to the requirements of good security, the Departmental Representative will permit the Contractor and his employees as much freedom of action and movement as is possible.
- .2 However, notwithstanding paragraph above, the Departmental Representative 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 when escorted by a member of the CSC security staff or a commissionaire.
- .3 During the lunch and coffee/health breaks, all construction employees will remain within the construction site.

1.21 SURVEILLANCE  
AND INSPECTION

- .1 Construction activities and all related 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  
WORK

- .1 The Departmental Representative may order at any time that the contractor, his employees, sub-contractors and their employees to not enter or to 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 CSC staff member giving this instruction, the time of the request and obey the order as quickly as possible.
- .2 The contractor shall advise the Departmental Representative of this interruption of the work within 24 hours.

1.23 CONTACT WITH  
INMATES

- .1 Unless specifically authorized, the contractor is not encouraged to come into contact with inmates, to talk with them, to receive objects from them or to give them objects. Any construction employee doing any of the above without permission will be removed from the site and his security clearance revoked.
- .2 It is to be noted that cameras are not allowed on CSC property except if required for photographic history of the project. In this case, the contractor will be asked to use a designated memory card for the project.
- .3 Notwithstanding the above paragraph, if the Departmental Representative approves of the usage of cameras, it is strictly forbidden to take pictures of inmates, of CSC staff members or of any part of the Institution other than those required as part of this contract.

1.24 COMPLETION OF  
CONSTRUCTION PROJECT

- .1 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.

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## PART 2 Products

2.11.25 USED .1 Not Used.

## PART 3 Execution

3.11.26 USED .1 Not Used.

END OF SECTION

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|-------------------------------------|--|
| <u>1.1 SECTION INCLUDES</u>         | .1 Fire Safety Requirements  |
|                                     | .2 Hot Work Permit   |
|                                     | .3 Existing Fire Protection and Alarm Systems  |
| <u>1.2 RELATED WORK</u>             | .1 Section 01 35 29.06 Health and Safety Requirements.   |
|                                     | .2 Section 01 14 10 Scheduling and Management of Work.   |
| <u>1.3 DEFINITIONS</u>              | .1 Hot Work defined as: <ul style="list-style-type: none"><li>.1 Welding work</li><li>.2 Cutting of materials by use of torch or other open flame devices</li><li>.3 Grinding with equipment which produces sparks.</li><li>.4 Use of open flame torches such as for roofing work.</li></ul>             |
| <u>1.4 SUBMITTALS</u>               | .1 Submit copy of Hot Work Procedures and sample of Hot Work permit to Departmental Representative for review, within 14 calendar days of acceptance of bid.   |
|                                     | .2 Submit in accordance with section 01 33 00.   |
| <u>1.5 FIRE SAFETY REQUIREMENTS</u> | .1 Implement and follow fire safety measures during Work. Comply with following: <ul style="list-style-type: none"><li>.1 National Fire Code.</li><li>.2 Fire Protection Standards FCC 301 and FCC 302.</li><li>.3 Federal and Provincial Occupational Health and Safety Acts and Regulations.</li></ul> |
|                                     | .2 In event of conflict between any provisions of above authorities the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, Departmental Representative will advise on the course of action   |

to be followed.

1.6 HOT WORK  
AUTHORIZATION

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

in this regard.

1.7 HOT WORK  
PROCEDURES

- .1 Develop and implement safety procedures and work practices to be followed during the performance of Hot Work.
- .2 Hot Work Procedures to include:
  - .1 Requirement to perform hazard assessment of site and immediate work area beforehand for each hot work event in accordance with Safety Plan specified in section 01 35 29.06.
  - .2 Use of a Hot Work Permit system with individually written permit issued by Contractor's Superintendent to specific worker or subcontractor granting permission to proceed with Hot Work.
  - .3 Permit required for each Hot Work event.
  - .4 Designation of a person on site as a Fire Safety Watcher responsible to conduct a fire safety watch for a minimum duration of 30 minutes immediately following the completion of the Hot Work.
  - .5 Compliance with fire safety codes, standards and occupational health and safety regulations specified.
  - .6 Site specific rules and procedures in force at the site as provided by the Facility Manager.
- .3 Generic procedures, if used, must be edited and supplemented with pertinent information tailored to reflect specific project conditions. Label document as being the Hot Work Procedures for this contract.
- .4 Procedures shall clearly establish responsibilities of:
  - .1 Worker performing hot work,
  - .2 Person issuing the Hot Work Permit,
  - .3 Fire Safety Watcher,
  - .4 Subcontractor(s) and Contractor.
- .5 Brief all workers and subcontractors on Hot Work Procedures and of Permit system. Stringently enforce compliance.

- .6 Failure to comply with fire safety procedures may result in the issue of a Non-Compliance notification as specified in Section 01 35 29.06.

1.8 HOT WORK  
PERMIT

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

1.9 FIRE  
PROTECTION AND  
ALARM SYSTEMS

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

1.10 DOCUMENTS ON  
SITE

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

END OF SECTION



<u>1.1 SECTION INCLUDES</u>	.1	Procedures to isolate and lockout electrical facility and other equipment from energy sources.
<u>1.2 RELATED WORK</u>	.1	Section 01 35 29.06: Health and Safety
	.2	Section 01 14 10 Scheduling and Management of the Work
	.3	Section 01 50 00: Temporary Facilities.
<u>1.3 REFERENCES</u>	.1	CSA C22.1-15 - Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.
	.2	CAN/CSA C22.3 No.1-15 - Overhead Systems.
	.3	CSA C22.3 No.7-15 - Underground Systems.
	.4	COSH: Canada Occupational Health and Safety Regulations made under Part II of the Canada Labour Code.
<u>1.4 DEFINITIONS</u>	.1	Electrical Facility: means any system, equipment, device, apparatus, wiring, conductor, assembly or part thereof that is used for the generation, transformation, transmission, distribution, storage, control, measurement or utilization of electrical energy, and that has an amperage and voltage that is dangerous to persons.
	.2	Guarantee of Isolation: means a guarantee by a competent person in control or in charge that a particular facility or equipment has been isolated.
	.3	De-energize: in the electrical sense, that a piece of equipment is isolated and grounded, e.g. if the equipment is not grounded, it cannot be considered de-energized (DEAD).
	.4	Guarded: means that an equipment or facility is covered, shielded, fenced, enclosed, inaccessible by location, or otherwise protected in a manner that, to the extent that is reasonably practicable, will prevent or reduce danger to any

person who might touch or go near such item.

- .5 Isolate: means that an electrical facility, mechanical equipment or machinery is separated or disconnected from every source of electrical, mechanical, hydraulic, pneumatic or other kind of energy that is capable of making it dangerous.
- .6 Live/alive: means that an electrical facility produces, contains, stores or is electrically connected to a source of alternating or direct current of an amperage and voltage that is dangerous or contains any hydraulic, pneumatic or other kind of energy that is capable of making the facility dangerous to persons.

#### 1.5 COMPLIANCE REQUIREMENTS

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

#### 1.6 SUBMITTALS

- .1 Submit copy of proposed lockout procedures and sample of lockout permit to Departmental Representative for review, within 14 calendar days of acceptance of bid.
- .2 Submit in accordance with section 01 33 00.

#### 1.7 ISOLATION OF EXISTING SERVICES

- .1 Obtain Departmental Representative's written authorization prior to working on existing live or active electrical facilities and equipment and before proceeding with isolation of such item.

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

- .8 Conduct hazard assessment as part of the process in accordance with health and safety requirements specified Section 01 35 29.06.

#### 1.8 LOCKOUTS

- .1 De-energize, isolate and lockout electrical facility, mechanical equipment and machinery from all potential sources of energy prior to working on such items.
- .2 Develop and implement clear and specific lockout procedures to be followed as part of the Work.
- .3 Prepare typed written Lockout Procedures describing safe work practices, procedures, worker responsibilities and sequence of activities to be followed on site by workforce to safely isolate an active piece of equipment or electrical facility and effectively lockout and tagout it's sources of energy.
- .4 Include as part of the Lockout Procedures a system of lockout permits managed by Contractor's Superintendent or other qualified person designated by him/her as being "in-charge" at the site.
  - .1 A lockout permit shall be issued to specific worker providing a Guarantee of Isolation before each event when work must be performed on a live equipment or electrical facility.
  - .2 Duties of person managing the permit system to include:
    - .1 Issuance of permits and lockout tags to workers.
    - .2 Determining permit duration.
    - .3 Maintaining record of permits and tags issued.
    - .4 Making a Request for Isolation to Departmental Representative when required as specified above.
    - .5 Designating a Safety Watcher, when one is required based on type of work.
    - .6 Ensuring equipment or facility has been properly isolated.
    - .7 Collecting and safekeeping lockout tags returned by workers as a record of the event.
- .5 Clearly establish, describe and allocate

responsibilities of:

- .1 Workers.
  - .2 Person managing the lockout permit system.
  - .3 Safety Watcher.
  - .4 Subcontractor(s) and General Contractor.
- .6 Generic procedures, if used, must be edited and supplemented with pertinent information to reflect specific project requirements.
- .1 Incorporate site specific rules and procedures in force at site as provided by Facility Manager through the Departmental Representative.
  - .2 Clearly label the document as being the Lockout procedures applicable to work of this contract.
- .7 Use energy isolation lockout devices specifically designed and appropriate for type of facility or equipment being locked out.
- .8 Use industry standard lockout tags.
- .9 Provide appropriate safety grounding and guards as required.

#### 1.9 CONFORMANCE

- .1 Brief all workers and subcontractors on requirements of this section. Stringently enforce use and compliance.
- .2 Failure to follow lockouts procedures specified herein may result in the issuance of a Non-Compliance notification as specified in Section 01 35 29.06.

#### 1.10 DOCUMENTS ON SITE

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

END OF SECTION



## PART 1General

- |                             |    |  |
|-----------------------------|----|--|
| <u>1.1 SECTION INCLUDES</u> | .1 | Health and safety considerations required to ensure that PWGSC shows due diligence towards health and safety on construction sites, and meets the requirements laid out in PWGSC/RPB Departmental Policy DP 073 - Occupational Health and Safety - Construction. |
| <u>1.2 REFERENCES</u>       | .1 | Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations  |
|                             | .2 | Health Canada/Workplace Hazardous Materials Information System (WHMIS)   |
|                             | .1 | Material Safety Data Sheets (MSDS).  |
|                             | .3 | Province of New Brunswick.   |
|                             | .1 | Comply with the Occupational Health and Safety Act for the Province of New Brunswick, and the General Regulations made pursuant to the Act.  |
| <u>1.3 SUBMITTALS</u>       | .1 | Make submittals in accordance with Section 01 33 00 - Submittal Procedures.  |
|                             | .2 | Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:   |
|                             | .1 | Results of site specific safety hazard assessment.   |
|                             | .2 | Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.  |
|                             | .3 | Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.   |
|                             | .4 | Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.   |

- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets.
- .7 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.
- .8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

#### 1.4 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.

#### 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 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.8 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.

1.9 RESPONSIBILITY

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

1.10 COMPLIANCE  
REQUIREMENTS

- .1 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.11 UNFORSEEN  
HAZARDS

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

1.12 POSTING OF  
DOCUMENTS

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

- |  |    |   |
|--|----|---|
| <u>1.13 CORRECTION OF<br/>NON-COMPLIANCE</u> | .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.                                  |
| <u>1.14 POWDER ACTUATED<br/>DEVICES</u>      | .1 | Use powder actuated devices only after receipt of written permission from Departmental Representative.  |
| <u>1.15 WORK STOPPAGE</u>                    | .1 | Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work. |

## PART 2 Products

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

## PART 3 Execution

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

END OF SECTION

- |  |    |  |
|--|----|--|
| <u>1.1 RELATED WORK</u>                | .1 | Section 01 74 21: Construction / Demolition Waste Management and Disposal.   |
|  | .2 | Section 01 14 10 Scheduling and Management of the Work   |
| <u>1.2 DEFINITIONS</u>                 | .1 | Hazardous Material: Product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to the environment or adversely affect health of persons, animals, or plant life when released into the environment. |
| <u>1.3 FIRES</u>                       | .1 | Fires and burning of rubbish on site not permitted.  |
| <u>1.4 HAZARDOUS MATERIAL HANDLING</u> | .1 | Store and handle hazardous materials in accordance with applicable federal and provincial laws, regulations, codes and guidelines. Store in location that will prevent spillage into the environment   |
|  | .2 | Label containers to WHMIS requirements and keep MSDS data sheets on site for all hazardous materials.  |
|  | .3 | Maintain inventory of hazardous materials and hazardous waste stored on site. List items by product name, quantity and date when storage began.  |
|  | .4 | Store and handle flammable and combustible materials in accordance with National Fire Code.  |
|  | .5 | Transport hazardous materials in accordance with federal Transportation of Dangerous Goods Regulations and applicable Provincial regulations.  |
| <u>1.5 DISPOSAL OF WASTES</u>          | .1 | Do not bury rubbish and waste materials on site.   |
|  | .2 | Do not dispose of hazardous waste or volatile materials, such as mineral spirits, paints,  |

thinners, oil or fuel into waterways, storm or sanitary sewers or waste landfill sites.

- .3 Dispose of hazardous waste in accordance with applicable federal and provincial laws, regulations, codes and guidelines.

1.6 POLLUTION  
CONTROL

- .1 Control emissions from equipment and plant to local authorities emission requirements.
- .2 Report, spills of petroleum and other hazardous materials as well as accidents having potential of polluting the environment to Federal and Provincial Department of the Environment.
  - .1 Notify Departmental Representative and submit a written spill report to Departmental Representative within 24 hours of occurrence.

END OF SECTION

PART 1 General

1.1 CONSTRUCTION  
SAFETY MEASURES

- .1 Without restricting other provisions or requirements of the Contract, observe construction safety measures of National Building Code 2010, Part 8, Provincial Government, Workers'/Workmen's Compensation Board and municipal authority provided that in any case of conflict or discrepancy more stringent requirements shall apply.
- .2 Comply with requirements of FCC No. 301.
- .3 Provide fire extinguishers necessary to protect the work in progress and the Contractor's physical plant on site. Do not use specified permanent fire extinguishers for this purpose.

1.2 REFERENCES AND  
CODES

- .1 Perform Work in accordance with National Building Code of Canada (NBC) including all amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
  - .1 Contract documents.
  - .2 Specified standards, codes and referenced documents.
- .3 Contractor responsible for obtaining all necessary building permits from the City of Miramichi.

1.3 FALSEWORK

- .1 Design and construct falsework in accordance with CSA S269.1.

1.4 BUILDING  
SMOKING  
ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.

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## PART 2 Products

2.1 NOT USED .1 Not Used.

## PART 3 Execution

3.1 NOT USED .1 Not Used.

END OF SECTION

PART 1 General

1.1 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests (minimum 48 hours), inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.2 INDEPENDENT  
INSPECTION AGENCIES

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

and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

1.3 ACCESS TO WORK

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

1.4 PROCEDURES

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

1.5 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative it is not expedient to correct defective Work

or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Departmental Representative.

1.6 REPORTS

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

1.7 TESTS AND MIX  
DESIGNS

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

1.8 MOCK-UPS

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

will assist in preparing a schedule fixing dates for preparation.

- .6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

## PART 2 Products

2.1 NOT USED .1 Not Used.

## PART 3 Execution

3.1 NOT USED .1 Not Used.

END OF SECTION

1.1 SITE ACCESS  
AND PARKING

- .1 The Departmental Representative will designate Contractor's access to project site as well as parking facilities for equipment and workers.
- .2 The Contractor is advised that while parking facilities for his workers and subcontractors will be on property, such parking facilities may be remote from the actual site of the work. In any case, follow all instructions from the Departmental Representative in regards to parking facilities.

1.2 BUILDING ACCESS

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

1.3 CONTRACTOR'S  
SITE OFFICE

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

1.4 MATERIAL  
STORAGE

- .1 Locate site storage trailers where directed by Departmental Representative. Place in location of least interference with existing Facility operations.
- .2 Material storage space on site does not exist. Coordinate delivery to minimize storage period on site before being needed for incorporation into work.

1.5 SITE ENCLOSURES

- .1 Provide temporary fence where designated on by departmental and as agreed to by Site representative to enclose various construction areas of work site.
- .2 Make all gates lockable and provide keyed padlocks.
- .3 Obtain Departmental Representative's approval beforehand of location and layout of all temporary fence enclosures.

- .4 Provide warning signs affixed to all fenced areas, identifying those enclosed areas as "Construction Zones" with access restricted to only those persons so authorized by General Contractor.
- .5 Do not construe fencing as an acceptable replacement for pedestrian walkway and hoarding requirements specified below.

1.6 PEDESTRIAN  
WALKWAYS AND  
HOARDING

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

1.7 INTERIOR DUST  
CONTROL AND  
DUST BARRIERS

- .1 Control creation and spread of dust and dirt to building interior and in particular to areas within premises still under use by occupants.
- .2 Develop and implement a dust control plan, addressing effective measures to carry out work with least amount of dust being created and propagated.
  - .1 Carefully evaluate the type of work to be undertaken and the physical layout of each work area on site.
  - .2 Provide specifically tailored strategy for each work area.
  - .3 Pre-determine location and placement of dust barriers to confine resulting dust to immediate work area.
  - .4 Inform Departmental Representative of the proposed dust control measures to be

followed at each work area and for each major dust generating activities. Obtain Departmental Representative's approval before proceeding with work.

- .3 Dust control plan to incorporate as a minimum the following dust protection and cleaning requirements:
  - .1 Erect dustproof partitions completely around work area to fully isolate construction from other parts of the building.
  - .2 Construct hoarding/dust partitions as follows:
    - .1 Use 10 mm polyethylene installed and sealed tightly to abutting walls, ceilings and floor with continuous duct tape along all edges and seams. Support in position with 38 x 89 wood framing at 400 mm o.c. Locate seams only at framing members and overlap sheeting by minimum of 150 mm.
    - .2 Use 19 mm thick plywood installed to wood stud framing spaced at 400 o.c.
      - .1 Erect from floor to underside of ceiling above, sheathing applied to occupied side of partition. Install polyethylene beneath plywood sheathing.
      - .2 Scribe, cut and fit sheathing tight to shape of structural steel, deck profile and to other obstructions in ceiling space and abutting walls.
      - .3 Use compressible neoprene gaskets around perimeter of partition and at all protrusions to achieve airtight construction.
  - .3 Provide a "dust tight" and lockable access door(s) within dust partition or between rooms for worker entry into work area. This is of particular importance for situations where excessive dust will be generated.
  - .4 Provide additional dust barriers, placed tightly to underside of the floor/roof deck above, in locations where existing walls are used as part of the dust barrier system but simply terminate at the finished ceiling level resulting in an open space above, or

- other similar condition, permitting dust to migrate beyond the construction areas.
- .5 Make all dust barriers airtight, effectively blocking and stopping all dust migration.
  - .6 Inspect dust barriers at various intervals during each work shift. Immediately fix tears, unsealed edges and maintain barriers effectively sealed for the entire work duration.
  - .7 Immediately clean areas in use by occupants contaminated by work.
    - .1 Vacuum, wash floors and walls. Remove accumulated dust from all surfaces. Clean and remove smears, scuffs and marks.
  - .4 Meager attempts at controlling dust will not be tolerated. Failure to provide effective dust control during work and to perform satisfactory cleaning thereafter will result in Departmental Representative to proceed and obtain a separate cleaning service agency to perform cleaning to tenant's satisfaction with cost for such services being charged against this Contract in the form of financial holdbacks.

1.8 SANITARY  
FACILITIES

- .1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances. Facility to be located outside Institution's perimeter wall.
- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.9 POWER

- .1 Power supply is available and will be provided for construction usage at no cost.
  - .1 Make arrangements for the use of such services through the Departmental Representative.
  - .2 Departmental Representative will designate and approve each location of existing power source to which connections can be made to obtain temporary power service.
  - .3 Connect to existing power supply in accordance with Canadian Electrical Code.

- .2 Provide and pay all costs to supply and install temporary cabling, panelboards, switching devices and other equipment as required to connect into power source, provide adequate ground fault protection and extend power supply from existing source to work areas. Perform work and make all connections in accordance with the Canadian Electrical Code, in compliance with the federal and provincial Occupational Health and Safety Regulations as specified in section 01 35 29.06 and to lockout requirements specified in section 01 35 25.
- .3 Provide and maintain temporary lighting to conduct work. Ensure illumination level is not less than 162 lux in all locations.
- .4 Electrical power and lighting systems installed under this Contract can be used for construction requirements provided that guarantees are not affected thereby. Make good damage.

1.10 WATER SUPPLY

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

1.11 VENTILATING

- .1 Provide temporary ventilation in enclosed areas as required to:
  - .1 Facilitate progress of work.
  - .2 Provide adequate ventilation to meet health regulations for safe working environment.
- .2 Maintain strict supervision of operation of temporary ventilating equipment to:
  - .1 Conform to applicable codes and standards.
  - .2 Enforce safe practices.
  - .3 Prevent abuse of services.
  - .4 Prevent damage to finishes.

1.12 CONSTRUCTION  
SIGN AND NOTICES

- .1 Contractor or subcontractor advertisement signboards are not permitted on site.
- .2 Safety and Instruction Signs and Notices:
  - .1 Signs and notices for safety and instruction

shall be in both official languages or commonly understood graphic symbols conforming to CAN3-Z321.

- .3 Maintenance and Disposal of Site Signs:
  - .1 Maintain approved signs and notices in good condition for duration of project and dispose of off-site on completion of project or earlier if directed by Departmental Representative.

1.13 REMOVAL OF  
TEMPORARY  
FACILITIES

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

END OF SECTION

PART 1 General

- |  |    |   |
|--|----|---|
| <u>1.1 SUBMITTALS</u>                        | .1 | Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.  |
| <u>1.2 INSTALLATION AND REMOVAL</u>          | .1 | Provide temporary utilities controls in order to execute work expeditiously.  |
|  | .2 | Remove from site all such work after use.   |
| <u>1.3 WATER SUPPLY</u>                      | .1 | The Departmental Representative shall provide a continuous supply of potable water for construction use in accordance with governing regulations and ordinances, from a designated existing source.   |
|  | .2 | Provide temporary connections and run all temporary piping or hoses to job locations requiring water service. Disconnect and remove upon completion of Work.  |
| <u>1.4 TEMPORARY HEATING AND VENTILATION</u> | .1 | Ventilating: <ul style="list-style-type: none"><li>.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.</li><li>.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.</li><li>.3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.</li><li>.4 Ventilate storage spaces containing hazardous or volatile materials.</li><li>.5 Continue operation of ventilation and exhaust system for a time after end of work process to assure removal of harmful contaminants.</li></ul> |
|  | .2 | The permanent heating system of the building, or portions thereof, may be used when available. Be responsible for damage thereto.   |
|  | .3 | Restore to new condition, any portion of the permanent heating system used during   |

construction. Replace all filters.

- .4 Pay costs for maintaining temporary heat, when using permanent heating system Departmental Representative will pay utility charges when temporary heat source is existing building equipment.
- .5 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
  - .1 Conform with applicable codes and standards.
  - .2 Enforce safe practices.
  - .3 Prevent abuse of services.
  - .4 Prevent damage to finishes.
  - .5 Vent direct-fired combustion units to outside.
- .6 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.5 TEMPORARY POWER  
AND LIGHT

- .1 The Departmental Representative will provide and pay for temporary power required during construction from a designated existing source for temporary lighting and operating power tools, to a maximum of 230 volts 30 amps, in accordance with governing regulations and ordinances.
- .2 The Departmental Representative is not responsible for interruptions to temporary power which may occur.
- .3 Provide all connections and power cords, from the designated existing source.
- .4 Temporary power shall not be used for welding. Use self-generator units for all welding power.
- .5 If Departmental Representative supplied power is insufficient, provide and pay for temporary power required during construction for temporary lighting and operating power tools, in accordance with governing regulations and ordinances.
- .6 Provide centrally located power panels for the use of all Subcontractors. Subcontractors shall provide their own extension cables c/w suitable fittings.

- .7 Provide and be responsible for necessary switching, fusing, wiring and connections in accordance with the Canadian Electrical Code.
- .8 Provide and maintain temporary lighting throughout the project. Provide a level of illumination on all floors and stairs of not less than 15 foot candles. Provide higher levels of illumination where required by specific sections of the specifications, to control quality of workmanship.
- .9 When work is performed at night or where daylight is obscured, provide artificial light sufficient to perform work properly and to permit thorough inspection.
- .10 Permanent electrical power and lighting system may be used for construction requirements provided no damage occurs or guarantees affected. Obtain Departmental Representative's approval before using permanent electrical power and lighting system. Pay all costs for use of permanent electrical power and lighting system during construction, until Substantial Performance of the Work.

1.6 TEMPORARY  
COMMUNICATION  
FACILITIES

- .1 Provide and pay for temporary telephone, fax and data hook up, lines, and equipment necessary for own use and use of Departmental Representative.
- .2 Cellular telephones are not permitted on site.

1.7 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

PART 2 Products

2.1 NOT USED

- .1 Not Used.

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PART 3 Execution

3.1 NOT USED .1 Not Used.

END OF SECTION

PART 1 General

- |                                     |    |  |
|-------------------------------------|----|--|
| <u>1.1 REFERENCES</u>               | .1 | Canadian General Standards Board (CGSB)  |
|                                     | .1 | CAN/CGSB 1.189-00, Exterior Alkyd for Primer Wood.   |
|                                     | .2 | CGSB 1.59-97, Alkyd Exterior Gloss Enamel.   |
|                                     | .2 | Canadian Standards Association (CSA International)   |
|                                     | .1 | CSA-A23.1/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete. |
|                                     | .2 | CSA-0121-08(R2013), Douglas Fir Plywood.   |
|                                     | .3 | CAN/CSA-S269.2-M87(R2003), Access Scaffolding for Construction Purposes.   |
|                                     | .4 | CAN/CSA-Z321-96(R2006), Signs and Symbols for the Occupational Environment.  |
| <u>1.2 SUBMITTALS</u>               | .1 | Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.   |
| <u>1.3 INSTALLATION AND REMOVAL</u> | .1 | Provide construction facilities in order to execute work expeditiously.  |
|                                     | .2 | Remove from site all such work after use.  |
| <u>1.4 SCAFFOLDING</u>              | .1 | Scaffolding in accordance with CAN/CSA-S269.2.   |
|                                     | .2 | Provide and maintain scaffolding, ramps, ladders, platforms.   |
| <u>1.5 SITE STORAGE/LOADING</u>     | .1 | Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.             |
|                                     | .2 | Do not load or permit to load any part of Work with a weight or force that will endanger the Work.                               |

- |   |    |   |
|---|----|---|
| <u>1.6 CONSTRUCTION<br/>PARKING</u>                     | .1 | Parking will be permitted on site in an area as directed by the Departmental Representative provided it does not disrupt performance of Work.                               |
|   | .2 | Provide and maintain adequate access to project site.   |
|   | .3 | If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads. |
| <u>1.7 SECURITY</u>                                     | .1 | Refer to Section 01 35 13 - Security Requirements.  |
| <u>1.8 OFFICES</u>                                      | .1 | Provide office heated to 22' C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.                    |
|   | .2 | Provide a clearly marked and fully stocked first-aid case in a readily available location.  |
|   | .3 | Subcontractors may provide their own offices as necessary.  |
|   | .4 | Locate offices where directed by the Departmental Representative.   |
| <u>1.9 EQUIPMENT,<br/>TOOL AND MATERIAL<br/>STORAGE</u> | .1 | Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.  |
|   | .2 | Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.                                      |
| <u>1.10 SANITARY<br/>FACILITIES</u>                     | .1 | Provide sanitary facilities for work force in accordance with governing regulations and ordinances.   |

- .2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.11 CONSTRUCTION  
SIGNAGE

- .1 No signs or advertisements, other than warning signs, are permitted on site.
- .2 Signs and notices for safety and instruction shall be in both official languages Graphic symbols shall conform to CAN3-Z321.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.12 CLEAN-UP

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

PART 2 Products

2.1 NOT USED

- .1 Not Used.

PART 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION



## PART 1 General

- |                       |    |   |
|-----------------------|----|---|
| <u>1.1 GENERAL</u>    | .1 | Individual product Sections: cutting and patching incidental to work of section. Advance notification to other sections required.   |
| <u>1.2 SUBMITTALS</u> | .1 | Submittals: in accordance with Section 01 33 00 - Submittal Procedures.   |
|                       | .2 | Submit written request in advance of cutting or alteration which affects: <ul style="list-style-type: none"><li>.1 Structural integrity of any element of Project.</li><li>.2 Integrity of weather-exposed or moisture-resistant elements.</li><li>.3 Efficiency, maintenance, or safety of any operational element.</li><li>.4 Visual qualities of sight-exposed elements.</li><li>.5 Work of Departmental Representative or separate contractor.</li></ul>  |
|                       | .3 | Include in request: <ul style="list-style-type: none"><li>.1 Identification of Project.</li><li>.2 Location and description of affected Work.</li><li>.3 Statement on necessity for cutting or alteration.</li><li>.4 Description of proposed Work, and products to be used.</li><li>.5 Alternatives to cutting and patching.</li><li>.6 Effect on Work of Departmental Representative or separate contractor.</li><li>.7 Written permission of affected separate contractor.</li><li>.8 Date and time work will be executed.</li></ul> |
| <u>1.3 MATERIALS</u>  | .1 | Required for original installation.   |
|                       | .2 | Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.  |

1.4 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

1.5 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 Remove samples of installed Work for testing.
- .6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .10 Restore work with new products in accordance with requirements of Contract Documents.
- .11 Fit Work airtight to pipes, sleeves, ducts,

conduit, and other penetrations through surfaces.

- .12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with fire-stopping material, full thickness of the construction element.
- .13 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.
- .14 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.6 WASTE  
MANAGEMENT AND  
DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

PART 2 Products

2.1 NOT USED

- .1 Not Used.

PART 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION



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## PART 1 General

### 1.1 DEFINITIONS

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

### 1.2 DOCUMENTS

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

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- |   |  |
|---|--|
| <u>1.3 SUBMITTALS</u>   | <ul style="list-style-type: none"> <li>.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.</li> <li>.2 Prepare and submit following prior to project start-up:             <ul style="list-style-type: none"> <li>.1 Submit 2 copies of Materials Source Separation Program (MSSP) description.</li> </ul> </li> </ul>   |
| <u>1.4 MATERIALS<br/>SOURCE SEPARATION<br/>PROGRAM (MSSP)</u> | <ul style="list-style-type: none"> <li>.1 Prepare MSSP and have ready for use prior to project start-up.</li> <li>.2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Departmental Representative.</li> <li>.3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.</li> <li>.4 Provide containers to deposit reusable and recyclable materials.</li> <li>.5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.</li> <li>.6 Locate separated materials in areas which minimize material damage.</li> <li>.7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.             <ul style="list-style-type: none"> <li>.1 Transport to approved and authorized recycling facility.</li> </ul> </li> <li>.8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.             <ul style="list-style-type: none"> <li>.1 Ship materials to site operating under Certificate of Approval.</li> <li>.2 Materials must be immediately separated into required categories for reuse or recycling.</li> </ul> </li> </ul> |

- |   |  |
|---|--|
| <u>1.5</u><br>STORAGE, HANDLING<br>AND PROTECTION | <ul style="list-style-type: none"><li>.1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.</li><li>.2 Unless specified otherwise, materials for removal become Contractor's property.</li><li>.3 Protect, stockpile, store and catalogue salvaged items.</li><li>.4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.</li><li>.5 Protect surface drainage, mechanical and electrical from damage and blockage.</li><li>.6 Separate and store materials produced during dismantling of structures in designated areas.</li><li>.7 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.<ul style="list-style-type: none"><li>.1 On-site source separation is recommended.</li><li>.2 Remove co-mingled materials to off-site processing facility for separation.</li><li>.3 Provide waybills for separated materials.</li></ul></li></ul> |
| <u>1.6 DISPOSAL OF<br/>WASTES</u>                 | <ul style="list-style-type: none"><li>.1 Do not bury rubbish or waste materials.</li><li>.2 Do not dispose of waste into waterways, storm, or sanitary sewers.</li><li>.3 Remove materials from deconstruction as deconstruction/disassembly Work progresses.</li><li>.4 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.</li></ul>  |
| <u>1.7 USE OF SITE AND<br/>FACILITIES</u>         | <ul style="list-style-type: none"><li>.1 Execute work with least possible interference or disturbance to normal use of premises.</li><li>.2 Provide temporary security measures approved by Departmental Representative.</li></ul>   |

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- |                       |    |   |
|-----------------------|----|---|
| <u>1.8 SCHEDULING</u> | .1 | Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work. |
|-----------------------|----|---|

## PART 2 Products

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

## PART 3 Execution

- |                        |    |  |
|------------------------|----|--|
| <u>3.1 APPLICATION</u> | .1 | Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes. |
|------------------------|----|--|

- |                     |    |   |
|---------------------|----|---|
| <u>3.2 CLEANING</u> | .1 | Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition. |
|                     | .2 | Clean-up work area as work progresses.  |
|                     | .3 | Source separate materials to be reused/recycled into specified sort areas.                                  |

- |                                   |    |   |
|-----------------------------------|----|---|
| <u>3.3 DIVERSION OF MATERIALS</u> | .1 | The diversion of waste materials from landfills is highly encouraged. Separate, recyclable and reusable materials where possible. |
|                                   | .2 | On-site sale of salvaged, recovered, reusable, or recyclable materials is not permitted.  |

END OF SECTION

PART 1 General

1.1 INSPECTION AND  
DECLARATION

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

<u>1.2 CLEANING</u>	.1	Remove waste and surplus materials, rubbish and construction facilities from the site in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
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PART 2 Products

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

<u>3.1 NOT USED</u>	.1	Not Used.
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END OF SECTION

## PART 1 General

- |                       |    |   |
|-----------------------|----|---|
| <u>1.1 SUBMITTALS</u> | .1 | Submittals: in accordance with Section 01 33 00 - Submittal Procedures.   |
|                       | .2 | Prepare instructions and data using personnel experienced in maintenance and operation of described products.   |
|                       | .3 | Copy will be returned after final inspection, with Departmental Representative's comments.  |
|                       | .4 | Revise content of documents as required prior to final submittal.   |
|                       | .5 | Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four (4) final copies of operating and maintenance manuals in English. |
|                       | .6 | Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.   |
|                       | .7 | If requested, furnish evidence as to type, source and quality of products provided.   |
|                       | .8 | Defective products will be rejected, regardless of previous inspections. Replace products at own expense.   |
|                       | .9 | Pay costs of transportation.  |
| <u>1.2 FORMAT</u>     | .1 | Organize data in the form of an instructional manual.   |
|                       | .2 | Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.  |
|                       | .3 | When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.  |
|                       | .4 | Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.                         |

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

### 1.3 CONTENTS - EACH VOLUME

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

### 1.4 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
  - .1 Contract Drawings.

- .2 Specifications.
- .3 Addenda.
- .4 Change Orders and other modifications to the Contract.
- .5 Reviewed shop drawings, product data, and samples.
- .6 Field test records.
- .7 Inspection certificates.
- .8 Manufacturer's certificates.

- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

#### 1.5 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: legibly 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 References to related shop drawings and modifications.

- .5 Specifications: legibly 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.

#### 1.6 EQUIPMENT AND SYSTEMS

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

- .9 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
- .10 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .11 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .12 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.
- .13 Additional requirements: As specified in individual specification sections.

#### 1.7 MATERIALS AND FINISHES

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. 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 Additional Requirements: as specified in individual specifications sections.

#### 1.8 SPARE PARTS

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to site; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

#### 1.9 MAINTENANCE MATERIALS

- .1 Provide maintenance and extra materials, in quantities specified in individual specification

sections.

- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to site; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.10 SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to site; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

1.11 STORAGE,  
HANDLING AND  
PROTECTION

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

1.12 WARRANTIES AND  
BONDS

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
- .4 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittal.

#### PART 2 Products

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

#### PART 3 Execution

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

END OF SECTION



Part 1 General

1.1 SECTION INCLUDES	.1	Alteration project procedures.
	.2	Removal of designated building equipment and fixtures.
	.3	Removal of designated construction.
1.2 REFERENCES SAFETY	.1	CSA S350-M1980(R2003), Code of Practice for in Demolition of Structures
1.3 ALTERATION PROJECT PROCEDURES	.1	Materials: As specified in Product sections; match existing Products and work for patching and extending work.
	.2	Employ skilled and experienced installer to perform alteration work.
	.3	Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring Products and finishes to original or specified condition.
	.4	Refinish existing visible surfaces to remain in renovated rooms and spaces, to renewed condition for each material, with a neat transition to adjacent finishes.
	.5	Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
	.6	When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Departmental Representative for review.

- .7 Patch or replace portions of existing surfaces which are damaged, lifted, discoloured, or showing other imperfections.
- .8 Finish surfaces as specified in individual Product sections.

#### 1.4 SUBMITTALS

- .1 Section 01 33 00: Procedures for submittals.
- .2 Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of temporary work.
- .3 Project Record Documents: Accurately record actual locations of capped utilities, subsurface obstructions.

#### 1.5 REGULATOR REQUIREMENTS

- .1 Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and re-connection.
- .2 Obtain required permits from authorities.
- .3 Do not close or obstruct egress width to any building or site exit.
- .4 Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.
- .5 Conform to procedures applicable when hazardous or contaminated materials are discovered.

#### 1.6 SCHEDULING

- .1 Schedule Work to coincide with new construction.
- .2 Describe demolition removal procedures and schedule.

- |                               |    |  |
|-------------------------------|----|--|
| <u>1.7 PROJECT CONDITIONS</u> | .1 | Conduct demolition to minimize interference with adjacent buildings.   |
|                               | .2 | Cease operations immediately if structure appears to be in danger and notify Departmental Representative. Do not resume operations until directed.   |
|                               |    |  |
| <u>1.8 PROJECT CONDITIONS</u> | .1 | If material resembling spray or trowel applied asbestos, Lead paints or mould or other designated substance listed as hazardous be encountered in course of demolition, stop work, take preventative measures, and notify Departmental Representative immediately. Proceed only after receipt of written instructions have been received from Departmental Representative. |
|                               | .2 | Structures to be demolished are based on their condition on date that tender is accepted.<br>.1 Remove, protect and store salvaged items as directed by Departmental Representative. Salvage items as identified by Departmental Representative. Deliver to Departmental Representative as directed.   |

## Part 2 Products

### 2.1 NOT USED

## Part 3 Execution

- |                        |    |   |
|------------------------|----|---|
| <u>3.1 PREPARATION</u> | .1 | Provide, erect, and maintain temporary barriers and partitions as required.   |
|                        | .2 | Erect and maintain weatherproof closures for exterior openings.   |
|                        | .3 | Erect and maintain temporary partitions to prevent spread of dust, odours, and noise to permit continued Owner occupancy. |

- .4 Protect existing materials and assemblies which are not to be demolished.
- .5 Notify affected utility companies before starting work and comply with their requirements.
- .6 Mark location and termination of utilities.
- .7 Provide appropriate temporary signage including signage for exit or building egress.

3.2 DEMOLITION  
AND DECONSTRUCTION

- .1 Demolish structure, interior finishes and assemblies as indicated and as follows:
  - .1 Remove miscellaneous items and components as indicated on Drawings.
- .2 Deconstruct materials and assemblies without damage and to minimize dusting.
- .3 At end of each day's work, leave work in safe and stable condition.
- .4 Demolish to minimize dusting. Keep materials wetted as directed by Departmental Representative.
- .5 Keep debris removal to pathways approved by Departmental Representative.
- .6 Remove materials in covered containers.

**END OF SECTION**

**Part 1      General**

- |   |    |  |
|---|----|--|
| <b><u>1.1    RELATED REQUIREMENTS</u></b>   | .1 | Section 09 91 23 - Interior Painting.  |
| <b><u>1.2    REFERENCES</u></b>             | .1 | Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturer's Association (CPMA).  |
|   | .1 | CISC/CPMA 2-75, Quick-Drying Primer for use on Structural Steel.   |
|   | .2 | Canadian Institute of Steel Construction (CISC)  |
|   | .1 | Handbook of Steel Construction, Tenth Edition.   |
|   | .3 | Canadian Standards Association (CSA).  |
|   | .1 | CSA-G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.  |
|   | .2 | CSA-S16-14, Design of Steel Structures.  |
|   | .3 | CSA-W47.1-09 (R2014), Certification of Companies for Fusion Welding of Steel.  |
|   | .4 | CSA-W48-14, Filler Metals and Allied Materials for Metal Arc Welding.  |
|   | .5 | CSA-W55.3-08, Certification of Companies for Resistance Welding of Steel and Aluminium.  |
|   | .6 | CSA-W59-13, Welded Steel Construction (Metal Arc Welding).   |
| <b><u>1.3    SOURCE QUALITY CONTROL</u></b> | .1 | The Contractor is to provide written documentation from the Canadian Welding Bureau certifying that the steel subcontractor is qualified to requirements of CSA-W47.1, Division 1 or 2.1. This document is to be submitted in accordance with Section 01 33 00 - Submittal Procedures. |
| <b><u>1.4    SUBMITTALS</u></b>             | .1 | Submit fabrication and erection documents and material lists in accordance with Section 01 33 00 - Submittal Procedures.   |
|   | .2 | It is the responsibility of the Contractor to field confirm the exact locations and construction of related work to which work under this section, modifies, connects to, or is supported on.  |
|   | .3 | On shop fabrication erection drawings, indicate materials and connections.   |

- .4 Submission shall bear signature and stamp of qualified Professional Engineer registered or licensed to practice in the Province of New Brunswick, for all details and connections not shown on the contract drawings.
- .5 Review of shop details and erection diagrams will extend to general design concept only. This review does not relieve the Contractor of the responsibility for accuracy of the detail dimensions, general fit-up of parts to be assembled, adequacy of connection details, or for errors or defects contained in the details.

## Part 2 Products

### 2.1 MATERIALS

- .1 Structural Steel (C-sections and plates): new, to CSA-G40.21, Grade 300W.
- .2 Welding materials: to CSA-W59 and certified by Canadian Welding Bureau.
- .3 Bolts, nuts and washers: to ASTM A325, galvanized for structural steel connections.
- .4 Adhesive Anchors: Acrylic adhesive for dowel and anchor rod anchorage: to ASTM C881, Type IV, Grade 3, Class A, B, and C.
  - .1 Acceptable Products:
    - .1 Epcon S7 by ITW Red Head.
    - .2 HIT HY200 by HILTI.
    - .3 SET-XP by Simpson Strong-Tie.
    - .4 FLO-ROK FR6-SD by UCAN Fastening Products.
    - .5 Anchorfix-3001 by Sika Canada Inc.
    - .6 Alternate Materials: Approved by addendum in accordance with Instructions to Tenderers.
- .5 Shrinkage Compensating Grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents to CSA-A23.1/A23.2.
  - .1 Compressive strength: 50 MPa at 28 days.
  - .2 Net shrinkage at 28 days: maximum 0.08%.
  - .3 Consistency:
    - .1 Fluid: to ASTM C827. Time of efflux through flow cone (ASTM C939), under 30s.
    - .2 Flowable: to ASTM C827. Flow table, 5 drops in 3s, (ASTM C109, applicable portion) 125 to 145%.
    - .3 Plastic: to ASTM C827. Flow table, 5 drops in 3s, (ASTM C109, applicable portions) 100 to 125%.
    - .4 Dry pack to manufacturer's requirements.
  - .4 Acceptable Products:

- .1 Sika Grout 212 standard by Sika Canada Inc.
- .2 Construction Grout to BASF Building Systems.
- .3 NS Grout by Euclid Canada Inc.
- .4 Alternate Materials: Approved by addendum in accordance with Instructions to Tenderers.

- .6 Shop paint primer: to CISC/CPMA 2-75.

## **2.2 FABRICATION**

- .1 Fabricate metal fabrications as indicated, in accordance with CAN/CSA-S16 and in accordance with reviewed shop drawings.
- .2 Minimum fillet weld size shall be 4 mm.

## **2.3 SHOP PAINTING**

- .1 Clean, prepare surfaces and shop prime structural steel in accordance with CAN/CSA-S16.
- .2 Clean steel plate, remove loose mill scale, rust, oil, dirt and other foreign matter.
- .3 Prepare surface according to SSPC SP7 (brush-off blast).
- .4 Apply one shop coat of CISC/CPMA 2-75 primer in shop to achieve minimum dry film thickness of 37-50 micrometers (1½ to 2 mils).
- .5 Apply paint under cover, on dry surfaces only and when surface and air temperatures are above 5 degrees Celsius.
- .6 Maintain dry condition and 5 degrees Celsius minimum temperature until paint is thoroughly dry.

## **Part 3 Execution**

### **3.1 GENERAL**

- .1 Do steel work in accordance with CAN/CSA-S16.
- .2 Do welding in accordance with CSA-W59.
- .3 Companies to be certified under Division 1 or 2.1 of CSA-W47.1 for fusion welding of steel structures and/or CSA-W55.3 for resistance welding of structural components.

### **3.2 INSPECTION**

- .1 Examine the work of the other sections upon which the work of this section depends and report any discrepancies to the Departmental Representative.
- .2 Verify that surfaces and conditions are ready to accept the work of this section.
- .3 Beginning of installation means acceptance of existing conditions.

- |            |   |    |  |
|------------|---|----|--|
| <b>3.3</b> | <b>PRODUCT DELIVERY, STORAGE AND HANDLING</b> | .1 | Exercise care in storing, handling, and erecting material and support materials properly at all times so that no piece will be bent, twisted, or otherwise damaged structurally or visually. |
| <b>3.4</b> | <b>WALL OPENING SUPPORT FRAMING</b>           | .1 | Field verify all dimensions and existing conditions prior to fabrication.  |
|            |   | .2 | Fabricate and install to details shown on plans and as per reviewed shop and erection drawings.  |
| <b>3.5</b> | <b>BENT PLATE ENCLOSURES</b>                  | .1 | Fabricate bent plate enclosures to details shown on plans.   |
|            |   | .2 | Enclosure plates to be of single length for both new wall opening jamb and header.   |
| <b>3.6</b> | <b>ERECTION</b>                               | .1 | Erect all new miscellaneous structural steel shown on drawings, and as indicated herein, in accordance with CAN/CSA-S16 and reviewed erection drawings.                                      |
|            |   | .2 | Provide temporary bracing and shoring as required until permanent connections are completed.   |
| <b>3.7</b> | <b>FIELD PAINTING</b>                         | .1 | Touch up all damaged surfaces and surfaces without shop coat with primer to CAN/CGSB-1.40 except as specified otherwise. Apply in accordance with CAN/CGSB 85.10.                            |

## PART 1 GENERAL

### 1.1 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM A27 / A27M - 13, Standard Specification for Steel Castings, Carbon, for General Application
  - .2 ASTM A36 / A36M - 14, Standard Specification for Carbon Structural Steel
  - .3 ASTM A47 / A47M - 99(2014), Standard Specification for Ferritic Malleable Iron Castings
  - .4 ASTM A53/A53M-12, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .5 ASTM A108 - 13, Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished
  - .6 ASTM A167 - 99(2009) Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  - .7 ASTM A194 / A194M - 15a Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both.
  - .8 ASTM A283 / A283M - 13, Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
  - .9 ASTM A307 - 14 Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - .10 ASTM A325M - 14 Standard Specifications for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric).
  - .11 ASTM A336 / A336M - 15, Standard Specification for Alloy Steel Forgings for Pressure and High-Temperature Parts
  - .12 ASTM A501 / A501M - 14, Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
  - .13 ASTM A666 - 15 Standard Specifications for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
  - .14 ASTM F436M - 11 Standard Specification for Hardened Steel Washers (Metric).
- .2 Canadian Standards Association (CSA)

International)

- .1 CSA-G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel.
  - .2 CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CSA-S16.1-01, Limit States Design of Steel Structures.
  - .4 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .5 CSA W59-13, Welded Steel Construction (Metal Arc Welding) (Imperial Version).
- .3 Federal Specifications:
- .1 FF-B-561D, Federal Specification: Bolts, (Screw), Lag (03 Aug 1993) [S/S By ASME/ANSI Standard B18.2.1 And ASME/ANSI Standard B18.18.1m]
  - .2 FF-S-111D, Federal Specification, Screw, Wood (27 Aug 1974)
  - .3 FF-W-92B, Federal Specification Washer, Flat (Plain) (9 May 1974)

1.2 SUBMITTALS

- .1 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
    - .1 For finishes, coatings, primers and paints.
- .2 Shop Drawings
- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Have shop drawings prepared by a structural engineer registered in New Brunswick for items required to be designed in accordance with Part 4.0 of the National Building Code.
  - .3 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

- .4 Shop drawings shall show construction details of specialties, general arrangements, typical and special installation conditions, materials, connections, attachments, anchorage, location of exposed fastenings and interface with adjacent materials.

1.3 QUALITY  
ASSURANCE

- .1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.4  
DELIVERY, STORAGE  
AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
  - .1 Deliver, store, handle and protect materials.
- .2 Storage and Protection:
  - .1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.
  - .2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

1.5 WARRANTIES

- .1 Upon completion of the work, submit the manufacturer's product warranties for incorporation into operation and maintenance manuals.
- .2 Specific warranties will be noted under the schedule of specialties if required by the Departmental Representative, otherwise the standard manufacturer's warranties shall be submitted.

#### 1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard and packaging material for recycling in accordance with Waste Management Plan.
- .4 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

### PART 2 PRODUCTS

#### 2.1 MATERIALS

- .1 Bolts and Anchor Bolts: to ASTM A325, type 1 medium carbon steel bolts, galvanized finish; ASTM A194, Grade 2H nuts, galvanized finish; ASTM F436, type 1 washers; ASTM A307, detention fabrications.
- .2 Fasteners (to stainless steel fabrications): to ASTM A666, type 304 stainless steel, of size and capacity as indicated on the reviewed shop drawings and as required to withstand all super imposed loading and to conform with all code requirements. Use Torx and pin fasteners where exposed.
- .3 Hollow Structural Sections: To CSA-G40.20/G40.21, 350W yield strength, Class C.
- .4 Isolation Coating: Alkali resistant bituminous paint or epoxy resin solution.
- .5 Supply new materials, free from defects impairing strength, durability or appearance, of best commercial quality for purposes specified. Where metal fabrications are exposed and painted, ensure that manufacturer's stamps are not visible.
- .6 Welding electrodes: to CSA W48 Series.

- .7 Welding materials: to CSA W59.
- .8 Welding Rods: of same analysis or high chromium nickel content than metal being welded.

## 2.2 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured. Provide strict quality control over fabrication to assure fabrication and assembly for +/- 1.5 mm from location indicated in the contract documents.
- .2 Where possible, fit and shop assemble work, ready for erection.
- .3 Ensure exposed welds are continuous for length of each joint.
  - .1 Welds shall be designed for flush smooth finish.
  - .2 Minor imperfections will be allowed only where practical during primer application.
  - .3 Defects which would be visible in the finished work shall be ground out, filled with welding material and ground flush prior to finishing.
  - .4 Grind all welds smooth. Welds shall be neat, complete and free of voids, flush finish, not ground.
- .4 Ease exposed edges to approximate 0.5 mm uniform radius.
- .5 Provide holes required for other work secured to or passing through architecturally exposed steel.
- .6 Fabricate all miscellaneous metalwork shown and detailed in the drawings and listed in this section in the quantities required.
- .7 Assemble built-up work in the shop and match-mark for correct field erection. Execute work in accordance with reviewed shop drawings.
- .8 All copes, miters and butt cuts in surfaces exposed to view shall be made with uniform gaps of 3.0 mm if detailed to be open joints or in uniform contact if detailed without gaps.
- .9 Weld in such a manner as to avoid distortion,

discolouration or damage to the members.

- .10 Weld interior work continuously along the entire line of contact.
- .11 Drill for countersunk screws if exposed to view unless otherwise shown or accepted by the Departmental Representative.
- .12 Locate holes in structural members for connections or for other purposes so as not to cause appreciable reduction in the strength of members.
- .13 Reinforce all work to suit the purpose for which it is intended and to withstand design loads.
- .14 Fabricate work square, true, straight and accurate to detail with sharply, defined profiles.
- .15 Fabricate curved work to smooth, uniform constant radii as detailed.
- .16 Joints in materials shall be cut to form fine hairline joints flush with adjacent surfaces.
- .17 Provide suitable temporary bracing as required to maintain alignment during shipment and erection.
- .18 Use self-tapping shake-proof and tamper proof flat headed screws on items requiring assembly by screws or as indicated. Use tamper proof fasteners where indicated of type as indicated on the Drawings.
- .19 Use one length piece per location, with neatly and accurately formed corners.
- .20 Use concealed fastening wherever possible.
- .21 Where exposed fastening is required, all exposed mechanical fastenings shall be flush countersunk Torx with pin type screws or bolts unobtrusively located consistent with the design, except where specifically noted otherwise.
- .22 Remove all sharp edges, burrs and the like.

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| <u>2.3 FINISHES</u>                      | .1 | Galvanizing: hot dipped galvanizing with zinc coating 600 g/m2 to CAN/CSA-G164.   |
|  | .2 | Shop coat primer: to CAN/CGSB-1.40.   |
|  | .3 | Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.  |
|  | .4 | For items to be finish painted, conform to Section 09 91 23 for primer types.   |
| <u>2.4 SHOP PREPARATION FOR PAINTING</u> | .1 | Clean metal of all loose mill scale, rust, oil, dirt and all other foreign matter.  |
|  | .2 | Clean interior metal to be painted in accordance with SSPC SPI Solvent Cleaning followed with SSPC SP.6 Commercial Blast Cleaning.  |
|  | .3 | Remove or repair sharp edges, burrs, weld spatter and other defects to steel members prior to application of primers.   |
| <u>2.5 SHOP PAINTING</u>                 | .1 | Apply one shop coat of primer to metal items. For items to be finish painted, apply primers in accordance with Section 09 91 23. Apply primer as specified under Section 09 91 23 in accordance with manufacturer's directions. Ensure that primer is applied within 8 hours of completion of surface preparations. |
|  | .2 | Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.   |
|  | .3 | Clean surfaces to be field welded; do not paint.  |
|  | .4 | If the correct primer is not applied by this section of the Work, this section is responsible for removal of the incorrect primer, re-conditioning the surface and applying the correct primer as specified, including removal and re-installation of the affected work as required.                                |
|  | .5 | Primer applied to surfaces not properly prepared in accordance with specified SSPC preparations will be rejected by the consultant and shall be   |

removed, brought up to the specified requirements and re-installed by the Contractor at no additional cost to the Departmental Representative.

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| <u>2.6 BULKHEAD FRAMING</u>    | .1 | Fabricate bulkhead frames from steel, 51x51x6.4 angles as indicated.   |
|                                | .2 | Weld angles together to form frame for steel bulkhead, sizes as indicated.   |
| <u>2.7 STEEL BULKHEAD</u>      | .1 | Fabricate steel sheet bulkhead as detailed on the drawings using 3 mm thick bent Weld sections together with fillet welds as detailed.   |
|                                | .2 | Use Torx with pin tamperproof fasteners at all exposed fasteners.  |
| <u>2.8 MISCELLANEOUS ITEMS</u> | .1 | Fabricate and install wall mounted supports to millwork as detailed on the drawings and elsewhere as indicated; coordinate with millwork and counters specified in Section 06 40 00. |
|                                | .2 | Fabricate and install security framing of L51x51x6.4 angles, for the installation of the washer and dryer as detailed on the Drawings and reviewed shop drawings.                    |
|                                | .3 | Existing door, at enlarged cells, to be welded into place to form a fixed panel as detailed on drawings.   |
|                                | .4 | Fabricate all other metal fabrication items or miscellaneous metal items required to complete the project.   |

### PART 3 EXECUTION

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|---------------------|----|--|
| <u>3.1 ERECTION</u> | .1 | Do welding work in accordance with CSA W59 unless specified otherwise.                                     |
|                     | .2 | Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections. |

- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Provide components for building by other sections in accordance with shop drawings and schedule.
- .6 Make field connections with bolts to CAN/CSA-S16.1, or weld.
- .7 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.
- .8 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 BULKHEAD FRAMES

- .1 Install steel channel frames as indicated.

3.3 MISCELLANEOUS  
ITEMS

- .1 Install all miscellaneous metal fabrications as indicated on the Drawings and as required to complete the work and to withstand all superimposed loading.

3.4 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Remove all protective labels just prior to final acceptance and clean products using cleaners as recommended by the manufacturer.
- .3 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION



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## PART 1 GENERAL

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|-----------------------|---|
| <u>1.1 REFERENCES</u> | <ul style="list-style-type: none"> <li>.1 American National Standards Institute (ANSI)               <ul style="list-style-type: none"> <li>.1 NPA A208.1-2009, Particleboard.</li> </ul> </li> <li>.2 American Society for Testing and Materials International (ASTM)               <ul style="list-style-type: none"> <li>.1 ASTM E1333-14, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.</li> <li>.2 ASTM D2832-92(2011), Standard Guide for Determining Volatile and Non-volatile Content of Paint and Related Coatings.</li> <li>.3 ASTM D5116-10, Standard Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.</li> </ul> </li> <li>.3 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)               <ul style="list-style-type: none"> <li>.1 Architectural Woodwork Quality Standards Illustrated, 8th edition, Version 1.0(2005).</li> </ul> </li> <li>.4 Canadian Standards Association (CSA International)               <ul style="list-style-type: none"> <li>.1 CSA B111-74(R2003), Wire Nails, Spikes and Staples.</li> <li>.2 CSA O112.4 Series-M1977(R2006), Standards for Wood Adhesives.</li> <li>.3 CSA O112.5-Series-M-1977(R2006), Urea Resin Adhesives for Wood (Room- and High-Temperature Curing).</li> <li>.4 CSA O112.7-Series M-1977(R2006), Resorcinol and Phenol-Resorcinol Resin Adhesives for Wood (Room- and Intermediate-Temperature Curing).</li> <li>.5 CSA O115-M1982 (R2001), Hardwood and Decorative Plywood.</li> <li>.6 CSA O121-08(R2013), Douglas Fir Plywood.</li> <li>.7 CSA O141-05(R2014), Softwood Lumber.</li> <li>.8 CSA O151-09 (R2014), Canadian Softwood Plywood.</li> <li>.9 CSA O153-13, Poplar Plywood.</li> <li>.10 CSA Z760-94(R2001), Life Cycle Assessment.</li> </ul> </li> </ul> |
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- .5 Environmental Choice Program (EPC)
  - .1 ECP-44, Adhesives, current edition.
  - .2 ECP-45, Sealants and Caulking Compounds, current edition.
  - .3 ECP-76, Surface Coatings, current edition.
- .6 International Organization for Standardization (ISO)
  - .1 ISO 14040-2006, Environmental Management-Life Cycle Assessment - Principles and Framework.
  - .2 ISO 14041-1998, Environmental Management-Life Cycle Assessment - Goal and Scope Definition and Inventory Analysis.
- .7 National Electrical Manufacturers Association (NEMA)
  - .1 ANSI/NEMA LD-3-05, High-Pressure Decorative Laminates.
- .8 National Hardwood Lumber Association (NHLA)
  - .1 Rules for the Measurement and of Inspection Hardwood and Cypress 1998.
- .9 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2005.

## 1.2 SUBMITTALS

- .1 Provide Submittal submissions: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Indicate details of construction, profiles, jointing, fastening and other related details.
  - .1 Scales: profiles full size, details 1/2 full size.
  - .2 Indicate materials, thicknesses, finishes and hardware.
  - .3 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.
- .3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.

- .1 Submit duplicate samples: sample size 300 x 300 mm samples of hardwood veneered plywood, plastic laminate, stainless steel and melamine and 300 mm long samples of hardwood edging, unless specified otherwise.
- .2 Provide duplicate colour samples of laminated plastic for colour selection.
- .3 Provide duplicate samples of laminated plastic joints, edging, cutouts and postformed profiles.
- .4 Quality assurance submittals:
  - .1 Manufacturer's Instructions: manufacturer's installation instructions.

### 1.3 QUALITY ASSURANCE

- .1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.
- .3 Delivery, Storage, and Handling:
  - .1 Deliver, handle, store and protect materials of this section.
    - .1 Protect millwork against dampness and damage during and after delivery.
    - .2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.
  - .2 Waste Management and Disposal:
    - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- .1 Softwood lumber: unless specified otherwise, S4S, moisture content 15 % or less in accordance with following standards:
  - .1 CSA 0141.
  - .2 NLGA Standard Grading Rules for Lumber. Canadian
  - .3 AWMAC custom grade, moisture content as

specified.

- .2 Machine stress-rated lumber is acceptable for all purposes.
- .3 Hardwood lumber: moisture content 15 % or less in accordance with following standards:
  - .1 National Hardwood Lumber Association (NHLA).
  - .2 AWMAC custom grade, moisture content as specified.
- .4 Douglas fir plywood (DFP): to CSA 0121, standard construction.
- .5 Canadian softwood plywood (CSP): to CSA 0151, standard construction.
- .6 Substrate for plastic laminate: Combination core plywood with a random waferboard inner core with Type II (interior) bond. Acceptable products:
  - .1 "Multi-Core".
  - .2 "Norcor".
  - .3 or preapproved product.
- .7 Laminated plastic for flatwork: to NEMA LD3, Grade VGL, Type S, 1.27 mm thick; satin finish, see drawings for finish schedule.
- .8 Hardwood edging - 19x38mm solid birch edging as detailed.
- .9 Nails and staples: to CSA B111.
- .10 Bolts, nuts, washers, lags, pins and screws: of size and type to suit application. Where fasteners are exposed, use stainless steel screws with stainless steel or chrome cup washers, and space neatly and evenly to the satisfaction of the Departmental Representative. Use tamper proof Torx type fasteners where indicated.
- .11 Sealant: refer to Section 07 92 00.
- .12 Adhesives and glues: nationally recognized brands suitable for intended application, water resistant, with acceptable low level emissions as follows:
  - .1 Total VOC concentration less than 0.5 mg/m3/hour.
  - .2 Formaldehyde: must be less than 1 part per

billion (1 PPB).

- .3 4 Phenycyclohexane (4-PCH): must be less than 1 part per billion (1-PPB).

## 2.2 FABRICATION

- .1 Set nails and countersink screws apply wood filler to indentations, sand smooth and leave ready to receive finish.
- .2 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.
- .3 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 3000 mm.

## 2.3 FINISHING

- .1 Refer to Section 09 91 23 - Interior Painting. All hardwood to be shop finished including clear finishes and stained finishes, using materials and application methods specified in Section 09 91 23.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- .1 Do architectural woodwork to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.
- .2 Install prefinished millwork at locations shown on drawings. Position accurately, level, plumb straight.
- .3 Fasten and anchor millwork securely.
- .4 Install steel leg to table top as detailed, so that it is level and will support all superimposed loading. Fasten to table top using security bolts.
- .5 Site apply laminated plastic to units as

indicated. Adhere laminated plastic over entire surface. Make corners with hairline joints. Use full sized laminate sheets. Make joints only where approved. Slightly bevel arises.

- .6 For site application, offset joints in plastic laminate facing from joints in core.

### 3.2 CLEANING

- .1 Clean millwork and outside surfaces.
- .2 Remove excess glue from surfaces.

### 3.3 PROTECTION

- .1 Protect millwork from damage until final inspection.

END OF SECTION

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

- .1 Materials, preparation and application for caulking and sealants.

### 1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM C920 - 14a Standard Specification for Elastomeric Joint Sealants
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB 19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
  - .2 CAN/CGSB 19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
- .3 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .4 General Services Administration (GSA) - Federal Specifications (FS)
  - .1 FS-SS-S-200-E(2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .6 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

### 1.3 SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's product to describe.
  - .1 Caulking compound.
  - .2 Primers.
  - .3 Sealing compound, each type, including compatibility when different sealants are in

contact with each other.

- .3 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Submit duplicate samples of each type of material and colour.
- .5 Cured samples of exposed sealants for each color where required to match adjacent material.
- .6 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Instructions to include installation instructions for each product used.

1.4 QUALITY  
ASSURANCE/  
MOCK-UP

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- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant.
- .3 Mock-up will be used:
  - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
- .4 Locate where directed.
- .5 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with sealant work.
- .6 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work.

1.5 DELIVERY,  
STORAGE, AND  
HANDLING

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- .1 Deliver, handle, store and protect materials in accordance with manufacturer's recommendations.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.6 WASTE  
MANAGEMENT AND  
DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard and packaging material for recycling in accordance with Waste Management Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .6 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .7 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Departmental Representative.
- .8 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.
- .9 Fold up metal banding, flatten, and place in designated area for recycling.

1.7 PROJECT  
CONDITIONS

- .1 Environmental Limitations: .1Do not proceed with installation of joint sealants under following conditions:
  - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
  - .2 When joint substrates are wet.
- .2 Joint-Width Conditions:
  - .1 Do not proceed with installation of joint

sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

- .3 Joint-Substrate Conditions:
  - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

## 1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .3 Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

## PART 2 PRODUCTS

### 2.1 SEALANT MATERIALS

- .1 Sealants and caulking compounds must:
  - .1 Meet or exceed all applicable governmental and industrial safety and performance standards; and
  - .2 Be manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising there from, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the fisheries Act and the Canadian Environmental Protection Act (CEPA).
- .2 Sealant and caulking compounds must not be formulated or manufactured with: aromatic

solvents, fibrous talc or asbestos, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium, barium or their compounds, except barium sulfate.

- .3 Sealant and caulking compounds must not contain a total of volatile organic compounds (VOCs) in excess of 5% by weight as calculated from records of the amounts of constituents used to make the product;
- .4 Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.
- .5 Caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant shall not be used in air handling units.
- .6 In the selection of the products and materials of this section preference will be given to those with the following characteristics: Water based, water clean-up, non-flammable, low Volatile Organic Compound (VOC) content, manufactured without compounds which contribute to ozone depletion in the upper atmosphere, manufactured without compounds which contribute to smog in the lower atmosphere, does not contain methylene chloride, does not contain chlorinated hydrocarbons.
- .7 The manufacturing process must adhere to Lifecycle Assessment Standards as per ISO 14040/14041 LCA Standards.
- .8 Sealants acceptable for use on this project except CAN/CGSB-19.1 and CAN/CGSB-19.18 must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with primers use only these primers.

2.2 SEALANT  
MATERIAL  
DESIGNATIONS

- .1 Sealant type 2 - multi component chemical curing sealing compound, paintable, to CAN/CGSB-19.24.
  - .1 Acceptable materials:
    - .1 Dymeric as manufactured by Tremco (Canada) Ltd.

- .2 Sikaflex 2C NS/S1 as manufactured by Sika Construction.
- .3 NP 2 as manufactured by Sonneborn, or an approved alternate.

- .2 Sealant type 4 - Security Sealant: as specified in Section 07 92 10.13.
- .3 Joint Filler: Round closed cell, non-staining, non-absorbent foam, extruded polyethylene shore hardness 20, tensile strength 138-207 KPa oversized 30-50%. For backup to large joints, cavities or voids, use fibreglass wool.
- .4 Bond Breaker: Pressure sensitive polyethylene tape, not bondable to sealant.

### 2.3 SEALANT SELECTION

- .1 Perimeters of interior frames, as detailed and itemized: Sealant Type 4 to inmate areas, Sealant Type 2 elsewhere.
- .2 Between different materials at interior locations, such as between gypsum board and concrete or concrete block: Sealant type 4 to inmate areas, Sealant type 2 elsewhere.
- .3 Sealant to wet areas: Sealant type 4 to inmate areas, Sealant type 2 elsewhere.

### 2.4 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
- .2 Primer: as recommended by manufacturer.

## PART 3 EXECUTION

### 3.1 Protection

- .1 Protect installed work of other trades from staining or contamination.

### 3.2 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for

installation of backup materials and sealants.

- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with manufacturer's directions.

### 3.3 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

### 3.4 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

### 3.5 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

### 3.6 APPLICATION

- .1 Sealant.
  - .1 Apply sealant in accordance with manufacturer's written instructions.
  - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
  - .3 Apply sealant in continuous beads.
  - .4 Apply sealant using gun with proper size nozzle.
  - .5 Use sufficient pressure to fill voids and joints solid.
  - .6 Form surface of sealant with full bead,

- smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
- .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing.
  - .1 Cure sealants in accordance with sealant manufacturer's instructions.
  - .2 Do not cover up sealants until proper curing has taken place.
- .3 Cleanup.
  - .1 Clean adjacent surfaces immediately and leave Work neat and clean.
  - .2 Remove excess and droppings, using recommended cleaners as work progresses.
  - .3 Remove masking tape after initial set of sealant.

END OF SECTION

PART 1 GENERAL

1.1 SECTION  
INCLUDES

- .1 Preparing sealant substrate surfaces.
- .2 Placement of joint fillers, backing and sealant.

1.2 REFERENCE  
STANDARDS

- .1 ASTM Standards:
  - .1 ASTM C920-14a: Standard Specification for Elastomeric Joint Sealants.

1.3 QUALIFICATIONS

- .1 Perform Caulking using parties recognized for ability in the trade, having at least five (5) years proven satisfactory experience, to carry out the work and/or supervise skilled mechanics thoroughly trained and competent in the use of caulking and sealing materials using pressure operated equipment.
- .2 Perform Work in accordance with the sealant manufacturer's requirements for preparation of surfaces and materials installation instructions.

1.4 PRODUCT DATA

- .1 Submit product data in accordance with Section 01 33 00.
- .2 Submit duplicate copies of manufacturer's product literature for each type of sealant material specified.

1.5 PROTECTION

- .1 If sealant can be damaged before it has cured sufficiently, provide adequate protection. If damaged, remove sealant and renew the application.

1.6 DELIVERY /  
STORAGE

- .1 Deliver all materials and store in originals wrappings and containers with manufacturer's seals and labels intact, and as recommended by the manufacturer of the sealant.
- .2 Maintain containers and labels in undamaged condition.

1.7 ENVIRONMENTAL  
CONDITIONS

- .1 Do not work at temperatures greater or less than those recommended by the manufacturer.
- .2 Maintain air temperature range of 4°C to 27°C in areas to receive sealants, 24 hours before, during application, and until sealants have cured.
- .3 Should it become necessary to apply sealants at temperatures below or above this range, advise the Departmental Representative and consult sealant manufacturer and follow the latter's recommendations.
- .4 Protect all work against damage and disfigurations and work of other trades against soiling and damage arising out of this work. Upon completion, replace and repair all defective work.
- .5 Examine substrate materials, joint voids, and note temperature/humidity conditions. Report unacceptable conditions to the Departmental Representative.
- .6 Commencement of work implies acceptance of conditions.

1.8 SAFETY  
REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada and Occupational Health and Safety.
- .2 Product may cause chemical burns on skin if not washed out within 5 minutes or in the eyes if not washed out immediately with water for a period of five minutes.
  - .1 Goggles, gloves and other suitable safety equipment should be used.
  - .2 Over time and over exposure can cause a skin reaction to occur.
  - .3 See manufacturer's Data Sheet before using.
- .3 Ventilate area of work as using acceptable portable supply and exhaust fans.

1.9 COMPATIBILITY

- .1 Ensure that all materials used are compatible.
- .2 Declaration of Materials Compatibility: Submit written declaration stating that sealant materials are compatible with adjacent materials and substrates and are acceptable to the sealant manufacturer. Include a list of materials, suppliers and manufacturers.

1.10 GUARANTEE

- .1 For Work of this Section 07 92 10.13 - Security Sealants, 12 months warranty period prescribed in subsection GC 3.13 of General Conditions "C" is extended to 60 months as described below.
- .2 Provide a written guarantee endorsed and issued in the name of Her Majesty the Queen stating that all sealant and caulking work is guaranteed against leakage, cracking and deterioration, shrinkage, loss of cohesion, loss of adhesion, staining of adjacent surfaces, integral staining or failure to provide intended seal; for a period of five (5) years from date of Substantial Performance of the contract and that any defects will be replaced including related materials at no cost to the Departmental Representative.
- .3 Provide manufacturers guarantee, that its products are of the quality represented in its product literature and package markings and, when applied in accordance with its current specifications and application instructions, will perform as stated in its product literature.
- .4 Include this scope provision within the scope of the Performance Bond.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Security Type Sealant: Epoxy sealant type 4, 2 component. Physical Properties Part A Part B Part A & B Colour - - Colour to match substrate Viscosity 10,000 CPS 200 CPS 7,000 CPS Specific Gravity 1.3 9.7 1.2.
  - .1 Acceptable products:  
"AnchorFix-3001" manufactured by Sika; Dynapoxy EP-1200 manufactured

by Pecora;

- .2 Joint Cleaner: Non-corrosive solvent recommended by sealant manufacturer for applicable substrate materials.
- .3 Primer: Non-staining type recommended by sealant manufacturer.
- .4 Joint Filler: Round closed cell, non-staining, non-absorbent foam, extruded polyethylene shore hardness 20, tensile strength 138-207 KPa oversized 30-50%. For backup to large joints, cavities or voids, use fibreglass wool.
- .5 Bond Breaker: Pressure sensitive polyethylene tape, not bondable to sealant.

## 2.2 COLOURS

- .1 Colours: to match adjacent material, as selected by the Departmental Representative.

## PART 3 EXECUTION

### 3.1 PREPARATION

- .1 Surface Cleaning: Clean all surfaces required to be caulked, removing all loose particles, dust, oil, wax, protective coatings, mould release agents, and the like, using brush, solvents, or acid etching methods.
  - .1 Concrete: Must be sound, free of grease, laitance, etc. Concrete must be dry.
  - .2 Steel: Remove rust, old paints, etc. Solvent cleaners to remove oil, etc.
  - .3 Wood: Must be dry and free of paint, oil, etc.
  - .4 Plastics: Consult sealant manufacturer for written instructions.
- .2 Primer Application: Prior to application of primer where required, test primers for possible yellowing, discolouration, and dirt pick-up when applied over face of porous substrates.
- .3 Following testing apply primers to joints following manufacturer's recommendations.
- .4 When tests indicate discolouration, dirt pick-up and the like on surfaces, take special precautions

when applying, by masking surfaces not required to be primed.

- .5 Ensure that the sealant manufacturer's representative reviews site conditions, joint design and installers qualifications. Report unsatisfactory conditions to the Departmental Representative. Ensure that sealants are compatible with adjoining materials.
- .6 Ensure that the sealant manufacturer's representative checks container labels, random inspect preparation of substrate materials and random test installed work.

### 3.2 APPLICATION GENERAL

- .1 Apply foam bead to within 10 mm of face of joint.
- .2 Ensure all surfaces are clean. Caulk only when surface temperature is between 4°C and 26°C.
- .3 Apply sealant in accordance with manufacturer's instructions.
- .4 Use pressure gun fitted with suitable nozzle.
- .5 Ensure finished surfaces of sealant are smooth and free from ridges, wrinkles, or foreign matter.
- .6 Prime joints when recommended by manufacturer. Use a brush that will reach all parts of the joints.
- .7 Wire brush loose surfaces (such as brick or masonry).
- .8 Ensure bead is solid, filling entire space between sides and bedding material, and exerting sufficient pressure on sides to obtain maximum bond, by allowing sealant to bulge out in advance of nozzle.

### 3.3 APPLICATION OF SEALANTS

- .1 Apply sealant in accordance with manufacturer's directions, using a pressure air gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.
- .2 Apply security sealant to all interior joints between dissimilar materials and elsewhere as

required or indicated on the Drawings.

- .3 Joints should be filled to approximately 2/3 full and let set for approximately 4 hours, then fill the remainder. The level of epoxy should be just above the surface. Passing a propane torch over the surface an hour after application will break any bubbles. Excess epoxy can be cut off with a scraper the next day.
- .4 Cold Temperature: Apply only when temperatures are above 0C.
- .5 Provide bond breaker between security sealant and glass. Remove excess bond breaker exposed after sealant has cured.
- .6 Provide bond breaker at radiant heat ceiling panel. Remove excess bond breaker exposed after sealant has cured.
- .7 Joint Design: Fill all spaces that are deeper than width of joint, with approved backup material. Ensure that the backup material fills the joint out to a dimension that is equal to the width of the joint, but in no case less than half the width of the joint.
- .8 Sealant Application: Gun apply sealants through a nozzle opening of such shape and diameter that the full bead of sealant is gunned into the joint, filling the joint completely; to the approval of the Departmental Representative.
- .9 A superficial or skin bead in joints will not be acceptable.
- .10 Tool all beads immediately after application to ensure firm, full contact with the inner faces of the joint. Strike off excess material with tooling stick or knife.
- .11 Upon completion ensure caulking surfaces are smooth, even, free from ridges, wrinkles, air pockets, and embedded foreign matter.
- .12 Joint Finishes: Finish joints in flush surfaces; fill joints full in internal angles, except as otherwise detailed. Use wet tool as required. Avoid the use of face fillet (or angle bead) joints. CONCAVE OR CONVEX JOINTS WILL BE REJECTED.

- .13 Where sharp, exact bead lines are desired, use masking tape. When taping, avoid touching cleaned and primed areas to which sealant is to be applied. Remove masking tape immediately after bead is placed and tooled, to avoid damage to developing surface skin.
- .14 Completely fill void with compound into which they are installed. Remove excess immediately following installation.
- .15 Do not provide security sealant to light switch plates, electrical plug plates and sprinkler heads.

#### 3.4 BREAKER

- .1 Use foam bead as specified, to limit depth of sealant and to act as bond breaker at back of joint (adhesion is not required at back of joint).
- .2 Where depth of joint does not permit the use of foam bead, apply paper masking tape to the back of the joint to act as bond breaker.

#### 3.5 CLEANING

- .1 Promptly as work proceeds remove all excess material or smears from surfaces beyond joint or surface to be caulked, using solvents as recommended by the manufacturer's representative. If sealant or caulking has set up, employ mechanical removal.
- .2 During application, maintain areas of work in clean condition daily removing from the premises and site all rubbish and surplus material.
- .3 Clean immediately soiled non-porous materials.
- .4 On porous surfaces, remove any excess sealant as recommended by manufacturer.
- .5 Sealant manufacturer recommends that equipment must be cleaned after use with Sealant Manufacturers Solvent. Cured material can only be removed by burning.

END OF SECTION



## PART 1 GENERAL

### 1.1 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A653/A653M-15, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
- .3 Canadian Standards Association (CSA International)
  - .1 CSA G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .4 Canadian Steel Door Manufacturers' Association (CSDMA)
  - .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
  - .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.

### 1.2 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of New Brunswick.
  - .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, louvered, arrangement of hardware

		and fire rating and finishes.
	.3	Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing, fire-rating finishes.
	.4	Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
	.5	Submit test and engineering data, and installation instructions.
	.4	Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
	.1	Submit one 300 x 300 mm corner sample of each type door.
	.2	Submit one 300 x 300 mm corner sample of each type of frame.
	.1	Show butt cutout, glazing stops.
<u>1.3 DELIVERY, STORAGE AND HANDLING</u>	.1	Deliver, store and handle materials in accordance with manufacturer's recommendations.
	.2	Waste Management and Disposal:
	.1	Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
<u>PART 2 PRODUCTS</u>		
<u>2.1 MATERIALS</u>	.1	Hot dipped galvanized steel sheet: to ASTM A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
	.2	Reinforcement: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.
<u>2.2 DOOR CORE MATERIALS</u>	.1	Honeycomb construction:
	.1	Structural small cell, 24.5mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m3 minimum sanded to required thickness.
<u>2.3 ADHESIVES</u>	.1	Honeycomb cores and steel components: heat

resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

- .2 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

#### 2.4 PRIMER

- .1 Touch-up prime CAN/CGSB-1.181.

#### 2.5 PAINT

- .1 Field paint steel doors and frames in accordance with Section 09 91 23 - Interior Painting. Provide final finish shall be free of scratches or other blemishes.

#### 2.6 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Interior top and bottom caps: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.
- .3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
- .4 Metallic paste filler: to manufacturer's standard.
- .5 Sealant: as specified in Section 07 92 00 - Joint Sealants.
- .6 Glazing: as specified in Section 08 80 50.
- .7 Make provisions for glazing as indicated and provide necessary glazing stops.
  - .1 Provide removable stainless steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless steel screws.
  - .2 Design glazing stops to be tamperproof.

#### 2.7 DOOR FRABRICATION GENERAL

- .1 Doors: swing type, flush, with provision for glass and openings as indicated.
- .2 Interior doors: honeycomb construction.

- .3 Fabricate doors with longitudinal edges welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.
- .4 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketing and hardware in accordance with ASTM E330.
- .5 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.
- .6 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- .7 Reinforce doors where required, for surface mounted hardware. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
- .8 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
- .9 Manufacturer's nameplates on doors are not permitted.

## 2.8 HOLLOW STEEL CONSTRUCTION

- .1 Form each face sheet for interior doors from 1.6 mm sheet steel.
- .2 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.
- .3 Fill voids between stiffeners of interior doors with honeycomb or temperature rise rated core.

## PART 3 EXECUTION

### 3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliances: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage

and installation instructions, and datasheets.

3.2 INSTALLATION  
GENERAL

- .1 Install doors and frames to CSDMA Installation Guide.

3.3 DOOR  
INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
  - .1 Hinge side: 1.0 mm.
  - .2 Latch side and head: 1.5 mm.
  - .3 Finished floor, top of carpet, noncombustible sill and thresholds: 13 mm.
- .3 Adjust operable parts for correct function.

3.4 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.

3.5 GLAZING

- .1 Install glazing for doors in accordance with Section 08 80 50 - Glazing.

END OF SECTION



## PART 1 - GENERAL

### 1.1 QUALITY CONTROL

- .1 Do not combine supplier bids for door hardware with bids for doors and frames.
- .2 Supplier: A recognized builders Hardware Supplier who has been furnishing hardware in the project's vicinity for a period of not less than five (5) years, and who is or has in employment an Architectural Hardware Consultant (AHC) who holds a current certification seal of the Door and Hardware Institute. The hardware consultant shall be available for on-site consultation as required. The supplier shall have adequate equipment, maintenance and advisory facilities in order to serve and keep pace with contract obligations and responsibilities.

### 1.2 REFERENCES

- .1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).
  - .1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.
- .2 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-69.17-M86/ANSI/BHMA A156.2-1996, Bored and Preassembled Locks and Latches.
  - .2 CAN/CGSB-69.18-M90/ANSI/BHMA A156.1-1981, Butts and Hinges.
  - .3 CAN/CGSB-69.20-M90/ANSI/BHMA A156.4-1986, Door Controls (Closers).
  - .4 CAN/CGSB-69.21-M90/ANSI/BHMA A156.5-1984, Auxiliary Locks and Associated Products.
  - .5 CAN/CGSB-69.22-M90/ANSI/BHMA A156.6-1986, Architectural Door Trim.
  - .6 CAN/CGSB-69.24-M90/ANSI/BHMA A156.8-1982, Door Controls - Overhead Holders.
  - .7 CAN/CGSB-69.28-M90/ANSI/BHMA A156.12-1986, Interconnected Locks and Latches.
  - .8 CAN/CGSB-69.29-93/ANSI/BHMA A156.13-1987, Mortise Locks and Latches.
  - .9 CAN/CGSB-69.30-93/ANSI/BHMA A156.14-1991, Sliding and Folding Door Hardware.
  - .10 CAN/CGSB-69.32-M90/ANSI/BHMA

A156.16-1981, Auxiliary Hardware.

- .11 CAN/CGSB-69.34-93/ANSI/BHMA A156.18-1987, Materials and Finishes.
- .12 CAN/CGSB-69.37-93/ANSI/BHMA A156.21-96, Thresholds.
- .13 ANSI/BHMA A156.28-00, Master Keying.

### 1.3 SAMPLES

- .1 Submit - Samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
- .3 After approval samples will be returned for incorporation in the Work.

### 1.4 HARDWARE LIST

- .1 Submit contract hardware list in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

### 1.5 KEY SCHEDULE

- .1 After a keying meeting between the Departmental Representative and the Hardware Supplier, provide a keying schedule, listing the levels of keying, as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled. This schedule can be submitted as part of the Hardware Schedule or as a separate schedule.

### 1.6 ELECTRONIC SECURITY HARDWARE

- .1 When electrified hardware is included in the hardware specification, the hardware supplier must employ an individual knowledgeable in electrified components and systems, who is capable of producing wiring diagrams and consulting as needed. Coordinate installation of the electronic security hardware with the Departmental Representative and provide installation and technical data to the Departmental Representative and other related sub-contractors. Upon completion of electronic security hardware installation, verify that all components are working properly, and state in the

required guarantee that this inspection has been performed.

1.7 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data for door closers, locksets and door hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- .2 Brief maintenance staff regarding proper care, cleaning, and general maintenance.

1.8 EXTRA MATERIALS

- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Supply two sets of wrenches for door closers and locksets.

1.9 DELIVERY AND STORAGE

- .1 Deliver, store, handle and protect materials in accordance with manufacturer's recommendations.
- .2 Store finishing hardware in locked, clean and dry area.
- .3 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

1.10 WASTE DISPOSAL AND MANAGEMENT

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction / Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Dispose of all corrugated cardboard, polystyrene, plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.
- .4 All existing hardware being removed is to be returned to client.

## PART 2 - PRODUCTS

### 2.1 HARDWARE ITEMS

- .1 Only door locksets listed on CGSB Qualified Products List are acceptable for use on this project.
- .2 Use one manufacturer's products only for all similar items.

### 2.2 DOOR HARDWARE

- .1 Locks and latches:
  - .1 Bored and preassembled locks and latches to CAN/CGSB-69.17 series 4000 bored lock, grade 1, designed for function, and keyed as stated in Hardware Group.
  - .2 Lever handles: plain design as stated in Hardware Group.
  - .3 Roses: round.
  - .4 Normal strikes: box type, lip projection not beyond jamb.
  - .5 Cylinders: key into keying system as directed.
  - .6 Finished to C26D.
- .2 Butts and hinges:
  - .1 Butts and hinges: to CAN/CGSB-69.20, designated by letter A and numerical identifiers, followed by size and finish, listed in Hardware Group.
- .3 Door Closers and Accessories.
  - .1 Door bottom seal: heavy duty door seal of extruded aluminum frame and solid closed cell neoprene weather seal, recessed in door bottom, closed ends, adjustable automatic retract mechanism when door is open, clear anodized finish.
  - .2 Weatherstripping:
    - .1 Head and jamb seal:
      - .1 Self adhesive gasket, resistant to fungus and mildew, controls smoke and sound.
    - .2 Adhesive backed santoprene material.
- .4 Holders and stops
  - .1 Holders and stops: to CAN/CGSB-69.32, ANSI A156.16, as listed in hardware schedule.
  - .2 Wall Stops: to ANSI/BHMA A156.8. solid cast

brass or bronze, circular shape, rubber insert, finish stainless steel.

Acceptable materials are: Gallery Hardware 250B or approved

.3 Floor stops: 50mm x 89mm full spherical radius Heavy duty Silicone rubber door stop (can be mounted to floors or walls)

.5 Auxiliary Hardware:

.1 Door Pull: to ANSI/BHMA A156.6, 25.4mm diameter stainless steel finish (US32D) or to match existing, c/w security fasteners.

Acceptable materials are: Southern Folger No.2 or approved equal.

.2 A Flush pull: Rugged cast flash cup door pulls that provide limited purchase on one or both sides of a door c/w security fasteners.

Acceptable materials are: Southern Folger No.4-1s or approved equal.

2.3 DETENTION DOOR  
HARDWARE

.1 Security Lock:

.1 High security Pin Tumbler, mechanical lock for swinging doors (Medium to Maximum Security) keyed one or two sides, Paracentric cylinder (s).

Stainless steel latch bolt deadlocks automatically when door is in closed position.

Acceptable materials are: 60 series as manufactured by Southern Folger.

.2 High Security Pin Tumbler, mortise mechanical lock for swinging food pass doors keyed one side only, paracentric cylinder (s).

Acceptable materials are: 17 series as manufactured by Southern Folger.

.3 High Security Locking & Operating roller chain, remote electric and local mechanical system for individual sliding doors not exceeding 450lbs. Device will unlock, open, or unlocks, closes and deadlocks closed. A door stopped in mid-travel may be open or closed manually.

Acceptable materials are: D2.B.3 series Door operator as manufactured by Southern Folger.

.4 Butts and Hinges: to CGSB-69.18, meeting ANSI Standards for performance, non-removable pins, with safety stuffs projecting into door frame and door (RSS), 114 x 114 x 4.75mm, 8mm pin diameter, hospital tip, numerical identifiers followed by size, options and finish in listings

- .5 #5 Heavy Prison hinges: To be supplied with bolt holes to be bolted to both door & frame on site 125mm x 150mm x 12.5mm thick. USP Primed.
- .6 #3FP Heaving Prison hinges: To be supplied with forged built in stop 10mm -16 x 19mm flat head security screws. 75mm x 102mm x 10mm thick. USP Primed.

#### 2.4 FASTENINGS

- .1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.
- .2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .3 Exposed fastening devices to match finish of hardware.
- .4 Use fasteners compatible with material through which they pass.

#### 2.5 DETENTION DOOR FASTENINGS

- .1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
- .2 All screw type fasteners for application of hardware items except those to be welded, shall be "Security Torx" type of the size and length as recommended by the manufacturer. Supply 2-10mm drive socket wrenches for each size for maintenance purposes.
- .3 Exposed fastening devices to match finish of hardware.
- .4 Use fasteners compatible with material through which they pass

#### 2.6 KEYING

- .1 Doors to be keyed alike in groups, master keyed, grand master keyed, as directed. Prepare detailed keying schedule in conjunction with Departmental Representative.
- .2 Provide keys in duplicate for every lock in this Contract.
- .3 Provide three master keys for each MK or GMK group.

- .4 Stamp keying code numbers on keys and cylinders.
- .5 Provide construction cores.
- .6 Provide all permanent cores and keys to Departmental Representative.

## 2.7 DETENTION DOOR KEYINGS

- .1 Mogul System: cores, cylinders and keying by lock manufacturer as continuation of current institution key groups.
- .2 Provide 3 keys minimum per key code, keyed as directed.

## PART 3 - EXECUTION

### 3.1 INSTALLATION INSTRUCTION

- .1 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
- .2 Furnish manufacturers' instructions for proper installation of each hardware component.
- .3 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.
- .4 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .5 Remove construction cores when directed by Departmental Representative; install permanent cores and check operation of all locks.

### 3.2 SCHEDULE

Door DC1002		
1-1/2 pr.	Hinges ST FBB 179 114 x 101	C26D
1	Office function Set (F81)	C26D
1 set	Weatherstrip K.N. Crowder W-22	
1	Auto Door Bottom K.N. Crowder CT-54	Alum
1	Door Stop SG 599S	C26D

Doors D4.B.1, D4.B.2, D4.B.3, D4.B.4, D4.B.6, D4.B.7, D4.B.8, D4.B.10  
1 High Security Pin Tumbler Series 17 by Southern Folger  
1 High Security locking/operating roller chain D2B3 by Southern  
Folger  
1 pr. Prison Hinges #3 FP  
1 Keying Mogul System

END OF SECTION

## PART 1 GENERAL

### 1.1 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM C542-05(2011), Specification for Lock-Strip Gaskets.
  - .2 ASTM D790-15e12, Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
  - .3 ASTM D2240-15, Test Method for Rubber Property - Durometer Hardness.
  - .4 ASTM E84-15b, Test Method for Surface Burning Characteristics of Building Materials.
  - .5 ASTM F1233-08(2013), Test Method for Security Glazing Materials and Systems.
- .2 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB-12.1-M90, Tempered or Safety Laminated Glass.
  - .2 CAN/CGSB-12.2-M91, Flat, Clear Sheet Glass.
  - .3 CAN/CGSB-12.3-M91, Flat, Clear Float Glass.
- .3 Environmental Choice Program (ECP).
  - .1 CCD-045-95, Sealants and Caulking.
- .4 Flat Glass Manufacturers Association (FGMA).
  - .1 FGMA Glazing Manual - 1997.
- .5 Laminators Safety Glass Association (LSGA).
  - .1 LSGA Laminated Glass Design Guide 2000.

### 1.2 SUBMITTALS

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
    - .1 For glazing materials during application and curing.
    - .2 Shop Drawings:
    - .3 Submit shop drawings in accordance

with Section 01 33 00 - Submittal Procedures.

- .3 Samples:
  - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit duplicate 300 mm size square samples of each type of glass.
- .4 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.
- .5 Closeout Submittals:
  - .1 Provide maintenance data including cleaning instructions for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

### 1.3 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
  - .1 Provide testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.
  - .2 Provide shop inspection and testing for glass.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

### 1.4 SITE CONDITIONS

- .1 Environmental Requirements:
  - .1 Install glazing when ambient is temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.
- .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

### 1.5 WASTE

- .1 Separate and recycle waste materials in

MANAGEMENT AND  
DISPOSAL

accordance with Section 01 74 21 - Construction / Demolition Waste Management and Disposal.

- .2 Divert metal cut-offs from landfill by disposal into on-site metal recycling bin.
- .3 Divert uninstalled materials for reuse at nearest used building materials facility or similar type facility.
- .4 Divert unused caulking and sealant materials from landfill through disposal at special wastes depot.
- .5 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.
- .6 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .7 Dispose of corrugated cardboard, polystyrene, plastic and packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

PART 2 PRODUCTS

2.1 MATERIALS: FLAT  
GLASS

- .1 Safety glass (glass type A1): to CAN/CGSB-12.1, transparent, 6mm thick.
  - .1 Type 2-Fully tempered.
  - .2 Class B-float.
  - .3 Category 11.
- .2 Security Glazing (Glass Type K1): 17.5 mm thick laminated unit, consisting of one lite of 3.16 mm chemically strengthened tempered glass, with 1.27 mm polyurethane based interlayer, one lite of 9.48 mm polycarbonate core, 1.27 mm polyurethane based interlayer, one lite 3.16 mm chemically strengthened tempered glass. Forced entry level 2, Ballistic Level A. Acceptable Product: Globe Amerada Architectural Glass, product 2116; No Substitution.
- .3 Security Glazing (Glass type K2): 23.8 mm thick laminated unit, consisting of one lite of 3.16 mm chemically strengthened tempered glass, with 1.27 mm polyurethane based interlayer, one lite

of 3.16 mm polycarbonate core, 0.64 mm polyurethane based interlayer, one lite of 6.4 mm polycarbonate core, 0.64 mm polyurethane based interlayer, one lite of 3.16 mm polycarbonate core, 1.27 mm polyurethane based interlayer, one lite 3.16 mm chemically strengthened tempered glass. Forced entry level 4, Ballistic Level A. Acceptable Product: Globe Amerada Architectural Glass, product 2114; No Substitution.

## 2.2 ACCESSORIES

- .1 Glazing Tape: 100% solids, ribbon form extruded polyisobutylene - butyl type, 10-15 durometer hardness, paper release, colour to match adjacent surfaces, size to suit opening.
- .2 Setting Blocks: Neoprene: 70-90 durometer Shore "A" hardness, 100 mm long x 9.5 mm thick x 6 mm high.
- .3 Spacer Shims: Neoprene: 50 durometer hardness, 75 mm x 2.4 mm thick x 6 mm high

## PART 3 EXECUTION

### 3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

### 3.2 EXAMINATION

- .1 Verify that openings for glazing are correctly sized and within tolerance.
- .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

### 3.3 PREPARATION

- .1 Clean contact surfaces with solvent and wipe dry.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION:  
INTERIOR - DRY  
METHOD (TAPE AND  
TAPE) TO HOLLOW  
METAL DOORS AND  
WINDOWS, DETENTION  
DOORS AND FRAMES

- .1 Cut glazing tape to length and set against permanent stops, projecting 1.6mm above sight line.
- .2 Place setting blocks at 1/4 points, with edge block maximum 159mm from corners.
- .3 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.
- .4 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.
- .5 Place glazing tape on free perimeter of glazing in same manner described.
- .6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- .7 Knife trim protruding tape.

3.5 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Remove traces of primer, caulking.
- .3 Remove glazing materials from finish surfaces.
- .4 Remove labels after work is complete.
- .5 Clean glass using approved non-abrasive cleaner in accordance with manufacturer's instructions.
- .6 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.6 PROTECTION OF  
FINISHED WORK

- .1 After installation, mark light with an "X" by using removable plastic tape or paste.

END OF SECTION



## PART 1 GENERAL

### 1.1 RELATED SECTIONS

- .1 Section 02 41 19 Selective Demolition
- .2 Section 07 92 10.13 - Security Sealant.

### 1.2 REFERENCES

- .1 American Concrete Institute (ACI)
  - .1 ACI 503R, Use of Epoxy Compounds with Concrete.
- .2 American Society for Testing and Materials (ASTM International)
  - .1 ASTM D 412)e1, Test Method for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.
  - .2 ASTM D 635, Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
  - .3 ASTM D 638, Test Method for Tensile Properties of Plastics.
- .3 Terrazzo, Tile and Marble Association of Canada
  - .1 Specification Guide - Tile Installation Manual, latest edition.

### 1.3 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 -Submittal Procedures.
- .2 Indicate cutting and patching details, installation locations for new terrazzo bases, layout of divider strips and expansion joints.

### 1.4 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit 300 x 300 x 6 mm thick samples of each colour and texture for flooring and bases.
- .3 Samples are to demonstrate colour and workmanship and will become the standard of acceptance for the work.
- .4 Sample colours and appearance are to match

existing flooring and bases.

1.5 CLOSEOUT  
SUBMITTALS

- .1 Provide maintenance data for Terrazzo floor for incorporation into manual specified in Section 01 33 00 - Submittal Procedures.

1.6 DELIVERY, STORAGE  
AND HANDLING

- .1 Deliver materials to job site just prior to installation.
- .2 Store materials inside, in dry location, away from heavy traffic areas.
- .3 Deliver and store materials in manner to prevent damage.
- .4 Ensure materials remain in original wrapping and containers until used.

1.7 ENVIRONMENTAL  
REQUIREMENTS

- .1 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of materials.
- .2 Ventilation.
  - .1 Provide continuous ventilation during and after installation. Run system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of installation.
- .3 Temperature.
  - .1 Maintain temperature and structural base temperature for installation area above 12 ° C for 24 hours prior to, during, and for 24 hours following installation.

1.8 QUALIFICATIONS AND  
WORKMANSHIP

- .1 Applicators must have a minimum of five (5) years' experience and be members in good standing with the TTMAC.
- .2 Terrazzo work shall be done in accordance with the latest Terrazzo Specification guide 096600 produced by TTMAC.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- .1 Underbed Materials
  - .1 Portland Cement: to CSA-A3000
  - .2 Sand: clean washed to ASTM C-144-11
  - .3 Divider strips: zinc 2 to 3 mm thick
  - .4 Underbed: One part Portland cement to four parts clean washed sand by volume, add sufficient clean water and mix thoroughly to a low slump to provide workability.
- .2 Topping Materials;
  - .1 Portland cement: white, grey or a blended mixture of both to match existing.
  - .2 Colour Pigments: non-fading in powder or liquid form if specified.
  - .3 Aggregate Chips: marble, granite, a limited amount of plastic or glass chips may be added to the mix according to manufacturer's instructions and to match existing floors.
  - .4 Abrasive Aggregate: aluminum oxide if required.
  - .5 Topping; 40 Kg cement, white grey or both, to 90 kg of aggregate chips, 70% No.2 and 30% No. 1 for floors; add colour pigment if required. Use no more than 18 liters of water per 40 kg of cement or adjust to suit conditions to provide workability.
- .3 Concrete Densifier: Pentrasil manufactured by Consolidek or an approved equal.
- .4 Top coat sealer: Pentra Guard manufactured by Consolidek or an approved equal.

## PART 3 EXECUTION

3.1 PREPARATION

- .1 After all the existing base and partitions are removed, all areas where the old terrazzo floor and terrazzo cove base was infilled with concrete, the concrete is to be completely removed. Followed by the installation of a new mortar bed with all the necessary zinc divider strips installed at the proper locations. After these steps then the new terrazzo floor and cove base to match existing is to be installed.
- .2 Mechanical Preparation
  - .1 Sandblasting, or use of other pneumatically impelled abrasive media:
    - .1 Provide uniformly textured surface.
    - .2 Carefully remove all spent abrasive media and loosened concrete particles following blasting with vacuums and brushes.
  - .2 Scarifying:
    - .1 Level deeply scarred subsurface to obtain uniform finish.
    - .2 Supplement removal of penetrated materials, where necessary, by other chemical or mechanical processes.
    - .3 Sanding, or surface abrasion with heavy grit media: corners and edges, full surface.

3.2 INSTALLATION

- .1 Underbed Installation: Broom clean base slab, saturate with water and remove excess. Apply a slurry bond coat consisting of a thick paste of cement and water, latex additive may be added. Place and screed underbed mix to 13 mm below finished floor elevation or slope. Install divider strips and control joints in underbed while in a workable plastic state. Trowel firmly on both sides of divider strips to a true and level plane and required pattern.
  - .1 Thickness of underbed 38 mm.
- .2 Terrazzo Topping Installation: Allow underbed to cure, sweep or vacuum, saturate with water and remove excess. Apply a slurry bond coat and immediately follow with application of terrazzo

topping mix. Wet topping mixture, mix thoroughly and spread terrazzo mixture with trowel, level to top of strips. Sprinkle topping with dry aggregate chips. Roll topping with heavy rollers to compact topping until excess cement and water has been extracted. Hand trowel topping surface flush with top of divider strips to close all voids and pin holes. Control cure for a minimum of 48 hours.

.1 Thickness of topping 13 mm.

.3 Grinding: After floor has sufficiently cured, grind with 24 grit abrasive stones or with diamond plugs. Follow initial grind with No. 80 grit stones. Remove excess slurry, rinse with clean water and apply grout by hand trowel or machine to fill all voids. Allow grout to cure for 48 hours and re-grind with 80 grit stones or finer, to a maximum of 120 grit until all grout is removed from surface, rinse with clean water, let surface dry thoroughly and apply sealer as per manufacturer's recommendations.

.4 Polishing: all new and existing terrazzo floors and terrazzo bases must be polished to a minimum of 400 grit. During this process a concrete densifier must be applied. After polishing apply a final protective topcoat.

.5 Bases.

.1 Standard base: coved 6mm thick, and 150mm high topping direct on wall.

.2 Where new terrazzo cove bases are to be installed, the terrazzo floor must be removed 75 mm from the wall. Then the troweled cove base shall be installed 150 mm high complete with all required zinc strips.

### 3.3 SAFETY

.1 Respirators: worn by individuals mixing epoxy.

END OF SECTION



## PART 1- General

### 1.1 REFERENCES

- .1 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33
- .2 Environmental Protection Agency (EPA)
  - .1 EPA Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 - 1995, (for Surface Coatings).
- .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .4 Master Painters Institute (MPI)
  - .1 MPI Architectural Painting Specifications Manual, Latest edition.
- .5 National Fire Code of Canada - 2010.

### 1.2 QUALITY ASSURANCE

- .1 Qualifications:
  - .1 Contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name, and location, specifying authority, and project manager.
  - .2 Journeymen: qualified journeymen who have "Tradesman Qualification Certificate of Proficiency" engaged in painting work.
  - .3 Apprentices: working under direct supervision of qualified trades person in accordance with trade regulations.
- .2 Mock-Ups:
  - .1 Provide mock-up in accordance with Section 01 45 00 - Quality Control.
  - .2 When requested by Departmental Representative, prepare and paint designated surface, area, room or item (in each colour scheme) to requirements specified herein, with specified paint or coating showing selected colours, gloss/sheen, textures and workmanship to MPI Painting Specification Manual standards for review and approval. When approved,

surface, area, room and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.

### 1.3 SCHEDULING

- .1 Submit work schedule for various stages of painting to Consultant for approval. Submit schedule minimum of 48 hours in advance for proposed operations.
- .2 Obtain written authorization from Consultant for any changes in work schedule.
- .3 Schedule painting operations to prevent disruption of occupants.

### 1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit product data and instructions for each paint and coating product to be used.
  - .2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 Submittal Procedures.
  - .3 Upon completion, submit records of products used. List products in relation to finish system and include the following:
    - .1 Product name, type and use.
    - .2 Manufacturer's product number.
    - .3 Colour numbers.
    - .4 MPI Environmentally Friendly classification system rating.
    - .5 Manufacturer's Material Safety Data Sheets (MSDS).
- .3 Samples:
  - .1 Submit full range colour sample chips to indicate where colour availability is restricted.
  - .2 Submit duplicate 300 x 300 mm sample panels of each paint, stain, clear coating, special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards submitted on the following substrate materials:

- .1 3 mm plate steel for finishes over metal surfaces.
- .2 13 mm birch plywood for finishes over wood surfaces.
- .3 50 mm concrete block for finishes over concrete or concrete masonry surfaces.
- .4 13 mm gypsum board for finishes over gypsum board and other smooth surfaces.
- .5 10 mm hardboard for finishes over wood surfaces.
- .3 When approved, sample panels shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.

#### 1.5 MAINTENANCE

- .1 Extra Materials:
  - .1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Submit one - one litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
- .3 Deliver to Contractor and store where directed.

#### 1.6 DELIVERY, HANDLING and STORAGE

- .1 Deliver, store and handle materials in accordance with manufacturer's recommendations.
- .2 Labels shall clearly indicate:
  - .1 Manufacturer's name and address.
  - .2 Type of paint or coating.
  - .3 Compliance with applicable standard.
  - .4 Colour number in accordance with established colour schedule.
- .3 Remove damaged, opened and rejected materials from site.
- .4 Provide and maintain dry, temperature controlled, secure storage.
- .5 Observe manufacturer's recommendations for storage and handling.

- .6 Store materials and supplies away from heat generating devices.
- .7 Store materials and equipment in a well ventilated area with temperature range 7°C to 30°C.
- .8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
- .9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.
- .10 Remove paint materials from storage only in quantities required for same day use.
- .11 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
- .12 Fire Safety Requirements:
  - .1 Provide one 9 kg Type ABC fire extinguisher adjacent to storage area.
  - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
  - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.
- .13 Waste Management and Disposal:
  - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
  - .3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan (WMP).
  - .4 Separate for reuse and recycling and place

- In designated containers Steel, Metal and Plastic waste in accordance with Waste Management Plan (WMP).
- .5 Place materials defined as hazardous or toxic in designated containers.
  - .6 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
  - .7 Ensure emptied containers are sealed and stored safely.
  - .8 Unused paint and coating materials must be disposed of at official hazardous material collections site as approved by Departmental Representative.
  - .9 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.
  - .10 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
  - .11 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
  - .12 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:
    - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
    - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
    - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
    - .4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.
    - .5 Empty paint cans are to be dry prior

- to disposal or recycling (where available).
- .13 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.
- .14 Set aside and protect surplus and uncontaminated finish materials. Deliver to or arrange collection by employees, individuals or organizations for verifiable re-use or re-manufacturing.

#### 1.7 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
  - .1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Requirements.
  - .2 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10°C for 24 hours before, during and after paint application until paint has cured sufficiently.
  - .3 Where required, provide continuous ventilation for seven days after completion of application of paint.
  - .4 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
  - .5 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities shall be provided by General Contractor.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
  - .1 Unless specifically pre-approved by the specifying body, Paint Inspection Agency and the applied product manufacturer, perform no painting work when:
    - .1 Ambient air and substrate temperatures are below 10°C.
    - .2 Substrate temperature is over 32° C unless paint is specifically formulated for application at high

- temperatures.
- .3 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.
- .4 The relative humidity is above 85% or when the dew point is less than 3°C variance between the air/surface temperature.
- .2 Perform no painting work when the maximum moisture content of the substrate exceeds:
  - .1 12% for concrete and masonry (clay and concrete brick/block).
  - .2 15% for wood.
  - .3 12% for plaster and gypsum board.
- .3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".
- .4 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .3 Surface and Environmental Conditions:
  - .1 Apply paint finish only in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
  - .2 Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.
  - .3 Apply paint only when previous coat of paint is dry or adequately cured.
- .4 Additional Interior Application Requirements:
  - .1 Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

## PART 2 - Products

### 2.1 MATERIALS

- .1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.

- .2 Provide paint materials for paint systems from single manufacturer.
- .3 Only qualified products with E2 "Environmentally Friendly" rating are acceptable for use on this project.
- .4 Conform to latest MPI requirements for interior painting work including preparation and priming.
- .5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI Architectural Painting Specification Manual "Approved Product" listing.
- .6 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.
- .7 Provide paint products meeting MPI "Environmentally Friendly" E2 rating based on VOC (EPA Method 24) content levels.
- .8 Use MPI listed materials having minimum E2 rating where indoor air quality (odour) requirements exist.
- .9 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, shall:
  - .1 be water-based.
  - .2 be non-flammable.
  - .3 be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
  - .4 be manufactured without compounds which contribute to smog in the lower atmosphere.
  - .5 do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.
- .10 Water-borne surface coatings must be manufactured and transported in a manner that steps of process, including disposal of waste products arising there from, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental

Protection Act (CEPA).

- .11 Formulate and manufacture water-borne surface coatings with no aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.
- .12 Flash point: 61.0 degrees C or greater for water-borne surface coatings and recycled water-borne surface coatings.
- .13 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:
  - .1 Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.
  - .2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.
- .14 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" E2 rating.
- .15 Recycled water-borne surface coatings to contain 50 % post-consumer material by volume.
- .16 Recycled water-borne surface coatings must not contain:
  - .1 Lead in excess of 600.0 ppm weight/weight total solids.
  - .2 Mercury in excess of 50.0 ppm weight/weight total product.
  - .3 Cadmium in excess of 1.0 ppm weight/weight total product.
  - .4 Hexavalent chromium in excess of 3.0 ppm weight/weight total product.
  - .5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

## 2.2 COLOURS

- .1 Departmental Representative will confirm Colours selection of colours from manufacturer's full

range of colours.

- .2 Where specific products are available in a restricted range of colours, selection will be based on the limited range.
- .3 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

### 2.3 MIXING AND TINTING

- .1 Perform colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials is allowed only with Departmental Representative's written permission.
- .2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.
- .3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.
- .4 Thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Departmental Representative.
- .5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

### 2.4 GLOSS/ SHEEN RATINGS

- .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

Gloss @ 60 degrees	Sheen @ 85 degrees
--------------------	--------------------

Gloss Level 1 - Matte Finish (flat)

Max.5

Max.10

Gloss Level 2 -Velvet

like-finish	Max. 10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - Satin Like finish	20 to 35	min. 35
Gloss Level 5 - Traditional Semi Gloss Finish	35 to 70	min. 35
Gloss Level 6 - Traditional Gloss	70 to 85	
Gloss Level 7 - High Gloss Finish	More than 85	

- .2 Gloss level ratings of painted surfaces shall be as specified herein.

## 2.5 INTERIOR PAINTING SYSTEMS

- .1 Concrete Vertical Surfaces: including horizontal soffits.  
.1 INT 3.1L Waterborne light industrial [insert gloss level] coating.
- .2 Concrete Horizontal Surfaces: floors and stairs  
.1 INT 3.2B Alkyd floor enamel gloss finish.
- .3 Concrete Masonry Units: smooth face block  
.1 INT 4.2K Waterborne light industrial G5 gloss level.
- .4 Structural Steel and Metal Fabrications: columns, beams, joists, etc.  
.1 INT 5.1B Waterborne light industrial G5 gloss level.
- .5 Galvanized Metal: doors, frames, misc. steel, pipes, ducts, etc.  
.1 INT 5.3B Waterborne light industrial coating, G5 gloss level.

## 2.6 SOURCE QUALITY CONTROL

- .1 Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned.

Testing by laboratory or facility which has been accredited by Standards Council of Canada.

- .1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.
- .2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.
- .3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

### 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 data sheet.

#### 3.2 GENERAL

- .1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.

#### 3.3 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Reports to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report

findings to Departmental Representative. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

- .3 Maximum moisture content as follows:
  - .1 Gypsum Board: 12%.
  - .2 Concrete: 12%.
  - .3 Concrete Block: 12%.

### 3.4 PREPARATION

- .1 Protection:
  - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Departmental Representative.
  - .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
  - .3 Protect factory finished products and equipment.
  - .4 Protect building occupants in and about the building.
- .2 Surface Preparation:
  - .1 Removal of electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings shall be done prior to undertaking any painting operations by General Contractor. Items shall be securely stored and re-installed after painting is completed by General Contractor.
  - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
  - .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.
- .3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
  - .1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
  - .2 Wash surfaces with a biodegradable

- detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
- .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
- .4 Allow surfaces to drain completely and allow to dry thoroughly.
- .5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
- .6 Use trigger operated spray nozzles for water hoses.
- .7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- .5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
  - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
  - .2 Apply wood filler to nail holes and cracks.
  - .3 Tint filler to match stains for stained woodwork.
- .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, blowing with clean dry compressed air, or vacuum cleaning.
- .8 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections,

welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

- .9 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.

### 3.5 APPLICATION

- .1 Method of application to be as approved by Departmental Representative. Apply paint by brush, roller, or airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.
- .2 Brush and Roller Application:
  - .1 Apply paint in uniform layer using brush and/or roller type suitable for application.
  - .2 Work paint into cracks, crevices and corners.
  - .3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
  - .4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
  - .5 Remove runs, sags and brush marks from finished work and repaint.
- .3 Spray application:
  - .1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
  - .2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
  - .3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
  - .4 Brush out immediately all runs and sags.
  - .5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
- .4 Use dipping, sheepskins or daubers only when no

other method is practical in places of difficult access.

- .5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .7 Sand and dust between coats to remove visible defects.
- .8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .9 Finish inside of cupboards and cabinets as specified for outside surfaces.
- .10 Finish closets and alcoves as specified for adjoining rooms.
- .11 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 MECHANICAL/  
ELECTRICAL EQUIPMENT

- .1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.
- .2 Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.
- .3 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
- .4 Touch up scrapes and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
- .5 Do not paint or nameplates.
- .6 Keep sprinkler heads free of paint.

- .7 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- .8 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .9 Paint natural gas piping yellow.
- .10 Do not paint interior transformers and substation equipment.

### 3.7 FIELD CONTROL

- .11 Field inspection of painting operations to be carried out by independent inspection firm as designated by Departmental Representative.
- .12 Advise Departmental Representative when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- .13 Co-operate with inspection firm and provide access to areas of work.
- .14 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.
- .15 Standard of Acceptance:
  - .1 Walls: No defects visible from a distance of 1000 mm at 90° to surface.
  - .2 Ceilings: No defects visible from floor at 450 to surface when viewed using final lighting source.
  - .3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

### 3.7 RESTORATION

- .1 Clean and re-install all hardware items removed before undertaken painting operations.
- .2 Remove protective coverings and warning signs as soon as practical after operations cease.

- .3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- .4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.
- .5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

END OF SECTION

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## PART 1 - GENERAL

1.1 RELATED SECTIONS .1 Section 05 50 00: METAL FABRICATIONS.

1.2 REFERENCES .1 American Standard Testing Method (ASTM):

- .1 ASTM E84, Steiner Tunnel Flame Spread Test.
- .2 ASTM D790-15e2, Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- .3 ASTM D638-14, Standard Test Method for Tensile Properties of Plastics.

.2 Canadian Standards Association (CSA):

- .1 CSA B44.1 - Elevator and Escalator Equipment.
- .2 CSA B355 - Lifts for Persons with Physical Disabilities.
- .3 CSA - National Electric Code.

.3 National Building Code (NBC) 2010.

1.3 SHOP DRAWINGS .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate size and description of components, base material, surface finish, hardware, attachment devices, description of rough framing, etc.

.3 Provide parts list and maintenance instructions for incorporation into maintenance manuals.

## PART 2 - PRODUCTS

2.1 LAUNDRY UNIT .1 Coin operated, commercial grade, electric, stacking washer and dryer unit, with 5 year warranty.

- .2 Washer -
  - .1 Power - 120V, 60Hz
  - .2 Capacity - 88 litres (3.1 cu. ft.)
  - .3 Speed - 40 RPM
- .3 Dryer
  - .1 Power - 240V, 60Hz
  - .2 Capacity - 190 litres (6.7 cu. ft.)

## 2.2 PENIL BED

- .1 One piece, maintenance free lower bed, Single size, complete with mattress. Colour to be selected by Departmental Representative.
  - .1 Herculite polymer construction.
  - .2 Impact resistant.
  - .3 Flexural strength - 131Mpa.
  - .4 Flexural modulus - 8963Mpa.
  - .5 Meet or exceed ASTM D638 and ASTM E84.
  - .6 Warranty - 10 year warranty.

## 2.3 INCLINED WHEELCHAIR PLATFORM LIFT

- .1 Inclined platform wheelchair lift for straight stairs, two landings and two stops. Lift consists of extruded aluminum guide rail, folding platform, over speed safety system and call stations at each landing.
  - .1 Load rating - 300kgs.
  - .2 Tower mount.
  - .3 Motor - Single phase, 2hp.
  - .4 Speed - up to 6m/minute.
  - .5 Colour - To be selected by Departmental Representative from standard range of colours.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- .1 Laundry Unit - Install Laundry Unit complete with security bracket.
- .2 Penil Bed - Install bed as per manufacturer's written instructions, in location as indicated on drawings.

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- .3 Inclined Wheelchair Platform Lift - Install platform lift as per manufacturer's written instructions, in location as indicated on drawings.

END OF SECTION



## PART 1- General

- |  |    |   |
|--|----|---|
| <u>1.1 EXPLANATION</u>                         | .1 | This section is to be combined with Sections 08 71 00. Refer to Section 11 19 30 - Detention Doors and Frames, Item 1.9 - Co-ordination and Single Source Responsibility of Detention Equipment Contractor (DEC).   |
|  | .2 | This Section describes detention quality steel doors and frames.  |
|  | .3 | Detention quality steel doors and frames are identified on the Door and Frame Schedule.   |
|  | .4 | Details and Drawings provided by Departmental Representative indicate general overall intent and principals of design and function for project Detention Doors and Frames. This Section is responsible for final Design of Detention Doors and Frames that will meet testing, mock-up and warranty requirements within overall constraints of project. Indicate final design information on Shop Drawings for review by Departmental Representative. In particular detailing Detention Doors and Frames to adjacent construction to ensure compatibility with project conditions. |
| <u>1.2 REQUIREMENTS OF REGULATORY AGENCIES</u> | .1 | ASTM Standards:<br>.1 ASTM A1008/A1008M-15 CS Type B cold-rolled Steel or hot-rolled, pickled and oiled Steel conforming to ASTM A1011/A1011M-15 CS Type B. Steel shall be free of scale, pitting, coil breaks, buckles, waves or other surface blemishes or defects.<br>.2 ASTM A653/A653M-15e1, Standard Specification for Sheet Steel, Zinc-coated applied by the Hot- Dip Process. Coating designation A60 (ZF180) or G60 (Z180).<br>.3 ASTM A666, Type 304 Stainless Steel.  |
|  | .2 | CGSB Standards:<br>.1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.<br>.2 CAN/CGSB-1.181-99, Ready-Mixed, Organic   |

- Zinc Rich Coating
- .3 CSA Standards:
    - .1 CSA-G40.20-13/G40.21-13: General Requirements for Rolled or Welded Structural Quality Steel.
    - .2 CSA W59-13, Welded steel Construction (Metal. Arc Welding).
  - .4 ULC Standards:
    - .1 ULC 702, Standard for Thermal Insulation Mineral Fibre For Buildings.
    - .2 ULC 104: Fire Tests of Door Assemblies.
    - .3 ULC 105: Standard Specification for Fire Door Frames Meeting the Performance Required by ULC 104.
  - .5 CSDFMA Standards: Canadian Steel Door and Frame Manufacturers; Association, (CSDFMA) Canadian Manufacturing Specification for Steel Door and Frames, 2006.
  - .6 NAAMM HMMA 863-14, Hollow Metal Manufacturers Association (HMMA) Division of the National Association of Architectural Metal Manufacturers; (NAAMM) Guide Specifications for Detention Security Hollow Metal Doors and Frames, dated 2014 and ASTM F1450-12a.
  - .7 NFPA 80-2016, Fire Doors and Windows.

1.3 PERFORMANCE  
REQUIREMENTS  
AND TEST REPORTS

- .1 Fabricate detention doors and frames to meet following performance requirements, as established by ANSI/NAAM HMMA 863-14 and ASTM F1450-12a.
  - .1 Static load test.
  - .2 Rack test.
  - .3 Impact load test.
  - .4 Removable glazing stop test.
- .2 Submit test reports from independent testing laboratory-certifying compliance with performance criteria of ANSI/NAAMM HMMA 863-14 and ASTM F1450-12a for static load, rack, impact load and removable glazing stop tests. The following outlines the testing procedures, but is not to be construed as complete in all respects to the performance criteria.

ASTM F 1450, TABLE 1			SECURITY GRADES AND TEST LOAD REQUIREMENTS				
Grade	Recommended	Static Load Test B	Rack Load Test C	Impact Test A Impact Energy -200Ft. Lbf. (271.2J)			ASTM Reference
	Sheet and Frame Thickness In. (mm) gage, Min.	Lbf.(N)	Lbf.(N)	Lock Impacts	Hinge Impacts	Glazing Impacts	Standards
1	0.093 (2.5) 12	14000 62 272	7500 33 360	600	200	100	F 1450, F 1577, F 1643
2	0.093 (2.5) 12	14000 62 272	7500 33 360	400	150	100	F 1450, F 1577, F 1643
3	0.067 (2.0) 14	11000 48 939	5500 24 470	200	75	100	F 1450, F 1577
4	0.067 (2.0) 14	11000 48 939	5500 24 470	100	35	100	F 1450, F 1577

.1 Static and Rack Tests: Two full flush doors 900 mm x 2100 mm x 50 mm with 125 mm x 635 mm vision panel with door face sheet core thickness according to grade stated in Table 1, prepared and tested as follows: Lock: Type 7C1, located at a height of 985 mm to centre lines of cylinder with door and frame preparation according to lock suppliers, templates or as noted on drawing and specifications, whichever is the most stringent. Hinges: As specified located on edge opposite to the lock and 127 mm from the top of the door to the top of the top hinge, 254 mm from the bottom of the door to the bottom hinge, with the middle two hinges equally spaced between. Two sample doors are required for Static Load Test as well

as Rack Test.

- .1 Static Load Test: Door shall be placed in the horizontal position, and an increasing static load applied at quarter points. Door shall be uniformly supported over its width and no more than 101 mm from each end, apply test load, as per Table 1 for grade of door, equally distributed between the quarter points. The maximum deflection at centre span under full load shall be recorded, and shall not exceed 14.73 mm. After release of load the deformation shall not exceed 2.55 mm.
- .2 Rack Test: Door shall be held in stationary cantilevered position not more than 150 mm from the top, support the lower corner on the hinge edge by a stand whose door contact surface is not more than 150 mm x 150 mm square. Apply test load, as per Table 1 for grade of door, in a downward direction to the unsupported corner.
  - .1 The hydraulic ram shall exert test load on top of unsupported corner with its center line 76 mm from bottom of the door and 76 mm from the lock edge. The maximum corner deflection at full load shall not exceed 90 mm and there shall be no failure of any welds, nor buckling of channel or stiffeners throughout the door structure. After removal of load, the permanent corner deflection shall be recorded and shall not exceed 36 mm.
  - .2 Permanently mark and date both the test doors and retain at the manufacturer's plant for one year after date of project completion.
  - .3 Impact Load Test: Construct door assembly including: wall, door, frame, wall anchors, lock, hinges and other hardware as specified for the doors. Rigidly mount in vertical position, so that the door and locking hardware are operable.
    - .1 Construct a pendulum ram system capable of delivering consistent impacts of 271.2J so that impacts may be delivered to the lock, hinge and glazing panel assemblies. The striking nose of the ram shall be C1010 or C1020 low carbon steel and the striking surface area shall be 25.8 cm<sup>2</sup>. Position the ram so that the door

swings away from the ram, while hanging at rest, just touching the target area.

.2 With the door closed and locked, conduct the tests at 271.2J of energy with each impact as per locations and number of impacts shown in Table 1.

.3 The door shall remain closed and locked throughout the testing procedure, and the assembly shall not be damaged to the extent that forcible egress can be obtained. After testing is completed the door shall be capable of being unlocked and operated to provide egress.

.4 Impact Series for Frame and Glazing/Panel Impact Test for Multi-light Frame and Sidelight Frame shall be in accordance to ASTM F1592. Grade of Impact Test to conform to Grade of adjacent Doors unless stated otherwise in Door & Frame Schedule or Specifications.

.5 Notify Departmental Representative sufficiently in advance of tests to allow for assignment of supervisory personnel.

.3 Fire rated doors and frames: labeled and listed by and organization accredited by Standards Council of Canada in conformance with CAN4-S104 for rating specified.

.4 Submit performance and fire resistance testing data prior to fabrication. Failure to provide required testing data or submission of misrepresented testing data would result in disqualification. In the event of disqualification substitute an acceptable alternate manufacturer / subcontractor, at no additional cost to Departmental Representative.

.5 The Departmental Representative reserves the right to appoint a technical advisor to monitor all aspects of detention doors and frames.

#### 1.4 SAMPLES

.1 Submit in accordance with Section 01 33 00.

.2 Submit one 450 mm x 300 mm corner section of each type of door and reinforcement showing internal construction. Include with glazing stops applied

in one corner to show corner joint.

- .3 Submit one full sized sample of frame showing welded construction, mortar guard boxes for lock and door position switch, conduits junction box and sample of glazing stop applied in one corner to show corner joint.

#### 1.5 SHOP DRAWINGS

- .1 Submit in accordance with Section 01 33 00.
- .2 Indicate each type of door, materials, steel core material thickness, mortises, reinforcements, locations of exposed fasteners, opening for glass, arrangement of hardware and fire ratings.
- .3 Indicate each type of frame, materials, weld types and spacing, steel core material thickness, reinforcements, glazing stops, location of anchors and exposed fastenings, finishes, hardware sets and fire ratings.
- .4 Show fabrication and installation drawings where applicable.
- .5 Reference doors and frames to Door and Frame Schedule provided by Departmental Representative.

#### 1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard and packaging material for recycling in accordance with Waste Management Plan.
- .4 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.
- .5 Fold up metal banding, flatten and place in designated area for recycling.

1.7 QUALITY  
ASSURANCE OF  
DETENTION  
EQUIPMENT  
CONTRACTOR

- .1 Manufacture doors and frames using an established company experience in design and production of custom detention security door and frame assemblies together with integration of security hardware and glazing preparations, as they impact upon the scope of work.
- .2 Have lock manufacturer's representative visit door and frame fabricating facility,
  - .1 to review lock and strike preparations and reinforcements,
  - .2 to review lock and strike installation methods and
  - .3 to provide technical assistance as required to ensure proper lock and strike installations.
- .3 Provide the following documentation prior to contract award to substantiate door and frame fabricator qualifications. Failure to provide required information or submission of misrepresented information will result in disqualification.
  - .1 Evidence of ten (10) years prior experience with manufacture and installation of equipment similar to this project.
  - .2 List of employees in supervisory capacity stating respective area of responsibility and experience.
  - .3 List of five (5) jobs completed in size and construction similar to this project, built within last five (5) years. Include job name, contact person with telephone number and contract amount.
- .4 List five (5) jobs comparable in size, which have been in operation for over five (5) years. Include job name, contact person with telephone number and contract amount.
- .5 Name of pneumatic lock supplier proposed for use on this project. Submit evidence that supplier is current manufacturer distributor where not dealing direct with manufacturer's plant.
- .6 Letter of intent to commission each security door installed in accordance with Field Quality Control.

1.8 CO-ORDINATION  
AND SINGLE SOURCE  
RESPONSIBILITY OF  
DETENTION  
EQUIPMENT CONTRACTOR

- .1 Co-ordinate work of this section with work of Electrical Contactor (Division 26) Contractor for complete integration of electrical systems, door control systems, and authorities having jurisdiction.
- .2 Perform work of this section under one Subcontractor who will be held responsible for supply and installation of all work of this section including installation of detention hardware specified under Section 08 71 00 and co-ordination of all other work specified under Related Sections as required for completion of work.
  - .1 Include all costs attributed to any change in lock supplier, which would involve changes in sizes of doors and frames at no additional charge to Owner.

1.9 CLOSEOUT  
SUBMITTALS

- .1 Submit documentation for incorporation into maintenance manuals specified under Section 01 78 00.
- .2 Documentation to include:
  - .1 Full identification of hardware including part numbers, manufacturer and source of supply.
  - .2 Recommended spare parts lists that Owner should stock for maintenance purposes.
  - .3 Complete operational, adjustment, maintenance and repair procedures.
  - .4 Name, address and telephone number of Subcontractor installing work.
- .3 Provide maintenance material in accordance with Section 01 78 00.
- .4 Provide four (4) sets of drivers and other required tools for each size of security fastener installed, two (2) for hand drivers, and two (2) for drill mount.
- .5 Include full identification, exploded diagrams and cross reference numbering for spares.
- .6 Manufacturer's factory representative must be present to sign off and verify the detention door and hardware system during the final commissioning process.

- |                       |    |  |
|-----------------------|----|--|
| <u>1.10 WARRANTY</u>  | .1 | Provide a warranty of 3 years for all labour and materials in this Section.  |
|                       | .2 | Warrant in writing doors and frames against failure and defects in material, weld, fasteners, anchors and workmanship.   |
| <u>1.11 SCHEDULES</u> | .1 | Refer to drawings for Door and Frame Schedules indicating door numbers, types, sizes frame types, sheet core thickness, finishes, and label requirements for fire-rated doors and frames, where applicable.                                  |
|                       | .2 | Doors listed in Schedules are nominal size only. Fabricator shall make necessary allowance for all clearances.   |
|                       | .3 | All core thickness dimensions are nominal dimensions.  |
|                       | .4 | Frames which, upon delivery exhibit rust, distortion or surface irregularities due to improper fabrication or handling will be rejected and shall be replaced at no increase in Contract Price.  |
| <u>1.12 DELIVERY</u>  | .1 | Label or identify doors as to their location of installation to avoid errors.  |
|                       | .2 | Deliver removable glass stops, and security screws for glass stops, and turn over to Prime Contractor for installation. Sort glass stops as to Building Wing in which they are to be installed, and identify their location of installation. |

## PART 2 Products

- |                      |    |  |
|----------------------|----|--|
| <u>2.1 MATERIALS</u> | .1 | Face sheet steel: Commercial grade steel to ASTM A568/A568M, Class1, hot dipped galvanized to ASTM A653/A653M - commercial quality, coating designation to ASTM A924/A924M, ZF075, commercially known as "Colourbond", Satincoat", |
|----------------------|----|--|

or "Galvanneal".

- .2 Steel shapes, plates and bars: Structural quality to CAN/CSA-G40.21-M81, type 230G or 260W; free of scale, pitting and other surface blemishes.
- .3 Guard Boxes: ZF075 coating designation zinc finish, 1.6 mm core thickness steel unless noted otherwise.
- .4 Door insulation: rock wool or rigid fiberglass for sound deadening and fire insulation to CAN/ULC-S702, minimum 24 kg/m density.
- .5 Shop coat primer: to CAN/CGSB-1.40 M.
- .6 Zinc primer: Zinc rich, ready mix to CAN/CGSB-1.181.
- .7 Filler: Polyester type automotive body spot filler compound.
- .8 Door Bumpers: grey neoprene/rubber type; pop rivet to door frame with aluminum rivets. Mask bumpers for painting.

## 2.2 FASTENING DEVICES

- .1 Provide security screws, security nuts, rivets, spanner screws or other equally secure approved devices for affixing various components.
- .2 Use only rivets, security screws, or security nuts at locations where maximum security against removal is required.
- .3 Use spanner screws only at locations where security against removal is not as important and where it is necessary to remove and repair items from time to time.
- .4 Security screws and nuts to have an extra head which twists off when screw or nut is fully secured, leaving main head without holes or slots for insertion of tool for removal.
- .5 Security Spanner screws to be torx with pin requiring a special spanner tool to remove screws.
- .6 Round head screws not acceptable except at locations approved where material is not thick enough to permit counter-sinking.

.7 Standard screws not acceptable.

### 2.3 FABRICATION OF DETENTION HOLLOW METAL DOORS

- .1 Fabrication of Detention Hollow Metal Doors:
- .2 Fabrication of Detention Hollow Metal Doors to meet requirements of this Section.
- .3 Fabricate doors with flush faces and provisions for glass openings as indicated on Door and Frame Schedule.
- .4 Fabricate doors square and free of distortion and twists. Accurately form and fit components and sections, to close fitting tolerances. Form edge bends true, straight and of minimum radius for metal thickness of sheet steel used.
- .5 Install special pockets, brackets and back-up plates required for door mounted manual locks. Confirm requirements with hardware manufacturer. Detention side of doors are to be finished flush and have minimum 4.5 mm thick structural quality steel back-up plates to protect locks. Brackets are to firmly support lock cases on both faces, preventing them from moving in event of impact attack. Design pockets so that removal of locks are impossible when lock bolts are extended.
- .6 Use one full sheet of sheet steel per door face, formed accurately at longitudinal edges to wrap around each strike and hinge edge. Arrange sheets to overlap each other at strike and hinges edges. Continuous weld face sheets together along exposed lap edges, grind, fill sand smooth and flush to requirements stated under Finishing.
- .2 Components for Detention Hollow Metal Doors:
  - .1 Refer to drawings for Door and Frame Schedule indicating location of Detention Hollow Metal Doors. Detention doors are all security doors receiving door face sheets of 2.0 mm or 2.5 mm core thickness meeting ASTM F1450 Grade No. to locations noted in Door and Frame Schedule.
  - .2 All doors shall be custom made, of the types and sizes shown on the approved shop drawings, and shall be prepared for hardware as per the final approved shop drawings, and shall be prepared for hardware as per the final approved hardware schedule. Door edge reinforcements and internal reinforcements: either commercial quality sheet steel or structural quality steel designed to meet requirements specified in Article 1.3 Performance Requirements and Test Reports, but shall not be

less than the following:

.1 Door thickness shall be either 45 mm or 50 mm; to locations as noted in the Door and Frame Schedule. All doors shall be rigid, neat in appearance, and free from warpage or buckle. Edge bends shall be true and straight and of minimum radius for the thickness of metal used.

.2 Face sheets shall be stiffened by continuous full height double hat channel design; spanning the full thickness of the interior space between door faces. These stiffeners shall be 1.6 mm minimum thickness. Flat at sheets are to be resistance spot welded at 75 mm. o.c. horizontally and 75 mm. o.c. vertically.

.3 Alternatively face sheets shall be stiffened by continuous full height true truss design with triangular form, of shape which cannot be altered without changing the length of the sides; spanning the full thickness of the interior space between door faces. These stiffeners shall be 0.5 mm minimum thickness. Flat apexes to be resistance spot welded at 75 mm. o.c. horizontally and 75 mm. o.c. vertically.

.4 Fill all voids between each flute of reinforcement with door insulation.

.5 The vertical edges shall be reinforced by a continuous steel channel, not less than 3.5 mm, extending the full length of the door. The top and bottom edges shall be closed with a continuous channel, also not less than 3.5 mm, welded to both face sheets not less than 75 mm o.c. The 3.5 mm end channels shall be continuously welded to vertical reinforcing channel at all 4 corners producing a fully welded perimeter reinforcing channel.

.6 The top end channel shall be fitted with a flush closing channel of not less than 1.6 mm. The flush closing channel shall be welded in place at the corners and at the centre. Installation of closer channel using screws, security or otherwise, shall be deemed unacceptable. The end channel and flush closer channel shall be installed such that they are permanent and non-removable. Provide weep holes in exterior door bottom channel.

- .7 Provide preparation for door position switch.
  - .8 Bevel vertical door strike edges 3 mm in 50 mm, unless required otherwise by security or hardware design.
  - .9 Lock bolt pockets: 9.5 mm steel plate recessed and fully welded to door edge, complete with holes for lock bolt and 1.2 mm steel bolt pocket fully welded to steel plate. Steel plate to have screw holes tapped ready to receive strike plate and security screws supplied by lock manufacturer.
  - .10 Provide drilled and tapped holes for all hardware according to template furnished by hardware suppliers.
- .3 Hardware Reinforcements: Doors shall be mortised, reinforced, drilled and tapped at the factory for all templated hardware in accordance with the final approved hardware schedule and templates provided by the hardware supplier. Indicate clearly on shop drawings exact location of internal hardware reinforcing within hollow metal door to ensure proper alignment of surface mounted hardware. Minimum core thickness for hardware reinforcements shall be as follows:
  - .1 For recessed pulls: minimum 3.5 mm thick plates.
  - .2 For surface mounted security pulls: minimum 10 mm thick plates.
  - .3 For lock fronts, closures and stays: minimum 3 mm thick plates.
  - .4 For all other surface applied hardware: 3 mm thick plates
  - .5 For glass openings: 3.5 mm channel with corners fully welded to form a continuous perimeter channel frame.
- .4 Glass Moldings and stops: where specified, doors shall be provided with steel moldings to secure glazing by others in accordance with glass sizes and thickness specified in section 08 80 50.
  - .1 Fixed glass molding shall be no less than 3.5 mm, and shall be spot-welded to door face sheets at 100 mm o.c. minimum.
  - .2 Removable glass stops shall be pressed steel angles not less than 3.5 mm. Stops shall be tight fitting at the corner joints, and secured with 6 mm 20 button-head, self-tapping spanner screws located 150 mm o.c. maximum.

.3 Where glass thickness dictates, 3.5 mm, off set surface-mounted glass stop shall be used. The corners shall be tight fitting and the glass stop shall be secured to the face of the door using 6 mm 20 button-head, self-tapping spanner security screws spaced 150 mm maximum. With the fasteners located not more than 50 mm from each end of each stop.

.4 Orient glass stops on secure side of doors. Confirm secure side with Departmental Representative. Verify glass thickness with Departmental Representative prior to fabrication.

#### 2.4 CLEARANCES AND TOLERANCES FOR DETENTION DOORS

- .1 Maintain edge clearances as follows:
- .2 Between doors and frames, at head and jambs:  
3 mm
- .3 At door sills where no threshold is used:  
6 mm maximum above finished floor.
- .4 At door sills where threshold is used: 19  
mm maximum above finished floor.

- .2 Maintain fabrication tolerances within following limits:
  - .1 Width, measured between rabbets at head:  
nominal opening width: +1.6mm, -0.8 mm.
  - .2 Height (total length of jamb rabbet):  
nominal opening height +/- 1.2 mm.
  - .3 Cross sectional profile dimensions:
    - .1 Face: +/- 0.8mm.
    - .2 Stop: +/- 0.8 mm
    - .3 Rabbet: +/- 0.4 mm
    - .4 Depth: +/- 0.8 mm
    - .5 Throat: +/-1.6 mm
  - .4 Hardware cutout dimensions: Template  
dimensions +0.4 mm, -0mm.
  - .5 Hardware location: +/-0.8 mm

- .3 Doors:
  - .1 Width: +/- 1.2mm
  - .2 Height: +/- 1.2mm
  - .3 Thickness: +/- 1.6mm

#### 2.5 ACCESSORIES

- .1 Provide accessory components for hollow metal  
detention doors and panels as detailed,

including: food pass units as per Details 1 and 2 on drawing A103.

2.6 FINISHING OF  
DOORS

- .1 After fabrication, remove welding slag and splatter, grind smooth all sharp edges and welds, fill surface depressions with metallic paste filler and sand all tool marks and surface imperfections and dress to a uniform smooth finish so that all welded joints will not be invisible under painted gloss finish.
- .2 Prime paint steel and ferrous metal with one coat shop coat primer in accordance with manufacturer's instructions.
- .3 Touch up welded, grinds and damaged galvanized and zinc-coated surfaces using zinc primer.

PART 3 Execution

3.1 INSTALLATION

- .1 DEC to protect all hardware devices from work of other trades for the entire duration of the project.
- .2 Install doors, panels, accessory components and hardware in accordance with hardware templates and manufacturer's instructions. Install hardware to requirements specified in Section 08 71 00.
- .3 Adjust operable parts for correct clearances and function.
- .4 Touch up hollow metal work with shop primer, where prime painted surfaces have become scratched or abraded during handling and installation and leave ready for Finish Painting.
- .5 The Detention Door Manufacturer shall be employed as subcontractor to hang and adjust all doors equipped with type 16B locking devices including mechanical installation of the following type 16B locking device components:
  - .1 Mechanism housings at each door complete.
  - .2 Vertical locking columns complete.
  - .3 Bottom door guide assemblies complete.
  - .4 Mechanism housings connecting rows of cell

doors to mechanical control cabinets.  
.5 Mechanical control cabinets.  
.6 Rubber bumpers in sliding door receiving channels.

### 3.2 TOOLS FOR MAINTENANCE

- .1 Two fastening tools for each type of fastener shall be delivered to the Owner at Substantial Performance.

### 3.3 FIELD QUALITY CONTROL

- .1 Contractor's commissioning verification will be required for installation of doors, frames, hardware and associated detention equipment for each scheduled door.
- .2 Co-operate with Departmental Representative's allowing access to work for proper review, inspections and verifications.
- .3 Fulfill following as scope of mandatory commissioning and documentation for each and every door and frame.
  - .1 Check following on delivery to site.
    - .1 Conformance to shop drawings, and specifications.
    - .2 Metal thickness (gauge) of steel, warpage, welding and cutouts.
    - .3 Material (submit applicable lab tests).
    - .4 Construction of doors (sample door for testing as required).
    - .5 Preparation for associated hardware/detention equipment.
    - .6 Size and location of reinforcements and anchors.
  - .2 Check following after doors have been installed.
    - .1 Alignment.
    - .2 Tolerances.
    - .3 Rough-in templates and alignment of all detention equipment.
  - .3 Check following after hardware/ detention equipment had been installed.
    - .1 Function.
    - .2 Cylinder/lock assembly.
    - .3 Peripherals (DPIS, etc.).

.4 Submit three (3) copies of commissioning results to Departmental Representative upon completion of tests and prior to inspection of Substantial Performance of the Work.

.5 Be present and provide required resources during verification and commissioning of door control system as specified.

END OF SECTION



<b>MODIFICATIONS TO UNIT 4</b>	<b>COMMON WORK RESULTS FOR</b>	<b>SECTION 22 05 00</b>
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## **1 GENERAL**

### **1.01 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
  - .1 Submit drawings stamped and signed.
  - .2 Indicate on drawings:
    - .1 Mounting arrangements.
    - .2 Operating and maintenance clearances.
  - .3 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.
  - .4 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.

### **1.02 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data 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 Operation instruction for systems and component.
    - .2 Description of actions to be taken in event of equipment failure.
    - .3 Valves schedule and flow diagram.
    - .4 Colour coding chart.
  - .3 Maintenance data to include:
    - .1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
    - .2 Data to include schedules of tasks, frequency, tools required and task time.
  - .4 Performance data to include:
    - .1 Equipment manufacturer's performance datasheets with point of operation as left after commissioning is complete.
    - .2 Equipment performance verification test results.
    - .3 Special performance data as specified.

- .5 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.
- .6 Additional data:
  - .1 Prepare and insert into operation and maintenance manual additional data when need for it becomes apparent during specified demonstrations and instructions.
- .7 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.
  - .2 Transfer information weekly to reproducibles, revising reproducibles to show work as actually installed.
  - .3 Use different colour waterproof ink for each service.
  - .4 Make available for reference purposes and inspection.
- .8 As-built drawings:
  - .1 Production of as-built drawings.
  - .2 Identify each drawing in lower right hand corner in letters at least 12 mm high as follows: - "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" Signature of Contractor and Date.
  - .3 Submit to Departmental Representative for approval and make corrections as directed.
  - .4 Submit completed reproducible as-built drawings with Operating and Maintenance Manuals.

## **2 EXECUTION**

### **2.01 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.

### **2.02 PAINTING REPAIRS AND RESTORATION**

- .1 Do painting in accordance with Section 09 91 23 - Interior Painting.
- .2 Prime and touch up marred finished paintwork to match original.

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.3 Restore to new condition, finishes which have been damaged.

## **2.03 SYSTEM CLEANING**

.1 Clean interior and exterior of all systems including strainers.

## **2.04 FIELD QUALITY CONTROL**

.1 Site Tests: conduct following tests in accordance with Section 01 45 00  
- Quality Control and submit report as described in PART 1 SUBMITTALS.

## **2.07 PROTECTION**

.1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

**END OF SECTION**



## 1 GENERAL

### 1.01 REFERENCES

- .1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers International (ASME)
  - .1 ANSI/ASME B16.15-06, Cast Bronze Threaded Fittings, Classes 125 and 250.
  - .2 ANSI/ASME B16.18-01, Cast Copper Alloy Solder Joint Pressure Fittings.
  - .3 ANSI/ASME B16.22-01, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
  - .4 ANSI/ASME B16.24-01, Cast Copper Alloy Pipe Flanges and Flanged Fittings, Class 150, 300, 400, 600, 900, 1500 and 2500.
- .2 ASTM International Inc.
  - .1 ASTM A 307-07b Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - .2 ASTM A 536-84(2004)e1, Standard Specification for Ductile Iron Castings.
  - .3 ASTM B 88M-05, Standard Specification for Seamless Copper Water Tube (Metric).
- .3 American National Standards Institute/American Water Works Association (ANSI)/(AWWA)
  - .1 ANSI/AWWA C111/A21.11-07, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
- .4 Canada Green Building Council (CaGBC)
  - .1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum [2007]).
  - .2 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
- .5 Canadian Standards Association (CSA International)
  - .1 CSA B242-05, Groove and Shoulder Type Mechanical Pipe Couplings.
- .6 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Protection Act, 1999, c. 33 (CEPA).
- .7 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .8 Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).
  - .1 MSS-SP-67-02a, Butterfly Valves.
  - .2 MSS-SP-70-06, Gray Iron Gate Valves, Flanged and Threaded Ends.
  - .3 MSS-SP-71-05, Gray Iron Swing Check Valves, Flanged and Threaded Ends.
  - .4 MSS-SP-80-03, Bronze Gate, Globe, Angle and Check Valves.

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- .9 National Research Council (NRC)/Institute for Research in Construction
  - .1 NRCC 38728, National Plumbing Code of Canada (NPC) - 2015.
- .10 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act, 1992, c. 34 (TDGA).

## 1.02 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's printed product literature and datasheets for insulation and adhesives, and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Closeout Submittals:
  - .1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

## 2 PRODUCTS

### 2.01 PIPING

- .1 Domestic hot, cold and recirculation systems, within building.
  - .1 Above ground: copper tube, hard drawn, type [K], [L]: to ASTM B 88M.
  - .2 Buried or embedded: copper tube, soft annealed, type [K], [L]: to ASTM B 88M, in long lengths and with no buried joints.

### 2.02 FITTINGS

- .1 Bronze pipe flanges and flanged fittings, Class 150 and 300: to ANSI/ASME B16.24.
- .2 Cast bronze threaded fittings, Class 125 and 250: to ANSI/ASME B16.15.
- .3 Cast copper, solder type: to ANSI/ASME B16.18.
- .4 Wrought copper and copper alloy, solder type: to ANSI/ASME B16.22.

### 2.03 JOINTS

- .1 Rubber gaskets, latex-free 1.6 mm thick: to AWWA C111.
- .2 Bolts, nuts, hex head and washers: to ASTM A307, heavy series.
- .3 Solder: 95/5 silver.
- .4 Teflon tape: for threaded joints.
- .5 Dielectric connections between dissimilar metals: dielectric fitting, complete with thermoplastic liner.

## **2.04 BALL VALVES**

- .1 NPS 2 and under, soldered:
  - .1 To ANSI/ASME B16.18, Class 150.
  - .2 Bronze body, stainless steel ball, PTFE adjustable packing, brass gland and PTFE seat, steel lever handle, with NPT to copper adaptors.

## **3 EXECUTION**

### **3.01 APPLICATION**

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

### **3.02 INSTALLATION**

- .1 Install in accordance with NPC and local authority having jurisdiction.
- .2 Assemble piping using fittings manufactured to ANSI standards.
- .3 Install CWS piping below and away from HWS and HWC and other hot piping so as to maintain temperature of cold water as low as possible.
- .4 Connect to fixtures and equipment in accordance with manufacturer's written instructions unless otherwise indicated.
- .5 Buried tubing:
  - .1 Lay in well compacted washed sand in accordance with AWWA Class B bedding.
  - .2 Bend tubing without crimping or constriction. Minimize use of fittings.

### **3.03 VALVES**

- .1 Isolate equipment, fixtures and branches with ball valves.
- .2 Balance recirculation system using lock-shield globe valves. Mark settings and record on as-built drawings on completion.

### **3.04 PRESSURE TESTS**

- .1 Test pressure: greater of 1 time maximum system operating pressure or 860 kPa.

### **3.05 FLUSHING AND CLEANING**

- .1 Flush entire system for 8 h. Ensure outlets flushed for 2 hours. Let stand for 24 hours, then draw one sample off longest run. Submit to testing laboratory to verify that system is clean Federal potable water guidelines. Let system flush for additional 2 hours, then draw off another sample for testing.

### **3.06 PRE-START-UP INSPECTIONS**

- .1 Systems to be complete, prior to flushing, testing and start-up.
- .2 Verify that system can be completely drained.
- .3 Ensure that pressure booster systems are operating properly.
- .4 Ensure that air chambers, expansion compensators are installed properly.

### **3.07 DISINFECTION**

- .1 Flush out, disinfect and rinse system.
- .2 Upon completion, provide laboratory test reports on water quality for Departmental Representative.

### **3.08 START-UP**

- .1 Timing: start up after:
  - .1 Pressure tests have been completed.
  - .2 Disinfection procedures have been completed.
  - .3 Certificate of static completion has been issued.
  - .4 Water treatment systems operational.
- .2 Provide continuous supervision during start-up.
- .3 Start-up procedures:
  - .1 Establish circulation and ensure that air is eliminated.
  - .2 Check pressurization to ensure proper operation and to prevent water hammer, flashing and/or cavitation.
  - .3 Monitor piping HWS piping systems for freedom of movement, pipe expansion as designed.
  - .4 Check control, limit, safety devices for normal and safe operation.
- .4 Rectify start-up deficiencies.

### **3.09 PERFORMANCE VERIFICATION**

- .1 Scheduling:
  - .1 Verify system performance after pressure and leakage tests and disinfection are completed, and Certificate of Completion has been issued by authority having jurisdiction.
- .2 Procedures:
  - .1 Verify that flow rate and pressure meet Design Criteria.
  - .2 Sterilize HWS systems for Legionella control.
  - .3 Verify performance of temperature controls.
  - .4 Verify compliance with safety and health requirements.
  - .5 Check for proper operation of water hammer arrestors. Run [one] outlet for 10 seconds, then shut of water immediately. If water hammer occurs, replace water hammer arrestor or re-charge air chambers. Repeat for outlets and flush valves.
  - .6 Confirm water quality consistent with supply standards, and ensure no residuals remain as result of flushing or cleaning.

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END OF SECTION



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## 1.01 REFERENCES

- .1 ASTM International Inc.
  - .1 ASTM B 32-08, Standard Specification for Solder Metal.
  - .2 ASTM B 306-02, Standard Specification for Copper Drainage Tube (DWV).
  - .3 ASTM C 564-03a, Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
- .2 Canadian Standards Association (CSA International).
  - .1 CSA B67-1972(r1996), Lead Service Pipe, Waste Pipe, Traps, Bends and Accessories.
  - .2 CAN/CSA-B70-06, Cast Iron Soil Pipe, Fittings and Means of Joining.
  - .3 CAN/CSA-B125.3-05, Plumbing Fittings.
- .3 South Coast Air Quality Management District (SCAQMD), California State
  - .1 SCAQMD Rule 1168-a2005, Adhesive and Sealant Applications.

## 1.02 ACTION AND INFORMATIONAL SUBMITTALS

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

## 2 PRODUCTS

### 2.01 COPPER TUBE AND FITTINGS

- .1 Above ground sanitary and vent type DMV to: ASTM B 306.
  - .1 Fittings.
    - .1 Cast brass: to CAN/CSA-B125.3.
    - .2 Wrought copper: to CAN/CSA-B125.3.
  - .2 Solder: tin-lead, 50:50, type 50A lead free, to ASTM B 32.

### 2.02 CAST IRON PIPING AND FITTINGS

- .1 Above ground sanitary, storm and vent: to CAN/CSA-B70.
  - .1 Joints:
    - .1 Hub and spigot:
      - .1 Caulking lead: to CSA B67.
    - .2 Mechanical joints:
      - .1 Neoprene or butyl rubber compression gaskets with stainless steel clamps.

## 3 EXECUTION

### 3.01 APPLICATION

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

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### 3.02 INSTALLATION

- .1 Install in accordance with National Plumbing Code and local authority having jurisdiction.

### 3.03 TESTING

- .1 Hydraulically test to verify grades and freedom from obstructions.

### 3.04 PERFORMANCE VERIFICATION

- .1 Cleanouts:
  - .1 Ensure accessible and that access doors are correctly located.
  - .2 Open, cover with linseed oil and re-seal.
  - .3 Verify that cleanout rods can probe as far as the next cleanout, at least.
- .2 Test to ensure traps are fully and permanently primed.
- .3 Ensure that fixtures are properly anchored, connected to system and effectively vented.
- .4 Affix applicable label (storm, sanitary, vent, pump discharge etc.) c/w directional arrows every floor or 4.5 m (whichever is less).

**END OF SECTION**

<b>MODIFICATIONS TO UNIT 4</b>	<b>PLUMBING SPECIALTIES AND</b>	<b>SECTION 22 42 01</b>
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## **1 GENERAL**

### **1.01 REFERENCES**

- .1 ASTM International
  - .1 ASTM A 126-04(2009), Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
  - .2 ASTM B 62-09, Standard Specification for Composition Bronze or Ounce Metal Castings.
- .2 American Water Works Association (AWWA)
  - .1 ANSI/AWWA C700-09, Standard for Cold Water Meters-Displacement Type, Bronze Main Case.
  - .2 ANSI/AWWA C701-12, Standard for Cold Water Meters-Turbine Type for Customer Service.
  - .3 ANSI/AWWA C702-10, Standard for Cold Water Meters-Compound Type.
- .3 CSA International
  - .1 CSA-B64 Series-111, Backflow Preventers and Vacuum Breakers.
  - .2 CSA B79-08, Commercial and Residential Drains and Cleanouts.
  - .3 CAN/CSA-B356-10, Water Pressure Reducing Valves for Domestic Water Supply Systems.
- .4 Plumbing and Drainage Institute (PDI)
  - .1 PDI-G101-R2010, Testing and Rating Procedure for Grease Interceptors with Appendix of Installation and Maintenance.
  - .2 PDI-WH201-R2010, Water Hammer Arresters Standard.

### **1.02 ADMINISTRATIVE REQUIREMENTS**

- .1 Verify project requirements.
- .2 Review installation and substrate conditions.
- .3 Co-ordination with other building construction sub-trades.
- .4 Review manufacturer's written installation instructions and warranty requirements.

### **1.03 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 plumbing products and include product characteristics, performance criteria, physical size, finish and limitations.

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- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed.
  - .2 Indicate on drawings to indicate materials, finishes, anchorage, dimensions, construction and assembly details.
- .4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .5 Instructions: submit manufacturer's installation instructions.
- .6 Manufacturers' Field Reports: manufacturers' field reports specified.

#### **1.04 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for plumbing specialties and accessories for incorporation into manual.
  - .1 Description of plumbing specialties and accessories, giving manufacturers name, type, model, year and capacity.
  - .2 Details of operation, servicing and maintenance.
  - .3 Recommended spare parts list.

### **2 PRODUCTS**

#### **2.01 WATER HAMMER ARRESTORS**

- .1 Stainless steel construction, bellows, piston type: to PDI-WH201.

#### **2.02 BACK FLOW PREVENTERS**

- .1 Preventers: to CSA-B64 Series, application as indicated, reduced pressure principle type back flow preventer with intermediate atmospheric vent or vacuum breaker.

#### **2.03 HOSE BIBBS AND SEDIMENT FAUCETS**

- .1 Bronze construction complete with integral back flow preventer, hose thread spout, replaceable composition disc, and chrome plated in finished areas.

### **3 EXECUTION**

#### **3.01 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for plumbing specialties and accessories installation in accordance with manufacturer's written instructions.
  - .1 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

- .2 Proceed with installation only after unacceptable conditions have been remedied and after receipt of approval to proceed from Departmental Representative.

### **3.02 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

### **3.03 INSTALLATION**

- .1 Install in accordance with National Plumbing Code of Canada, and local authority having jurisdiction.
- .2 Install in accordance with manufacturer's instructions and as specified.

### **3.04 BACK FLOW PREVENTERS**

- .1 Install in accordance with CSA-B64 Series, where indicated and elsewhere as required by code.
- .2 Pipe discharge to terminate over nearest drain or service sink.

### **3.05 HOSE BIBBS AND SEDIMENT FAUCETS**

- .1 Install at bottom of risers, at low points to drain systems, and as indicated.

### **3.06 START-UP**

- .1 Timing: start-up only after:
  - .1 Pressure tests have been completed.
  - .2 Disinfection procedures have been completed.
  - .3 Certificate of static completion has been issued.
  - .4 Water treatment systems operational.
- .2 Provide continuous supervision during start-up.

### **3.07 TESTING AND ADJUSTING**

- .1 Vacuum breakers, backflow preventers, backwater valves:
  - .1 Test tightness, accessibility for O&M of cover and of valve.
  - .2 Simulate reverse flow and back-pressure conditions to test operation of vacuum breakers, backflow preventers.
  - .3 Verify visibility of discharge from open ports.
  - .3 Verify that cleanout plug does not leak.
- .2 Hose bibbs, sediment faucets:
  - .1 Verify that flow and pressure meet design criteria.
  - .2 Check for leaks, replace compression washer if required.

**END OF SECTION**



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## 1 GENERAL

### 1.01 SUMMARY

- .1 Section Includes:
  - .1 Thermal insulation for piping and piping accessories in commercial type applications.

### 1.02 REFERENCES

- .1 American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
  - .1 ASHRAE Standard 90.1-01, Energy Standard for Buildings, Except Low-Rise Residential Buildings (IESNA co-sponsored; ANSI approved; Continuous Maintenance Standard).
- .2 American Society for Testing and Materials International (ASTM)
  - .1 ASTM B 209M-04, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate (Metric).
  - .2 ASTM C 335-04, Standard Test Method for Steady State Heat Transfer Properties of Horizontal Pipe Insulation.
  - .3 ASTM C 411-04, Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
  - .4 ASTM C 449/C 449M-00, Standard Specification for Mineral Fiber-Hydraulic-Setting Thermal Insulating and Finishing Cement.
  - .5 ASTM C 533-2004, Calcium Silicate Block and Pipe Thermal Insulation.
  - .6 ASTM C 547-2003, Mineral Fiber Pipe Insulation.
  - .7 ASTM C 795-03, Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.
  - .8 ASTM C 921-03a, Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
- .3 Canadian General Standards Board (CGSB)
  - .1 CGSB 51-GP-52Ma-89, Vapor Barrier, Jacket and Facing Material for Pipe, Duct and Equipment Thermal Insulation.
  - .2 CAN/CGSB-51.53-95, Poly (Vinyl Chloride) Jacketing Sheet, for Insulated Pipes, Vessels and Round Ducts
- .4 Department of Justice Canada (Jus)
  - .1 Canadian Environmental Assessment Act (CEAA), 1995, c. 37.
  - .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
  - .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.
- .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .6 Manufacturer's Trade Associations
  - .1 Thermal Insulation Association of Canada (TIAC): National Insulation Standards (Revised 2004).

- .7 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S102-03, Surface Burning Characteristics of Building Materials and Assemblies.
  - .2 CAN/ULC-S701-01, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  - .3 CAN/ULC-S702-1997, Thermal Insulation, Mineral Fiber, for Buildings
  - .4 CAN/ULC-S702.2-03, Thermal Insulation, Mineral Fiber, for Buildings, Part 2: Application Guidelines.

### **1.03 DEFINITIONS**

- .1 For purposes of this section:
  - .1 "CONCEALED" - insulated mechanical services in suspended ceilings and non-accessible chases and furred-in spaces.
  - .2 "EXPOSED" - will mean "not concealed" as specified.
- .2 TIAC ss:
  - .1 CRF: Code Rectangular Finish.
  - .2 CPF: Code Piping Finish.

### **1.04 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
    - .1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Shop Drawings:
  - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
    - .1 Shop drawings: submit drawings stamped and signed.

### **1.05 QUALITY ASSURANCE**

- .1 Installer: specialist in performing work of this Section, and have at least 3 years successful experience in this size and type of project, qualified to standards of TIAC.
- .2 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

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## **2 PRODUCTS**

### **2.01 FIRE AND SMOKE RATING**

- .1 In accordance with CAN/ULC-S102.
  - .1 Maximum flame spread rating: 25.
  - .2 Maximum smoke developed rating: 50.

### **2.03 INSULATION**

- .1 Mineral fiber specified includes glass fiber, rock wool, slag wool.
- .2 Thermal conductivity ("k" factor) not to exceed specified values at 24 degrees C mean temperature when tested in accordance with ASTM C 335.
- .3 TIAC Code A-1: rigid molded mineral fiber without factory applied vapor retarder jacket.
  - .1 Mineral fiber: to CAN/ULC-S702.
  - .2 Maximum "k" factor: to CAN/ULC-S702.
- .4 TIAC Code A-3: rigid molded mineral fiber with factory applied vapor retarder jacket.
  - .1 Mineral fiber: to CAN/ULC-S702.
  - .2 Jacket: to CGSB 51-GP-52Ma.
  - .3 Maximum "k" factor: to CAN/ULC-S702.
- .5 TIAC Code C-2: mineral fiber blanket faced with factory applied vapor retarder jacket (as scheduled in PART 3 of this section).
  - .1 Mineral fiber: to CAN/ULC-S702.
  - .2 Jacket: to CGSB 51-GP-52Ma.
  - .3 Maximum "k" factor: to CAN/ULC-S702.
- .6 TIAC Code A-6: flexible unicellular tubular elastomer.
  - .1 Insulation: with vapor retarder jacket.
  - .2 Jacket: to CGSB 51-GP-52Ma.
  - .3 Certified by manufacturer: free of potential stress corrosion cracking corrodants.

### **2.04 INSULATION SECUREMENT**

- .1 Tape: self-adhesive, aluminum, plain, 50 mm wide minimum.
- .2 Contact adhesive: quick setting.
- .3 Canvas adhesive: washable.
- .4 Tie wire: 1.5 mm diameter stainless steel.
- .5 Bands: stainless steel, 19mm wide, 0.5 mm thick.

### **2.05 CEMENT**

- .1 Thermal insulating and finishing cement:
  - .1 Air drying on mineral wool, to ASTM C 449/C 449M.

## **2.06 VAPOUR RETARDER LAP ADHESIVE**

- .1 Water based, fire retardant type, compatible with insulation.

## **2.07 INDOOR VAPOUR RETARDER FINISH**

- .1 Vinyl emulsion type acrylic, compatible with insulation.

## **2.08 JACKETS**

- .1 Polyvinyl Chloride (PVC):
  - .1 One-piece molded type and sheet to CAN/CGSB-51.53 with pre-formed shapes as required.
  - .2 Colors: by Departmental Representative.
  - .3 Minimum service temperatures: -20 degrees C.
  - .4 Maximum service temperature: 65 degrees C.
  - .5 Moisture vapor transmission: 0.02 perm.
  - .6 Fastenings:
    - .1 Use solvent weld adhesive compatible with insulation to seal laps and joints.
    - .2 Tacks.
    - .3 Pressure sensitive vinyl tape of matching color.

## **3 EXECUTION**

### **3.01 MANUFACTURER'S INSTRUCTIONS**

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

### **3.02 PRE-INSTALLATION REQUIREMENT**

- .1 Pressure testing of piping systems and adjacent equipment to be complete, witnessed and certified.
- .2 Surfaces clean, dry and free from foreign material.

### **3.03 INSTALLATION**

- .1 Install in accordance with TIAC National Standards.
- .2 Apply materials in accordance with manufacturer's instructions and this specification.
- .3 Use two layers with staggered joints when required nominal wall thickness exceeds 75 mm.
- .4 Maintain uninterrupted continuity and integrity of vapor retarder jacket and finishes.
  - .1 Install hangers, supports outside vapor retarder jacket.

- .5 Supports, Hangers:
  - .1 Apply high compressive strength insulation, suitable for service, at oversized saddles and shoes where insulation saddles have not been provided.

### 3.04 PIPING INSULATION SCHEDULES

- .1 Includes valves, valve bonnets, strainers, flanges and fittings unless otherwise specified.
- .2 TIAC Code: A-1.
  - .1 Securements: SS wire, bands, Tape at 300mm on center.
  - .2 Seals: lap seal adhesive, lagging adhesive.
  - .3 Installation: TIAC Code 1501-H.
- .3 TIAC Code: A-3.
  - .1 Securements: SS wire, bands, Tape at 300mm on center.
  - .2 Seals: VR lap seal adhesive, VR lagging adhesive.
  - .3 Installation: TIAC Code: 1501-C.
- .4 TIAC Code: C-2 with vapor retarder jacket.
  - .1 Seals: lap seal adhesive, lagging adhesive.
  - .2 Installation: TIAC Code: 1501-C.
- .5 Thickness of insulation as listed in following table.
  - .1 Run-outs to individual units and equipment not exceeding 4000 mm long.
  - .2 Do not insulate exposed run-outs to plumbing fixtures, chrome plated piping, valves, fittings.

Applic a-tion	Temp degree s C	TIAC code	Pipe sizes (NPS) and insulation thickness (mm)				
	Run out	to 1	1 1/4 to 2	2 1/2 to 4	5 to 6	8 & over	
Domest ic HWS		A-1	25	25	25	38	38
Domest ic CWS		A-3	25	25	25	25	25
Domest ic CWS		C-2	25	25	25	25	25

- .8 Finishes:
  - .1 Exposed indoors: PVC jacket.
  - .2 Exposed in mechanical rooms: PVC jacket.
  - .3 Use vapor retarder jacket on TIAC code A-3 insulation compatible with insulation.
  - .4 Finish attachments: SS screws, bands, at 150mm on center. Seals: wing closed.
  - .5 Installation: to appropriate TIAC code CRF/1 through CPF/5.

**END OF SECTION**



## PART 1 - GENERAL

### 1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
  - .1 CSA C22.1, Canadian Electrical Code, Part 1 (Latest Edition), Safety Standard for Electrical Installations.
  - .2 CSA C22.2 - Latest Edition.
  - .3 CAN/CSA-C22.3 No. 1-01 (Update March 2005), Overhead Systems.
  - .4 CAN3-C235-83 (R2000), Preferred Voltage Levels for AC Systems, 0 to 50,000 V.
- .2 Electrical and Electronic Manufacturer's Association of Canada (EEMAC)
  - .1 EEMAC 2Y-1-1958, Light Gray Colour for Indoor Switch Gear.
- .3 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 DESIGN REQUIREMENTS

- .1 Operating voltages: to CAN3-C235.
- .2 Language operating requirements: provide identification for control items in English.

### 1.4 SUBMITTALS

- .1 Product Data: submit WHMIS MSDS.
- .2 Shop drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of New Brunswick, Canada.
  - .2 Submit wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure co-ordinated installation.

1.4 SUBMITTALS  
(Cont'd)

- .2 (Cont'd)
  - .3 Identify on wiring diagrams circuit terminals and indicate internal wiring for each item of equipment and interconnection between each item of equipment.
  - .4 Indicate on drawings clearances for operation, maintenance, and replacement of operating equipment devices.
  - .5 Submit number of copies of drawings and product data to authority having jurisdiction.
  - .6 If changes are required, notify Engineer of these changes before they are made.
- .3 Quality Control:
  - .1 Provide CSA certified equipment and material.
  - .2 Where CSA certified equipment and material is not available, submit such equipment and material to authority having jurisdiction for special approval before delivery to site.
  - .3 Submit test results of installed electrical systems and instrumentation.
  - .4 Permits and fees: in accordance with General Conditions of contract.
  - .5 Submit certificate of acceptance from authority having jurisdiction upon completion of Work to Engineer.

1.5 QUALITY  
ASSURANCE

- .1 Qualifications: electrical Work to be carried out by qualified, licensed electricians who hold valid Master Electrical Contractor license or apprentices in accordance with authorities having jurisdiction as per the conditions of Provincial Act respecting manpower vocational training and qualification.
  - .1 Employees registered in provincial apprentices program: permitted, under direct supervision of qualified licensed electrician, to perform specific tasks.
  - .2 Permitted activities: determined based on training level attained and demonstration of ability to perform specific duties.
- .2 Health and Safety Requirements: do construction occupational health and safety in accordance with Health and Safety Requirements.

1.6 DELIVERY,  
STORAGE AND  
HANDLING

- .1 Material Delivery Schedule: provide schedule within 2 weeks after award of Contract.
- .2 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling.

1.7 SYSTEM STARTUP

- .1 Instruct Engineer and operating personnel in operation, care and maintenance of systems, system equipment and components.
- .2 Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.
- .3 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with aspects of its care and operation.

1.8 OPERATING  
INSTRUCTIONS

- .1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.
- .2 Operating instructions to include following:
  - .1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
  - .2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.
  - .3 Safety precautions.
  - .4 Procedures to be followed in event of equipment failure.
  - .5 Other items of instruction as recommended by manufacturer of each system or item of equipment.

1.9 Addenda and  
Revisions

- .1 All addenda, instructions and revisions issued during the tendering period shall become part of the Contract Documents and shall be included in the Tender, and shall take precedence over previous instructions.
-

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1.9 Addenda and  
Revisions  
(Cont'd)

- .2 The Owner and Engineer reserve the right to make revisions to the drawings during the period of construction and these revisions shall take precedence over previously issued drawings. All revisions to work shall be executed by duly authorized change orders with the amount of addition or deduction to the contract amount approved by the Owner before the execution of any work entailed in the revisions.

1.10 Substitutions

- .1 It is the intent of these drawings to establish the required quality of materials. Where manufacturers names or catalogue references are used, it is done in order to establish the required quality, style, size or function. Products of other manufacturers will not be permitted after the signing of the contract. The decision as to suitability shall rest with the Engineer.
- .2 Should the Contractor propose to furnish material and equipment other than those specified, he shall submit a written request for any or all substitutions 10 days prior to the tender closing date. Such a request shall be accompanied by a complete description including manufacturer, brand name, catalogue number, and technical data for all items. If requested by the Engineer, the Contractor shall submit for inspection a sample of the proposed item.
- .3 All material not meeting the standards as set down by these specifications shall not be allowed on the job site.
- .4 Substitutions affecting the design will not be permitted. Additional costs to any other trade as a result of a change or substitution by this Contractor, shall be borne by this Contractor.
- .5 The listing of a manufacturer as acceptable does not imply acceptance of all products of that manufacturer and only products meeting the standards as set out in the specifications will be accepted.

1.11 Work in  
Contract

- .1 The Electrical Contractor shall furnish all labour, materials, tools, appliances and equipment to entirely complete and provide for the operation of the electrical systems.
- .2 The overall intention is to provide for a finished piece of work complete in all aspects, and all items reasonably inferrable as called for by the plans and specifications, and by normally accepted good practice, notwithstanding that every item necessarily required may not be particularly mentioned. This Contractor shall fulfill his obligation and not take advantage of any unintentional errors or omissions should such exist, to the detriment of the Owner's interest. The work shall include but not be limited to:
  - .1 Rearrangement and modifications to existing cell electrical.
  - .2 CCTV Additions.
  - .3 Lift Addition

1.12 Electrical  
Drawings

- .1 The drawings which constitute an integral part of this contract shall serve as working drawings. They indicate the general layout of the complete electrical systems.
- .2 Field verification of scale dimensions on plans is required since actual locations, distances, and levels will be governed by the field conditions.
- .3 All discrepancies related to the electrical work shall be promptly brought to the attention of the Engineer for clarification.

1.13 Examination of  
Drawings and  
Existing Conditions

- .1 The Electrical Contractor shall become completely familiar with the drawings and specifications, as well as construction methods of other trades related to his work to avoid possible conflictions on the project. Should drastic changes be necessary to resolve such conflictions, this Contractor shall notify the Engineer and secure written approval and agreement on necessary adjustments before the installation is started.

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1.13 Examination of Drawings and Existing Conditions  
(Cont'd)

- .2 Before submitting his tender, this Contractor shall visit the site and become familiar with Existing installations which could effect the work, site conditions, availability of storage space and all other factors that might influence his tender.
- .3 The Contractor shall determine all working conditions and rigidly comply. Conditions requiring special consideration include but not be limited to:
  - .1 Dust.
  - .2 Noise.
  - .3 Vibration.
  - .4 Water.
  - .5 Use of powder actuated tools.
  - .6 Working hours.
  - .7 Access to working locations.
  - .8 Continuity of power.
  - .9 Project schedule.
  - .10 Physical protection of Owner's facility and equipment.
- .4 No extras will be allowed due to failure to take site conditions into consideration.
- .5 The exact roughing-in dimensions and connection points shall be determined from shop drawings and on-site measurements.

1.14 Discrepancies

- .1 Bidders in preparing their tenders, finding any errors, omissions, or discrepancies in the plans, specifications or other documents, or having any doubt in the intent or meaning of any part thereof, shall immediately notify the Engineer, who will send written instructions or clarification to all bidders. Where such discrepancies exist and it is evident that this Contractor could not have properly tendered without clarification and where such clarification was not requested, no extra to the contract will be considered in order to have the installation properly made. The Owner and Engineer will not be responsible for oral instruction.

## PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

.1 Material and equipment to be CSA certified. Where CSA certified material and equipment are not available, obtain special approval from authority having jurisdiction before delivery to site and submit such approval as described in PART 1 - SUBMITTALS.

.2 Factory assemble control panels and component assemblies.

2.2 WARNING SIGNS

.1 Warning Signs: in accordance with requirements of authority having jurisdiction and Engineer.

.2 Decal signs, minimum size 175 x 250 mm.

2.3 WIRING TERMINATIONS

.1 Ensure lugs, terminals, screws used for termination of wiring are suitable for copper conductors.

2.4 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates as follows:

.1 Nameplates: lamicoid 3 mm thick plastic engraving sheet , black face, white core, lettering accurately aligned and 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

#### 2.4 EQUIPMENT IDENTIFICATION (Cont'd)

- .2 Wording on nameplates to be approved by Engineer prior to manufacture.
- .3 Allow for minimum of twenty-five (25) letters per nameplate.
- .4 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics.

#### 2.5 WIRING IDENTIFICATION

- .1 Identify wiring with permanent indelible identifying markings, numbered, 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.

#### 2.6 CONDUIT AND CABLE IDENTIFICATION

- .1 Colour code conduits, boxes and metallic sheathed cables.
- .2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling, or floor, and at 15 m intervals.
- .3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

	Prime	Auxiliary
CCTV	Green	
up to 250 Emer	Red	Yellow
up to 600 Emer	Red	Green

#### 2.7 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 outdoor electrical equipment "equipment green" finish to.
  - .2 Paint indoor switchgear and distribution enclosures light gray to EEMAC 2Y-1.

PART 3 - EXECUTION

- |  |    |   |
|--|----|---|
| <u>3.1 INSTALLATION</u>                        | .1 | Do complete installation in accordance with CSA C22.1 except where specified otherwise.   |
| <u>3.2 CO-ORDINATION WITH OTHERS</u>           | .1 | Co-ordinate interruptions of electrical services and installation of equipment to minimize inconvenience to Owner.  |
|  | .2 | Care must be taken to prevent interference with normal operations of the Owner.   |
|  | .3 | Work by other contractors will be done concurrently with work in this contract. This contractor shall schedule and arrange his work and store his material in co-operation and so as to avoid interference with others.   |
| <u>3.3 NAMEPLATES AND LABELS</u>               | .1 | Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.  |
| <u>3.4 CONDUIT AND CABLE INSTALLATION</u>      | .1 | If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.  |
|  | .2 | Install cables, conduits and fittings embedded or plastered over, close to building structure so furring can be kept to minimum.  |
| <u>3.5 CO-ORDINATION OF PROTECTIVE DEVICES</u> | .1 | Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.  |
| <u>3.6 FIELD QUALITY CONTROL</u>               | .1 | Conduct following tests.<br>.1 Power distribution system including phasing, voltage, and grounding.<br>.2 Insulation resistance testing:<br>.1 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.<br>.2 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument. |

- 3.6 FIELD QUALITY CONTROL  
(Cont'd)
- .1 (Cont'd)
  - .2 (Cont'd)
  - .3 Check resistance to ground before energizing.
  - .2 Carry out tests in presence of Engineer.
  - .3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
  - .4 Manufacturer's Field Services:
    - .1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
    - .2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
    - .3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

- 3.7 CLEANING
- .1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.
  - .2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

- 3.8 Record Drawings
- .1 Refer to General Conditions.
  - .2 Two sets of white prints shall be maintained for the exclusive purpose of recording deviations from that shown on the contract drawings. One set shall be kept up to date at all times. At the completion of the project, the information shall be transferred to the second set of drawings and to a set of reproducible drawings, both shall be turned over to the Owner.

- 3.9 Cutting
- .1 The Contractor shall be responsible for all cutting required to complete the work shown on the drawings and described herein.
-

- |                               |    |  |
|-------------------------------|----|--|
| 3.9 Cutting<br>(Cont'd)       | .2 | All holes through concrete or masonry shall be made by core drilling. Care must be taken to contain dust and debris.                       |
|                               | .3 | Seal all holes and openings using a non-shrink, fire proof compound.   |
| 3.10 Patching and<br>Painting | .1 | The Contractor shall neatly patch all surfaces cut or damaged as a result of this contract.  |
|                               | .2 | The patching shall be of matching material or as specified herein and carried out by tradesmen trained and skilled in the work to be done. |
|                               | .3 | Painting of a patched area will be required. The painted area shall match as near as possible the existing paint.                          |
|                               | .4 | All patching, painting and sealing shall be to the satisfaction of the Engineer.   |
|                               | .5 | The Contractor shall neatly paint all surfaces left exposed or patched as a result of this contract.                                       |



## PART 1 - GENERAL

- |   |    |  |
|---|----|--|
| <u>1.1 DELIVERY,<br/>STORAGE AND<br/>HANDLING</u> | .1 | Packaging Waste Management: remove for reuse and return by manufacturer of pallets crates paddling and packaging materials in accordance with Section Construction/Demolition Waste Management and Disposal. |
|---|----|--|

## PART 2 - PRODUCTS

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

## PART 3 - EXECUTION

- |                                      |    |   |
|--------------------------------------|----|---|
| <u>3.1 FIELD QUALITY<br/>CONTROL</u> | .1 | Perform tests in accordance with Section 26 05 00 - Common Work Results for Electrical.   |
|                                      | .2 | Perform tests using method appropriate to site conditions and to approval of Departmental Representative and local authority having jurisdiction over installation. |
|                                      | .3 | Perform tests before energizing electrical system.  |

- |   |    |   |
|---|----|---|
| <u>3.2 GENERAL CABLE<br/>INSTALLATION</u> | .1 | Cable Colour Coding: to Section 26 05 00 Common Work Results for Electrical.                      |
|   | .2 | Conductor length for parallel feeders to be identical.  |
|   | .3 | Lace or clip groups of feeder cables at distribution centres, pull boxes, and termination points. |

- |   |    |  |
|---|----|--|
| <u>3.3 INSTALLATION OF<br/>BUILDING WIRES</u> | .1 | Install wiring as follows:<br>.1 In conduit systems in accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings. |
|---|----|--|



## PART 1 - GENERAL

### 1.1 REFERENCES

- .1 American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)
  - .1 ANSI/IEEE 837-, Qualifying Permanent Connections Used in Substation Grounding.
- .2 Canadian Standards Association, (CSA International)

### 1.2 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Construction/Demolition Waste Management And Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4 Divert unused metal materials from landfill to metal recycling facility as approved by Engineer.
- .5 Fold up metal banding, flatten and place in designated area for recycling.

## PART 2 - PRODUCTS

### 2.1 EQUIPMENT

- .1 Grounding conductors: bare stranded copper, tinned, soft annealed, size as indicated.
  - .2 Insulated grounding conductors: green, type. RW90.
  - .3 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to:
    - .1 Grounding and bonding bushings.
    - .2 Protective type clamps.
    - .3 Bolted type conductor connectors.
    - .4 Thermit welded type conductor connectors.
    - .5 Bonding jumpers, straps.
    - .6 Pressure wire connectors.
-

PART 3 - EXECUTION

3.1 INSTALLATION  
GENERAL

- .1 Install complete permanent, continuous grounding system including, conductors, connectors, accessories. Where EMT is used, run ground wire in conduit.
- .2 Install connectors in accordance with manufacturer's instructions.
- .3 Protect exposed grounding conductors from mechanical injury.
- .4 Use mechanical connectors for grounding connections to equipment provided with lugs.
- .5 Soldered joints not permitted.
- .6 Make grounding connections in radial configuration only, with connections terminating at single grounding point. Avoid loop connections.

3.2 EQUIPMENT  
GROUNDING

- .1 Install grounding connections to typical equipment included in, but not necessarily limited to following list. Distribution panels, equipment, etc.

3.3 FIELD QUALITY  
CONTROL

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical.
- .2 Perform ground continuity and resistance tests using method appropriate to site conditions and to approval of Engineer and local authority having jurisdiction over installation.
- .3 Perform tests before energizing electrical system.
- .4 Disconnect ground fault indicator during tests.

## PART 1 - GENERAL

### 1.1 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Construction/Demolition Waste Management And Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4 Divert unused metal materials from landfill to metal recycling facility as approved by Engineer.
- .5 Fold up metal banding, flatten and place in designated area for recycling.

## PART 2 - PRODUCTS

### 2.1 SUPPORT CHANNELS

- .1 U shape, size 41 x 41 mm, 2.5 mm thick.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- .1 Secure equipment to hollow solid masonry, tile and plaster surfaces with lead anchors or nylon shields.
- .2 Secure equipment to poured concrete with expandable inserts.
- .3 Secure equipment to hollow masonry walls or suspended ceilings with toggle bolts.
- .4 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.
- .5 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.

3.1 INSTALLATION  
(Cont'd)

- .5 (Cont'd)
  - .2 Two-hole steel straps for conduits and cables larger than 50 mm.
  - .3 Beam clamps to secure conduit to exposed steel work.
- .6 Suspended support systems.
  - .1 Support individual cable or conduit runs with 6 mm dia threaded rods and spring clips.
  - .2 Support 2 or more cables or conduits on channels supported by 6 mm dia threaded rod hangers where direct fastening to building construction is impractical.
- .7 For surface mounting of two or more conduits use channels.
- .8 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.
- .9 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.
- .10 Do not use wire lashing , nylon straps, or perforated strap to support or secure raceways or cables.
- .11 Do not use supports or equipment installed for other trades for conduit or cable support except with permission of other trade and approval of Engineer.
- .12 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.

## PART 1 - GENERAL

### 1.1 REFERENCES

- .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.

### 1.2 SUBMITTALS

- .1 Provide submittals in accordance with Submittal Procedures.
- .2 Product data: submit manufacturer's printed product literature, specifications and datasheets.
  - .1 Submit cable manufacturing data.
- .3 Quality assurance submittals:
  - .1 Test reports: submit certified test reports.
  - .2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .3 Instructions: submit manufacturer's installation instructions.

### 1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Construction/Demolition Waste Management and Disposal.
  - .2 Place materials defined as hazardous or toxic waste in designated containers.
  - .3 Ensure emptied containers are sealed and stored safely for disposal away from children.
-

## 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 cable length, voltage rating, conductor size, and manufacturer's lot number and reel number.
- .2 Each coil or reel of cable to contain only one continuous cable without splices.
- .3 Identify cables for exclusively dc applications.

### 2.2 CONDUITS

- .1 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with couplings.
- .2 Flexible metal conduit: to CSA C22.2 No. 56, steel.
- .3 Rigid Steel Conduit: to CSA C22.2 No. 45

### 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.
- .2 Beam clamps to secure conduits to exposed steel work.
- .3 Channel type supports for two or more conduits.
- .4 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 Set Screw connectors and couplings for EMT.

### 2.5 FISH CORD

- .1 Polypropylene.
-

### PART 3 - EXECUTION

<u>3.1 MANUFACTURER'S INSTRUCTIONS</u>	.1	Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.
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<u>3.2 INSTALLATION</u>	.1	Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.
	.2	Conceal conduits except in mechanical and electrical service rooms.
	.3	Use Rigid Steel Conduit in Inmate accessible areas.
	.3	Use electrical metallic tubing (EMT).
	.4	Use liquid tight flexible metal conduit for connection to motors or vibrating equipment.
	.5	Bend conduit cold: .1 Replace conduit if kinked or flattened more than 1/10th of its original diameter.
	.6	Mechanically bend steel conduit over 19 mm diameter.
	.7	Install fish cord in empty conduits.
	.8	Remove and replace blocked conduit sections. .1 Do not use liquids to clean out conduits.
	.9	Dry conduits out before installing wire.

<u>3.3 SURFACE CONDUITS</u>	.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	Group conduits wherever possible on channels.
	.5	Do not pass conduits through structural members except as indicated.

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3.3 SURFACE CONDUITS (Cont'd)	.6	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	On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
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PART 1 - GENERAL

<u>1.1 SECTION INCLUDES</u>	.1	Switches, receptacles, wiring devices, cover plates and their installation.
<u>1.2 RELATED SECTIONS</u>	.1	Section 01 33 00 - Submittal Procedures.
	.2	Section 26 05 00 - Common Work Results - Electrical.
<u>1.3 REFERENCES</u>	.1	Canadian Standards Association (CSA International) .1 CSA-C22.2 No.42-99(R2002), General Use Receptacles, Attachment Plugs and Similar Devices. .2 CSA-C22.2 No.42.1-00, Cover Plates for Flush-Mounted Wiring Devices (Bi-national standard, with UL 514D). .3 CSA-C22.2 No.55-M1986(July 2001), Special Use Switches. .4 CSA-C22.2 No.111-00, General-Use Snap Switches (Bi-national standard, with UL 20, twelfth edition).
<u>1.4 SHOP DRAWINGS AND PRODUCT DATA</u>	.1	Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
<u>1.5 WASTE MANAGEMENT AND DISPOSAL</u>	.1	Separate and recycle waste materials in accordance with Construction/Demolition Waste Management And Disposal.
	.2	Remove from site and dispose of all packaging materials at appropriate recycling facilities.
	.3	Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
	.4	Divert unused metal and wiring materials from landfill to metal recycling facility as approved by Engineer Consultant.

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## PART 2 - PRODUCTS

### 2.1 SWITCHES

- .1 15 A, 120 V, single pole,, three-way, four-way switches to: CSA-C22.2 No.55 and CSA-C22.2 No.111.
- .2 Manually-operated specification grade ac switches with following features:
  - .1 Terminal holes approved for No. 10 AWG wire.
  - .2 Silver alloy contacts.
  - .3 Urea or melamine moulding for parts subject to carbon tracking.
  - .4 Suitable for back and side wiring.
  - .5 Ivory toggle.
- .3 Toggle operated fully rated for tungsten filament and fluorescent lamps, and up to 80% of rated capacity of motor loads.
- .4 Switches of one manufacturer throughout project.
- .5 Acceptable materials:
  - .1 Hubbell: 1201 to 1204
  - .2 Leviton: 1201 to 1204
  - .3 Bryant: 4801 to 4804
  - .4 Pass & Seymore: 15AC1 to 15AC4
  - .5 Eaton: 1201 to 1204

### 2.2 RECEPTACLES

- .1 Duplex receptacles, Specification CSA type 5-15 R, 125 V, 15 A, U ground, to: CSA-C22.2 No.42 with following features:
    - .1 Ivory urea moulded housing.
    - .2 Suitable for No. 10 AWG for back and side wiring.
    - .3 Break-off links for use as split receptacles.
    - .4 Eight back wired entrances, four side wiring screws.
    - .5 Triple wipe contacts and rivetted grounding contacts.
  - .2 Single receptacles CSA type 5-15 R, 125 V, 15 A, U ground with following features:
    - .1 Ivory urea moulded housing.
    - .2 Suitable for No. 10 AWG for back and side wiring.
    - .3 Four back wired entrances, 2 side wiring screws.
-

- |                                    |    |  |
|------------------------------------|----|--|
| <u>2.2 RECEPTACLES</u><br>(Cont'd) | .3 | Other receptacles with ampacity and voltage as indicated.  |
|                                    | .4 | Receptacles of one manufacturer throughout project.  |
|                                    | .5 | Acceptable materials: <ul style="list-style-type: none"><li>.1 Hubbell: 5262</li><li>.2 Leviton: 5262</li><li>.3 Bryant: 5262</li><li>.4 Pass &amp; Seymore: 5262</li><li>.5 Eaton: 5262</li></ul> |
| <u>2.3 COVER PLATES</u>            | .1 | Cover plates for wiring devices to: CSA-C22.2 No.42.1.   |
|                                    | .2 | Cover plates from one manufacturer throughout project.   |
|                                    | .3 | Stainless steel, vertically brushed, 1 mm thick cover plates for wiring devices mounted in flush-mounted outlet box.   |
|                                    | .4 | cast cover plates for wiring devices mounted in surface-mounted FS or FD type conduit boxes.   |

### PART 3 - EXECUTION

- |                         |    |   |
|-------------------------|----|---|
| <u>3.1 INSTALLATION</u> | .1 | Switches: <ul style="list-style-type: none"><li>.1 Install single throw switches with handle in "UP" position when switch closed.</li><li>.2 Install switches in gang type outlet box when more than one switch is required in one location.</li><li>.3 Mount toggle switches at height in accordance with Section 26 05 00 - Common Work Results - Electrical.</li></ul>                                 |
|                         | .2 | Receptacles: <ul style="list-style-type: none"><li>.1 Install receptacles in gang type outlet box when more than one receptacle is required in one location.</li><li>.2 Mount receptacles at height in accordance with Section 26 05 00 - Common Work Results - Electrical as indicated.</li><li>.3 Where split receptacle has one portion switched, mount vertically and switch upper portion.</li></ul> |
|                         | .3 | Cover plates:   |

3.1 INSTALLATION

(Cont'd)

.3 (Cont'd)

.1 Protect stainless steel cover plate finish with paper or plastic film until painting and other work is finished.

.2 Install suitable common cover plates where wiring devices are grouped.

.3 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

## PART 1 - GENERAL

<u>1.1 SECTION INCLUDES</u>	.1	Materials and installation for fused and non-fused disconnect switches.
<u>1.2 RELATED SECTIONS</u>	.1	Section 26 05 00 - Common Work Results - Electrical.
<u>1.3 REFERENCES</u>	.1	Canadian Standards Association (CSA International). .1 CAN/CSA C22.2 No.4-M89 (R2000), Enclosed Switches. .2 CSA C22.2 No.39-M89 (R2003), Fuseholder Assemblies.
<u>1.4 SUBMITTALS</u>	.1	Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
<u>1.5 HEALTH AND SAFETY</u>	.1	Do construction occupational health and safety in accordance with Health and Safety Requirements.
<u>1.6 WASTE MANAGEMENT AND DISPOSAL</u>	.1	Separate waste materials for reuse and recycling in accordance with Construction/Demolition Waste Management and Disposal.
	.2	Remove from site and dispose of packaging materials at appropriate recycling facilities.
	.3	Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
	.4	Separate for reuse and recycling and place in designated containers Steel Metal Plastic waste in accordance with Waste Management Plan.
	.5	Fold up metal banding, flatten and place in designated area for recycling.

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## PART 2 - PRODUCTS

- |                            |    |  |
|----------------------------|----|--|
| 2.1 DISCONNECT<br>SWITCHES | .1 | Fusible, and non-fusible, heavy duty horsepower rated disconnect switch in CSA Enclosure 1, to CAN/CSA C22.2 No.4 size as indicated. |
|                            | .2 | Provision for padlocking in on-off switch position by three locks.   |
|                            | .3 | Mechanically interlocked door to prevent opening when handle in ON position.   |
|                            | .4 | Fuses: size as indicated, HRC type.  |
|                            | .5 | Fuseholders: to CSA C22.2 No.39, suitable without adaptors, for type and size of fuse indicated.                                     |
|                            | .6 | Quick-make, quick-break action.  |
|                            | .7 | ON-OFF switch position indication on switch enclosure cover.   |

- |                                 |    |  |
|---------------------------------|----|--|
| 2.2 EQUIPMENT<br>IDENTIFICATION | .1 | Provide equipment identification in accordance with Section 26 05 00 - Common Work Results - Electrical. |
|                                 | .2 | Indicate name of load controlled on size 4 nameplate.  |

## PART 3 - EXECUTION

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|------------------|----|--|
| 3.1 INSTALLATION | .1 | Install disconnect switches complete with fuses if applicable. |
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