

# Project Manual

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Michael Garron Hospital  
Outpatient Ophthalmology Clinic

Project No. HS1025-0189

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Issued For Tender and Permit

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**SUPPLEMENTARY GENERAL CONDITIONS  
(CCDC 2 (2020) - STIPULATED PRICE CONTRACT)**

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**1. REFERENCE**

- (a) The Canadian Standard Construction Document, CCDC 2-2020, Stipulated Price Contract, consisting of the Agreement between *Owner* and *Contractor*, Definitions and the General Conditions of the Stipulated Price Contract, and these Supplementary General Conditions, are part of the *Contract Documents*.
- (b) These Supplementary General Conditions supplement or amend the Agreement, Definitions and General Conditions of the Stipulated Price Contract. These Supplementary General Conditions shall be read in conjunction with, and in the case of conflict, take precedence over the Agreement, Definitions and General Conditions. Where any of the Agreement, Definitions and General Conditions are supplemented or amended hereinafter, the unaffected provisions of such Agreement, Definitions and General Conditions shall remain in effect. Amendments to any provisions of the Agreement, Definitions and General Conditions shall be considered as superseding the affected provision thereof.

**2. AGREEMENT BETWEEN OWNER AND CONTRACTOR**

(a) **Article A-1 — THE WORK**

- (i) Add the following at the end of the first sentence of paragraph 1.3: “and attain *Total Completion* of the *Work* within 14 calendar days from the *Ready-for-Takeover* date.” (the “***Total Completion Date***”).

(b) **Article A-3 — CONTRACT DOCUMENTS**

- (i) Add in the list of *Contract Documents* in paragraph 3.1:

- Supplementary General Conditions.

(c) **Article A-5 — PAYMENT**

- (i) Delete paragraph 5.1.2 and substitute with the following:

- .2 on the 61<sup>st</sup> calendar day following the publication of the certificate of *Substantial Performance of the Work*, pay to the *Contractor* the unpaid balance of the holdback amount together with such *Value Added Taxes* as may be applicable to such payment provided: (i) there are no claims for lien registered against title to the *Place of the Work*; (ii) the *Owner* has not received any valid written notices of lien in respect of the *Work*; and (iii) the *Owner* has not published a notice of non-payment in the form prescribed by the *Construction Act* prior to the 40<sup>th</sup> calendar day following the publication of the certificate of *Substantial Performance of the Work*.

- (ii) Delete paragraph 5.2.1 and substitute with the following:

- .1 If either party fails to make payments as they become due under the terms of the *Contract* or pursuant to any award by arbitration or court, interest at the lesser of (i) two percent (2%) per annum above the prime rate (compounded monthly); and (ii) the quarterly prejudgment interest rate prescribed by the *Courts of Justice Act* (Ontario), on such unpaid amounts shall also become due and shall accrue until payment. The prime rate set out in (i) above shall be the lowest rate of interest quoted by the Bank of Canada from time to time as the prime rate.
- (iii) Add new paragraphs 5.3 and 5.4 as follows:
- 5.3 Notwithstanding any other provision of this *Contract*, and subject to the requirements of the *Construction Act*, the *Owner* may issue a notice of non-payment in accordance with the *Construction Act* and may make an allowance, set-off, adjustment or credit for any amount (other than release of holdback) (collectively, a “**Withholding**”) as may be necessary to protect the *Owner* from loss on account of:
- .1 non-conforming or defective *Work*, which is not rectified or remedied in accordance with the *Contract*;
  - .2 failure of the *Contractor* to fulfil its obligations in respect of claims for lien in accordance with GC 5.8 - LIENS;
  - .3 damage to the *Work* or property of the *Owner* or others for which the *Contractor* is responsible under the *Contract* which is not addressed or rectified in accordance with GC 9.1 – PROTECTION OF WORK AND PROPERTY;
  - .4 errors, discrepancies, inconsistencies or irregularities in any *Proper Invoice*;
  - .5 unsatisfactory prosecution of the *Work*, due to factors within the control of the *Contractor*, which is not rectified in accordance with paragraph 3.4.2 of GC 3.4 – CONSTRUCTION SCHEDULE; or
  - .6 failure by the *Contractor* to provide any document deliverable in accordance with the *Contract Documents*.

When the *Contractor* has remedied the cause of the *Withholding* and has furnished evidence satisfactory to the *Consultant* of such remedy, the amount of the *Withholding* will, subject to paragraph 5.4 hereof, be paid without interest.

- 5.4 Without prejudice to any other right or remedy of the *Owner*, the obligation of the *Owner* to make any payment to the *Contractor* under or in connection with the *Contract* is subject to the *Owner's* right to deduct or set off against any such payment any sum which may be due to the *Owner*, or to which the *Owner* has a claim, under the *Contract* and in such event the *Owner* may issue a notice of non-payment to the *Contractor* in accordance with the *Construction Act*. The *Owner* may retain from monies owing to the *Contractor* under this *Contract* an amount sufficient to cover any outstanding or disputed liabilities arising out of the *Contractor's* performance of this *Contract*, including the cost to remedy defects or deficiencies, the reduction in value of substandard portions of the *Work*, claims for damages by third parties which have not been determined in writing by the *Contractor's* insurer, and any outstanding workplace safety and insurance board assessments. Without limitation, if the *Contractor* is in breach or default of any provision of the *Contract*, and, after receiving notice thereof, the *Contractor* does not promptly remedy such default or breach or commence and diligently prosecute the remedy of such breach or default in accordance with the terms of this *Contract*, the *Owner* may (but shall not be obligated to) take any measures it considers reasonably necessary to remedy such default or breach and any sums incurred by the *Owner* in respect thereof may be deducted from or set off against any amount owing to the *Contractor* under the *Contract*.

(d) **Article A-7 — LANGUAGE OF THE CONTRACT**

- (i) Delete the words “The English / French language shall prevail” in paragraph 7.1 and substitute with the following: “the English language shall prevail”.

(e) **Article A-9 — GENERAL**

- (i) Add new Article A-9 – GENERAL as follows:

**ARTICLE A-9 GENERAL**

- 9.1 Time is of the essence of this *Contract*.
- 9.2 The *Contractor* shall be an independent *Contractor* in performing its obligations under the *Contract*. The *Contract* does not create any agency, partnership, joint venture, fiduciary or other relationship of the *Contractor* with the *Owner* other than the relationship of independent contractor. Nothing contained in the *Contract* shall create any employment or contractual relationship between the *Owner* (or anyone acting on its behalf) and any *Contractor Personnel*.
- 9.3 The *Contractor* shall be solely responsible for the performance of the *Work* and for any acts or omissions of any *Contractor Personnel*.

- 9.4 No approval or consent of, or certification, inspection, review, comment, verification, confirmation, acknowledgement or audit by, any *Governmental Authority*, the *Owner*, the *Consultant*, or anyone on their behalf, shall relieve the *Contractor* from performing or fulfilling any of its obligations under the *Contract*. Without limitation, whenever any drawings, plans, procedures, programs or other work product of the *Contractor* requires any review, inspection, comment or approval by any *Governmental Authority*, the *Owner*, the *Consultant*, or anyone on their behalf, any such review, inspection, comment or approval shall not, in any way, reduce or modify any of the *Contractor's* obligations under the *Contract*.
- 9.5 Nothing contained in the *Contract* shall be construed as making the *Owner*, the *Consultant*, or anyone acting on their behalf, responsible for anything which is the responsibility of the *Contractor* under the *Contract*.
- 9.6 Nothing in this *Contract* shall in any way fetter the right, authority and discretion of the *Owner* as a public hospital under the *Public Hospitals Act* (Ontario) in fulfilling its statutory or other functions under law including under the *Public Hospitals Act* (Ontario), and the *Local Health System Integration Act*, 2006 and in accordance with the hospital's by-laws.
- 9.7 The *Contractor* recognizes and understands that the *Owner* is a public hospital under the *Public Hospitals Act* (Ontario) which is managed pursuant to the *Local Health System Integration Act*, 2006 and is therefore subject to a highly regulated legal and operational environment. The *Contractor* acknowledges that the hospital and/or premises in which the *Work* is to be performed or to which the *Work* relates must remain in operation during the performance of the *Work*, except as specifically permitted by the *Owner*, and that the *Contractor* will, without additional cost to the *Owner*, carry out, perform and coordinate the performance of the *Work* to minimize disruption and interference to the on-going operation of the hospital and its facilities, including the delivery of quality patient care and the provision of services by tenants of the hospital. The *Contractor* further acknowledges that the *Owner* has provided it with requirements as to the manner in which the *Work* is to be performed in respect of minimizing disturbance to the hospital including in respect to noise, dust control, access to the *Place of the Work* and the particular requirements in respect to those portions of the *Work* which are to be carried out within the hospital (or in connection with the hospital) and in respect to those portions of the *Work* where connections are being made to the hospital. In addition the *Contractor* acknowledges that it has familiarized itself with hospital operations and will perform the *Work* taking into account the requirements of the *Owner* to maintain normal hospital operations and that the *Contract Price* includes all premium time and overtime that may be required to perform the *Work* in accordance with the foregoing requirements.

- 9.8 If any part of the *Contract* or the application of such part to any party, person or circumstance shall, to any extent, be invalid or unenforceable, the remainder of the *Contract*, or the application of such part to any other party, person or circumstance, shall not be affected thereby and each provision of the *Contract* shall be valid and enforceable to the fullest extent permitted by law.
- 9.9 The terms of the *Contract*, which by their nature are continuing, shall survive the termination or other expiration of the *Contract*.
- 9.10 The parties shall, from time to time, execute and deliver all such further documents and instruments and do all acts and things as the other party may reasonably require to effectively carry out or better evidence or perfect the full intent and meaning of the *Contract*.
- 9.11 The table of contents, titles, section headings, running headlines and marginal notes contained in the *Contract Documents* are solely to facilitate reference to various provisions of the *Contract Documents* and in no way affect or limit the interpretation or construction of the provisions to which they refer.
- 9.12 This *Agreement*, including the *Contract Documents* described herein and the attachments, documents and other agreements to be furnished or executed in connection herewith, supersedes all prior negotiations, representations or agreements, either written or oral, with respect to the subject matter hereof. No modification to the *Contract* shall be effective unless made in writing and signed by both the *Owner* and the *Contractor*, unless otherwise provided for herein.
- 9.13 All parties agree that this *Agreement* may be executed in any number of counterparts and may be executed via electronic signature, provided that an electronic signature tool (such as DocuSign) is utilized for such electronic signature. Each executed counterpart will be deemed to be an original. All executed counterparts taken together will constitute one *Agreement*. To evidence the fact that it has executed this *Agreement*, a party may send a copy of its executed counterpart to the other party by electronic mail in Portable Document File (PDF) format.

### 3. DEFINITIONS

- (a) Amend the following definitions:

#### **Contract**

Add as the second sentence: “When this agreement is referred to herein as the “Agreement”, the term “Agreement” shall mean “*Contract*”.”

#### **Contract Documents**



Add at the end of the sentence the words “in writing”.

#### **Payment Legislation**

Add as a second sentence: “For the purposes of this *Contract*, *Payment Legislation* shall mean the *Construction Act*.”

#### **Value Added Taxes**

Delete the definition of “Value Added Taxes” and substitute with the following:

*Value Added Taxes* means the taxes exigible under Part IX of the *Excise Tax Act* (Canada) and the regulations made thereunder, as amended from time to time, that are ordinarily known as the harmonized sales tax, and may also be referred to in this *Contract* as “HST”.

- (b) Add the following new definitions:

#### ***Adjudication***

*Adjudication* means the construction dispute interim adjudication procedure under Part II.1 of the *Construction Act* with respect to any and all matters referred to in Section 13.5 of the *Construction Act* and the matters set out in GC 8.1.1.

#### ***Commissioning***

*Commissioning* means the process of putting the *Work* or any part thereof into operation and includes start-up, verification and performance testing as described in the *Contract Documents*.

#### ***C.C.N.* (Contemplated Change Notice)**

*C.C.N.* means a written notice from the *Consultant* to the *Contractor* describing a proposed change to the *Work* and instructing the *Contractor* to provide a *C.N.Q.*

#### ***C.N.Q.* (Change Notice Quotation)**

*C.N.Q.* means a written quotation issued by the *Contractor* to the *Consultant* containing the *Contractor*’s proposed method of adjustment or amount of adjustment to the *Contract Price*, if any, and the *Contractor*’s proposed adjustment to the *Contract Time*, if any, and such other information as may be required under the applicable provisions of the *Contract*.

#### ***Construction Act***

*Construction Act* means the *Construction Act* (Ontario), R.S.O. 1990, c. C.30, as may be amended, repealed, superseded or replaced.

#### ***Commissioning Agent***

*Commissioning Agent* means the person designated by the *Owner* to witness the start-up, *Commissioning*, testing and demonstration of the performance of building systems and technologies forming part of the *Work* and to verify that such systems and technologies perform in accordance with the requirements of the *Contract Documents*. If the *Owner* chooses not to designate a person for the foregoing purposes, “Commissioning Agent” shall mean the *Owner*.

***Contractor Personnel***

*Contractor Personnel* means any *Subcontractor* or *Supplier* or other person performing or supplying any part of the *Work*, and any employees or agents thereof, and any employees or agents of the *Contractor*.

***Governmental Authorities***

*Governmental Authorities* means any government, legislature, municipality, regulatory authority, agency, commission, department, board or other law regulation or rule making entity (including, without limitation, a minister of the Crown).

***Proper Invoice***

*Proper Invoice* means a written bill or other request for payment for services and/or materials comprising the *Work* performed under this *Contract* issued by the *Contractor*, provided such bill or request:

- (A) contains the information set out in Section 6.1 of the *Construction Act*, which for certainty includes the following:
  - 1. The *Contractor's* name and address;
  - 2. The date of the *Proper Invoice* and the period during which the services or materials were supplied;
  - 3. Information identifying the authority, whether in this *Contract* or otherwise, under which the services or materials were supplied;
  - 4. A description, including quantity where appropriate, of the services or materials that were supplied;
  - 5. The amount payable for the services or materials that were supplied, and the payment terms;
  - 6. The name, title, telephone number and mailing address of the person at the *Contractor* to whom payment is to be sent; and
  - 7. Any other information that may be prescribed by the *Construction Act*,

- (B) shall be delivered to both the *Owner* and the *Consultant* simultaneously between the hours of 9:00 A.M. to 5:00 P.M. on a *Working Day*. In the case of the *Owner*, the *Proper Invoice* shall be directed to Accounts Payable (ap@tehn.ca), with a copy to the *Owner's* Project Manager for the *Project*, at the following address: 825 Coxwell Ave, Toronto, ON M4C 3E7; and
- (C) meets the additional requirements outlined in paragraphs 5.2.2 - 5.2.9 of GC 5.2 – APPLICATIONS FOR PAYMENT PURSUANT TO THE SUBMISSION OF PROPER INVOICES.

***Submittals***

*Submittals* are documents or other forms of information which the *Contractor* is required to submit to the *Owner* or the *Consultant* and include, without limitation, *Shop Drawings*, samples, models, record drawings, test reports, certificates, diagrams and manuals.

***Total Completion***

*Total Completion* shall be attained when the entire *Work*, except those items arising from the provisions of GC 12.3-WARRANTY, has been performed in accordance with the requirements of the *Contract Documents*, as certified by the *Consultant*.

***Total Completion Date***

*Total Completion Date* means the date listed in paragraph 1.3 of Article A-1 – THE WORK by which time the *Contractor* is to have attained *Total Completion*. The *Total Completion Date* may only be amended by means of an approved *Change Order* or by the *Owner*, in writing.

***Work Site***

*Work Site* means, within the *Place of the Work*, the area shown on the drawings, or designated by the *Consultant* or the *Owner*, where the *Work* is to be carried out.

**4. GENERAL CONDITIONS**

**(a) GC 1.1 — CONTRACT DOCUMENTS**

- (i) Delete GC 1.1.1 and substitute with the following:

- 1.1.1 It is the intent of the *Contract Documents* that, unless otherwise expressly provided in the *Contract Documents*, the *Contract Price* covers all of the *Contractor's* obligations under the *Contract* and all things necessary for the proper execution and completion of the *Work* in accordance with the *Contract* (together with anything reasonably inferable therefrom), including the remedying of any defects in the *Work* in accordance with the *Contractor's* warranty obligations and, in this regard, but without limiting the foregoing, the *Contractor* shall be considered to have thoroughly

reviewed the *Contract Documents*, to have carried out such inspections and investigations described in paragraph 6.4.5 of GC 6.4 – CONCEALED OR UNKNOWN CONDITIONS, and to have obtained all other necessary information as to the risks, contingencies and other circumstances affecting the *Work* (including ground water, utility locations, climate, availability of labour, Products, status of existing conditions and equipment and other conditions which may affect the *Work*) and the *Contractor* accepts full responsibility for having reasonably foreseen all difficulties and costs of successfully executing the *Work*, as well as meeting all other obligations of the *Contractor*, in accordance with the *Contract*.

(ii) Delete the second sentence of GC 1.1.2.

(iii) Delete GC 1.1.3 and GC 1.1.4 and substitute as follows:

1.1.3 The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Consultant* any error, inconsistency or omission the *Contractor* may discover. Such review by the *Contractor* shall comply with the standard of care described in paragraph GC 3.9.1 of GC 3.9 – PERFORMANCE BY CONTRACTOR. Except for its obligation to make such review and report the result, the *Contractor* does not assume any responsibility to the *Owner* or to the *Consultant* for the accuracy of the *Contract Documents*. The *Contractor* shall not be liable for damages or costs resulting from such errors, inconsistencies or omissions in the *Contract Documents*, which the *Contractor* could not reasonably have discovered. If the *Contractor* does discover any error, inconsistency or omission in the *Contract Documents*, the *Contractor* shall not proceed with the work affected until the *Contractor* has received corrected or missing information from the *Consultant*.

1.1.4 If the *Contractor* finds discrepancies in and/or omissions from the *Contract Documents* or has any doubt as to the meaning or intent of any part thereof, the *Contractor* shall immediately notify the *Consultant*, who will provide written instructions or explanations. Neither the *Owner* nor the *Consultant* will be responsible for oral instructions.

(iv) Add new GC 1.1.5.6 as follows:

.6 in case of discrepancies, noted materials and annotations shall take precedence over graphic indications in the *Contract Documents*.

(v) Add new sentence to the end of GC 1.1.9 as follows:

The *Specifications* are divided into divisions and sections for convenience but shall be read as a whole and neither such division nor anything else contained in the *Contract Documents* will be construed to place responsibility on the *Consultant* to settle disputes among the *Subcontractors* and *Suppliers* in respect to such divisions.

- (vi) Add new sentence to the end of GC 1.1.10 as follows:

The *Owner* shall have a perpetual, fully paid-up, royalty free, irrevocable, non-cancellable, non-terminable, worldwide, non-exclusive, sublicenseable, assignable and transferable right to use all such specifications, drawings, models and copies with respect to the *Work* and for other uses as shall be reasonably required by the *Owner*.

- (vii) Add new GC 1.1.12 as follows:

1.1.12 The *Owner* shall provide the *Contractor*, without charge, one (1) hard copy and one (1) copy in electronic format, of the *Contract Documents*, exclusive of those required by *Governmental Authorities*. Additional copies will be furnished to the *Contractor* at the *Contractor's* cost of reproduction, handling and applicable taxes.

(b) **GC 1.4 — ASSIGNMENT**

- (i) Delete GC 1.4.1 and substitute with the following:

1.4.1 The *Contractor* shall not assign this *Contract* or a portion thereof without the prior written consent of the *Owner*. The *Contractor*, when requesting the *Owner's* consent to an assignment, shall provide evidence satisfactory to the *Owner* of the proposed assignee's ability to complete this *Contract* in respect of its technical and financial competence, its work force and its equipment, along with any other information reasonably requested by the *Owner*.

(c) **GC 2.1 — AUTHORITY OF THE CONSULTANT**

- (i) Add as the second sentence to GC 2.1.2: "The *Contractor's* consent shall not be unreasonably withheld."

(d) **GC 2.2 — ROLE OF THE CONSULTANT**

- (i) Delete the words "progress and quality of the work" in GC 2.2.2 and substitute with the following: "progress and quality of the *Work*".

- (ii) Delete GC 2.2.4 and substitute with the following:

2.2.4 Upon receipt of a *Proper Invoice*, the *Consultant* shall review the *Proper Invoice* and issue to the *Owner*, no later than five (5) calendar days after receipt of the *Proper Invoice*, a certificate for payment in accordance with subparagraph 5.3.1.1 of GC 5.3 - PAYMENT.

- (iii) Add the words "to the *Contractor*" in GC 2.2.5 after the words "The *Consultant* will not be responsible" in the first two sentences of such paragraph.

- (iv) Delete in the first line of GC 2.2.6 the words “except with respect to GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER”.
- (v) Delete GC 2.2.7 - GC 2.2.10 and substitute with the following: “Intentionally Deleted”.
- (vi) Add new GC 2.2.19 as follows:

2.2.19 The *Consultant* or the *Owner*, acting reasonably, may from time to time require the *Contractor* to remove from any involvement in the *Work*, any *Contractor Personnel* including without limitation, project managers, superintendents, *Subcontractors* or *Suppliers*. Such persons shall be replaced by the *Contractor* in a timely fashion to the complete satisfaction of the *Consultant* or the *Owner*, as the case may be and without in any way limiting or deleting the *Contractor's* obligation and responsibility to properly manage all *Contractor Personnel*.

(e) **GC 2.4 — DEFECTIVE WORK**

- (i) Add new GC 2.4.1.1 and GC 2.4.1.2 as follows:
  - .1 The *Contractor* shall rectify, in a manner acceptable to the *Owner*, all defective work and deficiencies throughout the *Work*, whether or not they are specifically identified by the *Consultant*.
  - .2 The *Contractor* shall prioritize the correction of any defective *Work* which, in the sole discretion of the *Owner*, adversely affects the day to day operation of the *Owner*.
- (ii) Amend GC 2.4.3 by deleting the words “... the difference in value between the *Work* as performed and that called for by the *Contract Documents*” and substitute with the following: “... the value of such *Work* as is necessary to correct any non-compliance with the *Contract Documents*.”
- (iii) Add new GC 2.4.4 – GC 2.4.6 as follows:
  - 2.4.4 Acceptance of the *Work* by the *Owner* or *Consultant* shall not release the *Contractor* from responsibility for correcting deficiencies which were apparent but had not been identified at the time of drawing up the deficiency list or which become apparent during any warranty period provided for in this *Contract*.
  - 2.4.5 Upon notification of a defect in the *Work*, the *Contractor* shall, within five (5) *Working Days*, promptly provide a written statement outlining the proposed remedial measures and a schedule for implementation. Once approved by the *Consultant*, the *Contractor* shall proceed with the remedial measures without adversely affecting the construction schedule.

- 2.4.6 Notwithstanding any rejection of the *Work* by the *Consultant* or deduction of an amount otherwise due to the *Contractor* by the *Owner* as a result of a defect in the *Work* that is not rectified in accordance with this GC 2.4, the *Contractor* is required to continue the *Work* in accordance with the *Contract Documents*.

(f) **GC 3.1 — CONTROL OF THE WORK**

- (i) In GC 3.1.1, delete the words “and shall effectively direct” and substitute with the following: “and shall effectively schedule, coordinate, direct”.

- (ii) Add new GC 3.1.3 – GC 3.1.5 as follows:

3.1.3 Prior to commencing individual procurement, fabrication and construction activities, the *Contractor* shall verify, at the *Place of the Work*, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the *Work* and shall further carefully compare such field measurements and conditions with the requirements of the *Contract Documents*. Where dimensions are not included or exact locations are not apparent, the *Contractor* shall immediately notify the *Consultant* in writing and obtain written instructions from the *Consultant* before proceeding with any part of the affected work.

3.1.4 The *Contractor* shall perform the *Work* in a good and workmanlike manner, using new materials, in accordance with all applicable laws and current best practices and standards in the construction industry at the *Place of the Work*. The *Contractor* acknowledges that both time and quality are of the essence and the *Contractor* will perform the *Work* or cause the *Subcontractors* and *Suppliers* to perform the *Work* in accordance with the construction schedule.

3.1.5 The *Contractor* shall perform all cutting and patching work by means which minimizes disruption or inconvenience to adjacent occupancies and operations. Where, in the opinion of the *Consultant*, such work may cause unacceptable disruption, noise or inconvenience, the *Consultant* may instruct the *Contractor* to perform such work at times and in a manner consistent with the requirements of this paragraph and the *Contractor* shall carry out such *Work* in conformity with such instruction without entitlement to any adjustment in *Contract Price* or *Contract Time*.

(g) **GC 3.2 — CONSTRUCTION BY OWNER OR OTHER CONTRACTORS**

- (i) Delete GC 3.2.2.1 and GC 3.2.2.3 in their entirety.

- (ii) Add new GC 3.2.3.5 as follows:

.5 subject to GC 9.4 – CONSTRUCTION SAFETY, for the *Owner's* own forces and for *Other Contractors* performing work at the *Place of the Work*,

assume overall responsibility for compliance with all aspects of the applicable health and safety legislation at the *Place of the Work*, including all of the responsibilities of the “constructor” under the *Occupational Health and Safety Act* (Ontario);

- (iii) Delete GC 3.2.6 and substitute with the following:

3.2.6 The *Owner* shall have the right to enter and take possession of the *Work* in whole or in part for the purposes of installing and testing fittings and equipment, or for such other temporary or permanent use, before the *Ready-for-Takeover* date, so long as such entry, occupation and use does not unreasonably interfere with the *Contractor* in the performance of the *Work* in accordance with the *Contract Documents*. Such entry, possession or use shall not be considered as acceptance of the *Work*, in whole or in part, or in any way relieve the *Contractor* from any of its obligations under the *Contract*, including without limitation the warranties in GC 12.3 – WARRANTY. For certainty, care, custody and control of the *Work* shall remain with the *Contractor* until *Ready-for-Takeover* is achieved.

- (iv) Add new GC 3.2.8 as follows:

3.2.8 *Work* by others, including the *Owner*, or by *Other Contractors* which may include attachment to, installation upon, or connection of other work to the *Work* of the *Contractor* does not relieve the *Contractor* of its responsibility to provide and maintain the specified warranties except where damage is caused by the *Owner's* forces or by *Other Contractors*.

(h) **GC 3.3 — TEMPORARY WORK**

- (i) Delete GC 3.3.1 and substitute with the following:

3.3.1 The *Contractor* shall provide temporary supports, structures, services (namely water, electrical power, heat and cooling) and facilities as are required to execute the *Work* and shall have sole responsibility for the design, erection, operation, maintenance and removal of *Temporary Work*.

(i) **GC 3.4 — CONSTRUCTION SCHEDULE**

- (i) Delete GC 3.4.1 and substitute with the following:

3.4.1 The *Contractor* shall:

- .1 Within **[Five (5)]** *Working Days* after receiving the authorization to proceed with the *Work*, submit to the *Owner* and the *Consultant* for their review and acceptance a construction schedule indicating the critical path for the *Project* demonstrating that the *Work* will be performed in conformity with the *Contract Time* and in accordance with the *Contract Documents*. The *Contractor* shall include the



requisite time in the construction schedule to allow the *Commissioning Agent* and associated witnessing persons access and resources to perform the *Commissioning*. The *Contractor* shall provide the schedule information required by this paragraph in both electronic format and hard copy. Once accepted by the *Owner* and the *Consultant*, the construction schedule submitted by the *Contractor* shall become the baseline construction schedule;

- .2 Provide the expertise and resources, such resources including manpower and equipment, as are necessary to meet and maintain the accepted baseline construction schedule referred to in subparagraph 3.4.1.1 or any successor or revised schedule accepted by the *Owner* pursuant to this GC 3.4;
- .3 Monitor the progress of the *Work* at a minimum on a weekly basis relative to the construction schedule reviewed and accepted pursuant to subparagraph 3.4.1.1, or any successor or revised schedule accepted by the *Owner* pursuant to this GC 3.4, (or as otherwise specified in the *Contract Documents*), update the schedule on a monthly basis and advise the *Consultant* and the *Owner* in writing of any variation from the baseline or slippage in the schedule and the reasons therefor.
- .4 Any updates to the baseline construction schedule, identified in GC 3.4.1.1 above, will not form the basis for any adjustment to the *Contract Time*, or to the baseline construction schedule, unless the *Owner* or the *Consultant* issues an extension pursuant to GC 6.5 – DELAYS. Failing such an extension, the *Contractor* shall remain responsible for attaining *Ready-for-Takeover* by the date prescribed in paragraph 1.3 of Article A-1 – THE WORK and shall bear sole responsibility for any and all costs associated with acceleration and/or overtime or other additional expenses required to meet the scheduled *Ready-for-Takeover* date, as set out in paragraph 6.5.3.4 of GC 6.5 – DELAYS.

If the *Contractor* forms the opinion that a slippage in the baseline construction schedule cannot be recovered by the *Contractor* and if the *Contractor* is of the opinion that such slippage is the direct result of a delay event that entitles the *Contractor* to an extension of the *Contract Time* and any additional direct costs, in accordance with GC 6.5 – DELAYS, the *Contractor* shall be solely responsible for providing written notice to the *Consultant* within the time period described in paragraph 6.5.4 of GC 6.5 – DELAYS.

- (ii) Add new GC 3.4.2 as follows:

3.4.2 If:

- (i) at any time it should appear to the *Owner* or the *Consultant* that the actual progress of the *Work* is behind schedule or is likely to become behind schedule, based on critical path methodology; or
- (ii) the *Contractor* is delayed in the performance of the *Work* for any reason other than a reason for which an extension is granted as provided in the *Contract*; or
- (iii) if the *Contractor* fails to file written notice of a claim for extension of time as provided in the *Contract*; or
- (iv) the *Contractor* has given notice to the *Owner* or the *Consultant* of any variations from the base line schedule or slippage in the schedule pursuant to subparagraph 3.4.1.3; or
- (v) the *Contractor* does not perform the *Work* substantially in accordance with the agreed schedule as provided in this GC 3.4;

then the *Contractor* shall take whatever measures that are necessary at its own cost, including taking all appropriate preventative and corrective action and steps to cause the actual progress of the *Work* to conform to the schedule, including but not limited to such extra measures as shift work, double or “stacked” shifts or an expanded work force, to maintain the schedule, and shall produce and present to the *Owner* and the *Consultant* a recovery plan demonstrating how the *Contractor* will achieve the recovery of the schedule. Unless the circumstances giving rise to the delay are matters covered by Part 6 – CHANGES IN THE WORK, all costs of taking such preventative and corrective action and steps, as well as any costs reasonably incurred or damages suffered by the *Owner* arising out of or as a result of any such delay, shall be for the account of the *Contractor*.

(j) **GC 3.5 — SUPERVISION**

- (i) Delete GC 3.5 - SUPERVISION and substitute with the following:

**GC 3.5 - SUPERVISORY PERSONNEL**

3.5.1 The *Contractor* shall employ a supervisor in connection with the *Project* (and other assistant personnel as may be required) and such supervisor and personnel shall be in attendance at the *Place of the Work* at all times while the *Work* is being performed. The supervisor shall be the person who has charge of and responsibility for the *Work* and its performance. The said

supervisor shall be a “competent person” as such term is defined in the *Occupational Health and Safety Act* (Ontario).

- 3.5.2 The supervisor shall represent the *Contractor* at the *Place of the Work* and notices and communications given to the supervisor by the *Consultant* or the *Owner* shall be deemed received by the *Contractor*.
- 3.5.3 The supervisory personnel assigned to the *Work* shall be fully qualified to effectively deal with all scheduling, coordination, field engineering, reviews, inspections, testing, *Commissioning* and like matters contemplated in the *Contract Documents*.
- 3.5.4 Supervisory personnel assigned to the *Work* shall not be changed without the prior written consent of the *Owner*.
- 3.5.5 The *Owner* may, by notice to the *Contractor*, instruct the *Contractor* to replace any supervisory personnel assigned to the *Work* for incompetence or upon such other grounds as the *Owner* deems appropriate. Upon receipt of any such notice, the *Contractor* shall, within fifteen (15) calendar days of such receipt, replace any such personnel with other personnel meeting the requirements of this GC 3.5.

(k) **GC 3.6 — SUBCONTRACTORS AND SUPPLIERS**

- (i) Delete GC 3.6.2 and substitute with the following:

3.6.2 When required by the *Contract Documents*, the *Contractor* agrees that only pre-qualified *Subcontractors* on the list of pre-qualified *Subcontractors* approved by the *Owner* shall be used by the *Contractor* in connection with the *Work*. The *Contractor* agrees not to change *Subcontractors* without the prior written approval of the *Owner*, which approval will not be unreasonably withheld. No *Subcontractors* identified in writing by the *Contractor* to the *Owner* with the bid documents shall be changed without the prior written approval of the *Owner*.

- (ii) Add new GC 3.6.7 as follows:

3.6.7 The *Contractor* shall pay all *Subcontractors*, *Suppliers* and workers which it employs, all such sums as are due to them, in accordance with the *Construction Act*. The *Contractor* shall take all necessary steps to ensure that *Subcontractors* and *Suppliers* do likewise. All payments shall be made promptly when due in accordance with the *Construction Act*.

(l) **GC 3.7 — LABOUR AND PRODUCTS**

- (i) Delete GC 3.7.1 and substitute with the following:

3.7.1 The *Contractor* shall provide and pay for *Products* and provide and pay for labour, tools, *Construction Equipment*, water, heat, light, power, transportation, and other facilities and services necessary for the performance of the *Work* in accordance with the *Contract* (unless otherwise specified in the *Contract Documents*).

(ii) Delete GC 3.7.3 and substitute with the following:

3.7.3 The *Contractor* shall maintain good order and discipline among the *Contractor's* employees, *Subcontractors*, and *Suppliers* engaged on the *Work* and the *Contractor*, *Subcontractors*, and *Suppliers* shall not employ anyone not skilled in the tasks assigned or who is unsatisfactory to the *Owner*. All *Contractor Personnel* shall be competent and qualified to carry out any part of the *Work* to which they are assigned.

(iii) Add new GC 3.7.4 as follows:

3.7.4 Any *Products* delivered to the *Place* of the *Work* but not yet incorporated into the *Work* shall remain at the risk of the *Contractor* notwithstanding that title has passed to the *Owner* pursuant to GC 14.2 – TITLE TO PRODUCTS AND MATERIALS. The *Contractor* is responsible for the safe on-site storage of *Products* and their protection (including *Products* supplied by the *Owner* and *Other Contractors* to be installed under the *Contract*) in such ways as to avoid dangerous conditions or contamination to the *Products* or other persons or property and in locations at the *Place of the Work* to the satisfaction of the *Owner*. The *Contractor* shall only store *Products* or equipment at locations at the *Place of the Work* which have been designated in writing by the *Owner* or the *Consultant* for such purposes (if any). The *Contractor* acknowledges and accepts that the *Owner* may not have space for storage of *Products* or equipment at the *Place of the Work* and, as such, the *Contractor* agrees that the *Owner* shall not have any responsibility or liability to permit the storage of *Products* or equipment at the *Place of Work*. The *Owner* shall provide all relevant information on the *Products* to be supplied by the *Owner*.

(iv) Add new GC 3.7.5 as follows:

3.7.5 the *Products* and any services provided to the *Place of Work* by the *Contractor* under this *Contract* are not result of, and in any way involve, forced labour or child labour (as such terms are defined in Canada's Fighting Against Forced Labour and Child Labour in Supply Chains Act).

(m) GC 3.8 — SHOP DRAWINGS

(i) Add the words "AND OTHER SUBMITTALS" to the title after SHOP DRAWINGS.

- (ii) Add “and *Submittals*” after the words “*Shop Drawings*” in each paragraph of GC 3.8.

- (iii) Add the following at the end of GC 3.8.2:

Prior to the first *Proper Invoice*, the *Contractor* and the *Consultant* shall jointly prepare a schedule of the dates for submission and return of *Shop Drawings* and any *Submittals*. *Shop Drawings* which require approval of any legally constituted authority having jurisdiction shall be submitted directly to such authority by the *Contractor* for approval. The *Contractor* shall copy the *Consultant* on all correspondence between the *Contractor* and any such authority.

- (iv) Delete GC 3.8.3.1 and substitute with the following:

- .1 the *Contractor* has determined and correlated the field measurements with the *Shop Drawings* and any *Submittals* and field construction conditions, *Product* requirements, catalogue numbers and similar data, or will do so, if not possible at that time, and

- (v) Delete GC 3.8.7 and substitute with the following:

3.8.7 The *Consultant* will (or in the absence of a *Consultant*, the *Owner* will) review and return *Shop Drawings* and *Submittals* in accordance with the schedule agreed upon in GC 3.8.2, or, in the absence of such schedule, with reasonable promptness. If, for any reason, the *Consultant* is unable to process them within the agreed-upon schedule or with reasonable promptness, the *Contractor* shall notify the *Consultant* and they shall meet to review and arrive at an acceptable revised schedule for processing. The *Contractor* shall update the *Shop Drawings* and *Submittals* Schedule to correspond to changes in the construction schedule. Changes in the *Contract Price* or *Contract Time* may be made only as otherwise provided in the *Contract*.

- (vi) Add new GC 3.8.8 as follows:

3.8.8 *Shop Drawings* and all other drawings, plans, specifications, models, alternatives, suggestions, ideas and similar contributions by the *Contractor* to the design and execution of the *Work*, whether before or after execution of this *Contract*, shall not be considered proprietary information and may be used by the *Owner* in the execution of the *Work* and any subsequent renovation, reconstruction, addition or other work on the *Place of the Work*, all without any compensation to the *Contractor*. The *Owner* is hereby granted an irrevocable fully paid perpetual exclusive license to use such materials for such purposes (including the right to show the same to prospective lenders, appraisers or other persons and to assign such license to any mortgagee or subsequent owner of the Site with or without any specific assignment document). The *Contractor* warrants that it has full

right, power and authority to grant the foregoing license either because such materials are the *Contractor's* property or because it has obtained adequate rights from the architects, engineers or other parties who have prepared them, or any other person owning any patent, copyright or other right with respect to anything incorporated in such materials.

(n) **GC 3.9 — PERFORMANCE BY CONTRACTOR**

- (i) Add new GC 3.9 — PERFORMANCE BY CONTRACTOR as follows:

**GC 3.9 — PERFORMANCE BY CONTRACTOR**

3.9.1 The *Contractor* represents covenants and warrants to the Owner that it has the necessary high degree of experience and expertise required to perform the *Work* in accordance with the requirements of the *Contract Documents*. The *Contractor* covenants and agrees that, in performing its obligations under the *Contract*, the *Contractor* shall exercise a standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The *Contractor* acknowledges and agrees that throughout the *Contract*, the *Contractor's* obligations, duties and responsibilities shall be interpreted in accordance with this standard. The *Contractor* shall exercise the same standard of due care and diligence in respect of any *Products*, personnel, or procedures which it may recommend to the *Owner*.

3.9.2 The *Contractor* represents covenants and warrants to the *Owner* that:

- .1 the personnel it assigns to the *Project* are appropriately experienced;
- .2 it has a sufficient staff of qualified and competent personnel to replace its designated supervisor and *Project* manager, subject to the *Owner's* approval, in the event of death, incapacity, removal or resignation; and
- .3 there are no pending, threatened or anticipated claims that would have a material effect on the financial ability of the *Contractor* to perform the *Work* under the *Contract*.

(o) **GC 3.11 — RIGHT OF ENTRY**

- (i) Add new GC 3.11 — RIGHT OF ENTRY as follows:

**GC 3.11 — RIGHT OF ENTRY**

3.11.1 The *Owner* shall have the right to enter or occupy the *Work* in whole or in part for the purpose of placing fittings and equipment or for other uses before *Ready-for-Takeover*, if, in the reasonable opinion of the *Consultant*, such entry or occupation does not prevent or substantially interfere with the

*Contractor* in completion of the *Contract* within the *Contract Time*. Such entry or occupation shall not be considered as acceptance of the *Work* or in any way relieve the *Contractor* from responsibility to complete the *Contract*. In exercising such right, the *Owner* acknowledges the *Contractor's* role and responsibility as constructor under the *Occupational Health and Safety Act* and the *Owner* shall comply with the *Contractor's* safety requirements and programs in such entry or occupation.

(p) **GC 3.12 – INTERFACE WORK**

- (i) Add new GC 3.12 – INTERFACE WORK as follows:

**GC 3.12 – INTERFACE WORK**

- 3.12.1 Where part of the *Work* is affected by or depends upon for its proper execution the work of *Other Contractors* or the *Owner's* own forces (hereinafter called "***Interface Work***"), the *Contractor* shall promptly report to the *Owner* in writing and prior to proceeding with that part of the *Interface Work*, any error, inconsistency or omission in such *Interface Work* that the *Contractor* may discover. Failure of the *Contractor* to so report shall invalidate any claims against the *Owner* by reason of the error, inconsistency or omission in such *Interface Work*, except those errors, inconsistencies or omissions not then reasonably discoverable during the *Contractor's* review.
- 3.12.2 The *Contractor* shall not load or permit to be loaded any part of the *Work* or any related or surrounding structures or facilities with a weight or force that will endanger the safety or integrity of the *Work* or such structures or facilities.
- 3.12.3 If storage or other areas are required for the *Work* in addition to the *Work Site*, the *Contractor* shall be responsible for making arrangements to obtain the additional areas and obtaining any necessary permits, permission or authorization and, if required, for making payments for permits, rental or other payments that may be required for such purpose.

(q) **GC 4.1 — CASH ALLOWANCES**

- (i) Delete GC 4.1.4 and substitute with the following:

- 4.1.4. Where the actual cost of the *Work* under any cash allowance exceeds the amount of the allowance, any unexpended amounts from other cash allowances shall not be reallocated. Where the actual cost of the *Work* under all cash allowances exceeds the total amount of all cash allowances shall the *Contractor* be compensated for the excess incurred and substantiated, plus an amount for overhead and profit on the excess only, as set out in the *Contract Documents*.

- (ii) Delete GC 4.1.5 and substitute with the following:

4.1.5. The net amount of any unexpended cash allowances shall be deducted from the Contract Price by Change Order without any adjustment for the Contractor's overhead and profit on such amount.

- (iii) Delete GC 4.1.7 and substitute with the following:

4.1.7 The *Contractor* shall, within ten (10) *Working Days* following *Contract* execution, prepare a schedule of the dates for submission and authorization of items called for under cash allowance for the *Consultant's* review and the *Owner's* review and approval, so as to facilitate the timely progress of the Work.

- (iv) Add new GC 4.1.8 as follows:

4.1.8 The *Owner* reserves the right to call, or to have the *Contractor* call, competitive bids for portions of the *Work*, to be paid for from cash allowances. If the *Owner* determines to proceed with competitive bids, the *Contractor* shall comply with the directions of the *Owner*.

(r) **GC 4.2 — CONTINGENCY ALLOWANCE**

- (i) Delete GC 4.2 and substitute with the following: "Intentionally Deleted".

(s) **GC 5.1 — FINANCING INFORMATION REQUIRED OF THE OWNER**

- (i) Revise the heading, "GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER" to read, "GC 5.1 FINANCING INFORMATION REQUIRED".

- (ii) Delete GC 5.1.1 and substitute with the following:

5.1.1 The *Owner* and *Contractor* shall provide each other with timely *Notice in Writing* of any material change in their financial ability to fulfil their respective obligations under the *Contract*.

- (iii) Delete GC 5.1.2 in its entirety.

(t) **GC 5.2 — APPLICATIONS FOR PAYMENT**

- (i) Delete GC 5.2, including the heading, and substitute with the following:

**GC 5.2 - APPLICATIONS FOR PAYMENTS PURSUANT TO THE SUBMISSION OF PROPER INVOICES**

5.2.1 Applications for payment on account as provided in Article A-5 of the Agreement - PAYMENT shall be made pursuant to the delivery of *Proper*



*Invoices* which shall be given to the *Owner* and the *Consultant* on a monthly basis as the *Work* progresses.

- 5.2.2 On or before the **twenty-fifth (25<sup>th</sup>)** calendar day of each month, the *Contractor* shall submit simultaneously to the *Owner* and the *Consultant* a *Proper Invoice* for payment. Subject to the provisions of the *Construction Act*, payment shall be made by the *Owner* to the *Contractor* of the amount outlined in the *Proper Invoice* within twenty-eight (28) calendar days of the *Owner's* receipt of the *Proper Invoice*, unless within fourteen (14) calendar days of the *Owner's* receipt of the *Proper Invoice*, the *Owner* issues a notice of non-payment to the *Contractor* in accordance with the *Construction Act*. If a notice of non-payment is issued by the *Owner*, the *Owner* shall pay the *Contractor* the undisputed portion of the *Proper Invoice* within twenty-eight (28) calendar days after receiving the *Proper Invoice*.

Provided, however, a *Proper Invoice* shall not be submitted for any *Products* to be incorporated into the *Work* which have been delivered to the *Place of the Work* more than one (1) month in advance of their anticipated date of incorporation into the *Work* unless, in the reasonable opinion of the *Contractor* concurred by the *Owner*, the stockpiling of such *Products* more than one (1) month in advance of their anticipated date of incorporation into the *Work* is necessary or desirable because of:

- .1 impending cyclical delays in the availability of such *Products*;
  - .2 the probability of delay in delivery of such *Products* at a later date owing to impending or likely labour disputes, lockouts or other known or probable causes of delay at a later date; or
  - .3 cost benefit to the *Owner* not originally reflected in the *Contract Price*, which is sufficiently significant to justify early delivery of such *Products* to the *Place of the Work*.
- 5.2.3 If the *Proper Invoice* referenced in GC 5.2.2 is received by the *Owner* after 5:00 P.M. on a *Working Day* or at any time on a non-*Working Day*, the *Proper Invoice* shall be deemed to be received by the *Owner* on the following *Working Day*.
- 5.2.4 The *Contractor* shall submit to both the *Owner* and the *Consultant*, no later than five (5) *Working Days* before the first *Proper Invoice* is issued, a schedule of values for the parts of the *Work*, aggregating the total amount of the *Contract Price* so as to facilitate review of the *Contractor's Proper Invoices* for the *Work*.
- 5.2.5 The schedule of values shall be made out in such form and supported by such evidence as the *Owner* or the *Consultant* may reasonably require.

- 5.2.6 The *Contractor* shall submit, with each *Proper Invoice* after the first, a Statutory Declaration, on an original form of CCDC Document 9A-2018, declaring that payments in connection with the *Work*, as noted in the Statutory Declaration, have been made to the end of the period immediately preceding that covered by the current *Proper Invoice*.
- 5.2.7 The *Contractor* shall submit, with each *Proper Invoice*, evidence of compliance with workers' compensation/workplace safety and insurance board legislation at the *Place of the Work*, including payments due thereunder.
- 5.2.8 The *Contractor* shall submit, with each *Proper Invoice*, an updated construction schedule along with an unconditional written declaration, duly signed by an authorized representative of the *Contractor*, stating that there has been no delay in the progress of the *Work* for which the *Contractor* has any claim against the *Owner* with the exception of any such claim previously disclosed in accordance with the applicable provisions of the *Contract*.
- 5.2.9 The *Contractor* shall submit, with each *Proper Invoice*, a statement which includes an itemized breakdown and comparison of the actual expenditures incurred as compared to the schedule of values provided.
- 5.2.10 The *Contractor* shall cause payment to be made to all *Subcontractors*, trade contractors, workers and *Suppliers* promptly when due in accordance with the *Construction Act*.

(u) **GC 5.3 —PAYMENT**

- (i) Delete GC 5.3.1 and substitute with the following:

- 5.3.1 After receipt by the *Owner* and the *Consultant* of a *Proper Invoice* submitted by the *Contractor* in accordance with GC 5.2 - APPLICATIONS FOR PAYMENTS PURSUANT TO THE SUBMISSION OF PROPER INVOICES:
  - .1 the *Consultant* will issue to the *Owner*, no later than five (5) calendar days after the *Consultant's* receipt of the *Proper Invoice*, a certificate for payment in the amount applied for, or in such other amount as the *Consultant* determines to be properly due following its review of such *Proper Invoice*. The issuance by the *Consultant* to the *Owner* of such certificate for payment is solely for the *Owner's* internal purposes and the *Owner's* receipt or approval of such certificate shall not be a condition of the giving or payment of the *Proper Invoice* in respect of which such certificate has been issued;

- .2 after the *Owner* has reviewed the *Proper Invoice* and the *Consultant's* review of the same, the *Contractor* may amend it if the *Owner* agrees in advance to the revision. For clarity, the form and date of the *Proper Invoice* cannot change despite such a revision; and
- .3 the *Owner* shall make payments to the *Contractor* in accordance with GC 5.2 - APPLICATIONS FOR PAYMENTS PURSUANT TO THE SUBMISSION OF PROPER INVOICES.

(v) **GC 5.4— SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK**

(i) Delete GC 5.4 and substitute with the following:

- 5.4.1 Prior to the issuance of the certificate of *Substantial Performance of the Work*, the *Contractor*, in consultation with the *Consultant*, shall establish reasonable dates for completing the *Work* and correcting deficient *Work*.
- 5.4.2 Without limiting the rights of the *Owner* under paragraph 3.2.7 of GC 3.2 – CONSTRUCTION BY THE OWNER OR OTHER CONTRACTORS, and subject to GC 12.2 – EARLY OCCUPANCY BY THE OWNER, upon *Substantial Performance of the Work*, the *Owner* shall be entitled to take complete possession of the *Work* and the *Contractor's* access to, or continuing presence at, the *Work Site* shall be for the sole purpose of achieving *Ready-for-Takeover*, *Total Completion* and performing its obligations under the *Contract* which arise subsequent to *Substantial Performance of the Work* (including the *Contractor's* obligations under GC 12.3 – WARRANTY); provided that such access or continuing presence by the *Contractor*, shall not unreasonably interfere with the use or operation of the *Project* by the *Owner*, and the *Contractor*, in completing its obligations under the *Contract*, shall, at its own cost, take all reasonable measures to minimize the effect thereof on such use or operation.
- 5.4.3 The *Contractor* shall publish, in a construction trade newspaper (as prescribed by the *Construction Act*), a copy of the certificate of *Substantial Performance of the Work* within seven (7) calendar days of receiving a copy of the certificate issued by the *Consultant*, and the *Contractor* shall provide suitable evidence of the publication to the *Consultant* and the *Owner*. If the *Contractor* fails to publish such notice, the *Owner* shall be at liberty to publish and back charge the *Contractor* its reasonable costs for doing so.
- 5.4.4 Prior to or concurrent with the submission of its application for *Substantial Performance of the Work*, the *Contractor* shall submit to the *Owner* and *Consultant*:

- .1 written proof acceptable to the *Owner* and *Consultant* that the *Work* has been substantially performed in accordance with the requirements of all municipal, government and utilities authorities having jurisdiction;
- .2 occupancy permits from the local authority having jurisdiction over the *Project*, if required;
- .3 certification by all permit-issuing authorities, indicating approval of all permitted installations;
- .4 certification by all testing, cleaning or inspection authorities or associations as specified in the *Contract Documents*;
- .5 evidence acceptable to the *Owner* and *Consultant* that all systems and equipment are started up, commissioned and balanced;
- .6 a list of major items to be completed or corrected, including the time required to perform the work and a value thereof as well as the proposed completion date; and
- .7 any other materials or documentation required to be submitted under the *Contract*.

In addition, if available, the *Contractor* shall also submit to the *Owner* and *Consultant*:

- .8 all maintenance manuals, operating instructions, maintenance and operating tools, replacement parts or materials as specified in the *Contract Documents*;
- .9 all required manufacturers' inspections, certifications, guarantees and warranties as specified in the *Contract Documents*;
- .10 all required "as-built" or "as-installed" drawings in the form specified in the *Contract Documents* and in electronic format (in both PDF and AutoCAD 2010 format or newer or Revit format or as otherwise may be required by the *Owner*), which shall include, without limitation, all applicable xREFs and CTB files;
- .11 a statement indicating reconciliation of all Change Orders, cash allowances and/or other claims to the *Contract*; and
- .12 certification that the *Contractor* is in good standing with workers' compensation or Workplace Safety and Insurance Board legislation at the *Place of the Work*;

- 5.4.5 Where the *Contractor* is unable to deliver the documents and materials described in GC 5.4.4.7 to GC 5.4.4.11, and, provided that none of the missing documents and/or materials interferes, in a material way, with the use and occupancy of the *Work*, failure to deliver same shall not be grounds for the *Consultant* to refuse to certify *Substantial Performance of the Work*.
- 5.4.6 Any documents or materials described in GC 5.4.4.7 to GC 5.4.4.11 not delivered in accordance therewith shall be delivered as provided in paragraph 5.5.1 of GC 5.5 – FINAL PAYMENT, and will be included in the list of items under paragraph 5.5.1 of GC 5.5 – FINAL PAYMENT and deemed to be a deficiency in performance of the *Work* by the *Contractor* under the *Contract*, and the *Contractor* acknowledges that the *Owner* shall have the right to, on account of the *Contractor's* failure to deliver such documents and materials in accordance with GC 5.4.4, publish a notice of non-payment in the form prescribed under the *Construction Act* prior to the 40<sup>th</sup> calendar day following the publication of the certificate of *Substantial Performance of the Work* as a consequence of such failure.
- 5.4.7 The *Contractor* shall submit an application for payment of the lien holdback amount pursuant to a *Proper Invoice* in accordance with GC 5.3 – PAYMENT. All holdback amounts shall be due and payable on the day following the expiry of the holdback period specified in the *Construction Act* for the retention of holdback funds following *Substantial Performance of the Work*, unless: (i) a claims for lien or certificate of action has been registered against the title to the *Place of the Work*; (ii) the *Owner* has received a valid written notice of lien in respect of the *Work*; or (iii) the *Owner* has published a notice of non-payment in the form prescribed by the *Construction Act* prior to the 40<sup>th</sup> calendar day following the publication of the certificate of *Substantial Performance of the Work*.

(w) **GC 5.5 — FINAL PAYMENT**

- (i) Delete GC 5.5.1 and substitute with the following:

- 5.5.1 When the *Contractor* considers that the *Work* is completed, and all deficiencies which are identified by the *Owner* or *Consultant* prior to the application for final payment are remedied, the *Contractor* shall submit an application for final payment pursuant to a *Proper Invoice*. The *Contractor's* application for final payment pursuant to a *Proper Invoice* shall be accompanied by any documents or materials not yet delivered pursuant to paragraph 5.4.4 of GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK together with the following, where applicable:
- .1 all required manufacturers' inspection reports, certifications, guarantees, warranties and other similar documentation as specified in the *Contract Documents*;

- .2 all maintenance manuals, operating instructions, maintenance and operating tools, replacement parts or materials as specified in the *Contract Documents*;
- .3 certification by all permit issuing authorities having jurisdiction indicating approval of all permitted installations forming part of the *Project*;
- .4 certification by all testing, *Commissioning*, cleaning or inspection authorities or associations as specified in the *Contract Documents*;
- .5 all required “as-built”, “as-installed” or “record drawings” in the form specified in the *Contract Documents*;
- .6 evidence of compliance with workers’ compensation/workplace safety and insurance board legislation at the *Place of the Work* in respect of the *Contractor*;
- .7 statement of reconciliation of all *Change Orders* or claims against the *Contract*;
- .8 a Statutory Declaration on CCDC Form 9A and a Statutory Declaration that no valid written notices of lien have been received; and
- .9 a report from the ***Consultant*** verifying that all building systems and other technologies forming part of the *Work* are operational in accordance with the *Contract Documents* (subject to any qualifications noted in the report reflecting matters which are not of a material nature).

(ii) Add new GC 5.5.5 as follows:

5.5.5 As additional requirements for release of any finishing construction lien holdback, the *Contractor* shall submit the following documentation:

- .1 *Contractor’s* written request for release of holdback, including a declaration that no written notices of lien have been received by it;
- .2 *Contractor’s* Statutory Declaration CCDC 9A-2018; and
- .3 evidence of compliance with workers’ compensation/workplace safety and insurance board legislation at the *Place of the Work*.

(x) **GC 5.6 — DEFERRED WORK**

- (i) In GC 5.6.1, insert the words “Subject to the *Construction Act* and paragraph 5.2.2 of GC 5.2 - APPLICATIONS FOR PAYMENT PURSUANT TO THE

SUBMISSION OF PROPER INVOICES,” at the beginning of the paragraph and change the word “If” to lower case “if”.

(y) **GC 5.8 — LIENS**

(i) Add new GC 5.8 — LIENS as follows:

5.8.1 In the event that a construction lien is registered against the *Project* by or through a *Subcontractor* or *Supplier*, and provided the *Owner* has paid all amounts properly owing under the *Contract*, the *Contractor* shall, at its own expense:

- .1 within ten (10) calendar days, ensure that any and all construction liens and certificates of action are discharged, released or vacated by the posting of security; and
- .2 in the case of written notices of lien, ensure that such notices are withdrawn, in writing.

5.8.2 In the event that the *Contractor* fails to conform with the requirements of GC 5.8.1, the *Owner* may set off and deduct from any amount owing to the *Contractor*, all costs and associated expenses, including the costs of borrowing the appropriate cash, letter of credit or bond as security and legal fees and disbursements. If there is no amount owing by the *Owner* to the *Contractor*, then the *Contractor* shall promptly reimburse the *Owner* for all of the said costs and associated expenses.

(z) **GC 6.1 — OWNER’S RIGHT TO MAKE CHANGES**

(i) Add new GC 6.1.3 – GC 6.1.4 as follows:

6.1.3 If any change in the *Work* results in either a deletion of a part of the *Work* or the removal of a part of the *Work* in circumstances where the *Owner* determines, in its discretion, that the removed scope should be performed by the *Owner*’s own forces or by *Other Contractors*, the *Contractor* shall not be entitled to any compensation for loss of profit or other consequential loss as a result of the deletion or removal.

6.1.4 Where the *Contractor* is required to perform changed or additional *Work*, resulting in an adjustment to the *Contract Price*, and provided that the parties do not agree to value the changed or additional work on a lump sum basis, the adjustment in the *Contract Price* for a change carried out by either a *Change Directive* or a *Change Order* shall be determined on the basis of the cost of the *Contractor*’s actual, net direct expenditures and savings attributable to the *Change Directive* or *Change Order*, as the case may be, valued in accordance with GC 6.3.7 and as follows:

- .1 If the change results in a net increase in the *Contractor's* cost, the *Contract Price* shall be increased by the amount of the net increase in the *Contractor's* cost, plus the *Contractor's* percentage fee on such net increase.
- .2 If the change results in a net decrease in the *Contractor's* cost, the *Contract Price* shall be decreased by the amount of the net decrease in the *Contractor's* cost, with a corresponding reduction to the *Contractor's* percentage fee on such net decrease.
- .3 When both additions and deletions covering related work or substitutions are involved in a change to the *Work*, the change in the *Contract Price* shall be calculated on the basis of the net difference, if any, between (i) the net increase in the *Contractor's* cost plus the *Contractor's* percentage fee on such net increase resulting from additions involved in the change to the *Work*, and (ii) the net decrease in the *Contractor's* cost with a corresponding reduction to the *Contractor's* percentage fee on such net decrease resulting from deletions involved in the change to the *Work*.
- .4 The *Contractor's* percentage fee for overhead and profit and, to the extent any changes in the *Work* are performed by *Subcontractor's* or sub-*Subcontractors*, the *Subcontractor's* percentage fee for overhead and profit shall be as follows:

For certainty, there shall be no additional mark-up for overhead or profit payable in respect of any changes in the *Work* performed by any sub-subcontractors to any *Subcontractors*.

.1 Contractor's Fee on Subcontractor's Work:

Total combined overhead and Profit: 5%

.2 Subcontractor's mark up on Subcontractor's work:

Overhead: 5% , Profit: 5%

- .5 Overhead percentage identified above includes, without limitation, all site and head office overheads including associated travel costs, financing costs including holdback, bonding and insurance costs, the salaries of superintendents, engineers, timekeepers, accountants, clerks, watch persons and all other site supervision staff above foreperson employed directly on the *Work*, co-ordination with other trades affected, use of temporary offices, sheds and other general temporary site support facilities and all utilities used therein and



licenses and permits, except when such licenses and permits are specifically required for particular items or components of the *Work*.

- .6 Labour costs shall be the actual, prevailing rates at the *Place of the Work* paid to the workers engaged in the performance of the *Work*, plus statutory charges on labour including workers' compensation/workplace safety and insurance board premiums, unemployment insurance, Canada Pension, vacation pay, hospitalization and medical insurance.
- .7 *C.N.Q.* for changes to the *Work* shall be accompanied by itemized breakdowns together with detailed, substantiating quotations or cost vouchers from *Subcontractors* and *Suppliers*.
- .8 Unit and alternative prices included in the *Contract* include Supply, installation, *Products*, equipment, services, materials, labour, overhead, profit and taxes, but exclude *Value Added Taxes*.
- .9 The *Owner*, through the *Consultant*, reserves the right to authorize payment for changes in the *Work* by means of cash allowance disbursement authorizations.
- .10 If any change or deviation in, or omission from the *Work* is made by which the amount of *Work* to be performed is decreased, or if the whole or a portion of the *Work* is dispensed with, no compensation is claimable by the *Contractor* for any loss of anticipated profits in respect thereof.
- .11 For certainty, no additional fee or mark-up will be chargeable to the *Owner* other than as specified in this GC 6.1.4.

(aa) **GC 6.2 — CHANGE ORDER**

- (i) Delete GC 6.2.1 and substitute with the following:

6.2.1 When a change in the *Work* is proposed or required, the *Consultant* shall issue a C.C.N. to the *Contractor*. Upon receipt of the C.C.N., the *Contractor* shall, as soon as reasonably practicable, submit to the *Consultant* a C.N.Q. in a form acceptable to the *Consultant* and containing such information as the *Consultant* may reasonably require, including, as applicable, a breakdown of net direct costs estimated to be incurred in order to effect such change, the *Contractor's* percentage fee (for overhead and profit), and the anticipated impact on the construction schedule based on critical path methodology. The *Contractor* shall also provide the following:

- .1 The proposed method of adjustment or an amount of adjustment for the *Contract Price*, if any, and the adjustment in the *Contract Time*, from the *Subcontractors* on the *Subcontractors'* letterhead.

- .2 Quotations submitted by the *Subcontractors* and the *Contractor* shall include a complete breakdown for all items of material, a total number of hours for labour, and a dollar rate applied against individual material items and labour quantities.
- .3 In its proposal to the *Consultant*, the *Contractor* shall not reserve any claim to a future adjustment to the *Contract Time*, or to a claim or potential claim for an impact or cumulative impact to the *Contract Time*, of the proposed change in the *Work*, or of multiple changes in the *Work*, but must clearly state any specific adjustment to the *Contract Time* resulting from the proposed change in the *Work*. A failure by the *Contractor* to indicate such an adjustment will constitute a waiver by the *Contractor* of any and all claims to any *Contract Time* adjustment.

(ii) Delete GC 6.2.2 and substitute with the following:

6.2.2 The adjustment in the *Contract Price* for a change carried out by way of a *Change Order* shall be determined in accordance with GC 6.1.4. When the *Owner* and *Contractor* agree to the adjustments in the *Contract Price*, the *Contractor's* percentage fee (for overhead and profit) and the *Contract Time*, such agreement shall be effective immediately and shall be recorded in a *Change Order*. The value of the work performed as the result of a *Change Order* shall be included in the *Proper Invoice*.

(iii) Add new GC 6.2.3 as follows:

6.2.3 Upon the *Contractor* and the *Owner* signing a *Change Order*, the *Change Order* shall be final and binding on the *Contractor* and the *Owner* and shall constitute full settlement of all matters addressed in the *Change Order*.

(bb) **GC 6.3 — CHANGE DIRECTIVE**

(i) Delete GC 6.3.6 and substitute with the following:

6.3.6 The adjustment in the *Contract Price* for a change carried out by way of a *Change Directive* shall be determined in accordance with paragraph 6.1.4 of GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES.

(ii) Amend the first line of GC 6.3.7 by deleting the words "the *Change Directive*" and substituting with "a change in the *Work*" and deleting the words: "in as much as it contributes directly to the implementation of the *Change Directive*".

(iii) Amend GC 6.3.7.1.(4) so that, as amended, it reads:

(4) the *Contractor's* office personnel engaged in a technical capacity, including clerical staff engaged in processing the change in the *Work* attributable to

the *Change Directive* for the time spent in the performance of the change in the *Work* attributable to the *Change Directive*;

- (iv) Delete GC 6.3.7.13, GC 6.3.17, GC 6.3.18 and GC 6.3.19 and substitute with “intentionally left blank”.

(cc) **GC 6.4 — CONCEALED OR UNKNOWN CONDITIONS**

- (i) Delete GC 6.4.1.2 in its entirety.

- (ii) Add new GC 6.4.5 as follows:

6.4.5 The *Contractor* confirms that, prior to submitting a qualified submission or proposal for the *Project*, it carefully investigated the *Place of the Work* and applied to that investigation the degree of care and skill described in paragraph 3.9.1 of GC 3.9 – PERFORMANCE BY CONTRACTOR. Such investigation shall include, if appropriate and having regard to the nature of the *Work*, an inspection of any existing structures or conditions at the *Place of the Work* that might reasonably be expected to impact the *Work*. The *Contractor* shall not be entitled to compensation or to an extension of the *Contract Time* for conditions which could reasonably have been ascertained by the *Contractor* by such careful investigation undertaken prior to submission of the bid.

(dd) **GC 6.5 — DELAYS**

- (i) Delete GC 6.5.1 and substitute with the following:

6.5.1 If the *Contractor* is delayed in the performance of the *Work* by any breach by the *Owner* of its obligations under the *Contract*, or by any fault of *Other Contractors* of the *Owner* engaged by the *Owner* for the execution of the *Project*, or by any act or omission of the *Consultant* contrary to the provisions of the *Contract Documents*, or such is attributable to any person employed or engaged directly or indirectly by the *Owner*, any such *Other Contractors*, or the *Consultant*, as the case may be, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*, and the *Contractor* shall be reimbursed by the *Owner* for reasonable, actual direct costs necessarily incurred by the *Contractor* as result of the delay, all subject to, and in accordance with, the provisions of GC 6.5.5. To the extent such actual direct costs incurred by the *Contractor* as result of such delay are comprised of the hourly rate of *Contractor Personnel*, such hourly rates shall be preapproved by the *Owner* in advance of such delay.

- (ii) Amend the last sentence of GC 6.5.2 as follows:

The *Contractor* shall be reimbursed by the *Owner* for the *Contractor's* actual, direct costs necessarily incurred by the *Contractor* as a result of the delay subject to, and in accordance with, the provisions of GC 6.5.5.

- (iii) At GC 6.5.3, renumber GC 6.5.3.4 as 6.5.3.5, delete GC 6.5.3.4 and substitute with the following:

.4 disease, epidemics, pandemics, power shortages or outages, or

- (iv) At GC 6.5.3, delete the words “*Consultant* or anyone employed or engaged by them directly or indirectly” at the end of this paragraph.

- (v) Delete GC 6.5.5 and substitute with the following:

6.5.5 The *Contractor* shall not be entitled to any extension of *Contract Time* or to any compensation in respect of any delay referred to in paragraph 6.5.1 or paragraph 6.5.2, or to any extension of *Contract Time* in respect of any delay referred to in paragraph 6.5.3, unless the *Contractor* is able to demonstrate that:

- (a) the *Contractor* has taken all reasonable steps required to mitigate the effect of the delay;
- (b) the delay has an adverse impact on the ability of the *Contractor* to complete any critical path activity in accordance with the construction schedule; and
- (c) in respect of a delay referred to in paragraph 6.5.1, the delay is predominantly attributable to a breach, fault or act or omission referred to in such paragraph.

In such case, the *Contract Time* will be extended for such reasonable period which reflects the time lost as a result of such impact and, where the provisions of paragraph 6.5.1 apply, the *Contractor* shall only be compensated for reasonable actual direct costs necessarily incurred by the *Contractor* as a result of such impact including those incurred to reasonably mitigate the effect of the delay.

- (vi) Add new GC 6.5.6. – GC 6.5.8 as follows:

6.5.6 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone employed or engaged by the *Contractor* directly or indirectly, or by any cause within the *Contractor's* control, then, subject to paragraph 3.4.2, of GC 3.4 – CONSTRUCTION SCHEDULE, the *Contract Time* may be extended for such reasonable time as the *Consultant* may decide in consultation with the *Contractor*. The *Owner* shall be reimbursed by the *Contractor* for all reasonable costs incurred by the *Owner* as the result of such delay, including all services

required by the *Owner* from the *Consultant* as a result of such delay by the *Contractor* and, in particular, the cost of the *Consultant's* services during the period between the *Ready-for-Takeover* date stated in paragraph 1.3 of Article A-1 – THE WORK herein as the same may be extended through the provisions of these General Conditions and any later, actual *Ready-for-Takeover* date achieved by the *Contractor*.

6.5.7 During any suspension of the *Work* or any construction or building operations, for whatever reason, the *Contractor* shall maintain adequate surveillance of the *Work* and undertake such maintenance and protection of the *Work* as may be necessary to maintain health and safety and, when possible, to protect *Products*, materials, plant and equipment already installed in the *Work* or delivered to the *Place of the Work*. The *Contractor* shall be responsible for the security, care, maintenance and protection of the *Work* in the event of any such shut down or interruption in the performance of the *Work*.

6.5.8 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone for whom the *Contractor* is responsible, then the *Contractor* shall be responsible to put in place any preventative or corrective measures to recover and prevent lost time in accordance with paragraph 3.4.2 of GC 3.4 – CONSTRUCTION SCHEDULE.

(cc) **GC 6.6 — CLAIMS FOR A CHANGE IN CONTRACT PRICE**

- (i) Delete GC 6.6, including its heading, and substitute with the following:

**GC 6.6 — CLAIM REPORTING**

6.6.1 If the *Contractor* intends to make any claim for an extension to the *Contract Time* or an increase in the *Contract Price* (or reimbursement for costs or any other compensation) the *Contractor* shall give notice to the *Owner* and the *Consultant* of such intention as soon as reasonably practicable and, in any event, within ten (10) *Working Days* following the date when the event or circumstance giving rise to such claim becomes known to the *Contractor*. As soon as reasonably practicable and, in any event, within ten (10) *Working Days* following the date of such notice, the *Contractor* shall submit to the *Owner* and the *Consultant* such details of the claim that are then available, and promptly notify each of them if, at any time thereafter, the *Contractor* becomes aware of any further information pertaining to the claim, giving details of that information to the extent such information is new or renders information previously submitted inaccurate or misleading. The *Contractor* shall keep such records as may be necessary to substantiate any claim in respect of any such entitlement. The *Contractor* shall permit the *Owner* and the *Consultant* to inspect any such records, and shall provide copies to them upon their request. Failure of the *Contractor* to comply with

the provisions of this paragraph in respect of any claim of the *Contractor* shall be deemed to be an express waiver by the *Contractor* of any right to assert such claim.

(ff) **GC 7.1 — OWNER’S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR’S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT**

- (i) Delete GC 7.1.2, and substitute with the following:

7.1.2 If the *Contractor* should neglect to prosecute the *Work* properly or otherwise fail to comply with the requirements of the *Contract*, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, give the *Contractor Notice in Writing* that the *Contractor* is in default of the *Contractor’s* contractual obligations and instruct the *Contractor* to correct the default within five (5) *Working Days* of receipt of such *Notice in Writing*.

- (ii) Amend GC 7.1.3.2 by deleting “an acceptable schedule” and substituting “a schedule acceptable to the *Owner*”.

- (iii) Delete GC 7.1.5.2 and substitute with the following:

.2 subject to the provisions of the *Construction Act*, withhold further payment to the *Contractor* until the *Owner* has completed all *Work* required by the *Contract Documents* and satisfied any of its costs or damages resulting from the *Contractor’s* default,

- (iv) Delete the words “... the difference” at the end of GC 7.1.5.3 and substitute with the following: “... on the expiry of the warranty period specified in paragraph 12.3.1 of GC 12.3 – WARRANTY for that portion of the *Work* performed by the *Contractor*, provided that such payment shall be made only in accordance with the requirements set out in GC 5.5 – FINAL PAYMENT.

- (v) Delete the words “the difference” at the end of GC 7.1.5.4 and substitute with the following: “... for that portion of the *Work* performed by the *Contractor*, provided such payment shall be made only in accordance with the requirements set out in GC 5.5 – FINAL PAYMENT.”

- (vi) Add new GC 7.1.5.5 as follows:

.5 the *Contractor’s* entitlement to payment arising from termination of the *Contract* shall not affect the *Owner’s* right to withhold payment (except from the release of any holdback amounts) because of: (i) the *Contractor’s* failure to pay all legitimate claims promptly; (ii) the registration of liens against the title to the *Project*, until such claims for lien are discharged by the *Contractor* pursuant to the *Construction Act* and GC 5.8 - LIENS hereof;

or (iii) those matters described in paragraph 5.4 of Article A-5 - PAYMENT.

(vii) Add new GC 7.1.7 – GC 7.1.9 as follows:

- 7.1.7 The *Owner* has the authority, in its sole discretion, to stop or suspend the progress of the *Work* whenever, in the *Owner's* opinion, there is a danger to safety, life or property or to the neighbouring property or to the *Work*. If the progress of the *Work* is stopped or suspended by the *Owner*, the *Consultant* shall, within two (2) *Working Days* of such stoppage or suspension, provide written confirmation to the *Contractor* and the *Owner* of such stoppage or suspension.
- 7.1.8 Where, pursuant to the provisions of GC 7.1 — OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT, the *Owner* has exercised its right to terminate this *Contract*, the *Owner* shall have the right, upon written notice to the *Contractor*, to require the *Contractor* forthwith upon notification of the exercise of such right, to make available to the *Owner*, its authorized agents, servants and representatives, all accounts, records and documents of the *Contractor* relating to the *Work*. Upon the *Owner* exercising such right, the *Contractor* shall be deemed, without further formality, to have sold, assigned and set over unto the *Owner*, without further consideration, those agreements, arrangements and contracts with *Subcontractors*, *Suppliers*, engineers and others (as well as its interest in any performance bonds, labour and material payment bonds or other security held by the *Contractor* in respect of any such contracts) to which the *Contractor* is a party with respect to the performance of the *Work* which the *Owner* designates in writing to the *Contractor* after the giving of notice to stop the *Work* or terminate the *Contract*. The remainder of such contracts shall continue to be the property and responsibility of the *Contractor*. The *Contractor* shall, upon written request by the *Owner* and in a form reasonably satisfactory to the *Owner*, execute such further assignments to give effect to the foregoing as the *Owner* shall reasonably require.
- 7.1.9 The *Owner* may terminate the *Contract* at any time for any reason or no reason, upon at least thirty (30) calendar days written notice to the *Contractor*. In such event, the *Owner* shall pay for the *Work* performed up to the effective date of termination and for any additional, verifiable direct costs related directly to such termination which are a reasonable consequence of the termination. The *Owner* shall not be liable to the *Contractor* for any other costs or damages whatsoever arising from such early termination of the *Contract* including, without limitation, any indirect, consequential or special damages, such as loss of profits or loss of opportunity.

(gg) **GC 7.2 — CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT**

- (i) Delete GC 7.2.2 and substitute with the following:

7.2.2 If the *Work* is stopped or otherwise suspended for a period of one hundred and twenty (120) calendar days or more under an order of a court or other public authority as the result of an act or default of the *Owner* or anyone employed or engaged by the *Owner*, the *Contractor* may, without prejudice to any other right or remedy that the *Contractor* may have, by giving the *Owner Notice in Writing*, terminate the *Contract*.

- (ii) Delete GC 7.2.3.1 and substitute with the following: "Intentionally Deleted".

- (iii) Delete GC 7.2.3.3 and substitute with the following:

.3 the *Owner* fails to pay the *Contractor* when due the undisputed portion of a *Proper Invoice*, or

- (iv) At GC 7.2.3.4, delete the words "and the *Consultant* except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER, gives a written statement to the *Owner* and the *Contractor* that provides detail of such failure to comply with the requirements of the *Contract* to a substantial degree."

- (v) Delete GC 7.2.4, and substitute with the following:

7.2.4 The *Contractor's Notice in Writing* to the *Owner* provided under paragraph 7.2.3 shall advise if the correction of the default is not commenced within ten (10) *Working Days* following receipt of the *Notice in Writing*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, stop or suspend the *Work* or terminate the *Contract*.

- (vi) Add the following after the words "work performed" in line 2 of GC 7.2.5: "to the date of termination of the *Contract* by *Contractor*", and in line 3, add the word "direct" before the word "damages."

- (vii) Add the following at the end of GC 7.2.5:

The *Contractor's* entitlement to payment arising from termination of the *Contract* shall not affect the *Owner's* right to issue a notice of non-payment in accordance with the *Construction Act* because of: (i) the *Contractor's* failure to pay all legitimate claims promptly; (ii) the registration of liens against the title to the *Project*, until such claims for lien are discharged by the *Contractor* pursuant to the *Construction Act* and GC 5.8 - LIENS hereof; or (iii) those matters described in paragraph 5.4 of Article A-5 PAYMENT.

- (viii) Add new GC 7.2.6 as follows:



7.2.6 If the *Contractor* terminates the *Contract* under the conditions described in this GC 7.2, the *Contractor* shall be entitled to be paid for all *Work* performed to the date of termination and the *Contractor* shall leave the *Work* and the *Work Site* in a safe and secure condition.

(hh) **GC 8.1 — AUTHORITY OF THE CONSULTANT**

(i) Delete GC 8.1, including its heading, and substitute with the following: “Intentionally Deleted”.

(ii) **GC 8.2 — ADJUDICATION**

(i) Delete GC 8.2 and substitute with the following:

8.2.1 Either party to this *Contract* may refer to *Adjudication*, subject to and in accordance with the *Construction Act*, a dispute with the other party with respect to those matters enumerated in Section 13.5(1) of the *Construction Act* and the following additional matters:

- .1 the *Contractor's* performance of the *Work* under the *Contract*, including without limitation the performance of the *Work* relative to the approved construction schedule and the quality of the *Work* performed by the *Contractor*;
- .2 claims for delay made by the *Contractor*;
- .3 the administration, process and timing of the *Contractor* in connection with *C.C.N.'s* and *C.N.Q.'s* and the *Contractor's* use of the change process in Part 6 - CHANGES;
- .4 differences or disputes between the parties to the *Contract* as to the interpretation, application, performance or administration of the *Contract* or any failure to agree where agreement between the parties is called for, herein collectively called “disputes”;
- .5 claims made by the *Contractor* for a change in the *Contract Price* or *Contract Time*; and
- .6 interpretation of the *Contract Documents*.

8.2.2 Prior to referring any matter set out in GC 8.2.1 to *Adjudication*, the parties shall make all reasonable efforts to resolve any dispute by amicable negotiations, and agree to provide, on a without prejudice basis, frank, candid and timely disclosure of relevant facts, information and documents to facilitate such negotiations.

(jj) **GC 8.3 — NEGOTIATION, MEDIATION, AND ARBITRATION**

(i) Delete GC 8.3 and substitute with the following:

- 8.3.1 Where neither party refers a dispute to *Adjudication* or where a dispute is referred to *Adjudication* and the parties are not satisfied with the outcome of *Adjudication*, the parties may jointly determine to mediate the dispute. Such mediation will be conducted in accordance with the current version of CCDC 40.
- 8.3.2 In the event that the dispute is not resolved through mediation, the parties may jointly, by agreement, made not later than ten (10) *Working Days* after the date of termination of the mediation, determine to arbitrate such dispute. Such an arbitration will be conducted in accordance with the current version of CCDC40.
- 8.3.3 Within five (5) calendar days of receipt of the agreement of the parties to arbitrate under GC 8.3.2, the *Owner* and the *Contractor* shall give the *Consultant* a written notice containing:
- .1 a copy of the agreement to arbitrate,
  - .2 a copy of the supplementary conditions to this *Contract*, and
  - .3 any claims or issues which the *Contractor* or the *Owner*, as the case may be, wishes to raise in relation to the *Consultant* arising out of the issues in dispute in the arbitration.
- 8.3.4 The *Owner* and the *Contractor* agree that the *Consultant* may elect, within ten (10) calendar days of receipt of the notice under GC 8.3.3, to become a full party to the arbitration under GC 8.3.2 if the *Consultant*:
- .1 has a vested or contingent financial interest in the outcome of the arbitration;
  - .2 gives the notice of election to the *Owner* and the *Contractor* before the arbitrator is appointed;
  - .3 agrees to be a party to the arbitration within the meaning of the rules referred to in GC 8.3.3; and
  - .4 agrees to be bound by the arbitral award made in the arbitration.
- 8.3.5 If an election is made under GC 8.3.4, the *Consultant* may participate in the appointment of the arbitrator and, notwithstanding the rules referred to in GC 8.3.2, the time period for reaching agreement on the appointment of the arbitrator shall begin to run from the date the respondent receives a copy of the notice of election.

8.3.6 The arbitrator in the arbitration in which the *Consultant* has elected under GC 8.3.4 to become a full party may:

- .1 on application of the *Owner* or the *Contractor*, determine whether the *Consultant* has satisfied the requirements of GC 8.3.4, and
- .2 make any procedural order considered necessary to facilitate the addition of the *Consultant* as a party to the arbitration.

(kk) **GC 8.4 — RETENTION OF RIGHTS**

(i) Add new GC 8.4.3 as follows:

8.4.3 If the *Owner* and *Contractor* agree pursuant to GC 8.3.2 to have a dispute resolved by arbitration, the *Contractor* agrees that this GC 8.4.3 shall be construed as a formal consent to the stay of any lien proceedings until an award is rendered in the arbitration or such dispute is otherwise resolved between the parties. In no event shall the *Contractor* be deprived of its right to enforce its lien against the *Project* should the *Owner* fail to satisfy any arbitral award against it in full on the dispute in respect of which the lien proceedings were commenced. Nothing in this GC 8.4.3 shall prevent the *Contractor* from taking the steps required by the *Construction Act*, to preserve and/or perfect a lien to which it may be entitled.

(ll) **GC 9.1 — PROTECTION OF WORK AND PROPERTY**

(i) Delete GC 9.1.1.1 and substitute with the following:

.1 errors in the *Contract Documents* which the *Contractor* could not have discovered applying the standard of care described in paragraph 3.9.1 of GC 3.9 – PERFORMANCE BY CONTRACTOR.

(ii) Delete GC 9.1.2 and substitute with the following:

9.1.2 Before commencing any *Work*, and if applicable, the *Contractor* shall determine the locations of all underground utilities and structures indicated in the *Contract Documents* or that are discoverable by applying to an inspection of the *Place of the Work* the degree of care and skill described in paragraph 3.9.1 of GC 3.9 – PERFORMANCE BY CONTRACTOR.

(iii) Add new GC 9.1.5 as follows:

9.1.5 The *Contractor* shall neither undertake to repair and/or replace any damage whatsoever to the *Work* of *Other Contractors*, or to adjoining property, nor acknowledge the same was caused or occasioned by the *Contractor*, without first consulting the *Owner* and receiving written instructions as to the course of action to be followed from either the *Owner* or the *Consultant*. However, where there is danger to life or public safety, the *Contractor* shall take such

emergency action as it deems necessary to remove the danger, and to protect the *Owner's* property.

(mm) **GC 9.2 — TOXIC AND HAZARDOUS SUBSTANCES AND MATERIALS**

(i) Delete GC 9.2 and substitute with the following:

9.2.1 Prior to the *Contractor* commencing the *Work*, the *Owner* shall:

- .1 take all reasonable steps to determine whether any toxic or hazardous substances or materials are present at the *Place of the Work*, and
- .2 provide the *Contractor* with a written report with respect to any such substances or materials, which report will form part of the *Contract Documents*.

9.2.2 If the *Contractor* discovers at the *Place of the Work* any toxic or hazardous substances or materials which are not described in the *Contract Documents*, the *Contractor* shall immediately notify the *Owner* of the presence of such substances and materials and take all reasonable steps, including stopping all or any relevant portion of the *Work*, to ensure that no person suffers injury, sickness or death and that no property is injured or destroyed as a result of exposure to or the presence of such substances or materials, and, for the purposes of GC 9.2.3, such circumstance shall be dealt with as a change to the *Work* in accordance with the provisions of Part 6 – CHANGES with respect to any adjustment to the *Contract Time*.

9.2.3 As part of the *Work*, the *Contractor* shall be responsible for taking all necessary steps, in accordance with all applicable laws and regulations, to dispose of, store or otherwise render harmless toxic or hazardous substances or materials which are described in the *Contract Documents*, as well as any other toxic or hazardous substances or materials which are referred to in GC 9.2.2.

9.2.4 The *Contractor* shall not permit any person performing any part of the *Work* to introduce to the *Place of the Work* any toxic or hazardous substances or materials without the prior written consent of the *Owner*. The *Contractor* shall require all persons performing any part of the *Work* involving any such substances and materials to comply with all applicable laws and regulations regarding the safe use, handling and disposal of such substances and materials.

9.2.5 Notwithstanding any provision to the contrary in the *Contract Documents*, the *Contractor* shall indemnify and hold harmless the *Owner*, and the *Consultant*, and their respective agents, consultants, officers, directors and employees, from and against any and all claims, demands, losses, costs,

damages, actions, suits or proceedings arising out of or resulting from any discharge, escape, emission, leak, deposit, dispersion, or migration into the environment (“**Release**”), or threatened *Release*, of any toxic or hazardous substances or material, which has or may have an adverse effect upon the environment or human health or safety and which is connected, in any way, with the performance of the *Work* in any of the following circumstances:

- (i) where the *Release* or threatened *Release* is due to the *Contractor*’s failure to comply with the provisions of GC 9.2.2,
- (ii) where any such substances or materials are required to be dealt with as part of the *Work* as provided in GC 9.2.3 and the *Release*, or threatened *Release*, is due to the fault or negligence of the *Contractor*, any *Subcontractor* or *Suppliers*, or anyone for whom they are responsible at law, or due to the failure of any of them to comply with any applicable legal and regulatory requirements in respect of such substances or materials, or
- (iii) where the *Release*, or threatened *Release*, is in relation to any other such substances or materials which have been brought or introduced to the *Place of the Work* by anyone performing the *Work*.

In the event of any *Release*, or threatened *Release*, described in subparagraphs (i), (ii) or (iii) above, the *Contractor* shall immediately notify the *Owner* of such event and shall take all steps, at its cost, to ensure that no person suffers injury, sickness or death and that no property is injured or destroyed as a result of the *Release* or threatened *Release* and to remedy such circumstance as soon as reasonably practicable.

(nn) **GC 9.4 — CONSTRUCTION SAFETY**

- (i) Delete GC 9.4 and substitute with the following:

9.4.1 The *Contractor* acknowledges that it is a “constructor” within the meaning of the *Occupational Health and Safety Act* (Ontario) and the *Contractor* undertakes to carry out the duties and responsibilities of a constructor with respect to the *Work*. The *Contractor* shall be responsible for developing a health and safety plan specific to the *Place of the Work* and which conforms to the *Owner*’s occupational health and safety, infection prevention, the *Owner*’s fire plan and the requirements of the local Fire Department, and control and emergency requirements at the *Place of the Work* (the “**HS Plan**”). Further, the *Contractor* shall be responsible for maintaining and supervising the HS Plan throughout the performance of the *Work*. Prior to commencement of the *Work*, the *Contractor* shall submit to the *Owner* a copy of the Notice of Project filed with the Ministry of Labour in respect of the *Work*. The *Contractor* shall indemnify and hold harmless the *Owner*, its employees, agents, officers, directors and consultants and the *Consultant*

from any liability for claims, damages or penalties, including reasonable legal fees to defend any offences arising from the *Contractor's* failure to comply with such duties and responsibilities. In cases where the *Owner's* own forces or *Other Contractors* are performing work at the *Place of the Work*, and do not have separate and defined work areas covered by a separate Notice of Project filed with the Ministry of Labour, the *Owner* will contractually require such forces or *Other Contractors* to comply with the *Contractor's* HS Plan and overall directions and instructions respecting health and safety matters. For clarity, the *Contractor* shall be responsible as constructor for such *Owner* forces and *Other Contractors* and shall have the authority to remove such other forces or *Other Contractors* from the *Place of the Work* should they fail to comply with the *Contractor's* directions or instructions respecting its HS Plan.

- 9.4.2 The *Contractor* shall comply with (and cause the *Contractor Personnel* to comply with) any safety regulations or directives issued in writing by or on behalf of the *Owner* in respect of the Project including, without limitation, in respect of infection control.

(oo) **GC 9.5 — MOULD**

- (i) Delete GC 9.5.3.3 and substitute with the following:

- .3 extend the *Contract Time* for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. If, in the opinion of the *Consultant*, the *Contractor* has been delayed in performing the *Work* and/or has incurred additional costs under GC 9.5.1.2, the *Owner* shall reimburse the *Contractor* for reasonable direct costs incurred as a result of the delay and as a result of taking those steps, and

(pp) **GC 10.1 — TAXES AND DUTIES**

- (i) Add the following to the end of GC 10.1.2:

The *Contractor* shall provide the *Consultant* with a detailed statement, acceptable to the *Consultant*, verifying the increase or decrease to the *Contract Price* on account of tax or duty changes. For added certainty, there shall be no increase or decrease in the *Contract Price* as a result of any inability by the *Contractor* or any *Subcontractor* to recover its own HST expenses by means of credits, rebates or refunds.

- (ii) Add new GC 10.1.3 - GC 10.1.8 as follows:

- 10.1.3 HST is in addition to the *Contract Price* and shall be computed and disclosed separately on each *Proper Invoice* in accordance with the requirements of the *Excise Tax Act* (Canada) and the regulations made thereunder. This amount will be paid to the *Contractor* in addition to the

amount paid under the *Proper Invoice* under this *Contract* and will therefore not affect the *Contract Price*. The *Contractor* shall further disclose on each *Proper Invoice* the HST registration number of the *Contractor* together with all of the other details required by the *Excise Tax Act* (Canada) and the regulations made thereunder to enable the *Owner* to recover such HST by way of credit, rebate or refund.

- 10.1.4 The *Contractor* shall report and remit to the appropriate taxing authority all taxes, including HST and shall, if requested by the *Owner*, provide to the *Owner* appropriate documentary evidence of such remittance within fifteen (15) calendar days of such request.
- 10.1.5 The *Contractor* shall take all reasonable measures requested by the *Owner* in relation to the performance of the *Work* for the purposes of minimizing the application of HST.
- 10.1.6 When an exemption or recovery of government sales taxes, customs duties or excise taxes, including HST, related to this *Contract* may be available to the *Owner*, the *Contractor* shall, at the request of the *Owner* or its agent, assist in the *Owner's* application for any exemption, credit, rebate, refund or other recovery of all such taxes and duties and all amounts recovered or exemptions obtained shall be for the sole benefit of the *Owner*.
- 10.1.7 The parties shall co-operate to minimize the impact of any tax increases or new taxes and take advantage of all tax reductions and avoid any double taxation.
- 10.1.8 If any payment made by the *Contractor* to the *Owner* in connection with this *Contract*, including any amount that may be awarded by a court, is deemed by the *Excise Tax Act* (Canada) to include any HST, the amount of such payment shall be increased by such additional amounts as may be necessary in order that the net amount of the payment, after such a deemed inclusion of HST, will equal the amount that would have been paid if there had been no such deemed inclusion of HST.

(qq) **GC 10.2 — LAWS, NOTICES, PERMITS AND FEES**

- (i) Add the following to the end of GC 10.2.3:

In the performance of the *Work* the *Contractor* will fulfill all requirements of the Municipality or any utility or other authority with jurisdiction over the *Work*, and will co-ordinate the work of any utility or other authority (whether on or off the *Work Site*) with the *Work* of this *Contract* and avoid any extra cost to the *Owner*.

- (ii) At GC 10.2.4, add as the second sentence:

The *Contractor* shall be deemed to be familiar with the laws, ordinances, rules, regulations and codes relating to the *Work* and if the *Contractor* fails to give the

said notices, the *Contractor* shall bear all costs arising out of the *Contractor's* actions.

- (iii) Add to the end of GC 10.2.4, the following:

The *Contractor* shall notify the applicable Chief Building Official of the readiness, substantial completion, and completion of the stages of construction set out in the Building Code legislation at the *Place of the Work*. The *Contractor* shall be present at each site inspection by an inspector as applicable under the Building Code legislation at the *Place of Work*.

- (iv) Delete from GC 10.2.6 the words “knowing it to be”.

- (v) Add new GC 10.2.8 as follows:

10.2.8 The *Contractor* shall furnish all certificates that are required or given by the appropriate *Governmental Authorities* as evidence that the *Work*, as installed, conforms with the laws and regulations of authorities having jurisdiction, including certificates of compliance for the *Owners' occupancy* or partial occupancy.

(rr) **GC 10.4 — WORKERS' COMPENSATION**

- (i) At GC 10.4.1 in line 2, delete the following: “and again with the *Contractor's* application for final payment,”.

(ss) **GC 11.1 — INSURANCE**

- (i) Delete GC 11.1 in its entirety and replace with the revised clauses as set out in **Schedule A**

(tt) **GC 11.2 — CONTRACT SECURITY**

- (i) Add new GC 11.2 – CONTRACT SECURITY as follows:

**GC 11.2 – CONTRACT SECURITY**

11.2.1 The *Contractor* shall, prior to the commencement of the *Work*, provide to the *Owner* a performance bond and a labour and material payment bond, each in an amount equal to **[fifty percent (50%)]** of the *Contract Price*.

11.2.2 All of such bonds shall be issued by a surety bonding company licensed to issue surety bonds and transact the business of suretyship in the Province of Ontario. In the event of any adjustment in the *Contract Price* in accordance with paragraph 4.4 of Article A-4 – CONTRACT PRICE in connection with any *Change Order* or *Change Directive*, the *Contractor* shall arrange for supplementary or replacement bonds to be provided to the *Owner* in accordance with GC 11.2.1 to reflect the adjusted *Contract Price* or



subcontract price as the case may be. The performance bonds shall remain in effect during the term of all warranty periods, to a maximum of one (1) year, except specified manufacturer's warranties.

(uu) **GC 12.1 — READY-FOR-TAKEOVER**

- (i) Add new GC 12.1.1.9 as follows:

.9 To the extent not duplicated in this GC 12.1.1, the documents and materials described in paragraph 5.4.4 of GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK.

- (ii) Delete GC 12.1.6 in its entirety.

(vv) **GC 12.2 — EARLY OCCUPATION BY OWNER**

- (i) Delete GC 12.2 and substitute with the following:

12.2.1 The *Owner* may take occupancy of a part or the entirety of the *Work* before *Ready-for-Takeover* provided that:

- .1 the *Owner* shall not occupy a part or the entirety of the *Work* without prior approval by authorities having jurisdiction; and
- .2 if the *Owner* takes occupancy of the entirety of the *Work* before all the prerequisites are met as described in paragraph 12.1.1 of GC 12.1 – READY-FOR-TAKEOVER, the *Work* shall, subject to the requirements of the *Construction Act*, be deemed to achieve *Ready-for-Takeover*. This shall not relieve the *Contractor's* responsibility to complete the *Work* in a timely manner.

(ww) **GC 12.3 — WARRANTY**

- (i) Delete GC 12.3.3 and substitute with the following:

12.3.3 The *Contractor* shall, at its expense, promptly correct defects or deficiencies in the *Work* which appear prior to and during the warranty periods specified in the *Contract Documents*. The *Contractor* shall remain responsible for the correction of any such defects or deficiencies, notwithstanding the work required to effect such correction commences after or continues beyond the end of the warranty periods.

- (ii) Add the following words at the end of GC 12.3.6:

In the event that a manufacturer fails to issue a *Product* warranty in the name of the *Owner* as well as the *Contractor*, the *Contractor* shall assign such warranty to the *Owner* on the *Ready-for-Takeover* date or such earlier date as directed by the

*Owner*. The *Contractor* shall cooperate with and reasonably assist the *Owner* during the warranty period in the enforcement of any and all *Product* warranties.

(iii) Add new GC 12.3.7 – GC 12.3.9 as follows:

12.3.7 The *Contractor* agrees that the *Contractor* is able to perform the *Work* and the *Contractor* warrants the *Work* in accordance with the *Contract Documents*

12.3.8 The *Contractor* shall, upon receiving notice of any defect or deficiency in the *Work*, commence the correction of such defect or deficiency within two (2) *Working Days* (or as otherwise agreed with the *Owner*) at such times that are convenient to the *Owner* except that, if any such defect or deficiency is of a nature which prevents or hinders, or is likely to prevent or hinder, patient care, comfort or safety, or any life safety, security or other material building system, such correction shall be carried out immediately. The correction of all defects and deficiencies shall be carried out in a manner to minimize any interference or disruption to patient care, comfort and safety. If the correction of any defect or deficiency is likely to disrupt or interfere with patient care, comfort or safety or any life safety, security or other material building system, the *Owner* shall be entitled to effect any temporary corrective action as the *Owner* shall deem appropriate and charge the cost thereof to the *Contractor*. If the carrying out of the correction of any defects or deficiencies entails overtime work on the part of the *Contractor*, additional charges for overtime work shall be borne by the *Contractor*. Prior to the expiry of the warranty period, the *Owner* reserves the right to carry out a detailed and exhaustive inspection of the work for the purpose of establishing a final deficiency list (hereinafter called "***Punch List***"). The *Contractor* shall promptly correct, at the *Contractor*'s expense, any defects or deficiencies in the *Work* noted in the *Punch List*.

12.3.9 Prior to the application for final payment pursuant to a *Proper Invoice* under paragraph 5.5.1 of GC 5.5 – FINAL PAYMENT, the *Contractor* shall assign to the *Owner* the benefit of all guarantees and warranties for all *Products* and services used or incorporated in the *Work* and shall ensure that such an assignment is also effected by all *Subcontractors*, *Suppliers* or consultants from whom the same have been obtained.

(xx) **GC 13.1 — INDEMNIFICATION**

(i) Amend the reference in GC 13.1.2.2 by deleting "\$2,000,000" and substituting "\$5,000,000".

(yy) **GC 13.2 — WAIVER OF CLAIMS**

(i) Delete the definition of "Substantial defects or deficiencies" in GC 13.2.3.4 and substitute with the following:

“Substantial defects or deficiencies” means those defects or deficiencies in the *Work* where the reasonable cost of repair of such defects or deficiencies exceeds:

- (a) if the *Contract Price* is \$2,000,000 or less, the sum of \$50,000, before HST;
- (b) if the *Contract Price* exceeds \$2,000,000, the sum of \$100,000, before HST.

In any event, “substantial defects or deficiencies” shall include defects or deficiencies in the *Work* which affect the *Work* to such an extent or in such a manner that a significant part or the whole of the *Work* is unfit for the purpose intended by the *Contract Documents*.

- (ii) Delete GC 13.2.4 and 13.2.5.

## **PART 14 — OTHER PROVISIONS**

- (i) Add new “Part 14 — OTHER PROVISIONS” as follows:

### **PART 14 — OTHER PROVISIONS**

#### **GC 14.1 — WORK PLAN**

14.1.1 In addition to the obligations regarding the *Project* schedule, prior to commencing any *Work* at the *Place of the Work*, including mobilizing any labour or equipment at the *Place of the Work*, or entering into any part of the hospital, the *Contractor* will deliver to the *Owner* and obtain the *Owner's* approval for a work plan (the “**Work Plan**”) clearly identifying:

- .1 any *Work* activity that may impact or interfere with the on-going operation of the hospital, including interference to patients, staff or visitors, including a description of the nature, timing and extent of interference;
- .2 the steps the *Contractor* intends to take to minimum the extent of such interference;
- .3 any temporary measures that the *Owner* will be required to take to accommodate the interference; and
- .4 any specific reporting relationships between the *Contractor* and the *Owner's* staff required to coordinate the interference.

14.1.2 Prior to delivering a *Work Plan*, the *Contractor* will consult with the *Owner* and, upon reasonable request, the *Owner* will make appropriate staff available for such consultation, to determine the *Work Plan* that minimizes interference to the hospital.

- 14.1.3 The *Work Plan* may be developed, delivered and approved in stages, as the *Work* is planned and progresses, beginning, for example, with the *Contractor's* detailed investigation of the hospital.

#### GC 14.2 – INTERRUPTION OF UTILITIES

- 14.2.1 With respect to any interruption of existing utilities that provide services to the hospital:

- .1 The *Contractor* will give a minimum of ten (10) calendar days advance written notice to the *Owner* and obtain written authorization to proceed from the *Owner's Project* representative prior to any interruption of existing services including, but not limited to, water, sewer, gas, medical gas systems, sprinklers, HVAC, power and electric, fire alarms, communication and security systems. The *Owner* may order the *Contractor* to stop the *Work* at any time due to emergency conditions and require required services to restart. The *Owner* may also order the *Contractor* to stop the *Work* at any time if any aspect of the *Work* affects or threatens to affect the continuous operation of the hospital and its facilities and operations.
- .2 The *Owner* will cooperate with the *Contractor*, at no cost to the *Contractor*, in the shut down of services as is necessary to allow the *Contractor* to modify existing services and to perform the *Work*. If, however, as a result of defective materials or workmanship it is necessary for any shut downs to be repeated, any additional costs incurred by the *Owner*, including the cost of labour provided by the *Owner*, to repeat the shutdown and then re-connect the service, will be paid by the *Contractor*.
- .3 The *Contractor* shall take measures to avoid triggering false alarms, including fire or security alarms, and will pay for any municipal costs charged to the *Owner* as a result of false alarms.
- .4 The *Contractor* will, at its cost (including any overtime labour cost), provide the necessary coverage as required by applicable *Governmental Authorities* in the event of the loss of or lack of coverage of life safety systems.
- .5 The *Contractor* will, at its cost (including any overtime labour cost), make service connections or modifications outside of normal working hours, or will provide temporary service connections, if such connections or modifications cannot be undertaken safely during normal working hours, or if such work would cause interruptions and interference with the *Owner's* normal health care operations in the hospital that are unacceptable to the *Owner*.

- .6 The *Contractor* will carry out all final connections to existing operational systems under the direct supervision and as directed by the *Owner's* operational staff or authorized agent.

#### **GC 14.3 — TITLE TO PRODUCTS AND MATERIALS**

- 14.3.1 Unless otherwise specified, all materials existing at the *Place of the Work* at the time of execution of the *Contract* shall remain the property of the *Owner*.
- 14.3.2 All *Work and Products* delivered to the *Place of the Work* by or on behalf of the *Contractor* shall be the property of the *Owner*. Title shall be deemed to pass to the *Owner* upon delivery.
- 14.3.3 The *Contractor* shall promptly remove all surplus or rejected materials as its property when notified in writing to do so by the *Consultant* or the *Owner*.

#### **GC 14.4 — PUBLICITY**

- 14.4.1 Neither the *Contractor* nor any *Contractor Personnel* shall release to the public, except as required by *Governmental Authorities*, any information relating to the *Contract* without the prior written consent of the *Owner*.

#### **GC 14.5 — CONFIDENTIALITY**

- 14.5.1 The *Contractor* shall not, except as is required to carry out its obligations, duties, responsibilities or liabilities under the *Contract*, divulge any confidential information communicated to or acquired by it in the course of carrying out its obligations, duties, responsibilities or liabilities under the *Contract*. No confidential information shall be used by the *Contractor* on any other project without the prior written approval of the *Owner* (which approval may be arbitrarily withheld). The *Contractor* shall not have any proprietary rights to or interest in the confidential information, nor shall the *Contractor* have any right to license such information to any *Subcontractor*, *Supplier* or other third party. The term, "confidential information" as used herein shall mean all information which the *Contractor* receives, either directly or indirectly, from the *Owner* or from the *Consultant*, except:
- .1 information which the *Contractor* can demonstrate is, at the time of disclosure, already known to the *Contractor*;
  - .2 information which, at the time of disclosure, is or thereafter becomes a part of the public domain through no act or omission on the part of the *Contractor*; and
  - .3 information which is disclosed to the *Contractor* by a third party without a covenant of confidentiality.

- 14.5.2 *Contractor* acknowledges that the *Owner* is subject to the *Personal Health Information Protection Act*, 2004 (“**PHIPA**”). The *Contractor* acknowledges and agrees that pursuant to PHIPA and the regulations under the *Public Hospitals Act* (Ontario), it is not entitled to receive any “personal health information” (as defined in PHIPA) from medical records or otherwise. Nevertheless, as a consequence of the *Work* to be conducted at the *Place of the Work*, *Contractor* may be incidentally exposed to or become aware of “personal health information”. Regardless of how collected or received, the *Contractor* agrees that it will not copy, discuss, remove or transmit from the *Place of the Work* any such “personal health information”.
- 14.5.3 The *Contractor* may disclose the confidential information to those *Contractor Personnel* to whom disclosure is required for the performance of their respective responsibilities, duties, obligations and liabilities under the *Contract*. The *Contractor* shall require such *Contractor Personnel* to treat such information as confidential and not to disclose such information to any person other than in accordance with the terms of the *Contract*.

#### **GC 14.6 – DAILY REPORTS/DAILY LOGS**

- 14.6.1 The *Contractor* shall cause its supervisor, or such competent person as it may delegate, to prepare a daily log or diary reporting on weather conditions, work force of the *Contractor*, *Subcontractors*, *Suppliers* and any other forces on site and also record the general nature of *Project* activities. Such log or diary shall also include any extraordinary or emergency events which may occur and also the identities of any persons who visit the site who are not part of the day-to-day work force.
- 14.6.2 The *Contractor* shall also maintain records, either at its head office or at the job site, recording manpower and material resourcing on the *Project*, including records which document the activities of the *Contractor* in connection with GC 3.4 – CONSTRUCTION SCHEDULE, and comparing that resourcing to the resourcing anticipated when the most recent version of the schedule was prepared pursuant to GC 3.4 – CONSTRUCTION SCHEDULE.

#### **14.7 – HOSPITAL RELATED PROVISIONS**

- 14.7.1 The *Contractor* acknowledges that the security and safety of the patients, employees and other occupants of the existing hospital is paramount. If any of the employees of the *Contractor* or the *Subcontractors* is determined by the *Owner* to be a concern for the security or safety of such patients, employees or occupants, the *Owner* may require that the *Contractor* replace such employee.
- 14.7.2 Notwithstanding any other provision in the *Contract*, paramountcy of access must be given to emergency and police vehicles and no claim may

be made by the *Contractor* for any delay in the performance of the *Work* as a result of any temporary lack of access to the *Place of the Work* resulting from this paramountcy of access by emergency and police vehicles, provided that the *Owner* will use commercially reasonable efforts to avoid and to limit the duration of any temporary lack of access for this reason.

- 14.7.3 The *Owner* has the authority, but without the obligation, to stop the *Work* in any circumstance affecting the safety of life or property or otherwise may cause an unsafe condition for the operation of the existing hospital. The *Contractor* shall abide by the *Owner's* instructions to stop the *Work* without any increase in the *Contract Price* and extension in the *Contract Time* if such circumstance was caused by the *Contractor*, *Subcontractors* or *Suppliers*.

**SCHEDULE “A”**  
**INSURANCE TO BE PROVIDED BY THE CONTRACTOR UNDER A CCIP**

11.1.1 The Contractor shall provide, maintain and pay for the insurance coverages listed in this Schedule “A” unless otherwise stipulated:

(a) **Commercial General Liability Insurance:**

The Contractor shall provide, maintain and pay for, and shall require each of its Subcontractors to provide, maintain and pay for, Commercial General Liability Insurance naming the Owner as **a additional insured**, with limits of not less than five million dollars (\$5,000,000) for any one accident or occurrence, or such higher limits as the parties may reasonably agree upon, inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof, with a bodily injury and property damage deductible no greater than twenty-five thousand dollars (\$25,000). The policy shall include non-owned vehicles, tenants, legal liability, medical payments, damage to existing structures, damage to hired vehicles and limited pollution, blasting and demolition, where applicable, and the provision and use of unmanned aerial vehicles, and shall contain a standard form of cross-liability and severability of interest clause. This insurance shall be maintained continuously from commencement of the Work until the *Ready-for-Takeover* date, and with respect to completed operations coverage for a period of not less than thirty-six (36) months (or such other period as the Owner may in its discretion require) from the *Ready-for-Takeover* date.

**Commented [OM1]:** Hospital to confirm who holds certificate and who is additional. Hospital vs Landlord

(b) **Blasting/Demolition Insurance (if awarded under separate contract)**

Should the Owner award a separate contract for demolition requiring the use of explosives for blasting, or pile driving, or caisson work, or removal or weakening or support of property, building or land, the Owner shall cause the contractor engaged to perform the blasting and demolition work to provide, maintain and pay for insurance covering the above noted perils at the limits set out in (a) above.

(c) **Contractor’s Pollution Liability Insurance:**

The Contractor shall provide, maintain, and pay for, or cause to be provided, maintained and paid for, liability insurance which includes Pollution, Legal Liability and Mould coverage of not less than two million dollars (\$2,000,000) per occurrence or such other amount as the Owner may require, with a deductible no greater than twenty-five thousand dollars (\$25,000), and with the Owner as **a additional insured**. This policy shall be maintained for a period of three (3) years (or such other period as the Owner may in its discretion require) after completion of this Contract and shall not include any health hazards or pollution exclusions.

(d) **Automobile Liability Insurance:**

The Contractor shall provide, maintain and pay for and shall require each of its Subcontractors to provide, maintain and pay for, automobile liability insurance in respect



of licensed vehicles with limits of not less than two million dollars (\$2,000,000) inclusive per occurrence and which shall be in the Standard Owner's Form Automobile Policy providing third party liability and accident benefits insurance and covering all vehicles of every description and kind owned, leased or operated by or on behalf of the Contractor, or any person or persons for whom the Contractor is in law responsible.

(e) **Aircraft and Watercraft Liability Insurance (where applicable):**

The Contractor shall provide, maintain and pay for and shall require each of its Subcontractors to provide, maintain and pay for, aircraft and watercraft liability insurance with respect to owned or non-owned aircraft (including unmanned aerial vehicles) and watercraft if used directly or indirectly in the performance of the Work, including use of additional premises, which shall be subject to limits of not less than five million dollars (\$5,000,000) inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof and limits of not less than five million dollars (\$5,000,000) for aircraft passenger hazard.

(f) **Contractor's Equipment Insurance:**

The Contractor shall provide, maintain and pay for and shall require each of its Subcontractors to provide, maintain and pay for, "all risk contractors' equipment insurance" covering construction machinery and equipment used by the Contractor or any of its trades or suppliers for the performance of the Work. Such insurance shall be in a form acceptable to the Owner and shall not allow subrogation claims by the insurer against the Owner. Subject to satisfactory proof of financial capability by the Contractor for self-insurance of its equipment, the Owner agrees to waive the equipment insurance requirement, but the Contractor shall be deemed for the purposes of this Agreement to have satisfactorily taken out such insurance and indemnify the Owner to the same extent.

(g) **Course of Construction (Builder's Risk) Property Insurance:**

The Contractor shall provide, maintain and pay for "Course of Construction" insurance, to remain in effect until Substantial Completion of the Work. Such insurance shall be "All Risks" property insurance covering all risks of physical loss or damage to the Project, including earthquake, flood and sewer back-up and construction phase boiler and machinery insurance, less such deductible amounts as are deemed acceptable by the Owner, which in any event shall not exceed ten thousand dollars (\$10,000). Coverage shall be not less than one hundred percent (100%) of the Contract Price or such other amount as the Owner may require. The form of such policy shall be at least equal in scope and coverage to DE4 or DE5 as required by the Owner. The insurance policy or policies may also exclude coverage of certain property from time to time mentioned in the policy or policies, including, without limitation, property and equipment of every description owned by the Contractor or its Subcontractors or for which they are responsible, as well as automobiles, accounts, bills, currency, stamps, deeds, evidences of debt or title, money notes or securities. Such insurance shall name the Owner, Contractor and Consultant as **additional insureds** and the Owner as loss payee. The insurance policy or policies shall also contain a "Waiver of Subrogation" in favour of the Subcontractors with respect to the

Work. The Owner shall be entitled to purchase at the Owner's cost any additional policies or extensions it deems prudent or to vary or alter or replace from time to time all policies of insurance made in implementation of this paragraph as it may, in its sole discretion, decide, provided that the provisions of this paragraph remain complied with.

(h) **Additional Insurance**

The Contractor shall provide, maintain and pay for such other insurance not identified in this Schedule "A" as is customary for a contractor to purchase and maintain in the Province in which the Project is located, which is to be clearly identified by the Contractor as to the risk insured, the rate applicable, the insured interest for the Owner, and such other information as the Owner may reasonably require.

- 11.1.2 Unless specified otherwise the duration of each insurance policy shall be from the date of commencement of the Work until the *Ready-for-Takeover* date. The Contractor shall be responsible for deductible amounts under all policies and for determining the deductible amount in respect of automobile liability and Contractor's equipment insurance. It shall be the responsibility of the Contractor not to violate, nor knowingly permit to be violated, any conditions of the policies maintained according to the provisions of this Section 11.1 and it shall be the Contractor's duty and responsibility to impose upon each Subcontractor the same responsibilities and obligations imposed upon the Contractor under such provisions.
- 11.1.3 The Contractor (for itself and its insurers) hereby releases the Owner and waives any rights, including rights of subrogation, it may have against the Owner for compensation for any loss or damage incurred by the Contractor or its Subcontractors or loss of use of property of the Contractor or its Subcontractors. The foregoing release and waiver will operate so long as available in the Province where the Project is located.
- 11.1.4 All insurance policies required to be taken out by the Contractor, or any of its Subcontractors, as required under this Section 11.1, shall be in form acceptable to the Owner and shall contain a waiver of any subrogation rights which the Contractor's, or Subcontractors' as the case may be, insurers may have against the Owner.
- 11.1.5 Each insurance policy shall be endorsed to provide the Owner with not less than thirty (30) days written notice of cancellation of the policy, except for non-payment of premium, in which case the statutory condition shall apply. The Contractor shall promptly provide the Owner with copies of any notices received by the Contractor from the insurer advising of any material change to any insurance policy or any amendment restricting coverage.
- 11.1.6 The Contractor shall provide certificates of insurance evidencing the coverage as required above to the Owner prior to the commencement of the Work under this Agreement and shall promptly provide the Owner, upon written request, with a certified true copy of each insurance policy. A new certificate shall be provided promptly upon renewal of said insurance policies. The certificates shall confirm the obligation on the part of the insurer to provide at least thirty (30) days written notice of cancellation to the certificate holders. The renewed insurance policy shall be forwarded to the Owner at the address indicated in this Agreement.

- 11.1.7 If the Contractor fails to provide or maintain insurance or indemnify the Owner against claims, actions, expenses or loss as required in this Agreement, then the Owner shall have the right to provide and maintain such insurance or respond to such claims and give evidence thereof to the Contractor. The cost thereof plus a fifteen percent (15%) administrative fee shall be payable by the Contractor to the Owner on demand or the Owner may deduct the costs thereof from monies which are due or may become due to the Contractor.
- 11.1.8 In the event of damage or destruction to the Project, the Contractor shall immediately proceed to restore the Work and shall be entitled to receive from the Owner (in addition to any sum due under the Agreement) the amount of insurance proceeds received by the Owner relating to such property damage, pursuant to the insurance maintained by the Contractor in accordance with Section 11.1.1(g) with respect to the cost of restoration of the Work, such amount to be paid as the restoration of the Work proceeds in accordance with GC 5.3, but in any event, not to be paid before the Owner has received the insurance proceeds under the insurance with respect to the restoration of the Work. Damage shall not affect the rights and obligations of either party under the Agreement except that the Contractor shall be entitled to such reasonable extension of time for *Ready-for-Takeover* and of the *Total Completion* as the Consultant may decide.

END OF DOCUMENT

## 1 SUMMARY OF WORK

### 1.1 Work covered under this Contract

- .1 Work of this Contract includes labour, materials, equipment, services and other related expenses to execute complete construction of facility specified under Contract Documents.
- .2 It is the Contractor's sole responsibility to examine the Construction Documents, Specifications and Drawings issued to establish/determine total scope of work.
- .3 In accepting award of this Contract, Contractor hereby reaffirms that it is fully informed regarding all conditions affecting Work including its company's provincial taxes are in good standing and further accepts to complete Work for purpose intended in accordance with Contract Documents. Contractor hereby reaffirms that it does not and will not have any conflict of interest in executing work of this Contract.

### 1.2 Work Provided By Owner or Performed Under Separate Contracts

- .1 The term "NIC" means that work of this Project which is not being performed or provided by the Contract; the term means "Not In This Contract" or "Not a Part of The Work to be Performed or Provided by The Contractor".
- .2 "NIC" work is specified and/or indicated on the Drawings as an aid to the Contractor in scheduling the amount of time and materials necessary for the completion of the Contract.

### 1.3 Base Building Vendors of Record

- .1 FIRE ALARM:
- .2 Chubb Fire & Security
- .3 Attention: Stephn Yates
- .4 Telephone: (289) 818-1162
- .5 Cell: (416) 659-1754
- .6 Email: stephen.yates@chubbfs.com
- .7 NURSE CALL
- .8 Aatel Communications.
- .9 Attention: Darren Croucher & Laura Graham
- .10 Email: darrenc@aatel.com
- .11 Email: laurag@aatel.com
- .12 RTLS:
- .13 Civica Canada
- .14 Attention: Marshall Sylvestre
- .15 Telephone: (431) 303-5284

- .16 Email: Marshall.Sylvestre@civica.ca
- .17 ACCESS CONTROL:
- .18 A1 Security Systems.
- .19 Attention: Rob
- .20 Telephone: (647) 558-3473
- .21 Email: a1design@rogers.com

## 2 SPECIFICATIONS

- 2.1 Specifications are not intended as detailed description of installation methods but serve to indicate particular requirements in completed Work.
- 2.2 Where Contract Documents do not provide sufficient information for complete installation of item, then as supplement, comply with manufacturer's written instructions for quality of work.
- 2.3 Portions of Specifications are written in short form. Therefore, it shall be understood that where item of Work is stated in heading followed by material, equipment, component, or operation, words "shall be", "shall consist of" or similar words or phrases are implied which denote supply, fabricate and supply, install, provide or commission of such materials, equipment or operations for component of Work designated by heading.
- 2.4 Where the Contract Documents refer to the singular, provide as many as required to complete Work. Words used in one gender only shall mean females and as well as males and conversely.
- 2.5 Drawings, Lists or Schedules of Items are intended to show scope and arrangement of work. For location of item described refer to such Drawings, Lists or Schedules unless location stipulated in Specifications.
- 2.6 Wherever words "acceptable", "approved", "reviewed", "satisfactory", "selected", "directed", "designated", "permitted", "inspected", "instructed", "clarification", "required", "report", "submit", "obtain", "consult", "advise", or similar words or phrases are used in Standards or in Contract Documents, it shall be understood that, unless context provides otherwise words "by/to/with/from the Consultant" shall follow them as applicable.

## 3 DIVISION OF WORK

- 3.1 Work specified in the Specifications is divided into Sections for reference purposes only. Division of work between Contractor and Subcontractors is the Contractor's responsibility. The Owner and Consultant assume no responsibility to act as an arbitrator to establish subcontract limits between Sections or Divisions of the Work.

## 4 REFERENCE STANDARDS

- 4.1 Conform to latest date of issue of referenced standards in effect on date of submission of bids, except where a specific date or issue is specifically noted.

## 5 **WORK RESTRICTIONS**

### 5.1 Owner's Policy and Procedural Requirements

- .1 Comply with the Owner's policies and procedural requirements prescribed in "TEHN Contractor Procedure Manual", included in the appendix to these specifications, including, but not limited to, personal conduct and behaviour, patient privacy, facility security, infection prevention and control, mechanical system interruptions, and work scheduling.
- .2 Conduct all work in accordance with the most current version of CAN/CSA-Z317.13.
- .3 All building materials and supplies must be in compliance with CSA Z8000 and MIFU, governing IPAC measures incorporated into the design and construction of a health care facility or any part thereof.
- .4 As determined by the Owner's policies, immediately correct all unsafe conditions that are identified within the active facility that are a result of, or related to, the construction work activities.

### 5.2 Occupancy

- .1 Existing premises outside of the Area of Work will remain occupied during Work. Execute Work to cause minimum interference with activities in existing premises and maintain maximum safety to occupants. Take reasonable measures to minimize and control noise, dirt and dust during Work.
  - .1 Provide a methodology for phasing and staging of the Work, and indicating safety and fire escape routes for the occupants of the building during construction.
  - .2 All areas that are only available for demolition and construction activity after hospital operational hours are to be vacuumed and mopped at the end of each construction day for terminal clean by hospital to enable the hospital to resume regular business operations unimpeded each day.
- .2 Access:
  - .1 Different areas of work within the hospital will be restricted to time frames indicated on Construction Phasing and Hoarding drawings.
  - .2 Before entering existing premises outside of the Area of Work to carry out Work or to obstruct or take out of use any area of existing premises, or to cause any other interference, request meeting with Consultant and Owner in order to reach agreement as to time and length of time Contractor may interfere, possess, obstruct or remove from use any such area or services.

### 5.3 Access to Area of Work

- .1 Work shall be confined to Area of Work limits indicated on Drawings and/or within area defined by property lines.
- .2 Assume responsibility for care, custody and control of Area of Work and perform work to extent covered in Contract Documents. Make good damage to existing Area of Work and existing building due to Work of this Contract.
- .3 Maintain temporary entrances to areas of Work and provide enclosed hoardings as required. Maintain access to existing building service entrance(s) at all times.

- .4 Work on Municipal property shall be carried out under regulations of respective Municipality and authorities having jurisdiction including without any limitations any associated fees, permits, insurance or bonding required.
- .5 Access to the existing buildings, and access to the neighbouring properties, cannot be blocked or otherwise compromised. Provide a minimum of 14 days' notice to Owner and coordinate with Owner for any major disruptions that may impact access to hospital or surrounding community.
- .6 Comply with the time frames/schedule of the hospital loading dock supervisor for all materials delivery to site and ensure loading bays are clear of materials/equipment.
- 5.4 Commencement of Work
  - .1 Make all required submittals, receive all reviewed submittals, and marshal all required materials off-site prior to commencing Work on-site.
  - .2 The first on-site Work shall be the construction of the hoarding.
- 5.5 No Smoking Policy
  - .1 Cooperate, respect and comply with the Owner's no smoking policy requirements.
  - .2 Ensure that Contractor's employees, sub-contractors and suppliers, performing work on Site on Contractor's behalf, are instructed to comply with the Owner's no smoking policy requirements.
  - .3 Comply with local By-Law and regulations or any authorities having jurisdiction.
  - .4 The property is a leased commercial property and any disruptions to other tenants must be coordinated with the landlord.
- 6 **SPECIAL PROJECT PROCEDURES**
  - 6.1 Existing premises will maintain operation during business hours. Work may be performed during these hours. Carry out work in such a manner as to cause a minimum of noise and interference to the use of the existing building. Conform to the requirements of the building management. Be responsible for any overtime work required after business hours.
  - 6.2 Co-ordinate construction activities and use of premises with Owner and building management.
  - 6.3 Maintain operations of building services, data, telephone and alarm. Ensure no interruptions of these services during execution of the Work.
  - 6.4 Provide written notice to the Owner minimum 14 working days before any system shut downs. Major shutdown requires 25 working days' notice. Do not proceed without written approval from Owner.
  - 6.5 Provide adequate protection against dust, water and other damages to Owner's electronic and computer equipment, fittings and furniture. Use covers acceptable to the Owner. Remove protection after each work period.

**7 SCHEDULE OF VALUES (VALUE OF SUBMITTALS)**

- 7.1 Within seven Working Days of Contract award, submit a detailed Schedule of Values providing a breakdown of the cost of the Work in a form acceptable to Consultant.
- .1 Show the cost (value) of the Work broken down by specification section. Identify each line item with number and title of the primary associated specification section, per month, and coincident with approved construction schedule. Identify site mobilization, bonds, insurance, and commissioning. Cost breakdowns when totalled, shall be same as Contract Price.
- .1 Include in each line item, the amount of specified Allowances. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- 7.2 Contractor shall identify general progress and commissioning payment line items for each of the following:
- .1 1% of total Contract value for provision of as-built drawings, O&M manuals and warranties covering all sub-contracts.
- .2 1% of Mechanical value for Commissioning process including completion and submission of testing forms and reports.
- .3 1% of Electrical value for Commissioning process including completion and submission of testing forms and reports.
- .4 Contractor shall submit all completed tests, reports and verification forms. The Consultant will use these documents to calculate a percentage completion.
- .5 Contractor may claim up to 60% of the value for commissioning through monthly progress payment requests leading up to performance testing. The remaining 40% of the value for commissioning shall be paid-out after the performance testing and training have been completed.
- .2 Commissioning 20 08 15 for Mechanical and 26 08 15 for Electrical
- 7.3 Revise schedule to list approved Change Orders with each Application for Payment.
- 7.4 Purpose of the cost breakdown is to assist Consultant with evaluation of progress draws and to assist Owner with cash flow arrangements.
- 7.5 The Owner reserves the right to withhold the amounts allocated for Submittals indicated above pending their submission.

**8 CASH ALLOWANCES**

- 8.1 Cash allowances, unless otherwise specified, cover net cost to Contractor of services, products, construction machinery and equipment, freight, handling, unloading, storage, installation and other authorized expenses incurred in performing the Work.
- 8.2 The Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.
- 8.3 The Owner reserves the right to call competitive tenders for portions of the work to be paid for out of any or all cash allowances. The relationship of the Contractor and the trades performing portions of the work to be paid out of cash allowances shall be such as between the Contractor and his Subcontractors.



- 8.4 Make expenditures out of the cash allowance at the sole discretion of the Owner and only on receipt of a Change Order signed by the Owner and Consultant.
- 8.5 Unexpended amounts of cash allowances may be reallocated to other specific cash allowances at the sole discretion of the Owner.
- 8.6 Unexpended amounts of cash allowances shall be deducted from the Contract Price at completion of the Work.
- 8.7 Include in the Contract Price, cash allowances for the following:

Ref #	Description	Amount
1	Signage & Wayfinding: Supply & installation of signage and wayfinding will be coordinated through the cash allowance. MGH will prepare the scope of work including message schedule and the location plan. MGH will solicit the quotation from the approved signage vendor and provide to the Contractor to issue a purchase order. Shop drawing/artwork review will be the responsibility of MGH. Coordination of sign install will be the responsibility of the Contractor.	\$20,000
2	Rectification of existing non-code compliant piping services (e.g. isolation valves, elimination of wet venting, missing piping insulation)	\$25,000
3	Reinstatement of damaged or missing fireproofing protection beneath the metal deck ceiling structure	\$25,000
4	Reinstatement of missing firestopping and/or sealing of existing service penetrations at existing fire separations	\$20,000
5	3 <sup>rd</sup> Party Testing & Inspection	\$15,000
6	Unforeseen Site Conditions related to the removal of hazardous/designated substances including mould and all associated work related to abatement and replacement of removed materials and building components. This Cash Allowance also includes all costs related to testing and inspection. The contractor is responsible to engage and coordinate the testing and inspection company. Refer to the Designated Substances and Hazardous Materials Survey Report prepared by MLE Consulting Inc, dated August 31, 2025.	\$25,000
7	Voice and Data cabling above ceiling not related to the demolished devices identified in the Electrical drawings. These include: <ul style="list-style-type: none"> <li>Verify if service is active or abandoned</li> <li>Remove all abandoned cabling to the head, removal all PEX tubing</li> <li>Tie to the joists all active cabling</li> </ul> Reroute cabling transiting the renovation space through the new partitions	\$25,000
8	Unforeseen site conditions which include but are not limited to the following: <ul style="list-style-type: none"> <li>addressing unforeseen concealed building elements or services uncovered during demolition that are not identified in the Contract Documents. This includes any remediation or modifications required to maintain code compliance, constructability or overall project continuity.</li> </ul>	\$45,000
	<b>TOTAL</b>	<b>\$200,000</b>

9                    **CONSTRUCTION SCHEDULE**

- 9.1                Submit a critical path construction schedule indicating milestone dates of major activities of the Work. Provide sufficient details of critical events and their inter-relationship for successful performance within the contract time.
- 9.2                Submit schedule within 15 days after award of Contract.

10                  **EXAMINATION OF EXISTING CONDITIONS**

- 10.1              Submission of bid shall be deemed evidence that Contractor has examined the site and is familiar with conditions under which work will be done and obtained all information which may be necessary for proper execution of Contract.
- 10.2              Signing of Contract indicates acceptance by Contractor of conditions under which work will be done.
- 10.3              Extra payments will not be authorized for work that could have been determined by a careful examination of site and existing conditions.

11                  **EXAMINATION OF SURFACES DURING CONSTRUCTION**

- 11.1              Before executing work against surfaces prepared by other Sections, examine such surfaces. Do not accept defective surfaces, or do any work to or on them, until the defects are remedied.
- 11.2              Commencement of work shall indicate acceptance of surfaces and responsibility concerning the conditions of same.

12                  **EXISTING SERVICES**

- 12.1              Cut off, cap, divert or remove existing water, gas, electric and other services in areas being altered which are affected by the changes as required or as directed by the municipal authorities and the utility company concerned, and the Consultant. Protect and maintain active services to the existing building.
- 12.2              If required by the Consultant, prepare interference and/or installation drawings showing the work of the various Sections as well as the existing installation, and submit these drawings to the Consultant for review before the commencement of work.

13                  **LOCATION OF EQUIPMENT AND FIXTURES**

- 13.1              Location of plumbing, heating and electrical fixtures and outlets, ducts, conduits and pipes shown or specified but not dimensioned shall be considered approximate.
- 13.2              Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space, and in accordance with manufacturer's recommendations for safety, access and maintenance.
- 13.3              Consult with the Consultant to determine the actual location of items not dimensioned as may be required to suit the job conditions.

- 13.4 Obtain Consultant's acceptance for precise locations of fixtures, access panels, outlets, mechanical, electrical and security items. Relocation caused by failure to determine the actual locations shall be executed without charge to the Owner.
- 13.5 Consultant reserves the right to relocate fixtures, access panels, outlets, mechanical, electrical and security items at a later date, but prior to installation, without additional cost, provided that the relocation per outlet or fixture does not exceed 3050 mm (10 feet) from the original location
- 14 **INTERFERENCE DRAWINGS**
- 14.1 Prepare dimensioned interference drawings indicating relationship of new installations and existing and/or unforeseen conditions prior to commencement of work.
- 14.2 Before commencing installation, prepare interference drawings, based on the actual field measurements, showing relationship of new and existing ductwork, conduit, piping, sprinklers, partitions, ceiling supports and framing, partition framing, communication and specialized equipment located within ceiling and shaft spaces.
- 14.3 Indicate locations of visible items such as air handling outlets, light fixtures, smoke detectors, sprinkler heads, communication grilles, and access panels occurring at these locations.
- 14.4 Drawings shall be initialed by responsible person of each Sub-Contractor involved along with Contractor's signature and submitted to Consultant for review and record purposes
- 15 **DOCUMENTS ON SITE**
- 15.1 Maintain at job site, one copy each document as follows:
- .1 Permit Drawings and Building Permit Posters.
  - .2 Contract Drawings and 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 Site-Specific Health and Safety Plan and Other Safety Related Documents.
  - .11 Fire Watch Log.
- 15.2 Other documents as specified
- 16 **NOISE LIMITATIONS AND DUST CONTROL**
- 16.1 Keep construction noise to a minimum.

- 16.2 No pneumatic or other noisy equipment will be permitted on the project site.
- 16.3 All vehicles and equipment shall be equipped with efficient muffling devices to minimize noise levels in the project area. In particular, construction equipment such as compressors, gas and diesel driven engines shall be equipped with efficient mufflers.
- 16.4 Undertake dust control measures to prevent dust nuisances resulting from any phase of the construction operation. Contractor to use tack mats, dust containment materials, dedicated cleaners.
- 16.5 Carry out dust control practices at all locations on site.
- 16.6 Provide air scrubbers for equipment, including trucks, to prevent exhaust fumes from entering nearby buildings' air intakes. Provide documentation to the Consultant confirming installation of scrubbers prior to equipment arriving on site.

## 17 **OVERLOADING**

- 17.1 Take precautions to prevent the overloading of any part of the structure, false work, form work or scaffolding during the progress of the Work, and make good, at no expense to the Owner, all damage resulting from such overloading.
- 17.2 No load bearing members shall be cut, drilled or sleeved without the written consent of the Consultant.

## 18 **HOLES THROUGH FLOORS AND WALLS**

- 18.1 Where holes are made in floors for the passage of pipes, ducts and conduit or wires, the holes shall be sealed with cement grout after the pipes, ducts and conduit or wires have been placed.
- 18.2 Where holes are made in walls for the passage of pipes, ducts, conduit or wires, holes shall be filled with a suitable material, cement grout in masonry or concrete walls or plaster in plaster or drywall walls, regardless of whether or not the pipes have escutcheon plates. Grout or plaster around outside of sleeves where holes are sleeved.
- 18.3 In mechanical rooms above grade and in other rooms where faucets occur, the pipes, ducts, conduits or wires or all, which pass through floors, shall be enclosed in a 100 mm high metal sleeve and then grouted around pipes and ducts.
- 18.4 Above requirements shall apply to both exposed and concealed walls and floors.

## 19 **MAKING GOOD**

- 19.1 Make good materials and finishes which are damaged or disturbed during the process of additions and reconstruction under the Contract. in accordance with Z317.13.
- 19.2 Where existing work is to be made good, match new work exactly with the old work in material, form, construction and finish unless otherwise noted or specified.
- 19.3 Protect work in the existing building, such as floors, finishes, trim, etc., as completely as possible to hold the replacing of damaged work to a minimum.
- 19.4 Preparation for new finishes:
  - .1 Remove existing finishes, including painting.

- .2 Fill cracks and depressions with suitable filler and finish smooth, as recommended by the manufacturer of the new finishes.
- .3 Grind protrusions level with substrates and finish smooth.
- .4 Remove all evidences of existing adhesive, grease, oil, soil and other encrustations of foreign material by washing, scraping and grinding if necessary.
- .5 Clean and prepare substrates to receive new work.

## 20 **CUTTING AND PATCHING**

- 20.1 Perform cutting, fitting, and patching to complete the Work. Do not cut, drill or sleeve load-bearing members without obtaining written approval for each condition. Work to be done in accordance with Z317.13 guidelines.
- 20.2 Remove and replace defective and non-conforming work.
- 20.3 Perform work to avoid damage to other work.
- 20.4 Prepare proper surfaces to receive patching and finishing.
- 20.5 Cut rigid materials using power saw or core drill. Pneumatic or impact tools not allowed.
- 20.6 Restore work with new products to match existing in accordance with Contract Documents.
- 20.7 Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- 20.8 At penetration of fire-rated wall, ceiling, or floor construction, completely seal voids with fire-rated material, full thickness of construction element.
- 20.9 Refinish surfaces to match adjacent finishes; for continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

## 21 **SALVAGE AND DISPOSAL OF MATERIALS**

- 21.1 Cut, disconnect and detach items and materials designated to be removed.
- 21.2 All materials resulting from the demolition work except as otherwise specified or directed shall become the property of the Contractor.
- 21.3 Remove all material and debris from the site as quickly as possible and dispose of legally.
- 21.4 Burning of debris or selling of materials on the site will not be permitted.

## 22 **FIRE SAFETY DURING CONSTRUCTION**

- 22.1 Provide fire prevention and protection measures to existing building as required by all authorities having jurisdiction.
- 22.2 Maintain exits, including stairways and exterior doors to the outside. Provide acceptable alternative exits where an existing exit is blocked off or deleted due to construction activities.

- 22.3 Where access to an exit through construction area is absolutely necessary, clearly define, protect and separate access from the construction area by a smoke tight fire separation equivalent to minimum 3/4 hour fire resistance rating.

23 **SAFETY MEASURES**

- 23.1 Comply with the safety regulations of the Occupational Health and Safety Act and authorities having jurisdiction for the safety of the Work.

24 **PROJECT MEETINGS**

- 24.1 Schedule and administer project progress meetings throughout progress of work.
- .1 Project progress meetings shall occur bi-weekly and as required.
- 24.2 Distribute written notice of each meeting four days in advance of meeting date to Consultant and Owner.
- 24.3 Provide physical space and make arrangements for meetings.
- 24.4 Record minutes. Include significant proceedings and decisions. Identify 'action by' parties.
- 24.5 Reproduce and distribute copies of minutes within three days after each meeting and transmit to meeting participants, affected parties not in attendance, Consultant and Owner.

25 **SUBMITTALS**

- 25.1 Administrative
- .1 Submit to Consultant submittals listed for review. Submit with reasonable promptness and in an orderly sequence so as to not cause delay in the Work. Identify Drawing Number and Specification Section number to which the submittal applies.
- .2 Unless otherwise specifically permitted by the Consultant, make submittals in groups containing associated items; the Consultant may reject partial submittals as not complying with the provisions of the Contract Documents.
- .3 Make submittals far enough in advance of scheduled dates of installation to provide required time for reviews, for securing necessary reviews, for possible revision and re-submittal, and for placing orders and securing delivery so as to cause no delay in the Work or in the work of other contractors. Costs of delays occasioned by tardiness of submittals shall not be borne by the Owner.
- .4 Do not proceed with Work affected by submittal until review is complete.
- .5 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of the Work and Contract Documents.
- .6 Verify field measurements and affected adjacent Work is coordinated.

- 25.2 Submittals Processing Time: Allow time for submittal review, including time for re-submittals, as follows:
- .1 Time for review shall commence on Consultant's receipt of submittal. If a shop drawing is received after 12 noon, it will be considered as received the next working day for the purposes of the processing time.
  - .2 For scheduling purposes allow minimum 10 working days following submission and minimum 10 working days following resubmission. Consultant will advise Contractor if additional time is required for technical or co-ordination review.
  - .3 Concurrent Review: When concurrent review of submittals by Consultant's subconsultants, Owner, or other parties is required, allow a minimum of fifteen (15) working days for initial review of each submittal. Direct transmittal to Consultant's subconsultants will not be permitted.
  - .4 If at any time the Contractor submits unusually large number of shop drawings, the Consultant will, within 5 working days of receipt of such drawings, provide the Contractor with an estimate of time necessary for processing such shop drawings.
  - .5 Failure to provide submittals in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension will be allowed.
- 25.3 Shop Drawings and Product Data
- .1 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connection, explanatory notes and other information necessary for completion of Work.
  - .2 Adjustments made on shop drawings by Consultant are not intended to change Contract Price.
  - .3 Make changes in shop drawings as Consultant may require.
  - .4 Submit Shop drawings and Product Data in electronic format as a PDF or DWG file via the project website or other means of electronic file delivery. Scanned drawings will only be accepted if legible. Illegible drawings will be rejected.
  - .5 Product Data catalogue cuts showing all aspects, design, sizes, components and rough-in information for equipment may be submitted where shop drawings will not be prepared due to standardized manufacture of product. Supplement standard information to provide details applicable to project. Generic documents will be rejected.
- 25.4 Samples
- .1 Submit samples for review as requested in respective specification Sections.
  - .2 Deliver samples prepaid to Consultant's business address.
  - .3 Any substitutions of finishes/fixtures must be in compliant with MGH cleaning agents. Samples to be provided to MGH for approval.
- 25.5 Operating Maintenance Manuals
- .1 Two weeks prior to Substantial Performance of the Work, submit to Consultant, three copies of operating and maintenance manuals.

- .2 Manuals to contain operational information on equipment, cleaning and lubrication schedules, filters, overhaul and adjustment schedules and similar maintenance information.
- .3 Bind contents in a three-ring, hard covered, plastic jacketed binder. Organize contents into applicable categories of work, parallel to specifications Sections.

## 26 **AS BUILT AND RECORD DRAWINGS**

- 26.1 After award of Contract, obtain a set of CAD drawings from the Consultant. Make sets of white prints for purpose of maintaining record drawings. Accurately and neatly record deviations from Contract Documents caused by site conditions and changes ordered by Consultant.
- 26.2 Record locations of concealed components of mechanical and electrical services.
- 26.3 Identify drawings as "Project Record Copy". Maintain in new condition and make available for inspection on site by Consultant. On a weekly basis, scan marked-up drawings to Adobe PDF format and provide a copy to Owner and Consultant.
- 26.4 On completion of Work and prior to final inspection, submit record documents to Consultant.
- 26.5 Prior to testing, balancing and adjusting, obtain a current set of CAD files from the Consultant and transfer record drawing information to AutoCad 2016 (CAD) files, to record final as-built condition.
- 26.6 Drawings are to remain set to and follow Consultants AutoCad Standards. Do not alter drawing scales, X-refs, colours, layers or text styles.
- 26.7 The Consultant's CAD files may not reflect all or any construction changes.
- 26.8 Where items have been deleted, moved, renumbered or otherwise changed from contract drawings, revise the CAD files to record these changes. "Bubble" these revisions, and place these annotations on a separate and easily identified drawing layer.
- 26.9 As-built drawings to show the final as-built condition.
- 26.10 Identify each drawing in lower right hand corner in letters at least 12 mm (½") high and as follows:  
  
"AS-BUILT DRAWINGS. This drawing has been revised to show all systems and conditions as installed". [Signature of Contractor] and [Date]
- 26.11 Provide "AS BUILT DRAWINGS" white prints to Consultant for review. Transfer Consultant's comments to the CAD files. Return AutoCad drawings modified to "As Built" condition to Consultants on CD or DVD Rom.
- 26.12 Submit three (3) sets of final "AS BUILT DRAWINGS" white prints with Operating and Maintenance Manuals.
- 26.13 Submit full set of final "AS BUILT DRAWINGS" to Owner in digital format: AutoCAD and PDF files, on CD or DVD Rom, or USB Flash drive, in triplicate.



27 **QUALITY CONTROL**

27.1 Owner's Quality Control

- .1 The Owner may require during progress of the Work, testing and inspection by an independent testing agency as directed by the Consultant, or as required in these Specifications, to determine if materials provided for the Works meet the specified requirements. The cost of these services shall be paid by Cash Allowances.
  - .1 In this case, the Contractor shall pay independent inspection and testing agency charges authorized by the Consultant from the cash allowances included for these services.
- .2 Employment of inspection/testing agencies does not relax Contractor's responsibility to perform Work in accordance with Contract Documents.
- .3 Contractor shall provide equipment required by testing agencies for executing inspection and testing.
- .4 Re-Testing and Re-Inspection:
  - .1 If defects are revealed during inspection and testing, testing agency will request additional inspection and/or testing to ascertain full degree of defect. Re-testing and re-inspection shall be performed by the same testing agency as the initial tests.
    - .1 Contractor shall correct defects and irregularities at no cost to Owner;
    - .2 Contractor shall pay costs for re-testing and re-inspection.
- .5 Microbiological clearance testing shall accompany HVAC and potable water supplies prior to hand over.

27.2 Code Compliance and Contractor's Convenience Testing

- .1 Code Compliance Testing: Inspection and tests required by codes or ordinances, or by an authority having jurisdiction shall be the responsibility of the Contractor and shall be paid for by the Contractor as part of the Contract Price.
- .2 Contractor's Convenience Testing: Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor and paid for by Contractor as part of the Contractor's overhead expenses.
- .3 Engage a qualified testing agency to perform these quality-control services. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
- .4 Submit a certified written report, in triplicate, of each quality-control service.
- .5 Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- .6 Re-testing/Re-inspecting: Provide quality-control services, including re-testing and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents. Pay costs for re-testing and re-inspection..

28 **SITE SIGNS**

- 28.1 Do not exhibit on the site advertisements or signs other than those required by authorities having jurisdiction, unless otherwise approved by the Consultant, in writing.

29 **CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

29.1 Co-ordination

- .1 Co-ordinate with the building management use of temporary controls and facilities not provided under this Contract, including but not necessarily limited to material delivery, unloading and hoisting. Make prior arrangements and schedule use at times acceptable to the building management. Be responsible for payment for use of such facilities.

29.2 Installation/Removal

- .1 Provide construction facilities and temporary controls in order to execute work expeditiously. Remove from site all such work after use.

29.3 Hoisting and Delivery

- .1 Material unloading and hoisting will be restricted to after hours.  
.2 Arrange for delivery and unloading of materials at areas designated by the building management. Do not interfere with vehicular traffic on the streets and pedestrian traffic on the sidewalks.

29.4 Security Provisions

- .1 Maintain and conform to existing security provisions required by the building management. Do not compromise such provisions.

29.5 Hoarding and Barricades

- .1 Erect hoarding and barricades to protect public, workers, public and private property from injury or damage. Provide lockable doors within hoarding for access to site by workers.

29.6 Weather Enclosures

- .1 Provide weathertight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.  
.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work area for temporary heat.

29.7 Parking

- .1 Parking will not be provided.

29.8 Dust Tight Screens

- .1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.  
.2 Maintain and relocate protection until such Work is complete.

- 29.9 Site Storage/Loading
  - .1 Confine the Work and operations of employees to limits indicated by Contract Documents. Do not unreasonably encumber premises with Products.
  - .2 Do not load or permit to be loaded any part of the Work with a weight or force that will endanger the Work.
- 29.10 Sanitary Facilities
  - .1 Existing facilities as designated may be used during construction period.
  - .2 Maintain in clean condition.
- 29.11 Water and Power Supply
  - .1 The Owner will provide and pay for a continuous supply of water, power for construction use as available from the existing facilities. Provide hoses, extensions, connections, and transformers as required for execution of the Work. Provide extra supply if the existing facilities are insufficient or not suitable for construction use.
  - .2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.
- 29.12 Temporary Lighting
  - .1 Provide temporary lighting required during construction period, including attendance and maintenance.
  - .2 Maintain lighting at levels required by Sections doing the work.
- 29.13 Temporary Heating
  - .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
  - .2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders not permitted.
  - .3 Maintain temperatures at levels required by Sections doing the work.
  - .4 Ventilate heated areas and keep building free of exhaust or combustion gases.
- 29.14 Temporary Telephone
  - .1 Provide and pay for temporary telephones necessary for own use and use of Consultant and Owner.
- 29.15 Equipment/Tool/Materials Storage
  - .1 Provide and maintain, in clean and orderly condition, lockable areas for storage of tools, equipment and materials.
  - .2 Locate materials on site in manner to cause least interference with work activities.
- 29.16 Project Cleanliness
  - .1 Maintain the Work in tidy condition, free from accumulation of waste products and debris.

- .2 Remove waste material and debris from site at end of each working day. Do not burn waste materials on site.
- .3 Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.
- .4 Project site and adjacent active areas of the building to be protected from dust and debris from the renovation activity. All infrastructure must be protected in accordance with CSA Z8000; CSA Z317; CSA 317.2; and MOL.

### 30 **MATERIAL AND EQUIPMENT**

#### 30.1 Product and Material Quality

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of Products provided.
- .2 Whenever Products are specified exclusively by trade name, manufacturer's name or by catalogue reference, use only those items, unless written approval for substitution is obtained from Consultant.
- .3 Defective Products, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective Products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should any dispute arise as to quality or fitness of Products, decision rests strictly with Consultant based upon requirements of Contract Documents.

#### 30.2 Storage, Handling and Protection

- .1 Handle and store Products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled Products in original and undamaged condition with manufacturer's seals and labels intact.

#### 30.3 Manufacturer's Instructions

- .1 Unless otherwise indicated in specifications, install or erect Products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.
- .2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant may establish course of action.
- .3 Improper installation or erection of Products, due to failure in complying with these requirements, authorizes Consultant to require removal and reinstallation at no increase to Contract Price.

#### 30.4 Workmanship

- .1 Workmanship shall be best quality, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.
- .2 Do not employ any unfit person or anyone unskilled in their required duties.

- .3 Decisions as to quality or fitness of workmanship in cases of dispute rest solely with Consultant, whose decision is final.
- 30.5 Concealment
  - .1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
  - .2 Before installation, inform Consultant if there is a contradictory situation. Install as directed by Consultant.
- 31 **GENERAL COMMISSIONING REQUIREMENTS**
  - 31.1 The Owner will retain and pay for an Independent Commissioning Agent (CA) who will provide Commissioning Services including witness Testing and Commissioning Services as required.
  - 31.2 The Owner's designated Commissioning Agent will provide the commissioning procedures and checklists for use by the Contractor and his Subcontractors.
  - 31.3 Contractor's Roles and Responsibilities
    - .1 Prepare the commissioning schedule in conjunction with construction schedule.
    - .2 Lead the coordination and scheduling of commissioning work.
    - .3 Schedule and attend commissioning coordination meetings.
    - .4 Ensure cooperation and participation of all sub-contractors, major equipment manufacturers, and suppliers.
    - .5 Ensure deficiencies are corrected.
    - .6 Upon completion of all phases of the commissioning program, provide a final commissioning report.
    - .7 Provide testing of integrated life safety and fire protection systems and related equipment in accordance with CAN/ULC S1001 Integrated Systems Testing of Fire Protection and Life Safety Systems and Fire Protection Commissioning.
  - 31.4 For additional requirements, refer to individual technical specifications for each affected Division of the Work, specifically to sections 20 08 11, 20 08 15, and section 26 08 15
  - 31.5 All mechanical systems must be commissioned in accordance with CSA Z8001 and where indicated, supported with NEGATIVE microbiological test results.
- 32 **CONTRACT CLOSEOUT**
  - 32.1 Final Cleaning
    - .1 When the Work is Substantially Performed, remove surplus products, tools construction machinery and equipment not required for performance of remaining Work.
    - .2 Leave work broom clean before inspection process commences.
    - .3 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

- .4 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls ceilings.
- .5 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .6 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .7 Broom clean and wash exterior walks, steps and surfaces.
- .8 Remove dirt and other disfigurations from exterior surfaces.
- .9 Location shall receive a construction clean prior to hand over to MGH Prior to occupancy for use, the renovated space shall include 2 terminal cleans spaced 24hrs apart from the end of the first to the start of the second clean.
- 32.2 Systems Demonstration
  - .1 Prior to final inspection, demonstrate operation of each system to Owner.
  - .2 Instruct personnel in operation, adjustment, and maintenance of equipment and systems, using provided operation and maintenance data as basis for instruction.
- 32.3 Documents
  - .1 Collect reviewed submittals and assemble documents executed by Subcontractors, suppliers, and manufacturers.
  - .2 Submit material prior to final application for payment.
  - .3 Submit three copies of Project Record Manual consisting of operation and maintenance data and one set of record (as-built) drawings white prints.
  - .4 Provide warranties fully executed and notarized.
  - .5 Execute transition of Performance Bond to warranty period requirements.
- 32.4 Inspection/Takeover Procedures
  - .1 Prior to application for certificate of Substantial Performance, carefully inspect the Work and ensure it is complete, that major and minor construction deficiencies are complete, defects are corrected and building is clean and in condition for occupancy. Notify Consultant in writing, of satisfactory completion of the Work and request an inspection.
  - .2 During Consultant inspection, a list of deficiencies and defects will be tabulated. Correct same.
  - .3 When Consultant considers deficiencies and defects have been corrected and it appears requirements of Contract have been performed, make application for certificate of Substantial Performance.
  - .4 Conform to OAA/OGCA Document No.100 for takeover procedures.
  - .5 Submit a final statement of accounting giving total adjusted Contract Price, previous payments, and monies remaining due.
  - .6 Consultant will issue a final change order reflecting approved adjustments to Contract Price not previously made.

End of Section

# **TORONTO EAST HEALTH NETWORK CONTRACTOR PROCEDURE MANUAL (General Conditions)**

**Updated October 2022**

### **OUR VISION**

Create Health. Build Community.

### **OUR MISSION**

Our community inspires us to deliver exemplary care, develop innovative partnerships and mentor the next generation of healthcare providers. Together we will make a difference and change the face of health in East Toronto and beyond.

### **OUR VALUES**

Compassion. Integrity. Courage. Accountability.

Contract or service work will not interfere with this mission or values. All work at the Hospital will be organized and scheduled to have the least possible impact on our patients, their families and Toronto East Health Network (TEHN) staff.

We therefore request that all service persons working in the Hospital be cognizant of this and plan their work and activities accordingly. The Service Personnel is accountable to work in a responsible and safe manner to the extent over which the Service Personnel has control or can reasonably be expected to have control at the site.

**This manual is the property of:**

**Name:** \_\_\_\_\_

**Contracting Firm:** \_\_\_\_\_

**Telephone Number:** \_\_\_\_\_



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## DEFINITIONS

Unless the context otherwise requires, the following terms have the meanings indicated below:

- (a) **“All Clear”** means an emergency alert has been cancelled or ended;
  - (b) **“Business Day” or “Business Days”** means Monday to Friday between the hours of 9:00 a.m. to 5:00 p.m., except when such a day is a public holiday, as defined in the Employment Standards Act (Ontario) or as otherwise agreed to by the parties in writing;
  - (c) **“Contractor”** means a company that undertakes a contract to provide materials or labor to perform a service or do a job;
  - (d) **“Days”** means calendar days;
  - (e) **“Premises”** for the purpose of this manual is any building and property owned by TEHN;
  - (f) **“Project Lead”** means TEHN staff responsible for the coordination of a project;
  - (g) **“Service Personnel”** means the Contractor’s employees, agents, representatives, and subcontractors;
  - (h) **“TEHN”** means Toronto East Health Network
  - (i) **“MGH”** means Michael Garron Hospital of the Toronto East Health Network, building address 825 Coxwell Avenue, East York, Ontario M4C 3E7
  - (j) **“WMC”** means Michael Garron Hospital of the Toronto East Health Network, building address 985/989 Danforth Avenue, East York, Ontario M4J 1M1
  - (k) **“840 MOB”** means Medical Office Building of the Toronto East Health Network, building address 840 Coxwell Avenue, East York, Ontario M4C 5T2
-

## **TEHN FACILITIES PROJECT LEAD CONTACT INFORMATION**

Normal Business Hours are Monday –  
 Friday, 8:00 am – 4:00 pm  
 TEHN Phone: 416-469-6580

### **Facilities – Maintenance and Redevelopment**

Facilities Lead Redevelopment	Clint Hodges	Ext # 2016	Cell - 647-290-4452
Supervisor, Redevelopment Support Services	Faye Baisley	Ext # 3199	Cell - 416-312-0570
Manager, Plant Operations	Desmond Carr	Ext # 2478	Cell -437-775-8261
Supervisor, Plant Operations	Austin Rooney	Ext # 3292	Cell - 647-648-4844
Manager, Facilities - Maintenance	Tony Martino	Ext # 6497	Cell - 416-717-3766
Supervisor Facilities - Maintenance,	Joe Colonna	Ext # 3350	Cell - 416-312-2304
Manager, Eng Services – Technologies	Jeremy Brown	Ext # 3605	Cell - 647-212-1173

### **All other Department/Site Contacts**

Contact Locating at 416-469-6580, Ext # 6333

Information for specific projects:

Please record the information here for future reference:

Contact Name: \_\_\_\_\_

Contact Ext #: \_\_\_\_\_

Contact Name: \_\_\_\_\_

Contact Ext #: \_\_\_\_\_

## ACCESS TO WORK SITE

- All Service Personnel not employed by TEHN must make prior arrangements to enter the site by contacting the appropriate Project Lead (see page 2) during normal business hours, and report when **arriving and leaving** the premises using the Service Personnel Log Book located:
  - a) Engineering Services – Power Plant; or
  - b) Maintenance Shop Central Dispatch Office

Shift Plant Operators can be reached at: 416-469-6580 ext 6498.

Maintenance Dispatch can be reached at: 416-469-6580 ext 2061.

## IDENTIFICATION

- All Service Personnel working in patient care areas must obtain a TEHN issued Identification (ID) Card. ID Cards are not transferable and can only be used by the person to whom it is issued.
- Arrangements to obtain an ID badge are to be made through the appropriate Project Lead. ID Cards are issued by Protection Services, located on the first floor of J-Wing, J1201.
- TEHN ID Cards **must** be worn with the photograph prominently displayed at all times while on the premises.
- While on the premises Service Personnel **must** wear their company issued uniform and identification at all times.

## PARKING

- Reserved parking is no longer available for Service Personnel. Service Personnel, may park their vehicles in the Public Parking lot located on Sammon Avenue. Please contact the respective Project Lead for more information on parking.
- Service Personnel shall respect all Emergency, Restricted, Wheelchair Parking Areas and other posted no parking areas. Vehicles parked in unauthorized areas will be towed at the owner's expense.
- Parking is not permitted in the MGH Receiving Dock. Access to the dock for the purpose of delivery of materials or tools must be arranged with the Project Lead. After delivery vehicles are to be removed and parked elsewhere

## KEYS

- Keyed access may be required for certain areas at MGH or the 840 MOB. Service Personnel who require entry to these locations, to engage in work as directed by TEHN, must report to the Security Office to sign out the required key(s). In order to sign out key(s), the Service Personnel must leave a driver's license or government authorized photo ID with the Security Office as collateral. Failure to provide the required ID will preclude the Service Personnel from obtaining keys. Keys are not available for sign out at the WMC and access will be provided by on site personnel.
- All roof access doors, mechanical and electrical room doors must remain closed and locked at all times. Do not prop doors open.
- Once work is finished for the day, Service Personnel shall report to the Security Office and return the issued key in exchange for their ID.
- Entrance to restricted areas or after-hours access can be made by contacting the Project Lead contact

## DELIVERY OF EQUIPMENT AND MATERIAL/STORAGE & STAGING AREAS

- Arrangements must be made with the Project Lead before any tools, equipment or materials are brought on TEHN premises to determine acceptable storage and internal delivery routes to work area(s). All materials and equipment deliveries will be coordinated with the Project Lead and must comply with Infection Control Requirements during construction when transporting materials, tools, and equipment to, or from, the work area.
- Use of the elevators shall be arranged through the Project Lead in conjunction with Facilities. Failure to arrange usage may result in work stoppages.
- Where permission is granted to the Contractor to use an elevator, the Contractor shall be responsible for providing protection to the cab and shall be responsible for repairing any damage caused during the use of the elevator at their cost. Service Personnel shall clear and surrender use of the elevator immediately during a Hospital emergency code.

## WORKING AT TEHN

- Traffic through existing occupied areas shall be kept to an absolute minimum throughout the duration of the work. Travel between entrances, public areas and the work area will be via the most direct route and be coordinated with the Project Lead contact in advance.
- Noise, dust, odours, etc. shall be kept to a minimum (if not eliminated) to ensure patients, visitors, tenants and staff in areas adjacent to the construction area are disturbed as little as possible. Corrective action to cease or limit disagreeable annoyances shall be implemented immediately upon notification of the Project Lead. This may require that work be stopped and rescheduled at a mutually agreed upon time.
- If the contract work impacts access to washrooms, elevators, doors, etc. the work must be coordinated with the Project Lead.
- Service interruptions, for any work impacting existing services, must be coordinated in advance through the Project Lead using the Disruption Request Form (see page 16). The Disruption Request Form must be submitted at least 15 business days prior to the work commencement date.
- Asbestos containing material can be found throughout MGH. The MGH asbestos log book, located in the Engineering Office and Central Maintenance Department, is available for Contractors to review.

## WORKSITE

- It is the responsibility of the Contractor to remove all garbage debris, packaging, surplus material and scrap from the worksite on a daily basis, or more often if required. TEHN containers and garbage bins may not be used unless written permission is obtained from the TEHN Project Lead. Service Personnel must ensure their work area is clear of debris and clean at all times.
- Use of Hospital's carts, ladders, tools and equipment is **not permitted**.
- All tools, equipment and materials must be properly labeled; secured and protected (this is strictly enforced in occupied areas). The Contractor must ensure that the equipment, material, and protective devices are in good working condition and are used according to Ministry of Labour guidelines and regulations. The loss of any such material will be the responsibility of the Contractor; TEHN assumes no responsibility for lost or stolen equipment or materials.
- All Contractors and Service Personnel must wear personal protective equipment suitable for the work being performed, or deemed appropriate by the Project Lead, ex. foot protection, head protection, eye protection, respiratory protection, hearing protection, arc flash gear, hi-vis gear, etc.
- Damage to TEHN equipment or property by the Contractor or Service Personnel must be reported

immediately to the Project Lead. The Contractor will be charged for the replacement or repair of damaged equipment and/or property.

- Fire routes or thoroughfares must not be obstructed. Fire doors must not be wedged open or latches disengaged. Any penetration through a fire separation must be firestopped in compliance with Ontario Building Code and using FM Global approved fire stopping materials.
- Cellular phone use is restricted in designated areas, as mobile devices can interfere with life support and medical monitoring equipment. Refer to posted signs, located throughout the Hospital, to determine if cellular phone use is restricted in the area.
- **The Project lead must be notified before any cutting, welding, core drilling, open flame work or dust work is done. Hot work permits can be obtained from Protection Services by calling extension 6016. Any Service Personnel who conduct hot work are to ensure they are familiar with the Hot Work Permit – Protection Services policy which can be obtained through the Project Lead.**
- Under no condition will it be permissible to connect a machine requiring electrical power to the existing building electrical panels. The Contractor shall provide their own generators unless approved in advance by the Project Lead. The use of any generators must be approved and arranged with Project Lead.
- The Contractor is responsible for securing and safe guarding the premises and adjoining premises from damage during the construction period and during any period when the work is closed down for any cause.
- Removal of existing material and equipment should be confirmed by the Project Lead. Where services are connected to such items, services shall be disconnected and capped/isolated. Where the services are being disconnected permanently wiring or piping no longer in service shall be removed, except where approved by the Project Lead to remain.
- No signs, advertisements, or notices of any kind, except required safety signage, shall be placed on or about the premises unless specifically approved and directed in writing by the Project Lead. Safety Signage includes PPE notification signage, building permits, contractor contact information, and any other signage required to be posted during construction by the Ministry of Labour, or required to be posted under the Occupational Health and Safety Act.

## EMERGENCY PROCEDURES AND FIRE PROTECTION at MGH

### ***Emergency Codes For Hospitals – to initiate call Security at 416-469-6016***

**Code Red**

**Fire**

**Code White**

**Violent Person/Physical Danger**

**Code Green**

**Evacuation**

**Code Orange**

**External Disaster**

**Code Brown**

**Hazardous/Chemical Spill**

**Code Blue**

**Cardiac Arrest Adult**

**Code Pink**

**Medical Emergency Infant/Child**

**Code Yellow**

**Missing Patient**

**Code Black**

**Bomb Threat/Suspicious Object**

**Code Purple**

**Hostage Taking**

**Code Silver**

**Active Attacker**

**Code Grey**

**Infrastructure Loss or Failure**

**Code Amber**

**Missing/Abducted Child**

- Provide and maintain at all times, ready access to firefighting equipment.
- While work is proceeding on the premises, existing fire hoses and fire extinguishers shall be used as required. Should a TEHN fire extinguisher be used Protection Services must be notified immediately at extension 6016. The discharged extinguisher should be returned to Protection Services.
- In case of a fire or an emergency in the construction area the following procedure should be followed to activate a **Code Red**:

**IN CASE OF FIRE**  
**Remain Calm and DO NOT shout FIRE**

1. Remove all personnel from the area.
2. Pull Fire Alarm – Call 911 Fire Department
3. Close Doors and Windows in Area
4. Fight Fire if Possible or evacuate as necessary  
(Do not use water on electrical fires or flaming liquids)

- When the alarm is activated:
  - a) The Fire Alarm will sound for 30 seconds
  - b) All magnetic door holders will be released and the fire separation doors will be closed
  - c) An announcement will be made identifying the location of the fire
  - d) Do not pass through fire doors.
- Upon hearing the fire alarm Service Personnel shall stop work, listen for the location of the fire and await further instructions. All Service Personnel are required to remain in the area that they are in until given further instructions or the fire alarm is deemed “all clear”.
- If the fire or emergency becomes more critical, an evacuation may be activated. TEHN will identify the locations being evacuated and provide instructions using the Fire Alarm Voice Annunciation System. A General Evacuation will result in the alarm sounding continuously. Evacuation bells sound more quickly than the Stage 1 alarm bells.
- If the area where the Service Personnel is working is to be evacuated, Service Personnel should turn off all equipment, if time permits, and leave the premises immediately via the closest exit, closing all doors behind them.
- The contractor is responsible for designating a supervisor or lead hand to ensure all personnel evacuating the work area are accounted for. If personnel are missing notify Protection Services immediately.
- If the fire or emergency has been deemed “all clear”, an announcement will be made stating “Code Red All Clear”. Service Personnel may resume their work at this time.

## **EMERGENCY PROCEDURES AND FIRE PROTECTION at 840 MOB and WMC**

- Provide and maintain at all times, ready access to firefighting equipment.
- While work is proceeding on the premises, existing fire hoses and fire extinguishers shall be used as required. Should a TEHN fire extinguisher be used Protection Services must be notified immediately at extension 6016 or by direct dial at 416-469-6016. The discharged extinguisher should be returned to Protection Services through on site personnel.
- In case of a fire or an emergency in the construction area the following procedure should be followed to activate a **Code Red**:

## **IN CASE OF FIRE**

### **Remain Calm and DO NOT shout FIRE**

- 1. Remove all personnel from the area.**
- 2. Pull Fire Alarm – Call 911 Fire Department**
- 3. Close Doors and Windows in Area**
- 4. Fight Fire if Possible or evacuate as necessary**  
**(Do not use water on electrical fires or flaming liquids)**

- When the alarm is activated:
  - a) The Fire Alarm will sound continuously.
  - b) All magnetic door holders will be released and the fire separation doors will be closed
  - c) Do not pass through fire doors
- Upon hearing the fire alarm Service Personnel shall stop work, and evacuate the building they are in until given further instructions or the fire alarm is deemed “all clear”.

## **TEMPORARY FIRE SAFETY**

- The Contractor shall make certain existing fire alarm systems and life safety systems (i.e. smoke detectors, enunciators, bells, exit light, etc.) are in proper operating condition at all times except when work is being done on these systems (i.e. at evenings, weekends, etc.) and these systems shall be left in proper operating conditions by temporary or permanent means.
- If, during the progress of the work, it is necessary to take all or part of the existing fire alarm system out of service, prior to final installation of the new fire alarm system, the Contractor shall provide adequate fire watch and also advise the Project Lead of the condition a minimum of 48 hours in advance. All such shutdowns and fire watches shall be kept to a minimum. The fire watch shall consist of a person available to patrol the affected areas and initiate a proper fire alert should the need arise.

## **SAFETY PROGRAM**

- The Contractor will supply the Project Lead with a copy of their construction safety program as well as ensure all Service Personnel supply proof of safety training for their specific job.
- All work performed at TEHN must be in compliance with TEHN policies and procedures as well as in accordance with the requirements of the Occupational Health & Safety Act of Ontario, and its regulations, including WHMIS.
- MSDS sheets must be on site and readily accessible to the Project Lead at their request. The Contractor will advise the Project Lead immediately of any Health & Safety concerns.
- Any incident resulting in harm, violence, or damage to TEHN property or systems must be reported to the Project Lead for the purpose of Incident Reporting.

## **PROPERTY DAMAGE**

- Each Contractor shall be responsible for damage done by their Service Personnel, equipment and materials, to the work, materials, and property of TEHN, other Contractors, tenants, visitors, patients and staff., The Contractor shall, at their own expense, repair or replace all work, materials, and property damaged, in a timely manner, to its original condition and the owner's satisfaction.

Available blueprints indicate the approximate locations of services as far as these are known. The Contractor shall take all measures to verify actual location of existing services prior to start of work.



Nevertheless, should any mechanical or electrical service line be broken or disrupted by operations specified under this contract, the Contractor shall repair service lines and make good all damage to the approval and satisfaction of the Project Lead and/or Consultants. **Immediately notify the Project Lead when a service line is severed or damaged; breaking or disrupting certain services may result in “life or death” situations.**

## CONTINUITY OF EXISTING SERVICES

- TEHN sites operate 24 hours a day, seven days a week, 365 days a year. Disruption to operations must be kept to a minimum.
- Contractors are responsible for scheduling and coordinating work so that services are not unduly interrupted at any time. Interruption of services must be reviewed and scheduled with the Project Lead so that disruption to patients and services are kept to a minimum. Generally, service interruptions are to be scheduled to occur after hours.
- Contractors shall obtain approval to interrupt services by completing the Disruption Request Form a minimum of 15 business days in advance of the scheduled date of work.
- The contractor is responsible for, and should include, the cost of all investigations, including ferro scanning.
- The contractor is responsible for, and should include, the cost of cryogenic freezing of domestic water where required.

## TEHN POLICIES

- A copy of TEHN policies can be provided by contacting the TEHN project lead.

### 1) *Harassment Policy*

- Contractors are responsible for the behavior of their Service Personnel while on TEHN premises. Service Personnel working at TEHN must demonstrate courtesy and respect in interaction with all TEHN employees, volunteers, physicians, patients and visitors and will not engage in any form of abusive or discriminatory behavior. Any violation of the TEHN Code of Conduct or Workplace Violence Prevention by Service Personnel and Suppliers is unacceptable and **will not be tolerated**.

### 2) *Asbestos Management Program*

- Copies of the TEHN Asbestos Management Program and asbestos logs are located in the Engineering Office, and Maintenance Department.

### 3) *Camera Policy*

- The use of cameras and or video equipment is prohibited throughout TEHN due to Patient Confidentiality unless permissions are procured through the Project Lead in conjunction with the TEHN Communications department. This may require accompaniment.

### 4) *Confidentiality*

- Contractors with access to patient information must ensure patient confidentiality is maintained on and off duty. They must not divulge, obtain, or use, confidential health information except to perform their legitimate duties pursuant to the expectations outlined in the Privacy and Confidentiality of Patients Health Information. Please contact the Project Lead to review and sign the Confidentiality Agreement.

## 5) *Electrical – Lockout / Tagout*

- The Contractor will not perform any work on energized electrical panels, distribution boards, busways, or other electrical devices which may expose personnel to accidental contact with energized parts.
- Strict written operating procedures must be prepared and adhered to when working on high voltage circuits and equipment.
- Equipment covers or panels shall not be removed or opened on any high voltage compartment in which there are exposed, energized, high voltage connections unless specifically approved by TEHN Service Personnel foreman or Facilities Manager/Supervisor.
- A Lockout Specification Sheet will be obtained and all aspects of the Lockout Tag Out Sequence (Sections 1 to 6) of this policy will be followed to facilitate application of the Lockout Tag Out process. A copy of the Lockout Tag Out policy and specification sheet will be provided by the TEHN project contact.

## INFECTION CONTROL PROCEDURES DURING CONSTRUCTION

### 1) *Pre-Construction*

- 1.1. The *Construction, Invasive Maintenance Work and Renovation – Infection Control* policy and the *Infection Control Construction/Renovation Permit* outline the notification requirements to the Infection Prevention and Control Department and the minimum precautionary measures to be taken.
- 1.2. These precautionary measures are determined by a risk matrix, taking into consideration the patient risk group and construction activity type. Failure to comply with this policy and procedure will result in a violation notice being issued by an Infection Control Practitioner and possible work stoppage.
- 1.3. Ensure all Service Personnel associated with each project has received and read a copy of TEHN Service Personnel's Procedure Manual.
- 1.4. Ensure that all Service Personnel are familiar with and follow the required Infection Control Procedures
- 1.5. Identify possible service disruptions e.g. water, electrical, HVAC, Oxygen, etc.
- 1.6. Review the potential for the contamination of occupied areas from air intakes or ductwork with Engineering; prior to start of work. Review the location of all air intakes so as to prevent cross contamination from the work site.
- 1.7. Establish with the Project Lead and Infection Control a safe traffic pattern for workers, tools, supplies and debris removal.
- 1.8. Identify and discuss barrier placement with the Project Lead and Infection Prevention & Control. For long term / large scale projects, drawings indicating hoarding lines are to be provided.
- 1.9. All tools, carts, supplies and workers clothing must be clean when entering occupied areas.
- 1.10. Carts used to transport equipment/supplies through an occupied area need to be clean and may need to be covered.
- 1.11. Before the construction project is started requirements for cleaning the adjacent areas shall be determined.

- 1.12. Notify the Project Lead if all TEHN equipment and supplies have not been removed, sealed with poly, or taped in a closet or cupboard prior to barrier installation.

## **2) Barrier Installation: Short Term / Low Risk Population as determined by Infection Control**

- 2.1. Prior to the start of work, including ceiling tile removal, exploratory opening of walls, ceilings or access hatches and any other dust generating activity, erect barriers, which shall comply with the following.
- 2.2. Barriers to extend from floor to false (finished) ceiling to completely enclose and isolate the work site from adjacent occupied spaces. If ceiling tiles are to be opened then barrier must go to true ceiling unless a Kontrol Kube (Portable Vinyl Enclosure with Hepa-Filter equipped Vacuum) is used to contain the ceiling opening.
- 2.3. For small minimal dust generation projects, up to ten square feet (10 sq. ft.) in area that can be completed within a single 8 to 12 hour work shift, barriers can be erected out of a single layer heavy gauge poly sheet with minimum four inch (4") overlaps between sheets and at floor and ceiling.
- 2.4. Seal junctions of poly sheeting and existing surfaces with tape so as to be airtight.
- 2.5. Entry to work site to be through a double layer of poly sheeting, over lapped by at least three feet (3').

## **3) Barrier Installation Long Term / Higher Risk Population as determined by Infection Control**

- 3.1. Barriers for larger projects or those projects that will extend beyond a single shift are required to be constructed out of solid impermeable panels screwed to steel studding spaced at 2'-0" on centre maximum. Barriers extending above false ceiling may be heavy gauge (6 mil) poly.
- 3.2. In certain circumstances, a heavy gauge Poly barrier may be required to protect the occupied area from dust and debris created during hard barrier installation.
- 3.3. Vacuum HEPA filtered equipped and /or wet wipe adjacent protected (or occupied) area immediately following barrier installation.
- 3.4. Long term hard surface barriers (e.g. > 1 month) shall be painted to allow for regular cleaning.
- 3.5. Barriers shall extend from floor to finished ceiling and shall be continuously sealed with tape along the bottom, top, sides and at junction of panels.
- 3.6. Extend the dust barrier above the finished ceiling or provide airtight isolation to separate the work site from the ceiling space in occupied areas.
- 3.7. Identify and discuss barrier placement with the TEHN project lead contact and Infection Prevention & Control. For long term / large scale projects, drawings indicating hoarding lines are to be provided.
- 3.8. All tools, carts, supplies and workers clothing must be clean when entering occupied areas. Access to the work site shall be through an airtight anteroom (vestibule), complete with walls and ceiling to completely isolate the anteroom from occupied areas.
- 3.9. A door equipped with door closer, weather stripping, door sweep, and keyed locking device shall be provided from occupied areas to the anteroom. Provide similar door from anteroom to work site. Seal doorframe to barrier walls with tape or caulking.
- 3.10. Arrange anteroom and doors so that one door can be closed prior to opening the second door and is large enough to hold equipment and debris carts so that one door is closed before the other is opened.

- 3.11. Lock access to work site when workers are not on site. Provide a key to security office through the TEHN project lead contact.
- 3.12. Install “high tack” contamination mats within the anteroom and outside the anteroom door, to remove dust and dirt from shoes and wheeled traffic. Replace as required (i.e. no longer sticky).
- 3.13. Keep anteroom clean and clear of tools, materials, debris and rubbish. Wet mop the area immediately in front of anteroom thoroughly on a daily basis, if it becomes dusty or dirty and as requested by TEHN staff. Vacuum the walls and ceiling of the anteroom, daily with a HEPA equipped vacuum cleaner.

#### **4) Worksite**

- 4.1. Post signage to maintain site (e.g. “Construction Zone”, “Entrance restricted to Construction Personnel only” or “Do Not Shut Off Exhaust Fan” or “Construction in Progress”).
- 4.2. Provide an airtight seal to all ductwork from the work site and adjust airflow to ensure that the work site is under negative air pressure to the adjacent areas of the Health Care Facility at all times.
- 4.3. Securely seal any gaps holes or leakage paths around any pipes (Including plumbing penetrations and electrical outlets) between construction site and adjacent areas of the hospital.
- 4.4. Removal of debris, tools, equipment and materials from the work site shall be via an agreed to route and at an agreed to time, generally after hours.
- 4.5. Transport debris in clean containers with tightly fitting lids or completely cover debris with a wet blanket or wrapped in heavy gauge poly. Wipe and/or vacuum clean containers prior to leaving the site to reduce risk of dust transfer to occupied areas.
- 4.6. Cover all rubbish chutes and bins and thoroughly wet rubbish and/or debris prior to placing in chutes. Locate rubbish chutes to prevent dust migrating into air intakes.
- 4.7. Areas of external excavation and the connecting road way must be kept moist at all times to keep dust to a minimum.
- 4.8. Carefully remove ceiling tiles so as to keep them in a horizontal position until vacuum cleaned with a HEPA-filter equipped vacuum cleaner.
- 4.9. Clean all ductwork, conduits, cable trays etc. and ceiling space with a HEPA equipped vacuum cleaner, prior to or immediately after removal of existing ceiling tiles and prior to start of work. Replace ceiling tiles should work be interrupted or stopped for any reason.
- 4.10. Seal and make air tight all exterior windows and doors in the vicinity of site work demolition and rubbish bins and chutes.
- 4.11. Maintain negative pressure within the construction area by using Portable HEPA filter-equipped air filtration units that include pressure gauges and an alarm (High Risk Areas), or HEPA-Filter equipped vacuum (Lower risk areas as determined by IPAC). Filters shall be monitored and replaced if clogged or functioning below the manufacturer’s specifications. Reminder: Anteroom should be negative to the occupied area, and positive to the worksite. Worksite must be negative to Anteroom and adjacent occupied areas.
- 4.12. Ensure that the air is either exhausted directly outside and away from intake vents or filter through a HEPA filter before going through regular exhaust and possibly being recirculated. Air movement from all adjacent occupied areas of the health care facility into the construction area shall be monitored to ensure that it exceeds 10m/min and that the negative pressure differential with respect to all adjacent building areas is no less than 7.5 Pa (0.03wc). High-efficiency exhaust fans with High-Efficiency Particulate Air (HEPA) filters shall be used for the duration of the work.

- 4.13. Maintain barriers throughout the work. Repair or replace as required or instructed. Replace torn or dirty poly sheeting and reapply tape as required to maintain airtight barrier.
- 4.14. Clean immediately outside the work area with a HEPA filter-equipped vacuum cleaner every day or more frequently if necessary.
- 4.15. Workers must use the route identified to enter and exit the work site. Workers should not enter the occupied hospital unless the hospital and Infection Control have identified an approved route. Prior to entering an occupied area, dust must be removed from the body, clothing and shoes using a HEPA equipped vacuum cleaner; as well, when workmen leave the work site and enter occupied areas; or workmen must wear coveralls which are to be removed prior to leaving the work site.
- 4.16. An entrance and if possible an elevator shall be designated by the Hospital for use by the Service Personnel to transport material and workmen to and from the work site. **DO NOT TRANSPORT** construction personnel, materials or debris in an elevator that is used to transport patients, visitors and staff.
- 4.17. Ensure that the dedicated elevator is vacuumed (HEPA) and damp mopped daily (or more often if necessary) to remove dust.
- 4.18. If an elevator is not available for use by the Service Personnel, workmen must use a designated stairwell.
- 4.19. Service Personnel shall ensure assigned elevator and/or stairwell remains free of dust and debris and must be cleaned on a daily basis, as required, and at the end of the day.
- 4.20. In areas designated by the Hospital (i.e. Operating Rooms) workmen may be required to wear protective clothing. **DO NOT ENTER THESE AREAS** without protective clothing if directed.
- 4.21. For small projects, tools, carts and/or toolboxes are to be clean and may be kept in the area immediately adjacent to entry to the barrier.
- 4.22. For larger projects, toolboxes and equipment are to remain within the work site barriers until completion of work. Do not leave tools or equipment unattended in any occupied areas.
- 4.23. Thoroughly vacuum all tools, toolboxes and equipment prior to removal from behind worksite barrier.
- 4.24. Use water or dust abating material to keep dust to a minimum in the construction area.
- 4.25. Provide pest control if required.
- 4.26. Clean the construction area with HEPA filter-equipped vacuum cleaner, a wet mop, or both, as necessary.
- 4.27. Replace any and all existing or new ceiling tiles, which become wet due to work being done by the Service Personnel.
- 4.28. Replace any and all drywall that becomes wet due to flooding or work being done by the Service Personnel.
- 4.29. Use cryogenic procedures to isolate valves and supply water piping. Hot and cold domestic water piping must not be drained. If drained for any reason, coordinate with the Hospital to have piping sanitized.
- 4.30. Report any water leaks or flooding immediately to the TEHN project lead contact, who will inform Facilities, Infection Control and the affected patient care areas.

## **5) After Construction**

- 5.1. Infection Prevention & Control (IPAC) Appointed Designate is required to inspect the site prior to removal of barriers.
- 5.2. Thoroughly vacuum (HEPA filter-equipped) and/or wet clean the work site and all surfaces of the dust barriers and anterooms in preparation for removal.
- 5.3. Poly barriers to be erected on the non-construction side of the hard barriers before removal of the hard barriers.
- 5.4. Thoroughly vacuum and/or wet clean the areas occupied by barriers. Repair finishes damaged by barrier installation or the work and touch up paint as required to leave the site in the same condition or better than, it was prior to start of work.
- 5.5. IPAC Appointed Designate is required to inspect the site prior to removal of the Poly barriers.
- 5.6. Environmental services to do final clean before removal of the poly barriers.
- 5.7. Remove barriers at times designated by the Hospital.
- 5.8. IPAC Appointed Designate is required to inspect the site after removal of barriers.

**Failure to comply with Infection Control requirements may cause work stoppage. Costs incurred as a result of non-compliance are the responsibility of the Service Personnel.**

\*Z317.13-07CSA Standard Infection Control during Construction or Renovation of Health Care Facilities is used by Infection Control to do Preventive Measures Analysis.

\*Specific reference for 4.8.1 (sections 6.6.2. and 8.3.22) of the above document.

## Construction / Renovation – Activity Permit

To be completed 96 hours in advance for all work/maintenance activities conducted in clinical patient areas.

<b>Estimated Start Date:</b>	<b>Location of Work:</b>	<b>Estimated Completion Date:</b>
<b>Service Personnel/Service Provider:</b>		<b>Contact #:</b>
<b>TEHN Project Lead:</b>	<b>Ext:</b>	<b>TEHN Mobile:</b>
<b>Associated Project #:</b>		
<b>Scope of Project:</b>		

Categorization of work activity: (refer to back page)

<b>Pt Risk Group:</b>	<b>Type of Work Activity:</b>	<b>IPAC Control Measures:</b>
<b>Additional Measures:</b> 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.		

Recommissioning of Space:

ENV Services Notified: Y/N	Terminal Clean Date:	Time:
	Terminal Clean Date:	Time:
	Terminal Clean Date:	Time:

Signatures:

TEHN Project Manager/Lead:		Ext:
Environmental Services Mgr/Sup:		Ext:
Clinical unit Mgr/Sup:		Ext:
IPAC Mgr or designate:		Ext:
Safety Specialist or designate:		Ext:



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### CSA Z317.13 work activity reference guide

Patient Risk Groups			
<b>Group 4 (highest risk)</b>	<b>Group 3</b>	<b>Group 2</b>	<b>Group 1 (minimal risk)</b>
J7 – FBC & SCN	A/B 5 - Surgery	A/C6	A1 – Foundation/Health Records
J6/B6 – OR, Recovery, Endo	H6/B4 – Mental Health	C 3, 4, & 5	B1 – Executive Offices
H7 – Respiratory & Oncology	G/J 5 – Palliative, Chronic Care	G1 & 2 – Paediatric Clinic, Rehab	C1 – Finance/ Pharmasave
J2 – CIU, Cath Lab, ICU, Nuc Med, Laboratory	A/B/F 3 – Medicine, ALC	H5 – Outpatient Mental Health	D6 – Q Imp Offices
C2 – TEE echo	B2 - Medicine		G/J basement – Env Services, HR, Plexxus
Diag Imaging Room 10 & 12	H4 – Nutrition/Dietary Serv		B basement – Acct Payable
G Basement – Pharmacy, MDRD	H/K 1 – Diagnostic Imaging		A basement – Health Records
H basement – Materials Mgmt	D1/2 – Outpatient clinics & Ophthalmology		
K basement - Hemodialysis	J1 – Emergency		

Categorization of Work Activity (Check the appropriate box. Up the category if activity not clearly listed)

Type A	<b>Inspection &amp; Non-invasive Activities</b> – includes but not limited to displacing one ceiling tile to inspect the ceiling plenum for no longer than 15 min, painting without sanding, electrical trim work, minor plumbing that does not require shutting off the plumbing for > 30 min.	
Type B	<b>Small scale, short duration activities that create minimal dust</b> – work lasting < 2 hrs, include but not limited to access to service chases, cutting of wall cavities, opening ceiling plenum for repairs, interruption of plumbing distribution that affects water supply to more than one pt room for > 30 min.	
Type C	<b>Any work that generates a moderate to high level of dust, or requires the demo or removal of any fixed building components or assemblies</b> – includes but not limited to activities such as removal of floor coverings, ceiling tiles and casework, minor duct or electrical work above the ceilings, or work that cannot be completed within a work shift, plumbing activities that requires the disruption of water supply to more than one patient care area for >30 min but < 1hr	
Type D	Activities that generate a high level of dust, activities that necessitate significant service disruptions, major demolition and construction requiring multiple shifts to complete – includes but not limited to heavy demolition, removal of cable trays, plumbing activities that requires disruption of the water supply for more than 1 hr.	

NOTE: water damage affecting cellulose based building materials (e.g. drywall) must be addressed in accordance with CSA Z317.13 section 9. Investigations and safe drying that cannot be conducted within **48hrs**, building materials must be identified for removal and remediation in the affected area.



## REQUEST FOR SHUTDOWN PROCEDURE

The Contractor is responsible for and must request f all construction related utility shutdowns through the appropriate Project Lead using the *Disruption Request Form*. TEHN is responsible for the disconnection or shut off of all valves, circuit breakers and smoke detectors for utility outages. **The Contractor shall not shut down, tie into, or disrupt any utility systems unless specifically directed to do so by the appropriate Project Lead. The Contractor shall not bag, disconnect, or impede any smoke or heat detection systems.** The utilities affected by this policy include but are not limited to all plumbing, fire sprinkler, gases, smoke detection, fire alarm, electrical, telephone, data, security systems, steam, heating, air conditioning, exhaust and conveying systems. Contractors must assume the work they are performing at TEHN is covered under this policy. Contractor's request for a shutdown must be performed in accordance with the procedures outlined in the "Specific Information" section of this document.

### Specific Information:

- A. The first step in the utility shutdown process is for the Contractor to identify the utility that needs to be shutdown, all areas of the building that will be affected by the shutdown, and any other associated utilities that might be affected. (Example: An electrical shutdown, which shuts down an associated air conditioner.)
- B. After the Contractor has identified the affected areas, they will obtain verification of this information from the appropriate Project Lead. The Contractor should thoroughly research the shutdown to determine which valves or electrical panel boxes will be affected by the shutdown. The Contractor should also determine the duration of time required for the shutdown prior to meeting with Facilities. However, **Facilities is responsible for the final scheduling of the actual start time and duration of all construction and renovation related utility shutdowns.** The Contractor shall perform all work necessary prior to the shutdown in order to minimize the duration of the shutdown. (i.e. install all necessary piping or pull all necessary wiring.)
- C. After collecting all necessary information, the Contractor will complete a *Disruption Request Form*. This form must be submitted to the appropriate Project Lead. It must be submitted by email a **minimum of 15 days prior to the requested time of the shutdown.** The 15 day notice is required in order to allow enough time for the processing of paperwork as well as the coordination of Engineering staff and any affected departments within the building. It will also allow enough time to resolve any scheduling conflicts between all parties affected by the shutdown. The actual amount of notice time may vary, depending on the type of shutdown, the area affected by the shutdown, the scheduled activities of occupants in the area affected, and the current workload of Facilities.
- D. The Contractor's request for a shutdown must include the following information – see page 15:
  - Project Name
  - Submission Date
  - Building affected & locations (all room numbers)
  - Requestor Information
  - Type of Shutdown request (i.e. Electrical, sprinklers. Etc.)
  - Reason for the shutdown (i.e. Install breaker, add sprinkler head, Etc. )
  - Requested shutdown start and stop date and time
  - Signature of Service Personnel performing the shutdown

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- E. Upon receipt of the Contractor's *Disruption Request Form*, the Project Lead will coordinate with Facilities and the building occupants to verify the actual start date and time of the shutdown. Depending on the complexity of the shutdown, a meeting may be scheduled with TEHN project lead contact, Facilities, the Contractor and all appropriate Service Personnel to coordinate the logistics of the shutdown.
- F. After the start time, duration and logistics of the shutdown have been verified; the Project Lead will create the appropriate shutdown notices.
- G. The Contractor and Service Personnel must be on site, have all preparations in place and be ready to begin the shutdown at least 15 minutes prior to the posted start time of the shutdown. This preparation includes having all of the equipment, supplies and manpower needed at the correct location to perform the work. Failure to do this can result in the shutdown being cancelled and re- scheduled for another time.
- H. When the Contractor and Service Personnel work is completed, the Contractor must notify the appropriate Facilities person so the system can be re-energized/restored to normal operation.
- I. The Contractor and Service Personnel responsible for the work must remain on- site until the system is fully re-energized and no leaks or other deficiencies have been detected.

## **Disruption Request Form**

Engineering &amp; Plant Services Department

DATE SUBMITTED: \_\_\_\_\_

*Submit 15 business days in advance of the requested date, unless otherwise agreed upon for consideration. All disruption requests are subject to approval of TEHN. This disruption request is considered tentative until approval is granted in writing by TEHN.*

SERVICE PERSONNEL INFORMATION	SHUTDOWN INFORMATION
Name: _____	Requested Date/Time: _____
Company: _____	Location: _____
Project #: _____	Duration: _____
Email: _____	Purpose: _____
Phone: _____	<i>*Subject to Approval.</i>

ELECTRICAL		
<input type="checkbox"/> Normal Power <input type="checkbox"/> Emergency Power <input type="checkbox"/> UPS Power <input type="checkbox"/> Critical Power <input type="checkbox"/> Other	<input type="checkbox"/> Single Circuits (s) <input type="checkbox"/> Branch Circuit Panel <input type="checkbox"/> Power Panel / MCC / Switchboard <input type="checkbox"/> Distribution System (Switch boards, loop feeders etc.) <input type="checkbox"/> Transformer <input type="checkbox"/> Other: _____	<input type="checkbox"/> 120 / 208 <input type="checkbox"/> 347 <input type="checkbox"/> 480 <input type="checkbox"/> 600 <input type="checkbox"/> 41600 <input type="checkbox"/> 27000 <input type="checkbox"/> Other: _____
Designation of equipment if known: _____  Location: _____		
PLUMBING SYSTEM		
<input type="checkbox"/> Cold <input type="checkbox"/> Hot / recirc. <input type="checkbox"/> Sanitary stacks / Drains / Vents <input type="checkbox"/> Storm <input type="checkbox"/> Soft Water System  <b>RO Water System</b> <input type="checkbox"/> Hemodialysis <input type="checkbox"/> MDRD  <input type="checkbox"/> Other: _____	Area to be isolated: _____  <b>Pumps</b> <input type="checkbox"/> Sewage / Bilge Pumps <input type="checkbox"/> Recirculation pumps  <b>Booster pumps</b> <input type="checkbox"/> Power Plant <input type="checkbox"/> J Wing Basement <input type="checkbox"/> J4	

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## HEATING, COOLING AND PROCESS STEAM

<input type="checkbox"/> Glycol <input type="checkbox"/> Hot Water <input type="checkbox"/> Steam <input type="checkbox"/> Condensate <input type="checkbox"/> Chilled Water <input type="checkbox"/> Other	<input type="checkbox"/> Local Isolation <input type="checkbox"/> Distribution System Isolation <input type="checkbox"/> Re-heat Coil System <input type="checkbox"/> Perimeter Heating System <input type="checkbox"/> Other <input type="checkbox"/> Unknown (Provide area of work) _____ _____
--	---

## EQUIPMENT

Air Handling Unit / Ventilation	Area to be Isolated:
Air Conditioning Unit	Area to be Isolated:
Boilers <input type="checkbox"/> vapour <input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3 <input type="checkbox"/> #4 <input type="checkbox"/> #5	
Chillers <input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3	
Cooling Tower <input type="checkbox"/> #1 <input type="checkbox"/> #2	

## COMPRESSED AIR SYSTEM

<input type="checkbox"/> Local <input type="checkbox"/> Entire System <input type="checkbox"/> Unknown (Provide area of work)
---

## PNEUMATIC TUBE SYSTEM

<input type="checkbox"/> Local Station <input type="checkbox"/> Entire System
---

## FIRE PROTECTION AND LIFE SAFETY SYSTEMS

### Fire Alarm

By-pass <input type="checkbox"/> Local Area <input type="checkbox"/> Entire system	<input type="checkbox"/> Programming /Verification / Testing <input type="checkbox"/> Programming Required <input type="checkbox"/> Testing / Verification <input type="checkbox"/> Bells must be sounded
--	--

### Fire Suppression Systems

<b>Wet System</b> <input type="checkbox"/> Sprinkler <input type="checkbox"/> Standpipe Area: Wing: _____ Floor: _____	<b>Dry System</b> <input type="checkbox"/> Loading Dock <input type="checkbox"/> Parking Garage East <input type="checkbox"/> Parking Garage West
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### Fire Suppression Systems Continued

<b>Pre-Action Systems</b> <input type="checkbox"/> H-Basement Data Center <input type="checkbox"/> Main Electrical Room <input type="checkbox"/> Diesel Tank Room <input type="checkbox"/> G4 Data Center / PBX Room <input type="checkbox"/> J4 Electrical Room <input type="checkbox"/> Other: _____	<b>Special Extinguishing Systems</b> <input type="checkbox"/> Kitchen Hood – H4 Kitchen <input type="checkbox"/> Co2 E Wing Electrical Substation EB202 <input type="checkbox"/> Co2 E Wing Electrical Substation EB203
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### Fire Pumps

<input type="checkbox"/> Fire Pump #1 <input type="checkbox"/> Fire Pump #2 <input type="checkbox"/> Jockey pump
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### Fire Exits, Fire Department Access

<input type="checkbox"/> Fire Route <input type="checkbox"/> Siamese Connection <input type="checkbox"/> Fire Exit or Means of Egress	
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## MEDICAL GAS

<input type="checkbox"/> Oxygen	<input type="checkbox"/> Zone
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## MICHAEL GARRON HOSPITAL

<input type="checkbox"/> Nitrous Oxide <input type="checkbox"/> Medical Air <input type="checkbox"/> Medical Vacuum <input type="checkbox"/> Carbon Dioxide	<input type="checkbox"/> Riser <input type="checkbox"/> Entire System <input type="checkbox"/> Other
<b>ELEVATORS</b>	
<u>A – F Wing</u> <input type="checkbox"/> Elevator 1 or 2 <input type="checkbox"/> Elevator 3 or 4 <input type="checkbox"/> Elevator 5 or 6	<u>G / H Wing</u> <input type="checkbox"/> Elevator 11 or 12 <input type="checkbox"/> Elevator 14 or 15  <u>G-Wing C-Wing</u> <input type="checkbox"/> Elevator 8 or 9
<u>J wing</u> <input type="checkbox"/> Elevator J1, J3 or J4 <input type="checkbox"/> Elevator J2_	<u>K Wing</u> <input type="checkbox"/> Elevator 16 <input type="checkbox"/> Elevator 17
<b>OTHER – Systems not identified above</b>	

### Description of work/ comments (Any attached documents i.e. Drawings, work plan, schedules)

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### APPROVAL FOR DISRUPTION \*\*\* FOR INTERNAL USE ONLY

<b>TEHN APPROVAL FOR DISTRUPTION</b>
System :  Date :  Time to:                      from :  Approval granted by: (print): _____ Signature: _____
<b>PROVISIONS TO BE PUT IN PLACE BY SERVICE PERSONNEL</b>
<b>EMERGENCY CONTACT INFO</b>
Main point of contact:  Redevelopment:  Facility Services:  Security: 416 469-6016  Other:

## SAFETY REGULATIONS / HOT WORK & WELDING PROCEDURES

Before commencement of any welding, soldering or cutting on TEHN premises, the following precautions and procedures must be strictly adhered to:

- Obtain an approved hot work permit (see page 21) from Protection Services and follow all requirements of the *Hot Work Permit – Protection Services*. The operator shall keep at the site of work a copy of the permit issued by Protection Services.
- Person(s) who operate equipment must be competent and be authorized to do so.
- The equipment to be used must first be checked to make sure it is in safe operating condition.
- Person(s) who use the equipment are to have reviewed the *Hot Work Permit – Protection Services* policy, which can be obtained through the TEHN project lead contact, prior to the start of work.

When all of the procedures and precautions identified below have been taken, you may begin to weld, solder or cut.

1. Check with Protection Services to verify smoke detectors, and fire alarms have been disconnected (request for shutdown must be requested 48hrs in advance).
2. Before starting to weld, solder or cut, make certain there is no combustible material nearby or opening leading to combustible material, that flame, sparks, hot slag or hot metal might ignite.
3. Be sure to keep a clear space between cylinders and the work. This is important so that cylinders and regulators can always be reached quickly.
4. Never use acetylene at pressures above 15 LBS PER SQ in. Using acetylene at pressures in excess of 15 LBS PER SQ. in. is a hazardous practice. Should pressures at 15 LBS PER SQ in be required the Project Lead must authorize the work prior to being completed.
5. Never release acetylene into the air near other welding, cutting, sparks, or flames.  
If it is necessary to release acetylene, release it out in the open, in a place where a mixture with air will not be ignited.
6. Always make sure hose is securely connected before using equipment. When using equipment, after making or remaking connections at the blowpipe and regulators, test for leakage.
7. Never hang a torch with its hose on regulators or cylinder valves. The weight of a torch and hose may strain or damage the regulator, or interfere with the quick closing of the cylinder valve.
8. Use special care when working in restricted or confined spaces (following Occupational Health & Safety Act, Healthcare O.Reg67-93).
9. Ensure proper clothing or PPE is worn.
10. Never do any welding, soldering, or cutting on containers until they have been thoroughly cleaned and safeguarded.
11. Protect the cylinders, hoses, and operator when flame cutting. Do not cut material in such a position that will permit sparks, hot metal, or the severed section to fall on the cylinder or hoses, or injure the operator.
12. Avoid dropping stub ends of welding rods on floor. Put them in a suitable container. Carelessly dropped stub ends are a fire hazard, and also if stepped on, may cause a fall, resulting in serious injury. A suitable container partly filled with water and within easy reach is a good place in which to dispose of these short ends.

- \*\*\* Where welding, soldering or cutting must be done near combustible materials, special precautions should be taken to make certain that flame, sparks, hot slag or hot metal do not reach combustible material, and thus start a fire. It is especially important to take special precautions in the case of portable cutting operations. Cutting produces a greater quantity of sparks and hot slag than does welding and locations where portable cutting equipment is used, must therefore, be thoroughly safeguarded against fire.

### **Additional Precautions For Safeguarding Against Fire:**

- Never use welding, soldering or cutting torch where sparks or open flame of any kind would be a hazard. Flame is a Hazard in any room containing flammable gas vapors, liquids or dust, or any material that ignites easily.
- Take welding, soldering or cutting work that can be moved to a location where there will be no possibility of setting fires. This must always be done when the metal to be welded, soldered or cut is in a place where open flames are prohibited. This practice may also be sensible in many other locations, even if open flames are allowed. If the work cannot be moved, combustible materials should be taken a safe distance away, if possible. If cutting is to be done this distance may be 30 to 40 feet or more.
- Floors should be swept before the torch is lighted. If flammable materials cannot be moved, use sheet metal guards, flame proof curtains, or similar protection to keep sparks close to the work you are doing.
- A fire watch shall be required when Hot Work is performed
- Be ready to put out any fire promptly with a fire extinguisher, pail of water, water hose, or sand. If there is a possibility that a smoldering fire may have been started, keep a worker at the scene of the work for at least one hour after the job is completed. Have them look carefully for smoke or fire before leaving.
- Never forget that heavy cutting sparks sometimes fly 25 to 30 feet or more and hold their heat for several seconds after landing.

### **Fire Watch**

A fire watch shall be required where the following conditions exist:

1. Combustible materials are closer than 11M to the point of operation.
2. Combustible materials are more than 11M away from the point of operation but are easily ignited by sparks.
3. Wall or floor openings within an 11M radius expose combustible materials in adjacent areas, including concealed spaces in walls or floors.
4. Combustible materials are adjacent to the opposite side of partitions, walls, ceilings, or roofs and are likely to be ignited.
5. A fire watch shall be maintained continuously for at least 1 hour after completion of hot work operations in order to detect and extinguish smoldering fires and checked at regular intervals of at least once every 1/2 hour for the next 3 hours.

**1 DEFINITIONS**

- 1.1 Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

**2 BASIS-OF-DESIGN**

- 2.1 Whenever manufacturer's catalogued trade name is specified, that product has been used as the Basis of Design and sets the standard for acceptance.
- .1 It is not the intent that these products are specified exclusively. The manufacturer's names and product numbers are used to denote minimum quality, style, design function, size, finish, performance, durability, maintenance, warranty and required approvals by Authorities Having Jurisdiction.
- 2.2 Other manufacturer's products may be used providing the items are equal or better in all respects to the items specified, subject to acceptance by the Consultant.
- 2.3 The Consultant's decision on the proposed substitution is final.
- 2.4 Any proposed item that in the opinion of the Consultant is not equal to the item specified will be rejected and the Contractor shall be required to supply items equal to the one specified at no extra cost.

**3 SUBSTITUTIONS**

- 3.1 Whenever Products are specified exclusively by trade name, manufacturer's name or by catalogue reference, use only those items, unless written approval for substitution is obtained from Consultant.
- 3.2 No substitutions will be permitted without prior written approval of the Consultant.
- 3.3 Proposals for substitutions may only be submitted after award of Contract.
- 3.4 Substitutions submitted on shop drawings without following requirements of this Section prior to submission of the shop drawings will cause the shop drawings to be rejected at any time. Consultant's review of shop drawings shall not be construed as approval of substitutions.
- 3.5 Proposed substitutions will be considered only under the following conditions:
- .1 If the materials and products specified are not available; or
- .2 If substitute materials and products to those specified, which are brought to the attention of and considered by the Consultant as equivalent to those specified, will offer Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Consultant for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
- 3.6 Requests for substitutions must be fully documented and properly submitted, and must include the following statements:
- .1 Description of proposed substitution.
- .2 Respective costs of items originally specified and the proposed substitution.
- .3 Compliance with the Building Codes and requirements of authorities having jurisdiction.



- .4 Affect concerning compatibility and interface with adjacent building materials and components.
- .5 Compliance with the intent of the Contract Documents.
- .6 Reason for the request.
- 3.7 There is no obligation on the part of the Consultant, or Owner to accept proposed substitutions. Acceptance of proposed substitutions by Owner does not relieve the Contractor's responsibility under the Contract.
- 3.8 Should proposed substitution be accepted either in part or in whole, bear full responsibility and costs when substitution affects other work on the project. Pay for design and contract document changes required as result of the substitution.
- 3.9 Amounts of all credits arising from acceptance of substitutions will be determined by the Consultant and the Contract Price adjusted accordingly.
- 3.10 Wherein the expression "other acceptable equivalents" or similar expressions in specification Sections, submissions under the expression shall be as specified in this Section.

End of Section

Substitution Request No: \_\_\_\_\_ Date: \_\_\_\_\_

Project: \_\_\_\_\_ Project No: \_\_\_\_\_

Contractor: \_\_\_\_\_

### Specified Product Specification Reference

Section Number	Section Title	Paragraph Number
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### Proposed Substitution

**Manufacturer and  
Product Trade Name**

\_\_\_\_\_

**Address**

\_\_\_\_\_

**Phone Number**

\_\_\_\_\_

**Contact Name**

\_\_\_\_\_

**Model Number**

\_\_\_\_\_

**History of Product**

New Product \_\_\_\_ 2-5 years old \_\_\_\_ 5-10 years old \_\_\_\_ More than 10 years old \_\_\_\_

Similar Installation

Project Name & Address

\_\_\_\_\_

\_\_\_\_\_

Consultant

\_\_\_\_\_

Owner

\_\_\_\_\_

**Proposed  
Substitution Affects  
Other Parts of Work**

No \_\_\_\_ Yes, explain:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Differences Between  
Proposed Substitution  
and Specified Product**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Reason For Not  
Providing Specified  
Product**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Changes to Contract  
Price**

Add/Deduct \$ \_\_\_\_\_

**Changes to Contract  
Time**

Add/Deduct \_\_\_\_\_ days

**Contractor's Declaration**

The Contractor Declares that:

- Proposed substitution has been fully investigated and determined to be equivalent or superior in all respects to specified product, and complies with requirements of authorities having jurisdiction.
- Same warranty will be furnished for proposed substitution as for specified product.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Proposed substitution is compatible with adjacent materials and assemblies.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Signed By: \_\_\_\_\_ Date: \_\_\_\_\_

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Reports ☐ Other \_\_\_\_\_

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### Consultant's Review

- ☐ Substitution Accepted – Provide submittals in accordance with Specification requirement.
- ☐ Substitution Accepted as Noted – Provide submittals in accordance with Specification requirement.
- ☐ Substitution Not Accepted – Use specified product.

Signed By: \_\_\_\_\_ Date: \_\_\_\_\_

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### Owner's Acceptance

Signed By: \_\_\_\_\_ Date: \_\_\_\_\_

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### Additional Comments:

☐ Consultant \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

☐ Contractor \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

☐ Owner \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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## 1 INFECTION CONTROL PROCEDURES

- 1.1 Obtain a copy of CAN/CSA Z317.13 "Infection Control During Construction, Renovation and Maintenance of Health Care Facilities".
  - .1 The Contractor, Sub-contractors, and Suppliers, and all personnel shall comply with the requirements of CAN/CSA Z317.13.
  - .2 Keep a copy of CAN/CSA Z317.13 on site.
- 1.2 Refer to CAN/CSA Z317.13, Table 2 "Population risk groups and geographical areas" and Table 3 "Construction activity type" attached at the end of this Section. Construction areas are designated as follows:
  - .1 Population Risk Group – Group 3 - High risk; Construction Activity Type – Type D; Preventive Measure Type IV.
- 1.3 Notify Owner at least 72 hours prior to start of work to implement Infection Control Procedures. Inform the Owner and arrange a site meeting to advise the implementation of Infection Control Procedures.
- 1.4 Prior to any work being done or removal of ceiling tiles or opening of ceiling access hatches, erect a floor to ceiling dust tight partition which completely encloses the area of work in conformance to the CSA Standards.
  - .1 Maintain barriers throughout the work and repair or replace as required or instructed.
  - .2 Completely remove barrier when work is finished and remove any marks left by tape or studs.
- 1.5 Post "Construction Zone" signage outside barrier and entrance to all work areas.
- 1.6 Take precautions when working on existing ceilings, ducts and piping systems. The dust and dirt collected in these areas may contain disease causing germs. It may be necessary to protect yourself and others with the following procedures:
  - .1 Carefully remove acoustical ceiling panels keeping horizontal if possible, and vacuum and clean the panels immediately upon removal.
  - .2 Existing air ducts, conduits and space above the ceiling must be cleaned with a HEPA filter equipped vacuum cleaner prior to start of any work.
  - .3 Vacuum clean areas inside the barrier prior to removal.
  - .4 Vacuum clean area occupied by barrier after the barrier is removed.
- 1.7 Throughout the work period, ensure that:
  - .1 Plastic barrier flaps or doors to construction area remain closed.
  - .2 Place adhesive floor strips outside the door to the construction area.
  - .3 Clean and vacuum construction areas daily with vacuum cleaners equipped with HEPA filters.
  - .4 Wet mop areas just outside the door to the construction site daily, or more often if necessary.

- .5 Vacuum carpeted areas daily or more often if necessary.
- .6 Shampoo carpets when the construction work is complete.
- .7 Designate an entrance and a hallway that the construction workers must use and that are not used by patients, visitors or health care workers; as arranged with and approved by Owner.
- .8 Remove dust from body and clothing when traversing patient care areas.
- 1.8 Carts, tools and equipment entering the construction area should remain there until the work is complete. Clean thoroughly prior to removal from the construction area.
- 1.9 Construct dust tight screens of 6 mil thick polyethylene sheets and 13 mm gypsum board on both sides of 92 mm steel studs at 400 mm centres. Lap polyethylene sheets 100 mm and continuously seal lap. Extend screens from floor to underside of floor above. Apply tape and one coat finish compound to visible joints on the public side. Seal gypsum board joints at top and bottom of screens both sides. Pack gaps at underside structure and around penetrations with rock wool insulation. Provide lockable hollow metal door and frame with weatherstripping and self closing device. Apply 2 coats paint on public side.
- 1.10 Provide exhaust within the construction area.
- 1.11 Ensure construction area is placed under negative pressure relative to adjacent rooms and hallways during construction.
- 1.12 Place HEPA filters on all exhaust grilles and or seal them with 6 mil poly material sealed to prevent air from circulating throughout hospital via exhaust duct system.

End of Section

**Table 1**  
**Preventive measures analysis**  
 (See Clauses 3.1, 6.5.1, 6.5.2, 7.1, 7.2.4.2, 7.5.3.1.)

Population risk group (from Table 2)	Construction activity type (from Table 3)			
	Type A	Type B	Type C	Type D
Group 1	I	II*	II	III/IV
Group 2	I	II*	III	IV
Group 3	I	III*	III/IV	IV
Group 4	I–III	III/IV*	III/IV	IV

\* Denotes where a lower level might be used in accordance with Clause 7.5.

**Note:** Instructions for this Table:

- Refer to Table 2 to determine the population risk group.
- Refer to Table 3 to determine the construction activity type.
- The intersection between the row (risk group) and column (activity type) shows the preventive measure level that applies.
- Where this Table offers a range instead of a single level, the appropriate preventive measure shall be determined as follows:
  - When the preventive measure is shown as I–III (Population Risk Group 4, Construction Activity Type A), the infection prevention and control department shall be consulted to determine the appropriate preventive measure (I, II, or III).
  - When the preventive measure is shown as III/IV (four other places in the Table), the MDT shall determine the appropriate level (see Clause 7.2.4.2).
- Clause 7.5 offers practical exceptions for short-term projects involving only ceiling access for investigation or minor work, provided that appropriate precautions are used.

**Table 2**  
**Population risk groups and geographical areas**  
 (See Clauses 5.3.2.4, 6.3.8.1, 6.5.2, 7.3.3.5, and 8.3.1.2.6 and Table 1.)

Population risk group	Typical areas
Group 1 Lowest risk	Office areas (i.e., non-clinical)
	Unoccupied patient care units
	Public areas not intersecting a patient care area
	Laundry and soiled linen sorting or storage areas
	Physical plant workshops
	Housekeeping rooms and closets
Group 2 Medium risk	Patient care areas, unless listed in Group 3 or Group 4
	Outpatient clinics (except oncology and surgery)
	Admission and discharge units

*(Continued)*

**Table 2 (Continued)**

<b>Population risk group</b>	<b>Typical areas</b>
	Waiting rooms Autopsy and morgue Occupational therapy and physical therapy areas remote from patient care areas
<b>Group 3 Medium to high risk</b>	Emergency (except trauma rooms) Diagnostic imaging Labour and birthing rooms (without operating room capability) Nurseries for healthy newborns Nuclear medicine Hydrotherapy Echocardiography Laboratories General medical and surgical wards or units (includes all areas including soiled and clean utility rooms) Pediatric units Geriatric units Long-term care units Food preparation, serving, and dining areas Respiratory therapy Clean linen handling and storage areas
<b>Group 4 Highest risk</b>	Intensive care units (ICU, PICU, NICU, etc.) Operating rooms (including prep, induction, post-anaesthetic care unit (PACU), and scrub areas) Anaesthesia storage areas and workrooms Oncology units and outpatient clinics Transplant units and outpatient clinics Inpatient units and outpatient clinics for patients with AIDS or other immunodeficiency diseases Dialysis units Critical care nurseries Labour and delivery operating rooms

*(Continued)*

**Table 2 (Concluded)**

<b>Population risk group</b>	<b>Typical areas</b>
	<p>Interventional or high-risk diagnostic imaging, e.g.,</p> <ul style="list-style-type: none"> <li>• Cardiac catheterization and angiography</li> <li>• Interventional radiology</li> <li>• Endoscopy</li> <li>• Bronchoscopy</li> <li>• Cystoscopy</li> </ul> <p>Cardiovascular and cardiology patient areas</p> <p>Pharmacy admixture rooms</p> <p>Medical device reprocessing areas (wherever located)</p> <p>Central sterile supply</p> <p>Clean and sterile storage</p> <p>Burn care units</p> <p>Animal rooms</p> <p>Trauma rooms</p> <p>Protective isolation rooms</p> <p>Tissue culture laboratories</p> <p>Pacemaker insertion rooms</p> <p>Dental procedure rooms</p>



**Table 3**  
**Construction activity type**  
 (See Clauses 3.1, 6.3.8.1, 6.5.2, and 7.5.3.1 and Table 1.)

Construction activity type	Description
Type A	<p>Inspection and non-invasive activities. These include, but are not limited to,</p> <ul style="list-style-type: none"> <li>a) activities that involve a single controlled opening in a wall or ceiling for minor work or visual inspection, that is accessed by               <ul style="list-style-type: none"> <li>i) removing no more than one ceiling tile; or</li> <li>ii) opening of an access panel on a wall or ceiling;</li> </ul> </li> <li>b) painting (but not sanding) and wall covering;</li> <li>c) electrical trim work;</li> <li>d) minor plumbing work that disrupts the water supply to a localized patient care area (i.e., one room) for less than 15 min; and</li> <li>e) other maintenance activities that do not generate dust or require cutting of walls or access to ceilings, other than as specified in Item a).</li> </ul>
Type B	<p>Small-scale, short-duration (e.g., less than 2 h) activities that create minimal dust. These include, but are not limited to,</p> <ul style="list-style-type: none"> <li>a) activities involving access to and use of chase spaces;</li> <li>b) cutting a small opening in a contained space where dust migration can be controlled, e.g., cutting of walls or ceilings to provide an access point for installing or repairing minor electrical work, ventilation components, telephone wires, or computer cables;</li> <li>c) sanding or repair of a small area of a wall; and</li> <li>d) plumbing work that disrupts the water supply of one or more patient care areas for less than 30 min.</li> </ul>
Type C	<p>Activities that generate a moderate to high level of dust, cause a moderate service disruption, require demolition, require removal of a fixed facility component (e.g., a sink) or assembly (e.g., a countertop or cupboard), or cannot be completed in a single work shift. These include, but are not limited to,</p> <ul style="list-style-type: none"> <li>a) activities that require sanding of a wall in preparation for painting or wall covering;</li> <li>b) removal of floor coverings, ceiling tiles, and casework;</li> <li>c) new wall construction;</li> <li>d) minor ductwork;</li> <li>e) electrical work above ceilings;</li> <li>f) major cabling activities; and</li> <li>g) plumbing work that disrupts the water supply of one or more patient care areas for more than 30 min, but less than 1 h.</li> </ul>
Type D	<p>Activities that generate high levels of dust, activities that necessitate significant service disruptions, and major demolition and construction activities requiring consecutive work shifts to complete. These include, but are not limited to,</p> <ul style="list-style-type: none"> <li>a) soil excavation;</li> <li>b) new construction that requires consecutive work shifts to complete;</li> <li>c) activities that involve heavy demolition or removal of a complete cabling system; or</li> <li>d) plumbing work that disrupts the water supply of more than one patient care area (i.e., two or more rooms) for 1 h or more.</li> </ul>

**PART - 1      GENERAL**

**1.1            SUMMARY**

- .1      Section Includes:
  - .1          Labour, Products, equipment and services necessary to complete the work of this Section.

**1.2            SECTION INCLUDES**

- .1      This Section of the Work covers the requirements for demolishing, salvaging, relocating and removing wholly or in part the various items designated on the drawings or required to be removed or partially removed for the receipt of the Work of this Contract.
- .2      Selective demolition includes, but is not necessarily limited to:
  - .1          Alteration and renovations to existing building.
  - .2          Cutting and removing of walls, ceilings, floor finishes, etc., in the existing buildings as indicated on drawings.
  - .3          Patching, making good walls, floors and ceilings including painting, as required.
  - .4          Removal of rubbish, debris, demolished fixtures, fitments and items not scheduled to remain Owner's property, resulting from the demolition and preparatory work.
  - .5          Dust Control during the operations of the work of this section.

**1.3            QUALITY ASSURANCE**

- .1      Comply with pertinent codes, regulations and insurance carriers providing coverage for this Work.
- .2      Execute the work in strict accordance with 'The Occupational Health and Safety Act and Regulations for Construction Projects' latest addition. Keep copy of the Act at the place of the Work at all times.
- .3      Carry out demolition work in accordance with CSA S350-M.
- .4      Submit fire safety plan in accordance with requirements of Owner.

**1.4            SUBMITTALS**

- .1      Submit demolition and cutting schedule to Consultant for review. Schedule to show timing and phasing of the Work in the various areas of the existing building. Deviation from schedule will not be permitted without approval.
- .2      Submit drawings to Consultant for review of demolition of structural elements.
  - .1          Make sure drawings bear the seal and signature of a licensed Professional Engineer, registered to practice in the Province of Ontario.
  - .2          Drawings to indicate extent of demolition and method of temporary shoring of existing structure where required.

**1.5 PROTECTION**

- .1 Erect barricades, covered ways, barriers, scaffolding, screens, notice and warning boards and maintain all lights, signals and protection of all kinds for the protection of workmen on the Work, for the protection of property and for the protection of public.
- .2 Use all means necessary to protect existing objects designated to remain and in the event of damage, immediately make all repairs and replacements necessary to the approval of the Consultant and at no additional cost to Owner.
- .3 Provide protection required to enable existing building and equipment to remain in continuous and normal operations, and maintain construction schedule.
- .4 Protect work in the existing building, such as floors, finishes, trim, etc., as completely as possible to hold the replacing of damaged work to a minimum

**PART - 2 PRODUCTS**

**2.1 MATERIALS**

- .1 Temporary braces, tie-rods, clamps, supports and cratings: constructed in accordance with plans prepared by Contractor.

**2.2 TEMPORARY PARTITIONS**

- .1 Erect Temporary Partitions / Dust-Proof Barriers / Hoarding prior to demolition. Adjust and relocate partitions as required for various operations of Work.

**PART - 3 EXECUTION**

**3.1 PREPARATION**

- .1 Notify the Consultant at least seven (7) days prior to commencing of the work.
- .2 The drawings do not purport to show all objects existing on the site. Before commencing the Work, carefully check drawings and verify with the Consultant regarding all objects to be removed and all objects to be preserved.
- .3 Schedule all Work in a careful manner with all necessary consideration for the requirements of Owner, his employees and the public.
- .4 Avoid interference with the use of, and passage to and from, adjacent buildings and facilities.
- .5 Before shutting-down any system verify with the Owner and schedule acceptable shut-down date with minimum 14 days' notice.
- .6 Before starting the operations, arrange with the appropriate trade concerned for the disconnection of all utility services, affecting the work.
- .7 Preserve in operating condition all active utilities to remain.

### 3.1 **DRILLING OR CORING INTO EXISTING CONCRETE**

- .1 Prior to coring and drilling into an existing concrete member (slabs, beams, columns and walls), provide full scanning, X-raying of the surfaces to locate rebars and other embedded items, such as pretensioned strands, electrical and communication conduits. Employ a professional structural engineer registered in the province of Place of the Work to review the Xray scanning report and provide recommendations for coring, drilling, trenching and proposed penetrations.
- .2 Once the concrete reinforcement and other obstructions have been located, submit a coring request for review by Consultant, indicating located obstructions layout and proposed penetration locations.
  - .1 If obstructions are found, relocate proposed penetrations, anchors and cores in order to avoid damaging embedded items.
  - .2 Clearly mark existing concrete to show proposed penetrations.
  - .3 In certain cases, it may be necessary for the Consultant to review condition on site. In such cases, arrange a site visit by Consultant to review each proposed location.
  - .4 Proceed with coring and drilling only upon obtaining written approval for each condition.
- .3 Indicate penetration locations on As-Built Drawings, showing the size of each hole and the distance in relation to grid lines.

### 3.2 **DEMOLITION AND PREPARATORY WORK**

- .1 In order to afford the least interference with the efficient operations of the existing building and to keep the risk of fire to a minimum at all times, ensure that demolished materials are continuously removed from the buildings and grounds as they accumulate, that no hazard condition is left during non-working hours and that full measures are taken by sprinkling and other means to keep dust to a minimum and to confine what dust there is within the working area.
- .2 Maintain proper and safe means of fire exit from all zones of the existing building to the approval of the authorities having jurisdiction.
- .3 Confine operation to those parts of the buildings which are to be altered or renovated. Do not damage existing construction beyond that necessary for performance of new work and repair such damage as required.
- .4 Carefully remove in re-usable condition, transport and store on site where directed by Owner and protect against damage all materials and equipment to be salvaged or relocated for reuse in the new work as directed by the Owner.
- .5 Take possession of all other materials arising from the demolition work and remove from the site daily.
- .6 Demolished materials become Contractor's property, unless such materials are identified on Contract Documents to be reused or turned over to Owner.
- .7 Demolish work into sections of practical size for removal without alteration or damage to the existing building remaining in place.

- .8 Cut openings through existing walls, partitions and floors. Establish exact location of steel reinforcing in existing concrete slabs or walls before holes are made. Be responsible for damage to existing steel reinforcing and be liable for structural failure. Make good surfaces disturbed with materials to match existing.
- .9 Cut to accommodate new structural steel members.
- .10 Sawcut floors, walls, ceiling and other elements before demolition is started, to minimize damage. Make cuts with clean, true, smooth edges. New openings required in existing walls and partitions shall be carefully cut and formed to blend into existing work.
- .11 Where items are to be removed from existing structure or surfaces that are to remain in place, remove those items complete with hangers, brackets and other readily removable supports and fastenings:
  - .1 Remove bolts, but not inserts embedded in concrete or masonry.
  - .2 Remove bolt and rivet fastenings from steel structure.
- .12 Join and make good new work to existing in such a manner that the joint is structurally sound and inconspicuous.
- .13 Cuts, breaks and other temporary openings into existing surfaces, which are required for installation or application of new fixtures, fittings, materials or services shall be, at completion of work, patched and/or made good and finished to blend with surrounding finishes. Openings to allow passage of ducts shall be closed tight to perimeters of duct at all locations where fire dampers are required.
- .14 Where fireproofing membranes or coverings to existing structural steel members and open web steel joists are disturbed, restore the fire protection with materials and methods acceptable by the authorities having jurisdiction.
- .15 In areas where work is required to be performed over acoustic ceilings composed of lay-in panels in a supporting grid, carefully remove panels to avoid damage and replace when work is completed. If existing lay-in panels in a room are damaged and cannot be matched with new panels, then replace all the panels in that room with new units to the Consultant's approval at no additional expense to Owner.
- .16 Materials and other equipment not required for re-use shall not be stored or sold from the site. Maintain the existing building in a weather and watertight condition at all times. Maintain security of existing building.
- .17 Upon completion of demolition, leave interior surfaces clean and dust free.

### 3.3 **MAKING GOOD**

- .1 Make good materials and finishes which are damaged or disturbed during the process of additions and reconstruction under the Contract. Where existing work is to be made good, match new work exactly with the old work in material, form, construction and finish unless otherwise noted or specified.
- .2 Preparation for new finishes:
  - .1 Remove existing finishes, including painting.
  - .2 Fill cracks and depressions with suitable filler and finish smooth, as recommended by the manufacturer of the new finishes.
  - .3 Grind protrusions level with substrates and finish smooth.

- .4 Remove all evidences of existing adhesive, grease, oil, soil and other encrustations of foreign material by washing, scraping and grinding if necessary.
- .5 Clean and prepare substrates to receive new work.

3.4 **CUTTING AND PATCHING**

- .1 Perform cutting, fitting, and patching to complete the Work. Do not cut, drill or sleeve load-bearing members without obtaining written approval for each condition.
- .2 Cut rigid materials using power saw or core drill. Pneumatic or impact tools not allowed.
- .3 Remove and replace defective and non-conforming work.
- .4 Perform work to avoid damage to other work. Prepare proper surfaces to receive patching and finishing.
- .5 Restore work with new products to match existing in accordance with Contract Documents.
- .6 Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .7 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with fire rated material, full thickness of construction element.
- .8 Refinish surfaces to match adjacent finishes; for continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

END OF SECTION

## **Part 1 GENERAL**

### **1.1 SUMMARY**

Work on this project involves the disturbance of non-friable asbestos-containing materials (ACM) as identified in 1.8 below.

Comply with requirements of this Section when performing following Work:

Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done by means of power tools that are attached to dust-collecting devices equipped with HEPA filters.

### **1.2 SECTION INCLUDES**

Requirements and procedures for asbestos abatement of intermediate amounts of ACM of the type described within (i.e. Type 2 Asbestos Operation).

### **1.3 REFERENCES**

Department of Justice Canada (Jus).

- Canadian Environmental Protection Act, 1999 (CEPA).

Transport Canada (TC).

- Transportation of Dangerous Goods Act, 1992 (TDGA).

Ontario Ministry of Labour, Training and Skills Development (MLTSD).

- Occupational Health and Safety Act (OHSA).
- Ontario Regulation 278/05 - Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations.

Ontario Ministry of the Environment and Climate Change (MOECC).

- Environmental Protection Act (EPA).

Ontario Regulation 347/90 - General - Waste Management

## **1.4 DEFINITIONS**

*HEPA vacuum*: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any dimension at 99.97% efficiency.

*Amended Water*: water with non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.

*Asbestos-Containing Materials (ACMs)*: materials identified under Existing Conditions Article, including fallen materials and settled dust.

*Asbestos Work Area*: area where work takes place which will, or may disturb ACMs.

*Authorized Visitors*: Engineer, or designated representatives, and representatives of regulatory agencies.

*Non-Friable Material*: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

*Occupied Area*: any area of building or work site that is outside Asbestos Work Area.

*Polyethylene*: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

*Sprayer*: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for scope of work.

## **1.5 SUBMITTALS**

Submit proof satisfactory to Consultant that asbestos removal methods will satisfy requirements for Type 2 procedures.

If, in the opinion of the Consultant, the Contractor's proposed work methods do not meet the intent of this section, carry out work in accordance with Asbestos Abatement- Type 3 Operations.

The onus is on the Contractor to select the appropriate removal method to satisfy regulatory requirements and these specifications.

Submit proof satisfactory to Consultant that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.



Submit Provincial/Territorial and/or local requirements for Notice of Project Form.

Submit proof of Contractor's Asbestos Liability Insurance.

Submit to Consultant necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.

Submit proof satisfactory to Consultant that employees have had instruction on hazards of asbestos exposure, respirator use, dress, entry and exit from Asbestos Work Area, and aspects of work procedures and protective measures.

Submit Worker's Compensation Board status and transcription of insurance.

Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including: amended water; and slow-drying sealer.

## **1.6 QUALITY ASSURANCE**

Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at the time work is performed.

Health and Safety-

Safety Requirements: worker and visitor protection.

Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

Non-powered reusable or replaceable filter-type respirator equipped with HEPA filter cartridges, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction.

Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres, consisting of full-body covering including head covering with snug-fitting cuffs at wrists, ankles, and neck.

Where conflict between these specifications and Table 2 of O.Reg.278/05, the requirements of Table 2 will apply (please see below).

Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

Before leaving Asbestos Work Area, dispose of protective clothing as contaminated waste as specified.

Ensure workers wash hands and face when leaving Asbestos Work Area.

**TABLE 2**  
**RESPIRATORS**

Work Category	Required respirator
Removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling	<p>One of the following:</p> <ul style="list-style-type: none"> <li>• Air purifying full-facepiece respirator with N-100, R-100 or P-100 particulate filter</li> <li>• Powered air purifying respirator equipped with a tight-fitting facepiece (half or full-facepiece) and a high efficiency filter or N-100, P-100 or R-100 particulate filter</li> <li>• Negative pressure (demand) supplied air respirator equipped with a full-facepiece</li> <li>• Continuous flow supplied air respirator equipped with a tight fitting facepiece (half or full-facepiece)</li> </ul>
<p>The associated respirator should be used when conducting the following activities:</p> <ol style="list-style-type: none"> <li>1. The removal or disturbance of one square metre or less of friable asbestos-containing material during the repair, alteration, maintenance or demolition of all or part of machinery or equipment or a building, aircraft, locomotive, railway car, vehicle or ship.</li> <li>2. Enclosing friable asbestos-containing material.</li> <li>3. Applying tape or a sealant or other covering to pipe or boiler insulation that is asbestos-containing material.</li> <li>4. Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area of 7.5 square metres or more and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.</li> <li>5. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if,</li> </ol>	<ul style="list-style-type: none"> <li>• Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter</li> </ul>

Work Category		Required respirator
<p>i. the material is not wetted to control the spread of dust or fibres, and</p> <p>ii. the work is done only by means of non-powered hand-held tools.</p> <p>6. Removing one square metre or more of drywall in which joint filling compounds that are asbestos-containing material have been used.</p> <p>7. Removing insulation that is asbestos-containing material from a pipe, duct or similar structure using a glove bag.</p> <p>8. Cleaning or removing filters used in air handling equipment in a building that has sprayed fireproofing that is asbestos-containing material.</p> <p>9. An operation that,</p> <p>i. may expose a worker to asbestos, and</p> <p>ii. is not classified as a Type 1 or Type 3 operation. O. Reg. 278/05, s. 12 (3).</p>		
Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable material containing asbestos by means of power tools, if the tool is attached to a dust collecting device equipped with a HEPA filter	Material is not wetted	<p>One of the following:</p> <ul style="list-style-type: none"> <li>Air purifying full-facepiece respirator with N-100, R-100 or P-100 particulate filter</li> <li>Powered air purifying respirator equipped with a tight-fitting facepiece (half or full-facepiece) and a high efficiency filter or N-100, P-100 or R-100 particulate filter</li> <li>Negative pressure (demand) supplied air respirator equipped with a full-facepiece</li> <li>Continuous flow supplied air respirator equipped with a tight fitting facepiece (half or full-facepiece)</li> </ul>
	Material is wetted to control spread of fibre	<ul style="list-style-type: none"> <li>Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter</li> </ul>

Facilities for washing shall be located as close as possible to the Asbestos Work Area.

Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

#### Visitor Protection:

Provide protective clothing and approved respirators to Authorized Visitors to work areas.

Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.

Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

## **1.7 WASTE MANAGEMENT AND DISPOSAL**

Separate waste materials for recycling.

Remove from site and dispose of packaging materials at appropriate recycling facilities.

Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.

Separate for reuse and recycling and place in designated containers Steel, Metal and Plastic waste in accordance with Waste Management Plan.

Place materials defined as hazardous or toxic in designated containers.

Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

Fold up metal banding, flatten and place in designated area for recycling.

Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial/Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mil bags or leak proof drums. Label containers with appropriate warning labels.

Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

## **1.8 EXISTING CONDITIONS**

Information pertaining to confirmed and potential ACMs to be handled, removed or otherwise disturbed and disposed of in the renovation area has been provided.

Notify Consultant of ACM discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Consultant.

Asbestos is present in the following building materials as summarized in the designated substances survey report entitled, *Designated Substances and Hazardous Materials Survey, Suite 201 - Reno Project, 20 Wynford Drive, Toronto, ON, August 2025* (provided under separate cover):

- Black mastic beneath vinyl sheet flooring and beige mastic beneath ceramic tiles.

Figures, tables and reports pertaining to ACM to be handled, removed, or otherwise disturbed and disposed of during this project are provided for general information only and are not necessarily representative of all ACM covered within the scope of this project.

## **1.9 SCHEDULING**

Contractor is responsible for scheduling of asbestos abatement work in order to achieve the desired renovation schedule.

Inform sub-trades of presence of asbestos-containing materials identified in Existing Conditions.

Co-ordinate with Consultant, Owner, Owner's representatives and other contractors when scheduling work.

## **1.10 OWNER'S INSTRUCTIONS**

Before beginning Work, provide Consultant satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, in use of glove bag procedures, and in use, cleaning, and disposal of respirators and protective clothing.

Instruction and training related to respirators includes, at minimum:

- Fitting of equipment.
- Inspection and maintenance of equipment.
- Disinfecting of equipment.
- Limitations of equipment.

Instruction and training must be provided by competent, qualified person.

## **Part 2 PRODUCTS**

### **2.1 MATERIALS**

#### **Enclosure:**

Polyethylene: 0.15 mm thick.

FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

#### **Wetting Agent:**

50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in a concentration to provide thorough wetting of asbestos-containing material.

**Waste Containers:** contain waste in two separate containers.

Inner container: 0.15 mm thick sealable polyethylene bag.

Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.

**Labelling requirements:** affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site.

**Tape:** tapes suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.

**Slow-drying sealer:** non-staining, clear, water-dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.

## **Part 3 EXECUTION**

### **3.1 PROCEDURES**

Before beginning Work, isolate Asbestos Work Area using, minimum, preprinted cautionary asbestos warning signs that are visible at access routes to Asbestos Work Area that shall read:

#### **CAUTION**

##### **Asbestos Hazard Area**

No Unauthorized Entry

Wear assigned protective equipment

Breathing asbestos dust may cause serious bodily harm.

Before beginning Work remove visible dust from surfaces in work area where dust is likely to be disturbed during course of work.

Use HEPA vacuum, or damp cloths where damp cleaning does not create hazard and is otherwise appropriate.

Do not use compressed air to clean up or remove dust from any surface.

Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in work areas where dust or contamination cannot otherwise be safely contained, where applicable

Cover or remove from the work area any equipment or furniture inside of it.

The work will involve the removal of non-friable material using a power tool attached to dust collecting device with a HEPA vacuum

Cover wall surfaces, which are not being abated, and ceiling with one layer of 6 mil polyethylene sheeting sealed with tape. Construct at least one chamber leading to the work area with overlapping and weighted flaps.

Establish negative air pressure using a negative air unit for the duration of the work.

Provide soap, water and towels for washing of workers' face and hands when exiting the enclosure. Ensure existing power supply to asbestos work area is isolated and disconnected where necessary.

Do not disrupt power supply to remainder of building. Disable the mechanical ventilation system serving the work area.

Seal the ventilation ducts to and from the work area.

Perform Work in a manner to reduce dust creation to lowest levels practicable.

#### Clean-up:

Frequently during Work and immediately after completion of work, clean up dust and asbestos-containing waste using HEPA vacuum or by damp mopping.

Place dust and asbestos-containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.

Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA vacuum and place in second clean waste bag.

Seal and remove double-bagged waste from site. Dispose of in accordance with requirements of Provincial/Territorial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.

Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA vacuum.

Re-establish mechanical and electrical systems in proper working order.  
Install new filters.

### **3.1 INSPECTIONS AND AIR MONITORING**

The following visual inspections will be completed by the Consultant over the duration of the work. The Contractor is to provide minimum 24-hour notice to the Consultant to arrange for the inspections. Asbestos Abatement Work shall not proceed until each inspection is completed and approval to proceed is obtained from the Consultant, where applicable.

*Pre Inspection:* following completion of preparation of work area but prior to the commencement of ACM removal.

*Visual Inspection:* following completion of all removal work and cleaning the enclosure, but prior to removing hoarding, drop sheets or other containment barriers.

If results of the visual inspection suggest that asbestos remains in the work area, re-clean the work area. Re-cleaning shall be at no additional cost to the Client. Once the visual inspection passes, Contractor will be provided authorization to apply lockdown sealant on all surfaces within the enclosure and schedule air monitoring for the following day.

Air monitoring will be conducted in the work area by the Consultant once the final inspection is completed and the area is deemed clean free of dust and debris. The air samples will be collected and analyzed in accordance with NIOSH method 7400. Analysis will be conducted by a laboratory that takes part in a documented QA/QC program for such analysis.

Air sample results will be shared with the Contractor verbally and authorization will be provided to dismantle the enclosure if the air sample results are below the regulated industry clearance standard of 0.01 fibres/cc.

If the air sample results are higher than the standard, the Contractor will reclean the work area and apply an additional coat of lockdown agent to all surfaces, at no additional cost to the Client. Additional air samples will be collected.

**END OF SECTION**



**PART - 1      GENERAL**

**1.1            SUMMARY**

.1            Section Includes:

.1            Labour, Products, equipment and services necessary to complete the work of this Section.

**1.2            REFERENCES**

- .1            ASTM A53: Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
- .2            ASTM A307: Standard Specifications for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
- .3            ASTM A325M: High-Strength Bolts for Structural Steel Joints
- .4            ASTM A653/A653M: Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process
- .5            ASTM F436: Hardened Steel Washers (for Use with High Strength Bolts)
- .6            CSA-G40.20/G40.21-M: General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel
- .7            CAN/CGSB-1.181: Ready Mixed Organic Zinc Rich Coating
- .8            CAN/CSA G164-M: Hot Dip Galvanizing of Irregularly Shaped Articles
- .9            CAN/CSA-S16.1: Limit States Design of Steel Structures
- .10          CSA W47.1: Certification of Companies for Fusion Welding of Steel Structures
- .11          CSA W48 Series: Electrodes
- .12          CSA W59-M: Welded Steel Construction (Metal Arc Welding)
- .13          CSA-W117.2: Safety in Welding, Cutting and Allied Processes
- .14          CGSB 85-GP-16M: Painting Galvanized Steel
- .15          CISC/CPMA 2.75: Canadian Institute of Steel Construction/Canadian Paint Manufacturers Association "A Quick-Drying Primer for Use on Structural Steel"
- .16          CISC: Canadian Institute of Steel Construction, "Code of Standard Practice"
- .17          SSPC: Steel Structures Painting Council, "Steel Structures Painting Manual, Vol. 2"

**1.3            SUBMITTALS**

.1            Shop Drawings

- .1            Submit shop drawings for each item showing:
  - .1            Product and material identification, thicknesses, gauges, finishes.
  - .2            Dimensions and jointing details.
  - .3            Cuts and drilled holes.
  - .4            Anchorage and securement systems.
  - .5            Interfaces with the work of other Sections.

- .2 Where structural or miscellaneous metal shapes and sizes, including shapes and sizes of hangers, bracing and anchors, are indicated on Architectural drawings it is the responsibility of the Metal Fabrications Subcontractor's structural engineer to review these shapes and sizes and confirm that they are adequate to support the loads anticipated. Consult with the Consultant regarding loading allowed by building structure. Subcontractor's structural engineer shall stamp and sign each shop drawing ensuring that the assemblies are provided in accordance with the engineer's design.
- .3 Clearly show and describe all items; sections, dimensions, erection details, anchors and fastenings, connection and jointing details.
- .4 Clearly indicate any deviation from the specifications or drawings.
- .2 Test Reports: Provide certified test reports showing compliance with specified performance characteristics and physical properties.
- .3 Product Data: Submit manufacturer's printed product literature, specifications and data sheets.
- .4 Samples: Duplicate samples of 300 mm square sheet, 300 mm long members of each finished metal work. Show each combination of mechanical and chemical treatments to be used on alloy. Prepare samples on metal of same alloy and gauge to be used for work. Show typical welds, fasteners, screws, mitres, and anticipated joints for compatible finish.

#### 1.4 **QUALITY ASSURANCE**

- .1 Employ a professional structural engineer registered in the province of Place of the Work to review components and supporting systems for the Work of this Section requiring structural performance, to be responsible for determining sizes, joint spacing to allow thermal movement, and loading of components in accordance with applicable codes and regulations, and to consult with the Project structural Consultant regarding loading allowed by building structure.
- .2 It is imperative that the Metal Fabrications Subcontractor's structural engineer review and coordinate shop drawings with respective Subcontractors specified to ensure proper interface of Work between both Subcontracts.
- .3 Employ welding operators licensed per CSA W47.1 for types of welding required by the Work.

#### 1.5 **PRODUCT DELIVERY, STORAGE AND HANDLING**

- .1 Coordinate deliveries to comply with construction schedule and arrange ahead for strategic off-the-ground, covered storage locations. Do not load areas beyond the designed limits.
- .2 Handle and store metal materials at job site in a manner to prevent damage to other materials, to existing buildings or property.
- .3 Handle components with care, and provide protection for surfaces against marring or other damage. Ship and store members with cardboard or other resilient spacers between surfaces. Use lifting chokers of material which will not damage surface of steel members.
- .4 Use strippable coatings or wrappings to protect exposed surfaces of prefinished metal work which does not receive site finishing. Use materials recommended by finishers or manufacturers of metals, to ensure that method is sufficiently protective, easily removed, and harmless to the finish.

- .5 Prevent the formation of wet storage stain on galvanized articles by complying with the following measures:
  - .1 Stack articles or bundle to allow air between the galvanized surfaces during transport from supplier. Load materials in such a manner that continuous drainage could occur.
  - .2 Raise articles from the ground and separate with strip spacers to provide free access of air to most parts of the surface. Incline in a manner which will allow continuous drainage. Do not lay galvanized steel on cinders, clinkers, wet soil or decaying vegetation.
  - .3 Handle galvanized articles in such a manner as to avoid any mechanical damage and to prevent distortion.
- .6 Tag metal fabrications, including associated anchor bolts, sleeves, and bases, or otherwise mark for ease of identification at project site.

1.6 **COORDINATION**

- .1 Supply to other Sections, materials requiring setting and/or building-in in concrete, masonry or other trades. This includes inserts, anchors, frames, sleeves, etc. Verify locations of said materials.

1.7 **PROJECT CONDITIONS**

- .1 Field Measurements: Take measurements at the building to assure proper fitting, fabrication, and erection of the work. Check dimensions in the field, whether or not shown, upon which the accurate fitting together and building-in of the metal fabrication work may depend or which affects the proper installation of the work of others.

**PART - 2 PRODUCTS**

2.1 **MATERIALS**

- .1 Metals - General: free from defects which impair strength or durability, or which are visible; new, of best quality and free from rust, waves or buckles, and clean, straight throughout entire length, of sharply defined profiles and true in web and flange.
- .2 Steel - General:
  - .1 Structural Shapes, Plates: New material conforming to CSA-G40.20/G40.21-M, Grade 350W for W and H shapes, and Grade 300W for other shapes, and plates.
  - .2 Hollow Structural Sections: New material conforming to CSA-G40.20/G40.21-M Grade 350W, Class H.
  - .3 Steel Pipe: Conforming to ASTM A53, Type "S", bare, Schedule 40, Grade A steel pipe.
- .3 Stainless Steel - General
  - .1 Stainless Steel Shapes: to ASTM A276, Type 304 for interior use; to AISI No. 4 (2B) finish.
  - .2 Stainless Steel Plate: to ASTM A167, Type 304 for interior use; to AISI No. 4 (2B) finish.
  - .3 Stainless Steel Sheet: to ASTM A167, Type 304 for interior use; to AISI No. 4 (2B) finish.
  - .4 Stainless Steel Fasteners: Type 304 or Type 316 to suit.

- .4 Galvanizing, steel shapes: CSA G164 Table 1, hot dip galvanized and passivated after fabrication of individual components.
- .5 Galvanizing, sheet steel: commercial quality to ASTM A653/A653M, Grade A, with zinc coating designation Z275, minimized spangle, in accordance with CSSBI Technical Bulletin No. 6. Galvanized sheets temper rolled and unpassivated zinc coating where required to receive paint or other applied finish.
- .6 Welding Materials: Conforming to CSA W48.1-M and CSA W59-M.
- .7 High Strength Bolts with Bolts, Nuts and Washers (for structural connections): Conforming to ASTM A325M with each type and size of bolt and nut sourced from same manufacture and of same lot. Use hot dipped galvanized where used in exterior connections or in unheated areas inside the building.
  - .1 Bolts: Heavy, hexagon head high strength structural bolts, of standard size, of lengths required for thickness of members joined and for type of connection.
  - .2 Nuts: Heavy hexagon semi-finished nuts.
  - .3 Washers: Flat and smooth hardened washers, quenched and tempered per ASTM F436.
- .8 Common or Ordinary Bolts and Anchor Bolts (for general applications): Unfinished bolts conforming with ASTM A307, Grade A, with hexagon heads and nuts where exposed in the finish work. Use hot dipped galvanized where used in exterior connections or in unheated areas inside the building.
  - .1 Common bolts: of lengths required to suit thickness of material being joined, but not projecting more than 6 mm beyond nut, without the use of washers.
  - .2 Anchor bolts: of lengths noted, but projecting not less than 13 mm beyond nut unless otherwise noted.
- .9 Galvanized Primer: Zinc rich conforming to CAN/CGSB-1.181 for new galvanized metal in compliance with CGSB 85-GP-16M. For galvanized fabrications touch-up to remain unpainted in finished work, use W.R. Meadows of Canada Ltd. "Galvafruid" or Kerry Industries "Z.R.C." or Niagara Paint Inc. "PL052898" zinc rich coating.

## 2.2 **FABRICATION**

- .1 Fabricate the work true to dimensions, square, plumb and level. Joints and intersecting members shall be accurately fitted with adequate fastenings.
- .2 Finished work shall be free from distortion and defects detrimental to appearance and performance.
- .3 Unless otherwise specified, noted or approved, all connections shall be welded.
- .4 Where not possible connections shall be bolted or secured in an approved manner. Exposed fastenings shall be countersunk, bolts cut off flush with nuts and made as inconspicuous as possible. Exposed fastenings where approved shall be of the same material, colour and finishes as the base metal on which they occur.
- .5 Shop and field connections shall comply with CSA S16.
- .6 Connections to structural steel members shall be welded. No bolting or drilling of holes shall be done unless approved in writing by the Consultant.
- .7 Fabricate items that are to be built into masonry or concrete and deliver to project site for setting; furnish items complete with bolts, anchors, clips, etc., ready to set. Furnish, completely install and connect other items. Erect items to proper lines and levels, plumb

and true, and in correct relation to adjoining work. Secure parts in a rigid and substantial manner using concealed connections where practicable.

- .8 Where necessary to secure work to the structure by means of expansion bolts, cinch anchors, and similar connections, lay out the work and install such connections, install the work and bolt up, unless otherwise noted.
- .9 Provide bolts, shims, blocks, nuts, washers, wedging pieces, etc., required for complete installation, unless otherwise noted.
- .10 Drill field holes for bolts or rivets. Do not burn holes.
- .11 Furnish fitting-up bolts, drift pins, other tools and equipment and do necessary reaming of unfair holes found in field connections. New holes or enlargement of unfair holes by use of cutting torch is cause for rejection of the entire member. Replacement shall be made at Contractor's expense.
- .12 Mill joints to a tight, hairline fit; cope or miter corners. Form joints exposed to weather to exclude water.
- .13 Remove burrs from all exposed cut edges.
- .14 Accurately cut, machine and fit joints so that finished work presents a neat appearance.
- .15 Assemble members without twists or open joints.
- .16 Drill properly sized holes for connecting the work of other trades where such can be determined prior to fabrication. Where possible, show such holes on shop drawings. Place holes so not to cause an appreciable reduction in strength of member.
- .17 Metal members shall be isolated where necessary in an approved manner to prevent corrosion due to metal to metal contact, or contact between masonry and concrete and metal.

## 2.3 **WELDING**

- .1 Execute welding to avoid damage or distortion to the Work. Should there be, in the opinion of Consultant or Inspection and Testing company, doubt as to adequacy of welds, such welds shall be tested for efficiency and any work not meeting specified Standards shall be removed and replaced with new work satisfactory to Consultant. Execute welding in accordance with the following standards:
  - .1 CSA W48: for Electrodes. If rods are used, only coated rods are allowed.
  - .2 CSA W59: for design of connections and workmanship.
  - .3 CAN/CSA-W117.2: for safety.
- .2 Welding shall be done by a fabricator fully approved by the Canadian Welding Bureau under the requirements of CSA W47.1.
- .3 Thoroughly clean welded joints and expose steel for a sufficient space to perform welding operations. Neatly finish welds. Where exposed to view and finish painted, apply weld continuously and grind to a uniformly smooth finish.

## 2.4 **GALVANIZING**

- .1 Unless otherwise specified galvanize exterior ferrous metals including members exposed to exterior elements when in final location; members embedded on the exterior side of exterior walls; members built into roof construction; members imbedded in concrete; members specified in this Section or noted on Drawings.
- .2 Hot-dip galvanize steel, in accordance with CSA G164 coating weight as prescribed for type of article, or ASTM A525M coating weight of 380 g/sq.m. as applicable. Galvanize

- after fabrication where possible. Follow recommended precautions to avoid embrittlement of the base metal by overpickling, overheating or during galvanizing.
- .3 Perform hot dip galvanizing after fabrication. Straighten shapes and assemblies true to line and plane after galvanizing. Repair damaged galvanized surfaces with galvanize primer in accordance with manufacturer's printed directions.
  - .4 Where the specification requires that material be zinc-coated it shall be zinc-coated after fabrication and in accordance with CGSB1-GP-181M (or) 1-GP-183M.
  - .5 Wet Storage Stain: Remove wet storage stain that may have developed in the coating before installation so that premature failure of the coating does not occur. Remove wet storage stain in accordance with galvanizer's recommendations.
  - .6 Repair of Galvanized Items: Repair coatings damaged by welding, cutting, or during handling, transport or erection using cold galvanizing compound specified, and as follows:
    - .1 Ensure surface is clean, dry, and free of oil, grease and corrosion.
    - .2 Power clean surface to near white metal condition, extending into undamaged galvanized coating.
    - .3 Apply touch up material to a dry film thickness of 0.203 mm (8 mils) minimum. If touched up work is to remain exposed in the finished work, apply a finish coat of aluminum paint to provide a colour blend with the surrounding galvanizing.
    - .4 Coating shall be continuous, adherent, as smooth and evenly distributed.

## **PART - 3 EXECUTION**

### **3.1 EXAMINATION**

- .1 Examine substrate surfaces to receive the work of this Section and ensure that work done as part of the work of other Sections is complete and that there are no conditions which will adversely affect the performance of this work.
- .2 Verify the accuracy and alignment of structural framing to which work of this Section is connected.
- .3 Do not proceed with work until unsatisfactory conditions have been corrected. Commencement of work implies acceptance of surfaces and conditions.

### **3.2 ERECTION**

- .1 Fit joints and intersecting members accurately. Make work in true planes with adequate fastenings. Build and erect work plumb, true, square, straight, level and accurate to sizes detailed, free from distortion or defects detrimental to appearance or performance.
- .2 Fit door frames and jambs with temporary steel spreaders to prevent springing frames and jambs out of shape.
- .3 Weld as specified herein.
- .4 Take adequate care to prevent damage to any material such as weld burns, etc.
- .5 Include all cutting and patching of masonry walls where necessary. Obtain Contractor's approval of cut-outs in advance.
- .6 Insulate where necessary to prevent electrolysis due to dissimilar metal to metal contact, or metal to masonry and concrete. Use bituminous paint, butyl tape, building paper or other approved means.
- .7 Install materials in a good and workmanlike manner, cleaning and grinding all welding laitance and touching up primer where necessary.

### 3.3 CONNECTIONS

- .1 Weld or high strength bolt main member connections. Use CISC double angle header connections wherever possible. High strength bolted connections shall be bearing type using 19mm dia. bolts conforming to ASTM A325M. Secondary members may be bolted with machine bolts.
- .2 Perform high tensile bolted connections in accordance with CSA-S16.1. Accurately space holes of size 1.6 mm larger than the nominal diameter of the bolt. Install bearing type high tensile bolted connections unless shown otherwise on Drawings. Provide compressor or electrical equipment capable of supplying and maintaining required pressure at the wrench. Make connections without the use of erection bolts, some high tensile bolts will serve that purpose. Prevent nuts on bolts, except high tensile bolts, from becoming loose by burring bolt thread, by welding or by lock washers or lock nuts.
- .3 Execute welding as specified under shop welding in Part 2 and as follows:
  - .1 Provide continuous welds on exterior work to provide proper weathering.
  - .2 Take necessary safety precautions in accordance with CSA Standards when welding is carried out in cold weather.

### 3.4 FIELD TOUCH-UP

- .1 Paint bolt heads, washers, nuts, field welds and previously un-primed items. Touch up shop primer damaged during transit and installation with material to match shop primer or galvanize coating.
- .2 Clean off dirt on installed miscellaneous metal surfaces.

### 3.5 SCHEDULE OF METAL FABRICATION ITEMS

- .1 General
  - .1 Provide metal fabrication items specified herein and items not indicated to be supplied under other Sections.
  - .2 Refer to drawings for details of metal fabrication work and related items not specifically listed in this Section.
  - .3 Where work is required to be built into work of other Sections supply such members to respective Sections.
  - .4 Provide anchor bolts and expansion bolts or other means of anchorage required for building into floors, walls and ceilings, where it is necessary to secure metal and wood to concrete, masonry or steel work. Supply anchor bolts, nuts and similar hardware to the respective Sections for fastening.
- .2 Steel Sections
  - .1 Supply and install steel sections which are:
    - .1 Not shown on structural drawings.
    - .2 Shown in outline, but not identified on structural drawings.
    - .3 Not noted on drawings to be supplied by another section.
    - .4 Not specified to be supplied under another section.
  - .2 Cutting of these steel sections in the field shall be done under this section and as directed. The cost of field cutting shall be borne by the trades requiring such cutting.

- .3 Where sections are required to be built into masonry or concrete, supply such members to respective trades.
  - .4 This work shall include, without being limited to -
    - .1 Steel struts to support suspended lead shielding
    - .2 Steel posts to counters.
  - .3 Stainless Steel Items
    - .1 Supply and install stainless steel items indicated on drawings, complete with fastenings and other incidentals required and as detailed. Refer to 'Materials' articles for alloy.
    - .2 Stainless steel finish: as specified under 'Finishes' article of this section, unless specified otherwise below.
    - .3 This work shall include, without being limited to:
      - .1 1.6 mm stainless steel corner guards for plaster walls.
  - .4 Concealed support elements and framing
    - .1 Construct concealed support elements and framing from rolled steel sections assembled by welding.
    - .2 Design work to withstand, within acceptable deflection limitations, their own weight, the weight of the items to be supported, loads imposed by the motion of supported items, where applicable, and all live loads, static and dynamic which might be applied to the supported items in the course of their normal function. Design supports with a safety factor of 3. Design supports further as required to accommodate structural deflection.
    - .3 Provide accessories, inserts and fixings necessary for attachment of supports to building structure. Drill supports to receive attachment of supported items. Arrange supports to avoid conflicts with pipes, ducts, pre-cast concrete connections, thermal and air/vapour barrier construction, framing provided under other Sections, and such that supports and their fixings are fully concealed from view within the finished work.
    - .4 Paint all supports unless galvanizing is specified.
  - .5 Steel Frames for Miscellaneous Openings
    - .1 Connections: Connect built-up members of frames by means of plug welding. Miter or cope and join members with continuous welding beads.
- 3.6 **RECONSTRUCTION, ALTERATIONS AND MAKING GOOD**
- .1 Do all re-construction, alterations, fitting, patching and making good of the existing building and to join new work to existing.

END OF SECTION



**PART - 1      GENERAL**

**1.1            SUMMARY**

- .1      Section Includes:
  - .1          Labour, Products, equipment and services necessary to complete the work of this Section.
- .2      Related Requirements
  - .1          Comply with Conditions of the Contract and Division 01 - General Requirements.

**1.2            QUALITY ASSURANCE**

- .1      Lumber identification: By grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2      Plywood identification: By grade mark in accordance with applicable CSA standards.
- .3      Align and plumb faces of furring and blocking to tolerance of 1:600.
- .4      Regulatory requirements: Provide finished wall assemblies flame spread rating of not more than 150 and finished ceiling assemblies flame spread of not more than 25.

**1.3            SUBMITTALS**

- .1      Test reports: Duplicate copies of flame spread classification test reports by independent testing agency to requirements of CAN/ULC S102.

**PART - 2      PRODUCTS**

**2.1            GENERAL**

- .1      All composite wood and agrifibre products (including core materials) used in the building must not contain added formaldehyde.
- .2      Adhesives used to fabricate laminated assemblies used in the building that contain composite wood and agrifibre products must not contain added formaldehyde.
- .3      Adhesives used must meet VOC requirements.

**2.2            MATERIAL**

- .1      Lumber: Acceptable to authorities having jurisdiction and unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with CSA O141 and NLGA Standard Grading Rules for Canadian Lumber, latest edition.
- .2      Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers: S2S, Standard or better grade.
- .3      Douglas fir plywood: CSA O121, standard construction.
- .4      Canadian softwood plywood: CSA O151, standard construction.
- .5      Poplar plywood: CSA O153, standard construction.
- .6      Interior mat-formed wood particleboard: ANSI/NPA A208.1.
- .7      Hardboard: CAN/CGSB-11.3.
- .8      Nailing discs: Flat caps, minimum 25 mm diameter, galvanized sheet metal formed to prevent dishing. Bell or cup shapes not acceptable.
- .9      Nails, spikes and staples: CSA B111.
- .10     Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.

- .11 Galvanizing: CAN/CSA G164, use galvanized fasteners for exterior work, interior highly humid areas, pressure-preservative and fire-retardant treated work.
- .12 Fire retardant treated wood: To CAN/ULC S102, flame spread, fuel contributed and smoke developed ratings of 25 or less, pressure treated.
  - .1 Lumber and plywood: FirePro FRTW by Osmose, or Dricon FRT by Arch Wood Products Inc., or other acceptable equivalents.
  - .2 Particleboard: Duraflake FR by Weyerhaeuser, or other acceptable equivalents.

**PART - 3 EXECUTION**

**3.1 INSTALLATION - GENERAL**

- .1 Install members true to line, levels and elevations.
- .2 Construct continuous members from pieces of longest practical length.
- .3 Install spanning members with "crown-edge" up.
- .4 Install materials so that grade-marks and other defacing marks are not visible or are removed by sanding.

**3.2 FURRING AND BLOCKING**

- .1 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding and other work as required.
- .2 Install furring to support siding applied vertically and where sheathing is not suitable for direct nailing.

**3.3 NAILING STRIPS, GROUNDS AND ROUGH BUCKS**

- .1 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

**3.4 CANTS, CURBS, FASCIA BACKING**

- .1 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized fasteners.

**3.5 SLEEPERS**

- .1 Install sleepers as indicated.

**3.6 FASTENERS**

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.
- .3 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

**3.7 PRESSURE TREATED WOOD**

- .1 Use pressure treated wood as follows:
  - .1 Wood cants, fascia backing, curbs, nailers, sleepers on roof deck.
  - .2 Wood furring on outside surface of exterior masonry and concrete walls.
- .2 Treat wood cut ends in contact with masonry or concrete with wood preservative before setting in place. Apply preservative in accordance with the manufacturer's written instructions.
- .3 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and one minute soak on plywood.

3.8            **ELECTRICAL, DATA AND TELEPHONE EQUIPMENT BACKBOARD**

- .1            Provide fire retardant treated backboards for mounting electrical equipment as indicated.  
              Use 19 mm thick plywood on 38 mm x 89 mm furring around perimeter and at maximum  
              300 mm intermediate spacing.

END OF SECTION

**PART - 1      GENERAL**

**1.1            SUMMARY**

- .1      Section Includes: Labour, Products, equipment and services necessary to complete the work of this Section.
- .2      Related Requirements
  - .1          Comply with Conditions of the Contract and Division 01 - General Requirements.

**1.2            REFERENCES**

- .1      Abbreviations and Acronyms:
  - .1          AWMAC: Architectural Woodwork Manufacturers Association of Canada;  
[www.awmac.com](http://www.awmac.com).
  - .2          NAAWS: North American Architectural Woodwork Standards – 3.1, 2017, including all errata and supplements, a jointly sponsored by Architectural Woodwork Manufacturers Association of Canada (AWMAC) and the Woodwork Institute (WI).

**1.3            DEFINITIONS**

- .1      Concealed Surfaces: Surfaces not visible after installation.
- .2      Exposed Surfaces: Surfaces exposed to view. Surfaces visible when doors and drawers are closed, backs of hinged doors and edges of hinged doors exposed when opened.
- .3      Semi-Exposed Surfaces: Surfaces that become visible when drawers and doors are opened.

**1.4            SUBMITTALS**

- .1      Product Data: Manufacturer's specifications, data, and installation instructions for each manufactured product specified, including fire-retardant-treated materials, hardware, accessories and finishing materials and processes.
  - .1          Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- .2      Shop drawings: Show large scale details of construction. Indicate profiles of members, jointing, fastening, strapping, cut-outs for mechanical and electrical services and related items.
- .3      Samples: Submit duplicate 150 mm x 150 mm samples of each specified finish and material for review, show colours and details of edging, forming and construction.
- .4      Test reports: Duplicate copies of flame spread classification test reports by independent testing agency to requirements of ULC S102.
- .5      Maintenance Data and Operating Instructions: Supply 3 copies of detailed instructions for maintaining, preserving and keeping work of this Section clean and give adequate warning of maintenance practices or materials detrimental to the factory finished work.

**1.5 QUALITY ASSURANCE**

- .1 Execute the work of this Section by fully equipped, expert craftsmen, highly skilled in millwork fabrication.
- .2 Quality of work and materials: Comply with the requirements for Premium Grade in accordance with the NAAWS standards.
- .3 Finish matching: Finish for solid wood members shall match wood veneer finish.
- .4 Regulatory requirements: Provide finished wall assemblies flame spread rating of not more than 150 and finished ceiling assemblies flame spread of not more than 25, smoke development classification of 100 for walls and 50 for ceilings, listed and labelled by an organization accredited by Standards Council of Canada in conformance with CAN/ULC-S104 and CAN/ULC-S105.

**1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Handle all materials and components carefully to prevent damage.
- .2 Do not deliver finished Products during rainy or damp weather.
- .3 Ensure that Work of this Section is not delivered until building and storage areas are sufficiently dry so that this Work will not be damaged by excessive changes in moisture content.
- .4 Comply with Product delivery, storage and handling requirements of the AWMAC Quality Standards.
- .5 Protect fire-retardant materials against high humidity and moisture.
- .6 Provide dry storage areas. Stack materials with 150 mm clearance off the floor.
- .7 Do not deliver and install damaged Products. Replace in accordance with requirements of this Section.
- .8 Cover finished surfaces with heavy kraft paper or put in cartons during shipment. Protect installed surfaces by approved means. Do not remove protective covers until immediately prior to final inspection.

**1.7 FIELD CONDITIONS**

- .1 Environmental Limitations: Do not deliver or install millwork items until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature between 16 and 32 deg. C and relative humidity between 25 and 55 percent during the remainder of the construction period.
- .2 Field Measurements: Where millwork items are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work
  - .1 Locate concealed framing, blocking, and reinforcements that support millwork items by field measurements before being enclosed, and indicate measurements on Shop Drawings.

**1.8 CO-ORDINATION**

- .1 Verify all dimensions on job site prior to shop fabrication and work on site. Alert Consultant immediately where discrepancies occur.
- .2 Co-ordinate fabrication, delivery, and installation with other Sections whose work affect work of this Section, including finish hardware, audio/visual, security, mechanical and electrical services.
- .3 It shall be the responsibility of this Section to verify the dimensions and installation details for Owner's supplied equipment and furnishings requiring cut-outs, adaptations and interfacing with woodwork items.

**PART - 2 PRODUCTS**

**2.1 GENERAL**

- .1 All composite wood (including core materials) used in the building shall not contain added formaldehyde.
- .2 Adhesives used to fabricate laminated assemblies used in the building that contain composite wood and agrifibre products shall not contain added formaldehyde.
- .3 Adhesives used must meet VOC requirements.

**2.2 MATERIALS**

- .1 Wood members: Clean, seasoned, straight, square and true on all four sides. Comply with minimum size and tolerances of CSA O141. Grade-mark all wood materials. Kiln dry wood materials for interior use to a moisture content of 4% to 8%, and 7% to 10% for exterior use.
- .2 Medium Density Fibreboard Core (MDF): to ANSI A208.2, Grade 155, manufactured from 100% recycled materials, without the use of added formaldehyde resins, minimum density of 770 kg/m<sup>3</sup> (48 lb./cu.ft.).
  - .1 Where indicated on drawings or required by authorities having jurisdiction, provide industrial grade MDF certified to meet Class 1 surface burning characteristics of ASTM E84, CAN/ULC S-102 and UL 723 (maximum flame spread ≤25, maximum smoke development ≤200).
- .3 Veneer Core (Plywood): Provide exterior grade, veneer core (plywood) conforming to NAAWS.
  - .1 Softwood plywood (concealed locations): Canadian Softwood Plywood (CSP) to CSA O151, standard construction, grade as required, of thickness as indicated, as recommended by NAAWS.
  - .2 Hardwood plywood: CSA O115, Type II (Type I for high humidity conditions), with a non telegraphing grain manufactured with exterior glue meeting requirements of NAAWS. Exposed faces of Good Sequence Matched, selected veneers, and unexposed faces of Sound Grade, So, veneers.
  - .3 Douglas Fir plywood: CSA O121; Western Softwood Plywood: CSA O151. Exposed two sides shall be Grade S2S, and exposed one side shall be Grade S1S. Consider fitment doors exposed on both sides.
  - .4 Birch-faced hardwood plywood: CSA O115, Good Sequence Matched, Select White or Select Red.

- .4 Particleboard Core: 100% pre-consumer recycled wood fiber particleboard, no added formaldehyde, to ANSI/NPA A208.1, Grade R, minimum density of 720 kg/m<sup>3</sup> (45 lb./cu.ft.), sanded both sides with thickness as recommended by NAAWS for specified applications.
- .5 Hardboard: CGSB 11-GP-3, impregnated, pressed wood with a tempering compound and polymerized by baking.
- .6 Plastic laminate (PLAM): ANSI/NEMA LD-3, High Pressure, Paper Base, Decorative Laminates. Unless otherwise specified, use the following:
  - .1 Horizontal postform work: Grade HGP, minimum 1 mm thick.
  - .2 Horizontal flat work: Grade HGS, minimum 1.2 mm thick.
  - .3 Vertical postform work: Grade VGP, minimum 0.7 mm thick.
  - .4 Vertical flat work: Grade VGS minimum 0.7 mm thick.
  - .5 Casework Liner (for semi-exposed surfaces): type CLS.
  - .6 Backing sheet: BK, same thickness as facing sheets, sanded one face and manufactured by the same manufacturer as the facing sheet.
  - .7 Test for acceptable VOC emissions in accordance with ASTM D2369 and ASTM D2832.
  - .8 Plastic Laminate Types: Refer to Section 09 06 00 Finishes Schedule for complete list of plastic laminate types, indicating designations, suppliers, textures and finishes.
- .7 Melamine board: Melamine resin impregnated paper, thermally fused to particle board or MDF core, furniture finish in solid colour to be selected by Consultant.
- .8 Concealed framing: NLGA, S-Dry No. 1 grade Ontario White Pine or Douglas Fir, comply with BCLMA Construction grade.
- .9 Sealer: Water-repellant, clear, colourless, penetrating wood preservative, LePage's Wood Preservative by LePage's Ltd., Super Solignum by Solignum Inc., Pentox by Osmose-Pentox Inc., or other acceptable equivalents.
- .10 Adhesives: Type I or Type II adhesives in accordance with NAAWS guidelines, and in accordance with manufacturer's recommendations for the intended purpose; urea-formaldehyde free, and not to exceed maximum VOC limits of SCAQMD Rule 1168, Adhesives and Sealants Applications.
- .11 Fire retardant treated wood: Pressure treated, flame spread classification of not more than 25 as tested to ULC S102.
  - .1 Concealed lumber and plywood framing, blocking, furring, and strapping: FirePro FRTW by Osmose, or Dricon FRT by Arch Wood Products Inc., or other acceptable equivalents.
  - .2 Medium density fiberboard: Premier MDF by Weyerhaeuser, or other acceptable equivalents.
- .12 Fasteners
  - .1 Nails and staples: to CSA B111.
  - .2 Concealed fasteners: Non-corrosive screws bolts and clips as required to suit conditions. Provide appropriate expansion anchors for securement to concrete and masonry.

- .13 Stainless steel: Type 304, No. 4 brushed finish.

## 2.3 **SOLID SURFACING**

- .1 Solid surfacing: Refer to Section 09 06 00 Finishes Schedule for complete list of solid surfacing types, indicating designations, suppliers, colours, and finishes.
- .2 Joint adhesive, solid surfacing: Manufacturer's standard two-part adhesive kit to create inconspicuous, non-porous joints, with a chemical bond.
- .3 Panel adhesive, solid surfacing: Manufacturer's standard neoprene-based panel adhesive.
- .4 Sealant, solid surfacing: Manufacturer's standard mildew-resistant silicone sealant colour formulated to match sheets.

## 2.4 **HARDWARE**

- .1 Refer to Section 09 06 00 Finishes Schedule for products and manufacturer unless specified otherwise.
- .2 Adjustable steel standards and supports: Nickel plated steel, adjustable on 12 mm centres, 255 ZC x 256 by Knape & Vogt or other acceptable equivalents. Standards at 150 mm from top and bottom. One support per 300 mm length of standard.
- .3 Secret gate latch: Cast aluminum with natural finish, 989 by Knape & Vogt or 600 by Rockwood or other acceptable equivalents.
- .4 Pin hinge: Nickel plated top, intermediate and bottom hinge, 1238 x 5146 by Amerock or 580 x 575 by onward or other acceptable equivalents.
- .5 Spring hinge: 170 degree opening, nickel plated steel mounting plate and self-closing hinge with zinc die cast screwed on cup model 91A6500 and 91A6600 and adhesive back plastic door bumpers model TP1950 by Blum Canada Ltd., or other acceptable equivalents.
- .6 Silencer: Round vinyl, self-adhered, provide 2 per door.
- .7 Magnetic catch: Cast aluminum, 918 by Knape & Vogt or other acceptable equivalents.
- .8 Cabinet locks: Tumbler, nickel plated, 987 NP by Knape & Vogt, or other acceptable equivalents. Provide two keys per lock.
- .9 Drawer slide: Full extension, side mounting, zinc coated, steel ball bearing, minimum 45 kg. rated, 1429 by Knape & Vogt or other acceptable equivalents.
- .10 Wall mounted shelf brackets: rated 1,000 lb per pair of brackets, epoxy coated white, 5 mm thick steel L shaped brackets, 208 Ultimate L- Brackets by Knape & Vogt or other acceptable equivalents.

## 2.5 **FABRICATION - GENERAL**

- .1 As far as practical, shop assemble work for delivery to site ready for installation and in size easily handled and to ensure passage through building openings. Leave ample allowance for fitting and scribing on the job.
- .2 Fabricate work square and to the required lines. Recess and conceal fasteners and anchor heads. Fill with matching wood plugs.
- .3 Make each unit rigid and self supporting, suitable for individual removal.



- .4 Provide wood members free from bruises, blemishes, mineral marks, knots, shake and other defects and select for colour, grain and texture. Machine and hand sand surfaces exposed in the finished work to an even, smooth surface free from defects detrimental to appearance, in accordance with NAAWS standards, Premium Grade.
- .5 Finish exposed edges and curves smooth. Keep contrast in colour and grain in adjoining materials to a minimum.
- .6 Provide running members in the maximum lengths obtainable. Provide thickness of members in maximum dressed size of standard lumber. Where thickness or width indicated is not available in hardwoods, use glue laminations to obtain sizes required.
- .7 Design and fabricate work to allow for expansion and contraction of the materials. Unless otherwise specified, work shall be glued, and blind screwed or nailed. Properly frame material with tight, hairline joints and hold rigidly in place. Use glue blocks where necessary.
- .8 Conceal joints and connections wherever possible. Locate prominent joints where directed. Glue and pin mortise and tenon joints. Intermediate joints between supports will not be permitted. Set and fill surface nails. Prevent opening-up of glue lines in the finished work.
- .9 Comply with glue manufacturer's recommendations for lumber moisture content, glue shelf life, pot life, working life, mixing, spreading, assembly time, time under pressure and ambient temperature.
- .10 Provide exposed and grain of solid members and edges of exposed plywood with matching solid edging at least 6 mm thick.
- .11 Seal finish carpentry wood items before they leave the fabricating shop. For surfaces to receive a natural or stain finish ensure that the sealer is compatible with the final finish. Co-operate with Section 09 91 00 Painting and obtain written approval of proposed sealer.
- .12 Fit shelf, door, drawer, gable and cabinet edges and other edges with hardwood edging prior to application of laminated plastic edging or subsequent finishing. Refer to drawings for hardwood edging dimensions.
- .13 Set nails and screws, apply wood filler to indentations, sand smooth and prepare to receive finish. Clean, ensure surfaces are free of dust.

## 2.6 **FABRICATION - CABINETS**

- .1 Framing: Solid stock framing assembled with machined dovetailed, mortised tennoned or blind dado joints adequately glued and secured with screws.
- .2 Countertops: 19 mm nominal thickness plywood, or particleboard. Provide cut-outs for sinks, fitments and services as required.
- .3 Gables: 19 mm particle board or plywood. Attach gables to framing with tongue and groove. Reinforce connections with supplementary metal angles. Route gables to receive shelf standards and fixed shelvings. Provide plastic laminate finished wood cleats for closet shelving and coat rod installation.
- .4 Backs: minimum 6 mm thick plywood. Conceal joints behind framing, rout backs into end gables.
- .5 Bottoms: 19 mm plywood attached to front rails with tongue and groove.
- .6 Doors: 19 mm thick particle board.

- .7 Drawers: solid wood stock, 19 mm thick fronts, 12 mm backs, 6 mm drawer dividers and 15 mm sides. Fasten sides to fronts with dovetail joints, and grooved joints for backs. Bottoms of minimum 6 mm thick Birch plywood grooved into front and sides and glued. Refer to architectural drawings for type of PLAM finish.
- .8 Shelving: 19 mm plywood. Apply plastic laminate to visible edges, except that adjustable shelves shall be edged on front and back, unless noted on architectural drawings as edge banding.
- .9 Base: Marine grade plywood, of height equal to base in room, for moisture/wet areas.

## 2.7 **FABRICATION - PLASTIC LAMINATE FACED WORK**

- .1 Factory apply plastic laminate to interiors of all cabinetwork except drawers, but including drawer fronts and shelves, including underside of cabinets.
- .2 Edge band doors, drawers, gables and all visible edges of plywood and particle board components with plastic laminate to match faces, strips same width as plywood or particle board.
- .3 Apply backing sheet to laminated flatwork. Apply uniform coating of sealer on exposed edges. Provide backing sheet of sufficient thickness to compensate stresses caused by the facing sheet.
- .4 Self-edge straight-line-edging with 1.2 mm standard material and radius corners with post-forming material; apply with same adhesive as facing sheet. Chamfer edges uniformly at approximately 20 degrees using machine router.
- .5 Locate joints at 2400 mm to 3000 mm o.c. At L-shaped corners mitre plastic laminate, to the outside corner. Accurately fit members together to provide tight and flush butt joints, in true planes. Provide 6 mm blind spline and approved type draw bolts; one draw bolt for widths up to 150 mm at maximum 450 mm centres for widths exceeding 150 mm. Colour-match adjoining units.
- .6 Provide cut-outs as required for inserts, fixtures and fittings. Use radiused corners and chamfer edges around cut-outs to avoid chipping laminate.
- .7 Post-form laminate work to details indicated. Provide same core and laminate profiles to provide continuous support and bond for the entire surface.
- .8 Assemble work, true and square. Arrange adjacent parts of continuous laminate work to match in colour and pattern.

## 2.8 **FABRICATION – SOLID SURFACING**

- .1 Shop fabricate work to greatest extent practical and to sizes and shapes indicated, in accordance with reviewed shop drawings and solid polymer manufacturer requirements.
- .2 Form joints between work using manufacturer's joint adhesive. Make joints inconspicuous in appearance and without voids. Mitre L-shaped corners. Attach 50 mm wide reinforcing strip of solid polymer material under each joint or as recommended by the manufacturer.
- .3 Cut holes and cutouts for items penetrating the work to templates. Reinforce holes and cutouts to manufacturer's requirements.
- .4 Provide edge details indicated. Rout and finish component edges to a smooth, uniform finish. Rout all cutouts, then sand all edges smooth. Repair or reject defective or inaccurate work.

**2.9 FABRICATION - TRIM**

- .1 Trim members shall be of sizes and profiles indicated. Trim members shall be slow-fed work, free from chatter and other machine marks.
- .2 Provide trim over 60 mm wide with backs ploughed or kerfed. Mitre all joints. Carefully machine drum-sand exposed flat surfaces. Minimize sanding on the job.

**2.10 FABRICATION - FIRE RETARDANT TREATMENT**

- .1 Provide ULC label for treated wood products as received from the pressure treating plant.
- .2 Do not expose pressure treated material to dampness between the time the material is treated and the time the finish is applied. Carefully sand surfaces which show surface salt deposits to remove such deposits before finish is applied.
- .3 Provide quality of finished work of equal standard to that of untreated material. Provide identification on materials delivered to Project site showing that these Specifications have been complied with, on each large item, and on bundles of small items. Arrange wood members in pressure treating cylinder to avoid sticker marks on best face of members.
- .4 Fire retardant varnish: Apply varnish to substrates in strict accordance to manufacturer's instructions. Maintain room temperature and humidity recommended by the varnish manufacturer.

**2.11 FABRICATION - METAL WORK**

- .1 Fabricate the work true to dimensions and square. Accurately fit members with hairline joints. Maintain continuous, unbroken profiles during joining and assembly process.
- .2 Construct finish work free from distortion and defects detrimental to appearance and performance. Work shall have smooth finished surfaces.
- .3 Fabricate metal work complete with all components required for anchoring in a safe and secure manner.
- .4 Countersink exposed fastenings, where such are shown on final reviewed shop drawings and make as inconspicuous as possible.

**PART - 3 EXECUTION**

**3.1 EXAMINATION**

- .1 Verify mechanical, electrical, plumbing, HVAC and other building components, affecting work in this Section are in place and ready.
- .2 Examine substrates and adjoining construction and conditions under which work will be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.

**3.2 PREPARATION**

- .1 Condition woodwork before installation.
- .2 Before installing woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

- .3 Provide blocking, nailers, furring and grounds required for installation of work of this Section, whether or not such blocking and similar items are indicated on drawings. Coordinate installation of supports concealed in partitions and walls with Sections providing the supports.
- .4 Coordinate with Sections providing work concealed by this Section.
- .5 Co-ordinate with mechanical, plumbing and electrical requirements to provide openings for diffusers, sprinkler heads, receptacles, switches and fixtures.

### 3.3 **INSTALLATION**

- .1 Install work in conformance with the NAAWS standards. Comply with NAAWS standards Premium Grade.
- .2 Install in accordance with reviewed shop drawings and manufacturer's instructions.
- .3 Set and secure materials and components in place, rigid, straight, level, plumb and square with hairline joints. Scribe neatly to adjoining surfaces; install blocking and fillers required. Secure units using concealed fasteners.
- .4 Provide matching scribing closer strips between units and gypsum wallboard or similar surfaces.
- .5 Provide heavy duty fixture attachments for wall mounted cabinet work.
- .6 Apply sealant between units and adjacent wall and floor surface, around sills, pipes and escutcheon plates and similar areas to seal and finish installation, in accordance with Section 07 92 00.
- .7 Make allowances around perimeter where fixed objects pass through or project into carpentry work to permit normal movement without restriction.
- .8 Install work rigidly anchored to the building structure. Provide steel post reinforcing and bracing as required at open gable ends, free standing rails and other free standing work.
- .9 Cut equipment cutouts using templates provided.
- .10 Access panels: coordinate with equipment supplier exact location of access panels.
- .11 Touch up cut edges and surfaces with sealer.
- .12 Apply water resistant building paper or bituminous coating over wood framing members in contact with cementitious construction.
- .13 After installation, adjust operating hardware for proper fit and function.
- .14 Protect finished surfaces by approved means. Do not remove until immediately before final inspection.

### 3.4 **INSTALLATION – SOLID SURFACING**

- .1 Install work plumb and level, in accordance with reviewed shop drawings and product installation details.
- .2 Adhere solid surfacing tops to support framing with panel adhesives or concealed fasteners.

- .3 Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Keep components and hands clean when making joints.
- .4 Apply sealant at joints to adjacent construction, to requirements of Section 07 92 00.
- .5 Keep components and hands clean during installation. Remove adhesives, sealants and other stains.
- .6 Protect surfaces from damage until Substantial Performance. Replace damaged work that cannot be repaired to Consultant's satisfaction.

### 3.5 **CABINET HARDWARE**

- .1 Install hardware to fitments in accordance with manufacturer's requirements and templates. Adjust hardware as and when required to provide smooth operation and ensure clearances are maintained. Repair damage to adjacent surfaces resulting from failure to conform with this requirement.
- .2 Provide lubricants required and use in manner to ensure smooth function of hardware consistent with manufacturer's recommendations.
- .3 Ensure fastening components are tightened snugly. Do not burr or otherwise mar the edges of surfaces of hardware components.

### 3.6 **METAL SUPPORTS**

- .1 Install metal supports as indicated on drawings.
- .2 Drill holes to receive counter-sunk screws.
- .3 Thoroughly clean and prime paint. Apply two coats paint to underside of angle projecting from counter in a neutral colour comparable to adjacent wood colour.

### 3.7 **ADJUSTING AND TOUCH-UPS**

- .1 Before completion of work, adjust moving and operating parts to function smoothly and correctly
- .2 Touch-up marred finishes, including factory finishes to match adjacent surfaces.
- .3 Fill and retouch all nicks, chips and scratches.
- .4 Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace damaged woodwork items.
- .5 Adjust joinery for uniform appearance.
- .6 Remove and replace units which are warped, bowed, not properly fitted or finished or otherwise damaged.

### 3.8 **CLEANING AND PROTECTION**

- .1 On completion, remove manufacturer's identification markings and clean plastic laminate surfaces.
- .2 Clean work upon completion on exposed and semi-exposed surfaces.
- .3 Broom clean the area of operation.

- .4 Protect units during construction so that they will be without any evidence of damage or use at time of acceptance, including corner guards at all edges and impact resistant protective facing to all surfaces.
- .5 Do not remove labels, packaging, wrapping, and other protective measures for finished installations prior to start of commissioning or otherwise instructed by Consultant.

END OF SECTION

**PART - 1 GENERAL**

**1.1 SUMMARY**

- .1 Section Includes:
  - .1 Labour, Products, equipment and services necessary to complete the work of this Section.
- .2 Related Requirements
  - .1 Comply with Conditions of the Contract and Division 01 - General Requirements.

**1.2 REFERENCES**

- .1 American Society for Testing and Materials (ASTM):
  - .1 ASTM E2174, Standard Practice for On-Site Inspection of Installed Fire Stops
- .2 Underwriters' Laboratories of Canada (UL Canada):
  - .1 CAN/ULC-S102, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
  - .2 CAN/ULC-S104, Standard Method for Fire Tests of Door Assemblies
  - .3 CAN/ULC-S105, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104.
  - .4 CAN/ULC-S115, Standard Method of Fire Test of Firestop Systems.

**1.3 REQUIREMENTS OF REGULATORY AGENCIES**

- .1 Fire rated assemblies: Labelled and listed by a nationally recognized testing agency having factory inspection service in conformance with CAN/ULC-S104 and CAN/ULC-S105 for ratings indicated.

**1.4 SYSTEM DESCRIPTION**

- .1 Work of this Section is inclusive of all firestopping specified herein and indicated on Drawings except for firestopping and smoke seal within mechanical assemblies (i.e. inside ducts, dampers, intumescent pipe sleeves) and electrical assemblies (i.e. inside bus ducts) shall be provided as part of work of the Mechanical and Electrical Divisions respectively. Firestopping and smoke seals around outside of such mechanical and electrical assemblies, where they penetrate fire rated separations, shall be part of work of this Section.
- .2 Fire stopping materials and/or systems intended to act as firestop and smoke seal for any through-penetrating items, termination devices, receptacles or any cut-out openings or joints, including openings and spaces at perimeter edge conditions, with wall and floor assemblies having fire-resistance rating.
- .3 Fire stop and seal (draft-tight) gaps, expansion joints and penetrations in fire separations and fire walls against passage of fire, smoke, gasses, fire fighter's hose stream and, where designated, passage of liquids. Smoke seal at angle support at fire dampers.
- .4 Materials and systems capable of providing effective barrier against passage of fire, smoke, gasses, and where specifically indicated passage of liquids.
- .5 Ensure firestopping system provides fire-resistance rating (flame and temperature) not less than fire resistance rating of surrounding floor, wall or assembly, in accordance with requirements of OBC.

- .6 Firestop system rating: Comply with F, FH, FT, or FTH ratings as required by authorities having jurisdiction.
- .7 Firestopping seals except for wall joints in visible areas must be of easily identifiable colour, such as red or yellow to be clearly distinguished from other building materials.
- .8 Supply asbestos-free and PCB-free materials and systems tested in accordance with CAN/ULC S115, be ULC listed, or be acceptable by authorities having jurisdiction.
- .9 Ensure suitability of products for application and compatibility of materials with surfaces to which it will be applied.
- .10 Site system assembly shall be in accordance with ULC listed system design limitations, unless proposed assembly is approved by authorities having jurisdiction and meets Consultant's approval.
  - .1 Technical submissions that propose deviations from a listed assembly must be prepared, stamped and signed by a Professional Engineer, licensed to practice in the Province of Ontario.

#### 1.5 **QUALITY ASSURANCE**

- .1 Provide work of this Section using competent installers experienced, trained and approved by material or system manufacturer for application of materials and systems being used. Installers shall have minimum 5 years experience in installation of firestopping materials as systems for multiple trade projects.
  - .1 Approved applicators of fireproofing materials shall select, with manufacturer's recommendations, ULC rated assembly to achieve the required fire resistance rating.
- .2 Work of this Section shall be by one Sub-Contractor responsible for firestopping materials and systems for all of the Work except as outlined above.
- .3 Pre-installation meeting: Prior to commencing work of this Section, arrange for manufacturer's technical representative to visit the site and review procedures to be adopted, conditions under which the work will be done, and inspect the surfaces to receive the work of this Section. Advise the Consultant of the date and time of the meeting.
- .4 Manufacturer's site inspection: Have the manufacturer's technical representative inspect the work at suitable intervals during application and at conclusion of the work of this Section, to ensure the work is correctly installed. When requested, submit manufacturer's inspection reports and verification that the work of this Section is correctly installed.
- .5 Request inspection by Consultant of completed systems before they are covered.

#### 1.6 **COORDINATION**

- .1 Coordinate with Sections involved (and advise dates) where work will take place throughout various areas of Work.

#### 1.7 **DELIVERY, STORAGE AND HANDLING**

- .1 Deliver materials to Site in manufacturer's sealed and labelled containers. Materials shall be subject to Consultant's inspection.
- .2 Store materials inside building for 24 hours prior to use; store in area designated by Consultant; protect from damage and environmental conditions detrimental to material.

#### 1.8 **ENVIRONMENTAL CONDITIONS**

- .1 Maintain minimum temperature of 40 deg F for minimum period of 1 week before application, during application and until application is fully cured.



- .2 Conform to manufacturer's recommended temperatures, relative humidity and substrate moisture content for storage, mixing, application and curing of firestopping materials.
- .3 Ventilate areas in which firestopping is being applied. Protect water-soluble material from wetting until fully cured.

#### 1.9 **SUBMITTALS**

- .1 Shop Drawings: Submit complete and detailed shop for each condition encountered on Site. Indicate following:
  - .1 ULC assembly number certification, unless proposed assembly is approved by authorities having jurisdiction and meets Consultant's approval
  - .2 Required temperature rise and flame rating
  - .3 Hose stream rating (where applicable)
  - .4 Thickness
  - .5 Proposed installation methods
  - .6 Material of firestopping and smoke seals, primers, reinforcements, damming materials, reinforcements and anchorages/fastenings
  - .7 Size of opening
  - .8 Adjacent materials
  - .9 Number of penetrations
  - .10 Location of penetrations
- .2 Product Data: Submit up-to-date manufacturer's product data proposed for use under this Section. Include manufacture printed instructions for installation.
- .3 Samples: If requested, submit samples of each type of firestopping systems, smoke seals and accessories. Indicate location where material/system shall be used
- .4 Certification: Submit current ULC listings and certified copies of test reports and/or smoke seals indicating that firestopping material/systems conforms to or exceeds specified requirements.

#### 1.10 **WARRANTY**

- .1 Warrant work of this Section against defects and deficiencies for period of 5 years commencing at the date of Substantial Performance. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no additional cost to Owner. Defects shall include but shall not be limited to cracking, breakdown of bond, failure to stay in place or bleeding.

### **PART - 2 PRODUCTS**

#### 2.1 **MATERIALS**

- .1 Primer: As recommended by firestopping material manufacturer for specific substrate and use.
- .2 Damming and backup materials, support and anchoring devices: Non-combustible, in accordance with tested assembly and as recommended by manufacturer. Combustible material for damming purpose may be permitted only if they are removed after permanent firestop materials are cured. Sheet steel covers over temporarily unused sleeves shall be minimum 0.8 mm (1/32") thick galvanized steel sheet.

- .3 Pipe and duct insulation and wrappings: Compatible with firestopping material; as recommended by manufacturer.
- .4 Fire stopping and smoke seals at opening intended for ease of re-entry such as cable: Elastomeric seal. Do not use cementitious or rigid seal at such locations.
- .5 Fire stopping and smoke seals at opening around penetrations for ductwork and other mechanical items requiring sound and vibration control: Elastomeric seal. Do not use cementitious or rigid seal at such locations.
- .6 Sealants at vertical surfaces: Non-sagging.
- .7 Sealants on floor surfaces requiring level finish: Self-levelling.
- .8 Firestop insulation / packing material: Intertek certified mineral wool batt insulation, pre-formed, semi-rigid, non-combustible, minimum 64 kg/m<sup>3</sup> (4 lbs/ft<sup>3</sup>) density.

## **PART - 3 EXECUTION**

### **3.1 PREPARATION**

- .1 Remove combustible material and loose material detrimental to bond from edges of penetration. Clean, prime or otherwise prepare substrate material to manufacturer's recommendation.
- .2 Do not apply firestop material to surfaces previously painted or treated with sealer, curing compound, water repellent or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .3 Verify openings, dimensions and surfaces conform to fire and smoke seal assembly.
- .4 Comply with manufacturer's recommended requirements for temperature, relative humidity, moisture content and presence of any sealer or release agents on substrate during application and curing of materials. Surfaces shall be dry, dust and frost free.
- .5 Fully protect walls, windows, floors and other surfaces around areas to be firestopped from marring or damage.
- .6 Prime surfaces in accordance with manufacturer's directions. Mask where necessary to avoid spillage on to adjoining surfaces. Remove stains on adjacent surfaces as required.
- .7 Remove insulation from area of insulated pipe and duct where such pipes or ducts penetrate fire separation unless ULC certified assembly permits such insulation to remain within assembly.
- .8 Provide temporary forming, packing and bracing materials necessary to contain firestopping. Upon completion, remove forming and damming materials not required to remain as part of system.
- .9 Install damming and firestopping materials as per manufacturer's instructions.
- .10 Mix materials at correct temperature and in strict accordance with manufacturer's directions.

### **3.2 INSTALLATION**

- .1 Seal penetrations through and gaps in fire rated separations. Fill gap in accordance with ULC details for tested system selected.
- .2 Apply firestopping materials in strict accordance with manufacturer's written instructions and tested designs to provide required temperature and flame rated seal. Apply with sufficient pressure to properly fill and seal openings to ensure continuity and integrity of fire separation. Tool or trowel exposed surfaces as required.

- .3 Remove excess compound promptly as work progresses and upon completion.
- .4 Examine sizes, anticipated movement and conditions of opening and penetration to establish correct system and depth of backup materials and of firestopping material required. Use firestopping and smoke seals best suited for specific application as required, indicated or specified. Use only components specified in fire test of system. Do not eliminate any component for firestop system that was present in fire tests.
- .5 Do not cover materials until full cure has taken place.
- .6 Provide firestop systems at following locations, without being limited to:
  - .1 At openings, voids and penetrations through floor slabs except openings within shafts constructed with a fire resistance rating and slabs on granular fill.
  - .2 At openings, voids and penetrations through fire rated masonry, concrete and gypsum board walls, partitions and shaft walls.
  - .3 At openings, voids and penetrations installed for future use through fire rated masonry, concrete and gypsum board walls, partitions and shaft walls.
  - .4 Around mechanical and electrical assemblies penetrating fire assemblies.
  - .5 Between perimeter of floor and roof slabs and exterior wall construction, and cladding systems.
  - .6 Between tops of fire rated walls and partitions and underside of floor or roof slabs.
  - .7 At all expansion joints in walls, floors and assemblies as detailed
- .7 Refer to all other sections of Specifications and the Drawings to ascertain where firestops are to be used and, if noted, type of firestop required.
- .8 Cure materials in accordance with manufacturer's directions.

### 3.3 **CLEANING**

- .1 Remove excess materials and debris and clean adjacent surfaces immediately after application to satisfaction of Consultant. Remove and/or correct staining and discolouring of adjacent surfaces as directed.
- .2 Remove temporary combustible damming materials after initial set of firestopping materials. Such dams may be required to remain in place if flame spread rating is below 25, in accordance with CAN/ULC-S102.

END OF SECTION

**PART - 1      GENERAL**

**1.1            SUMMARY**

.1      Section Includes:

- .1      Labour, Products, equipment and services necessary to complete the work of this Section for joint sealants as indicated on drawings and as required.
- .2      This Section specifies sealing work not specified in other Sections. Refer to other Sections for other sealants.

.2      Related Requirements:

- .1      Comply with Conditions of the Contract and Division 01 - General Requirements.

**1.2            REFERENCES**

.1      American Society for Testing and Materials (ASTM)

- .1      ASTM C719, Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
- .2      ASTM C834, Standard Specification for Latex Sealants
- .3      ASTM C920, Standard Specification for Elastomeric Joint Sealants
- .4      ASTM C1248, Standard Test Method for Staining of Porous Substrate by Joint Sealants
- .5      ASTM E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

**1.3            ACTION SUBMITTALS**

.1      Product Data: Submit to Consultant Product information from sealant manufacturer prior to commencement of work of this Section verifying:

- .1      Selected sealant materials are from those specified.
- .2      Composition and physical characteristics.
- .3      Surface preparation requirements.
- .4      Priming and application procedures.
- .5      Suitability of sealants for purposes intended and joint design.
- .6      Test report on adhesion, compatibility and staining effect on samples of adjacent materials used on Project.
- .7      Sealants compatibility and adhesion with other materials and Products with which they come in contact including but not limited to sealants provided under other Sections, insulation adhesives, bitumens, membranes, stone, concrete, masonry, metals and metal finishes, ceramic tile, plastic laminates and paints.
- .8      Suitability of sealants for temperature and humidity conditions at time of application

.2      Samples: Submit duplicate samples of each type of material and colour. Submit samples of primer, bond breaker tape and joint backing material, if requested.

**1.4            INFORMATION SUBMITTALS**

.1      Product Certificates: For each kind of joint sealant and accessory, from manufacturer.

- .2 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures.

## 1.5 **ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-installation meeting:
  - .1 Two (2) weeks prior to commencing work of this Section, arrange for manufacturer's technical representative to visit the site and review with installer preparatory and installation procedures to be followed, conditions under which the work will be done, and inspect the surfaces to receive the work of this Section.
  - .2 Establish a procedure to maintain optimum working conditions and to coordinate this work with related and adjacent work.
  - .3 Advise the Consultant of the date and time of the meeting.

## 1.6 **QUALITY ASSURANCE**

- .1 Applicators: Recognized and established sealant applicators with at least five years experience and having skilled mechanics thoroughly trained and competent in the use of sealant equipment and the specified materials.
- .2 Single source responsibility: Use sealants from single manufacturer for each different product required to ensure compatibility.
- .3 Pre-installation compatibility and adhesion testing: Provide sealant manufacturer samples of actual materials that will contact or affect their sealants in the Work for compatibility and adhesion testing. This testing will not be required where sealant manufacturer is able to furnish data acceptable to Consultant based on previous testing for adhesion and compatibility to materials matching those of the Work.
- .4 Pre-installation field adhesion testing:
  - .1 Conduct site field-tests for adhesion of sealants to actual joint substrates using proposed preparation methods and materials recommended by manufacturer.
  - .2 Conduct tests for each type of sealant and substrate.
  - .3 Locate field-test joints where inconspicuous or as directed by Consultant. Include areas typical of those requiring removal of existing sealants and utilize methods proposed for sealant removal.
  - .4 Test method: Use manufacturer's standard field adhesion test methods and methods proposed for joint preparation to verify proper priming and joint preparation techniques required to obtain optimum adhesion of joint sealants to joint substrate.
  - .5 Evaluate and report results of field adhesion testing.
  - .6 Do not use joint preparation methods or sealants that produce less than satisfactory adhesion to joint substrates during testing.
- .5 Standard of acceptance: Retain at least one 1500 mm long acceptable joint for each type of sealant and substrate installed during pre-installation field adhesion testing as standard of acceptability for the Work. Acceptable joints may form part of the Work.
- .6 Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

**1.7 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture and water.

**1.8 PROJECT CONDITIONS**

- .1 Do not proceed with installation of joint sealants under the following conditions:
  - .1 When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer, or are below 5 deg C (40 deg F).
  - .2 When joint substrates are wet.
  - .3 Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
  - .4 Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

**PART - 2 PRODUCTS**

**2.1 MATERIALS - GENERAL**

- .1 Provide exterior and interior joint sealants establishing and maintaining water tight, water resistant and air tight continuous joint seals without staining or deteriorating joint substrates.
- .2 Ensure joint sealants comply with specified type, grade, class and uses.
- .3 Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- .4 Provide Products with capability, when tested, for adhesion and cohesion under maximum cyclic movement in accordance with ASTM C719, to withstand required percentage change in joint width existing at time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated.
- .5 VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
  - .1 Architectural Sealants: 250 g/L.
  - .2 Sealant Primers for Nonporous Substrates: 250 g/L.
  - .3 Sealant Primers for Porous Substrates: 775 g/L.
- .6 Low-Emitting Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- .7 Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

- .8 Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- .9 Sealants, cleaning solvents and primers: Compatible with each other.
- .10 Colours of Exposed Joint Sealants: As selected by Consultant from manufacturer's full range. Allow for special colours as selected by the Consultant.

## 2.2 **JOINT SEALANTS**

- .1 **Sealant Type 1:** Provide 1 of following:
  - .1 Multicomponent, non-sag, polyurethane joint sealant, meeting specified requirements of ASTM C 920, Type M, Grade NS, Class 50, for Use NT.
    - .1 Dymeric 240 by Tremco (Canada),  
OR
  - .2 Multicomponent, non-sag, polyurethane joint sealant, meeting specified requirements of ASTM C 920, Type M, Grade NS, Class 25, for Use NT.
    - .1 Vulkem 227 by Tremco (Canada),
    - .2 SikaFlex 2c NS by Sika Canada Inc.
    - .3 Sonolastic NP2 by BASF Construction Chemicals, LLC-Building Systems.  
OR
  - .3 Non-sag type, 1 component ultra-low-modulus, pre-pigmented, neutral cure elastomeric silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 100/50, Use NT, G, M, A and O. Supply in standard colours as selected.
    - .1 Dow Corning 790 by Dow Corning Corporation.
    - .2 GE SCS2700 SilPruf LM by Momentive Performance Materials Inc.
    - .3 SikaSil-C990 by Sika Canada Inc.
    - .4 Spectrem 1 by Tremco (Canada).  
OR
  - .4 Non-sag type, 1 component medium-modulus, pre-pigmented, neutral cure elastomeric silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 50, Use NT, G, M, A and O. Supply in standard colours as selected.
    - .1 Dow Corning 791 by Dow Corning Corporation.
    - .2 GE SCS2000 SilPruf by Momentive Performance Materials Inc.
    - .3 SikaSil-C995 by Sika Canada Inc.
    - .4 Spectrem 2 by Tremco (Canada).
    - .5 OmniSeal by BASF Construction Chemicals, LLC-Building Systems.
- .2 **Sealant Type 2:**
  - .1 Single-component, non-sag, polyurethane joint sealant meeting specified requirements of ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
    - .1 Dymonic by Tremco (Canada),
    - .2 SikaFlex 1a by Sika Canada Inc.

- .3 Sonolastic NP1 by BASF Construction Chemicals, LLC-Building Systems.
- .3 **Sealant Type 3:** Acrylic latex or siliconized acrylic latex joint sealant meeting specified requirements of ASTM C 834, Type OP, Grade NF.
  - .1 Tremflex 834 by Tremco Incorporated,
  - .2 Sonolac by BASF Construction Chemicals, LLC-Building Systems.
- .4 **Sealant Type 4:** Mildew-resistant, single-component, acid-curing silicone joint sealant, meeting specified requirements of ASTM C 920, Type S, Grade NS, Class 25, for Use NT, G, A and O.
  - .1 Tremsil 200 by Tremco (Canada).
  - .2 Dow Corning 786 by Dow Corning Corporation.
  - .3 GE SCS1700 Sanitary by Momentive Performance Materials Inc.
  - .4 OmniPlus by BASF Construction Chemicals, LLC-Building Systems.
- .5 **Sealant Type 5:** Single component, non-skinning, non-hardening, non-sag synthetic rubber sealant, tested to reduce airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
  - .1 Acoustical Sealant by Tremco (Canada).
- .6 Preformed expanding foam secondary (or concealed) sealant:
  - .1 Watertight, 100% free of wax or asphalt compounds, thermal insulating, conforms to gap irregularities, high density open-cell polyurethane foam with microsphere-modified acrylic impregnation technology, sealant sizing in accordance with manufacturer's joint sizing chart.
  - .2 Movement performance, including tension and shear: +25%, -25% (50% total) of nominal material size.
  - .3 Acceptable Products:
    - .1 Backerseal by Emseal Joint Systems, Ltd.

## 2.3 MISCELLANEOUS MATERIALS

- .1 Joint primer: As recommended by sealant manufacturer for substrates, conditions and exposures indicated.
- .2 Bond breaker: Polyethylene tape or other adhesive faced tape as recommended by sealant manufacturer to prevent sealant contact where it would be detrimental to sealant performance.
- .3 Joint backer: Polyethylene foam rod or other compatible non-waxing, non-extruding, non-staining resilient material in dimension 25 percent to 50 percent wider than joint width as recommended by sealant manufacturer for conditions and exposures indicated. Ensure backing is compatible with sealant, primer and substrate.
- .4 Masking tape: Non-staining, non-absorbent tape product compatible with sealants and adjacent joint surfaces that is suitable for masking.



- .5 Cleaning Material: Non-corrosive, non-staining, solvent type, xylol, MEK, toluol, IPA or as recommended by sealant manufacturer and acceptable to material or finish manufacturers for surfaces adjacent to sealed areas free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way and formulated to promote optimum adhesion of sealants with joint substrates.

## **PART - 3 EXECUTION**

### **3.1 EXAMINATION**

- .1 Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- .2 Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- .1 Prepare surfaces to receive work in accordance with sealant manufacturer's instructions and recommendations except where more stringent requirements are indicated.
- .2 Thoroughly clean joint surfaces using cleaners approved by sealant manufacturer whether primers are required or not.
- .3 Remove all traces of previous sealant and joint backer by mechanical methods, such as by cutting, grinding and wire brushing, in manner not damaging to surrounding surfaces.
- .4 Remove paints from joint surfaces except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer.
- .5 Remove wax, oil, grease, dirt film residues, temporary protective coatings and other residues by wiping with cleaner recommended for that purpose. Use clean, white, lint-free cloths and change cloths frequently.
- .6 Remove dust by blowing clean with oil-free, compressed air.
- .7 Joint backer: Provide joint backer uniformly to depth required for proper joint design using a blunt instrument. Fit securely by compressing backer material 25 percent to 50 percent so no displacement occurs during tooling. Avoid stretching or twisting joint backer.
- .8 Bond breaker: Provide bond-breaker recommended by sealant manufacturer, adhering strictly to the manufacturer's installation requirements.
- .9 Priming: Prime joint substrates where required. Use and apply primer to sealant manufacturers recommendations. Confine primers to sealant bond surfaces; do not allow spillage or migration onto adjoining surfaces.
- .10 Taping: Use masking tape, where required, to prevent sealant or primer contact with adjoining surfaces that would be permanently stained or otherwise damaged by such contact or the cleaning methods required for removal. Apply tape so as not to shift readily, and remove tape immediately after tooling without disturbing joint seal.

### **3.3 INSTALLATION**

- .1 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.

- .2 Install sealants immediately after joint preparation.
- .3 Mix, apply and cure sealants in accordance with manufacturer's printed instructions.
- .4 Install sealants to fill joints completely, without voids or entrapped air, using proven techniques, proper nozzles and sufficient force that result in sealants directly contacting and fully wetting joint surfaces.
- .5 Install sealants to uniform cross-sectional shapes with depths relative to joint widths that allow optimum sealant movement capability as recommended by sealant manufacturer.
- .6 Dry tool sealants in manner that forces sealant against back of joint, ensures firm, continuous full contact at joint interfaces and leaves a finish that is smooth, uniform and free of ridges, wrinkles, sags, air pockets and embedded impurities.
  - .1 Tooling liquids that are non-staining, non-damaging to adjacent surfaces and approved by sealant manufacturer may be used if necessary when care is taken to ensure that the liquid does not contact joint surfaces before the sealant.
  - .2 Provide concave tooled joints unless otherwise indicated to provide flush tooling or recessed tooling.
  - .3 Provide recessed tooled joints where the outer face of substrate is irregular.
- .7 Remove sealant from adjacent surfaces in accordance with sealant and substrate manufacturer recommendations as work progresses.
- .8 Do not cover up sealants until proper curing has taken place.
- .9 Protect joint sealants from contact with contaminating substances and from damages. Cut out, remove and replace contaminated or damaged sealants immediately, so that they are without contamination or damage at time of Substantial Performance.

#### 3.4 **INSTALLATION – COMPRESSIBLE SEALER**

- .1 Prepare joint faces by grind or wire brush.
- .2 Heat and apply compressible sealer in accordance with manufacturer's instructions. Join consecutive lengths with 45 degree power saw miters. Provide corner bead of liquid silicone tooled between the preformed silicone bellows and substrate

#### 3.5 **LOCATION SCHEDULE**

- .1 Refer to Drawings for sealing work not specifically listed in this Section.
- .2 Use one of the sealants specified for each type in following locations. Ensure sealant chosen from several specified types listed under Part 2 Materials, and recommended by manufacturer for use for conditions encountered:

- .3 Seal following joints with Sealant Type 1:
  - .1 Typically used in joints between metal frames and adjacent masonry and/or concrete construction in exterior walls, exterior and interior sides; control and expansion joints in exterior and interior surfaces of poured-in-place concrete walls, precast architectural wall panels and unit masonry walls; sealing of joints between underside of pre-stressed precast concrete floor slabs and masonry; and other locations where sealant is required or noted on Drawings except in locations designated for Type 2, 3, 4 and 5 and except where sealant is specified in other Sections.
- .4 Seal following joints with Sealant Type 2 one component modified polyurethane sealant:
  - .1 Interior masonry and gypsum board control joints.
- .5 Seal following joints with Sealant Type 3 acrylic sealant:
  - .1 Joints between interior metal and/or wood frames and adjacent construction in interior partitions.
  - .2 Joints between interior aluminum door, window and screen frames and adjacent construction in interior partitions.
  - .3 Interior joints to receive paint finish.
- .6 Seal following joints with Sealant Type 4 mildew resistant silicone sealant:
  - .1 Typically used in joints between around washrooms accessories, at corners of walls, between splash backs and walls, in shower, damp or wet areas, at ceramic tiles where mildew resistant sealant is required.
  - .2 Underside of rims of sinks between sink rims and counters.
  - .3 Around pipes and conduits passing through walls and ceilings in washrooms. Conceal sealant with escutcheons.
  - .4 Joints in ceramic tile walls where joints occur over control joints in masonry back-up and where joints occur over control joints between cast-in-place concrete and masonry back-up.
  - .5 Joints between counters/vanities and walls in washrooms.
- .7 Seal following joints with Sealant Type 5 Acoustical Sealant
  - .1 Joints in assemblies with acoustic requirements and as indicated on drawings.

END OF SECTION

**PART - 1      GENERAL**

**1.1          SUMMARY**

- .1      Section Includes: Labour, Products, equipment and services necessary to complete the work of this Section, including but not limited to:
  - .1          Hollow metal doors, non-rated and fire rated types.
  - .2          Non-rated and fire rated steel frames.
  - .3          Interior glazed sidelight steel frames.

**1.2          REFERENCES**

- .1      American Society for Testing and Materials (ASTM):
  - .1          ASTM A568/A568M, Standard Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for
  - .2          ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2      Canadian Standards Association (CSA):
  - .1          CSA-W59: Welded Steel Construction (Metal Arc Welding).
- .3      Canadian General Standards Board (CGSB):
  - .1          CAN/CGSB-1.40: Anti-corrosive Structural Steel Alkyd Primer.
  - .2          CAN/CGSB-82.5: Insulated Steel Doors.
- .4      Underwriters' Laboratories of Canada (ULC):
  - .1          CAN4 S104M: Standard Method for Fire Tests of Door Assemblies
  - .2          CAN4 S105M: Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104
  - .3          CAN/ULC-S702: Standard for Thermal Insulation, Mineral Fibre, for Buildings.
  - .4          CAN/ULC-S704: Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
  - .5          Underwriters Laboratories of Canada, List of Equipment and Materials.
- .5      DHI (Door Hardware Institute) - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
  - .1          ANSI/DHI A115.IG-1994: Installation Guide for Doors and Hardware.
- .6      CSDFMA (Canadian Steel Door and Frame Manufacturers Association).
- .7      NFPA 80 - Fire Doors, Fire Windows.
- .8      NFPA 252 - Fire Tests for Door Assemblies.
- .9      SDI-100 - Standard Steel Doors and Frames.
- .10     NAAMM HMMA 802-07: Manufacturing of Hollow Metal Doors and Frames.
- .11     NAAMM HMMA 840-07: Guide Specification for Installation and Storage of Hollow Metal Doors and Frames.

1.3 **REQUIREMENTS OF REGULATORY AGENCIES**

- .1 Fire rated assemblies: Labelled and listed by a nationally recognized testing agency having factory inspection service in conformance with CAN4 S104M and CAN4 S105M for ratings indicated.
- .2 Install fire rated assemblies to NFPA 80 except where specified otherwise.

1.4 **SUBMITTALS**

- .1 Shop drawings: Indicate each type of door and frame, door and frame elevations, configurations, material, steel core thicknesses, mortises, reinforcements, anchor types and spacing, location of exposed fasteners, openings, arrangement of hardware, cut-outs for hardware, glazing, louvers, finishes, and fire rating.
- .2 Product Data: manufacturer's standard data sheet illustrating standard door and frame construction.
- .3 Samples: Submit samples indicating 1 cut-away corner sample and minimum 300 mm square for each type of door to indicated following:
  - .1 Core.
  - .2 Reinforcing.
  - .3 Facing.
  - .4 Frame.
- .4 Submit a copy of NAMMA-HMMA 840 to the contractor responsible for the storage and installation of hollow metal doors and frames.

1.5 **QUALITY ASSURANCE**

- .1 Qualifications: Provide evidence that the:
  - .1 Manufacturer has fabricated product of types under this Section, for projects of similar size and scope, for a continuous period of not less than five (5) years prior to award off Subcontract, has personnel and plant equipment capable of fabricating steel door and frame product of the types specified and has a written quality control system in place.
  - .2 Product supplier is a qualified direct distributor of the products to be furnished, and has in his regular employ, an AHC, CDC, or person of equivalent experience, available at reasonable times to consult with the Consultant, Subcontractor and/or Owner.
  - .3 Installer is a firm with five (5) years continuous experience prior to the award of Subcontract, in installing product covered by this Section and specification for the Door Hardware, and is knowledgeable of the manufacturers' and ANSI/NFPA 80 requirements relating to the installation of labelled fire rated products covered by this section and specification for the Door Hardware.
- .2 Quality Criteria:
  - .1 All door and frame Products shall meet the performance requirements specified herein. Fabricate assemblies on strict accordance with approved submittal drawings.
- .3 Conform to Canadian Steel Door and Frame Manufacturers Association standards.
- .4 Welding: to CSA W59.

.5 Performance/Design Criteria:

- .1 Ensure door and frame assembly meets acceptance criteria of ANSI A224.1 and is certified as Level "A" (1,000,000 cycles) and Twist Test Acceptance Criteria (deflection not to exceed 6 mm/13.6 kg (1/4"/30 lb) force, total deflection at 136 kg (300 lb) force not to exceed 64 mm (2-1/2") and permanent deflection not to exceed 3 mm (1/8")) when tested in accordance with ANSI A250.4. Ensure tests are conducted by an independent nationally recognized accredited laboratory.
- .2 Ensure Product quality meets standards set by CSDMA.

1.6 **DELIVERY, STORAGE, AND HANDLING**

- .1 Brace and protect assemblies to prevent distortion during shipment. Store in a secure dry location.
- .2 Store doors vertically, resting on planks, with blocking between to allow air to circulate.

1.7 **WARRANTY**

- .1 Steel door and frame Products provided under this Section, touched up only with zinc-rich rust inhibitive primer where coating has been removed during its manufacture, shall be warranted by the manufacturer for a period of ten (10) years from the date of supply:
  - .1 Against rust perforation, when stored, installed and finish painted in accordance with manufacturer's published instructions.
  - .2 For finish paint adhesion, when stored and cleaned in accordance with manufacturer's application recommendation, and finish painted with commercial quality paint in accordance with Section 09 91 00 and to paint manufacturer's application recommendations.

**PART - 2 PRODUCTS**

2.1 **MATERIALS**

- .1 Sheet Steel: Commercial grade steel to ASTM A568/A568M, Class 1, hot-dip galvanized to ASTM A653/A653M, ZF120 (A40), known commercially as "Colourbond", "Satincoat", or "Galvanneal". Steel sheet thicknesses specified are base metal thicknesses prior to galvanizing.
- .2 Standard Duty Interior Hollow Metal Doors:
  - .1 1.2 mm thick (18 ga) minimum commercial quality steel sheet faces, flush design, paintable galvanneal finish.
  - .2 Vertical Stiffeners: 0.912 mm thick (20 ga) minimum steel sheet.
  - .3 Glazing Stops: 0.912 mm thick (20 ga) minimum steel sheet, formed, drilled and countersunk for fastenings.
- .3 Core - Interior Doors:
  - .1 Steel Stiffened: vertically stiffened with 0.912 mm steel ribs at 152mm o.c. maximum, with all voids filled completely with semi-rigid mineral wool insulation. Fabricate door faces with a single sheet of steel welded to steel stiffeners.
- .4 Interior Hollow Metal Door Frames: 1.6mm thick, cold-rolled commercial quality steel; paintable galvanneal finish; sizes as indicated on Door Schedule and Drawings.

2.2 **ACCESSORIES**

- .1 Glazing Stops: rolled steel channel shape, 0.9 mm minimum thickness, butted corners; prepared for countersink style tamper-proof screws.

- .2 Reinforcements: regular galvalume steel, thicknesses as follows:
  - .1 Flush Bolt, Lock and Strike Reinforcement: minimum 1.6 mm (16 ga).
  - .2 Hinge Reinforcements: minimum 3.5 mm (10 ga).
  - .3 Door Closer and Holder Reinforcements: minimum 2.6 mm thick (12 ga) steel.
  - .4 Reinforcement for Surface Applied Hardware: minimum 1.2 mm thick (18 ga) steel.
  - .5 Concealed Door Closer or Holder Reinforcements: minimum 2.6 mm thick (12 ga) steel.
  - .6 Top and Bottom End Channels: minimum 1.2 mm thick (18 ga) steel.
  - .7 Jamb Spreaders: minimum 0.912 mm thick (20 ga) steel
- .3 Anchors: regular galvalume steel, as follow:
  - .1 T-Strap Type: 1.2 mm thick.
  - .2 Stirrup-strap Type: 50 x 250mm size, 1.6 mm thick.
  - .3 Jamb Floor Type: 1.6 mm thick.
  - .4 Stud Type: 1.0mm thick.
- .4 Conduit and Fittings: 20 mm o.d. EMT conduit and fittings, as specified in Division 26.
- .5 Bituminous Coating: fibrous asphalt emulsion.
- .6 Joint Sealer: as specified in Section 07 92 00.
- .7 Fasteners for Stops: Cadmium plated steel, counter sunk flat or oval head sheet metal Phillips screws.
- .8 Adhesives:
  - .1 Steel Components: Heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
  - .2 Polyisocyanurate Cores: Heat resistant, epoxy resin based, low viscosity, contact cement.
  - .3 Lock-Seam Doors: Fire resistant, RRPC, fire resistant, high viscosity sealant/adhesive.
- .9 Resilient bumpers: Round, black rubber, stud mount.
- .10 Primer: Zinc rich primer.

## 2.3 **FABRICATION - GENERAL**

- .1 Blank, reinforce, drill and tap doors and frames for mortised hardware. Reinforce doors and frames for surface mounted hardware.
- .2 Apply, at factory, touch up primer to doors and frames manufactured from galvanized steel where coating has been removed during fabrication.
- .3 Make provisions in doors and frames to suit requirements of Section providing security devices.

## 2.4 **FABRICATION - DOORS**

- .1 Fabricate doors to HMMA 802, and to the standards and specifications published by the Canadian Steel Door and Frame Manufacturer's Association.
- .2 Provide continuous faces free from joints, tool markings and abrasions; with hardware reinforcement plates welded in place.

- .3 Welding: to CSA W59. Grind exposed welds smooth and flush. Fill open joints, seams, and depressions with filler or by continuous brazing or welding. Grind and sand to a smooth, true, uniform finish.
- .4 Fabricate fire-rated doors in accordance with Canadian Fire Labelling Guide for Steel Doors and Frames as published by the Canadian Steel Door and Frame Manufacturer's Association.
- .5 Fabricate doors to accommodate scheduled glazing. Secure glazing stops to doors with counter sunk oval head sheet metal screws.
- .6 Attach fire rated label to each fire rated door unit.
- .7 Completely fill door cores with specified core materials.
- .8 Pre-wire door complete with CSA approved EMT metallic conduit and fittings for Electrolynx system where indicated on Door and Frame Hardware Schedule.
- .9 Preparation for hardware:
  - .1 Prepare doors for heavy weight oversize butt hinges, mortise locksets, rim and surface vertical rod exit devices, surface door closers and concealed overhead stops.
  - .2 Conform to approved finish hardware schedule.
  - .3 Blank, mortise, reinforce, and drill doors to receive template hardware, as required. Coordinate with Section 08 71 00.
  - .4 Where electrified hardware is specified on the approved hardware schedule, steel door and frame product, shall be provided with Electrolynx system consisting of CSA approved conduit, junction boxes and wire harness complete with modular plugs for coordinated connection directly to the electrified hardware. Refer to Section 08 71 00 – Door Hardware for openings that require electrified hardware.
- .10 Reinforce door edges with channel reinforcing.
- .11 Door faces of all steel doors shall be fabricated without visible seams, free of scale, pitting, coil brakes, buckles and waves.
- .12 Longitudinal edges of doors shall be mechanically interlocked and adhesive assisted.
- .13 Tack weld and fill seam between faces and door edges of doors
- .14 Bevel stiles minimum 3mm.
- .15 Coordinate louvre openings with Mechanical Division.
- .16 Fabrication Tolerances:
  - .1 Fabricated door deformation (bow, cup, twist, warp) shall not exceed 3 mm when measured with a straight edge placed diagonally across door extending from top to bottom.
  - .2 Widths of door openings shall be measured from inside of frame jamb rebates with a tolerance of +1.5 mm, -1 mm.
  - .3 Unless builders' hardware requirements dictate otherwise, doors shall be sized so as to fit openings and allow a 3 mm clearance at jambs and head. Provide 19 mm clearance between bottom of door and finished floor (exclusive of floor coverings). Tolerances on door sizes shall be 1.2 mm.
  - .4 Provide doors with 1.5 mm clearance at heads and jambs, and no more than 3 mm door and threshold.



## 2.5 **FABRICATION - FRAMES**

- .1 Fabricate frames as welded unit. Knock down frames will not be allowed.
- .2 Conform to HMMA 802.
- .3 Welding: to CSA W59. Grind exposed welds smooth and flush. Fill open joints, seams, and depressions with filler or by continuous brazing or welding. Grind and sand to a smooth, true, uniform finish.
- .4 Mitre corners of frames. Cut frame mitres accurately and weld continuously on inside of frame.
- .5 Protect strike and hinge reinforcements and other openings with mortar guard boxes welded to frame.
- .6 Reinforce frames wider than 1.2 metres with roll formed steel channels fitted tightly into frame head, flush with top.
- .7 Fit frames with channel or angle spreaders, minimum two per frame, to ensure proper frame alignment. Install stiffener plates to spreaders between frame trim where required to prevent bending of trim and to maintain alignment when setting and during construction.
  - .1 Channel or angle spreaders are to be removed prior to installation and are not to be used as part of the installation process.
- .8 Fabricate frames to accommodate scheduled glazing. Secure glazing stops to frames with counter sunk oval head sheet metal screws.
- .9 Provide 3 bumpers on strike jamb for each single door.
- .10 Pre-wire frames complete with CSA approved EMT metallic conduit and fittings for Electrolynx system where indicated on Door and Frame Hardware Schedule.
- .11 Preparation for hardware:
  - .1 Prepare frames for heavy weight oversize butt hinges, mortise locksets, rim and surface vertical rod exit devices, surface door closers and concealed overhead stops.
  - .2 Conform to approved finish hardware schedule.
  - .3 Blank, mortise, reinforce, drill and tap frames to receive template hardware, as required. Coordinate with Hardware specification.
  - .4 Where electrified hardware is specified on the approved hardware schedule, steel door and frame product, shall be provided with Electrolynx system consisting of CSA approved conduit, junction boxes and wire harness complete with modular plugs for coordinated connection directly to the electrified hardware. Refer to Hardware specification for openings that require electrified hardware.
- .12 Fabrication Tolerances:
  - .1 Widths of door openings shall be measured from inside of frame jamb rebates with a tolerance of +1.5 mm, -1 mm.
  - .2 Manufacturing tolerances on formed frame profiles shall be 1 mm for faces, stop heights and jamb depths. Tolerances for throat openings and door rebates shall be 1.5 mm and 0.5 mm respectively. Hardware cutout dimensions shall be as per template dimensions, +0.38 mm, -0.

**PART - 3 EXECUTION**

**3.1 INSTALLATION - GENERAL**

- .1 Touch up with primer galvanized finish damaged during installation.

**3.2 INSTALLATION - FRAMES**

- .1 Install frames plumb, square, aligned, without twist at correct elevation, to HMMA 840, ANSI/DHI A115.IG, Canadian Steel Door and Frame Manufacturers Association standards and manufacturer's instructions and templates.
- .2 Provide suitable anchors to suit construction. Use one base anchor and two wall anchors per jamb side for frames up to 1500 mm and one additional wall anchor per jamb side for each additional height of 750 mm or fraction thereof.
- .3 Secure anchorages and connections to adjacent construction.
- .4 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Remove temporary spreaders after frames are built-in.
- .5 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .6 Seal openings between frames and walls as specified in Section 07 92 00.

**3.3 INSTALLATION - DOORS**

- .1 Install doors to HMMA 840, ANSI/DHI A115.IG, Canadian Steel Door and Frame Manufacturers Association standards and manufacturer's instructions and templates.
- .2 Coordinate installation of finish hardware.
- .3 Coordinate installation of glass and glazing.
- .4 Install louvres.
- .5 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows:
  - .1 Hinge side: 3 mm.
  - .2 Latchside and head: 3 mm.
  - .3 Finished floor for non-rated assemblies: 12 mm.

**3.4 ADJUSTING**

- .1 Adjust door for smooth and balanced door movement.

END OF SECTION

**PART - 1      GENERAL**

**1.1          SUMMARY**

.1      Section Includes:

- .1      Labour, Products, equipment and services necessary to complete the work of this Section.

**1.2          QUALITY ASSURANCE**

- .1      Conduct pre-installation meeting to verify project requirements, manufacture's installation instructions and manufacturer's warranty requirements.
- .2      Have the supervision, administration and servicing of the work of this Section performed by a hardware specialist certified as an Architectural Hardware Consultant (AHC).
- .3      Have the installation of hardware performed by a firm which specializes in this work.
- .4      Have the hardware installer fully cooperate with the hardware specialist to ensure doors and hardware are properly and securely installed and that the installed doors and hardware are functioning properly.

**1.3          SUBMITTALS**

.1      Shop Drawings:

- .1      The hardware specialist shall prepare and submit shop drawings containing a completely itemized schedule of hardware for review. The schedule of hardware shall list all doors by number (in sequence) and location with complete details of the hardware to be supplied, including installation heights and special instructions. Format of schedule to be approved.
- .2      The schedule of hardware shall incorporate the catalogue numbers of hardware as specified and all alternatives which have been accepted.
- .3      The Contractor shall furnish copies of final reviewed shop drawings to the doors and frames fabricators and to the door and hardware installers.

.2      Wiring Diagrams: Include complete wiring diagrams indicating all component parts, disconnect switches, conduit, and voltage requirements provided under other Sections, and required to operate assembly.

.3      Samples: The hardware specialist shall submit complete samples of hardware items for review, if so requested.

.4      Templates: The hardware specialist promptly furnish templates and information necessary for proper preparation of doors and frames and for the installation of hardware to the doors and frames fabricator and to the doors and hardware installer, in ample time to facilitate the progress of the work.

.5      Furnish manufacturers' instructions for proper installation of each hardware component.

.6      Maintenance instructions manual: Prior to Date of Substantial Performance, hand over to the Owner, a manual containing a final "as built" hardware schedule, full instructions for the adjustment, maintenance, spare part list etc. of all hardware items, together with special keys, wrenches etc. required to carry out normal adjustments to hardware.

.7      Certification: Prior to date of Substantial Performance, have the hardware specialist provide a letter which certifies that the doors, frames and hardware installations have been inspected and are satisfactory.

**1.4 INSPECTION AND SUPERVISION**

- .1 The hardware specialist shall examine the Drawings, Hardware Schedules and shop drawings to determine final dimensions, sizes and quantity of the hardware items required, ensure that the hardware listed shall fit and operate properly and make adjustments to the hardware at no extra cost to the Owner.
- .2 The hardware specialist shall obtain electrical characteristics of the security and fire alarm systems from the electrical Subcontractor and furnish electrically operated hardware which suits the electrical characteristics and wiring connection requirements at no extra cost to the Owner.
- .3 The hardware specialist shall obtain and examine shop drawings for doors and frames to ensure proper provisions and preparations for hardware are made.
- .4 The hardware specialist shall make periodic inspections of the hardware and door installations, report improper and unsatisfactory conditions and expedite the replacement or correction of faulty hardware.
- .5 The hardware specialist and the door and hardware installer shall attend job site meetings when so requested.

**1.5 LABELLING, PACKAGING, DELIVERY AND STORAGE**

- .1 Deliver and store each hardware item in the manufacturers' original containers. The containers shall be clearly labelled as to content and door on which the hardware is to be installed, in accordance with the shop drawing schedule of hardware.
- .2 The hardware specialist shall be responsible for ensuring the timely delivery of hardware so that all on site work progresses without delay and interruptions.
- .3 Store hardware in a locked storage room in the building. Lay out all hardware in an organized manner on shelves.
- .4 Stockpile items sufficiently in advance to ensure their availability and make all necessary deliveries in a timely manner to ensure orderly progress of the total Work.
- .5 Store items in such a manner to allow easy access to each hardware item/group as needed without significantly disrupting storage arrangement.
- .6 Review shipments at time of arrival on the site to ensure agreement with respect to items shipped and received, quantity, back ordered or short-shipped items, and adherence to hardware schedule.

**1.6 EXTENDED WARRANTY**

- .1 Fully warrant exit devices, locksets, latchsets and door closers for a period of five (5) years from the date of Substantial Performance of the Project.
- .2 The warranty shall state expressly that all hardware will be replaced on the doors and frames at no cost to the Owner in the event of breakage or other defect occurring, willful damage excluded.

**PART - 2 PRODUCTS**

**2.1 HARDWARE SCHEDULE AND ALTERNATIVES**

- .1 The hardware schedule will be used for the purposes of establishing the hardware requirements and the hardware quality level.

- .2 While certain manufacturer's catalogue numbers are used in the schedule of finishing hardware, it is not the intent that these items are specified exclusively. The manufacturer's numbers are used to denote minimum quality, style, design function, finish. Specified items that must be supplied without substitution are electrical strikes, locksets and latchsets, automatic door operators, security contracts, and alarms.
- .3 Other manufacturer's products may be used providing the items are equal in all respects to the items specified, except as noted above.
- .4 The Hardware Contractor shall submit a complete physical sample of each hardware type for review prior to the preparation of shop drawings. All hardware delivered to the job sites shall be equal in all respects to the accepted sample.
- .5 List all manufacturer's names and complete catalogue number of all alternative hardware types proposed for supply and submit this list for review before preparing shop drawings.
- .6 The Consultant's decision on the quality of proposed alternative products shall be final.
- .7 Any proposed item that in the opinion of the Consultant is not equal to the item specified will be rejected and the supplier shall be required to supply items equal to the one specified at no extra cost.

## 2.2 **MATERIALS**

- .1 General:
  - .1 Hardware shall be as specified in the hardware schedule prepared under the direction of the Consultant and as specified in this Section.
  - .2 Installed hardware shall comply with applicable fire and building codes and requirements of local authorities having jurisdiction over doors and hardware.
  - .3 All hardware applied to metal doors and frames shall be made to template.
  - .4 Supply hardware complete with all necessary screws, bolts and other fastening of suitable size and type to anchor the hardware in position neatly and properly in accordance with the best practices and to the Consultant's approval.
  - .5 All fastenings shall harmonize with the hardware as to materials and finishes.
  - .6 Hardware for fire rated and labelled door and frame assemblies: ULC listed or as accepted by authorities having jurisdiction.
  - .7 Finish on all stainless steel items (C32D) shall be equal to No. 4 finish.
- .2 Hinges:
  - .1 Hinges for exterior doors shall be non-ferrous metal parts so that rust will not bleed from the bearing or other parts. Screws shall be provided in stainless steel.
  - .2 Where specified, provide hinges with non-removable pins or with safety stud feature to prevent doors being removed from frames even if pins are removed.
  - .3 Stamp hinge catalogue numbers on face of leaf of each hinge at factory to enable easy recognition of hinge material and manufacture after doors are hung.
  - .4 Where doors are required to swing to 180 degrees, furnish hinges of sufficient throw to clear trim.
  - .5 Furnish non-removable pins at out-swinging exterior doors.
  - .6 Supply concealed wired electric hinges with ULC label. Hinges to have 8 wires.

- .3 Locks and Latches:
  - .1 Provide and install all locks and latches exactly as specified, complete with cylinders.
  - .2 Strikes shall be ANSI standard size with curved lip strikes for latch bolts and no lip strikes for dead locks. Provide complete with wrought boxes finished to match strike.
- .4 Exit Devices:
  - .1 All exit devices installed on labelled fire doors shall bear the ULC Label.
  - .2 Through bolts complete with sleeves for mineral core doors.
  - .3 Coordinate exit devices with astragals, coordinators, carry open bars and thresholds for correct and safe operation.
- .5 Keying:
  - .1 All locks and exit devices with cylinder operation shall be grand masterkeyed to Owner's requirements.
  - .2 Prepare a detailed keying schedule and submit to the Consultant for review. Revise as necessary to suit Owner's requirements before ordering cylinders. The Consultant will hand over to the hardware supplier a list of the Owner masterkeying requirements.
  - .3 Stamp all keys "DO NOT DUPLICATE".
  - .4 Provide 2 change keys for each lock. 3 keys for each submaster level and 6 grand master keys. In the case of keyed alike groups, supply 6 (six) cut keys only and supply the balance as blanks.
  - .5 Allow for keying as required including key alike sets and keyed different sets.
- .6 Construction Keying:
  - .1 All lock cylinders shall have a construction masterkey system.
  - .2 The construction key system to be inoperative once the Owner's keys are inserted in the cylinders.
  - .3 Provide 12 construction master keys.
- .7 Closers:
  - .1 All door closers shall be hydraulically controlled and full rack and pinion in operation.
  - .2 Each closer shall have adjustable general speed, latch speed and back check control.
  - .3 The swing power of door closers shall be adjustable.
  - .4 Supply to the Owner special closer keys and wrenches as usually packed with closers.
  - .5 Install all necessary attaching brackets, mounting channels, cover plates, etc. where necessary for correct application of door closers.
  - .6 Closers to have parallel arms at out swinging exterior doors and at interior doors where specified.
  - .7 Coordinate closers with overhead holders.
  - .8 Through bolts complete with sleeves for mineral core doors.

- .8 Thresholds:
  - .1 Provide and install thresholds exactly as specified in required widths and lengths to suit door openings.
  - .2 The ends of the thresholds shall be cut to follow exactly the door frame profile.
  - .3 All thresholds shall be supplied in aluminum and installed complete with lead shields and stainless steel screws.
- .9 Push Plates and Kickplates
  - .1 Provide and install stainless steel plates in C32D finish and install secure with screw fastening.
  - .2 Length of kick plates shall be 40 mm less than door width for single doors and 3/4" less than door width for doors in pairs.
  - .3 All stainless steel plates are to be 1.3 mm thick, free of rough or sharp edges. Corners and edges to be slightly radiused. Install kick plates and armour plates on both sides of the door with 3M tape.
  - .4 Engrave pushplates with pictographs as noted in hardware schedule.
- .10 Door Push/Pulls:
  - .1 Where door pulls are scheduled on one side of door and push plates on other side issue installations instructions to ensure that the pull is secured through door from reverse side and countersunk flush with door installation of push plate. Locate push plate to cover fasteners for door pulls.
- .11 Door Stops:
  - .1 Wall stops shall not be installed on drywall partitions.
  - .2 Floor stops shall be installed so as not to create a tripping hazard and allows maximum opening of doors.
  - .3 Furnish door stops of height to engage doors.
- .12 Door Seals:
  - .1 Provide and install door seals, top door sweeps and astragals.
- .13 Electronic Hardware Items:
  - .1 Ensure electrical characteristics are compatible with card readers and related security systems provided by other Sections.
  - .2 Obtain electrical power and wiring characteristics from the Electrical Subcontractor and from the Electronic Security Subcontractor and provide the hardware to suit.
  - .3 Power Door Operators: Install operators by skilled trade persons who have been specifically trained in the installation and operation of these devices by a manufacturer's factory representative.
  - .4 All wiring shall be supplied and installed by Division 26 including conduit, boxes and other electrical appurtenances, including connection and termination.
  - .5 Be responsible for ensuring that all wiring work is performed at appropriate times to coordinate with installation of frames, doors and finish hardware. It is also responsible for ensuring that all electrical work is done in accordance with electronic hardware manufacturer's wiring diagrams and directions and that boxes, cut-outs, connections etc. are installed properly.

- .6 Arrange for testing and commissioning of electronic finish hardware by manufacturer or system. Submit a copy of reports to Consultant.
- .14 Miscellaneous Accessories:
- .1 All other items, not specifically described but required for complete and proper installation of finish hardware, shall be as selected by Hardware Supplier subject to approval of the Consultant.
- .15 Hardware Finish Codes:
- |     | BHMA | Canadian Code | US Code | Description                    |
|-----|------|---------------|---------|--------------------------------|
| .1  | 600  | CP            | USP     | Primed for Paint               |
| .2  | 602  | C2C           | US2C    | Cadmium Plated                 |
| .3  | 603  | C2G           | US2G    | Zinc Plated                    |
| .4  | 605  | C3            | US3     | Brightened Brass, Clear Coated |
| .5  | 606  | C4            | US4     | Satin Brass, Clear Coated      |
| .6  | 612  | C10           | US10B   | Satin Bronze, Clear Coated     |
| .7  | 613  | C10B          | US10B   | Oxidized Satin Bronze Oil Rub  |
| .8  | 619  | C15           | US15    | Satin Nickel Plate, Clear Coat |
| .9  | 625  | C26           | US26    | Bright Chromium Plated         |
| .10 | 626  | C26D          | US26D   | Satin Chromium Plated          |
| .11 | 627  | C27           | US27    | Satin Aluminum Clear Coated    |
| .12 | 628  | C28           | US28    | Satin Aluminum Clear Anodize   |
| .13 | 629  | C32           | US32    | Polished Stainless Steel       |
| .14 | 630  | C32D          | US32D   | Satin Stainless Steel          |
| .15 | 671  | AL            |         | Black Anodized                 |
| .16 | 689  | SBL, AL       | US28    | Aluminum Paint                 |
| .17 | 690  | DBL, STAT     | US20    | Dark Bronze Paint              |
| .18 | 691  | ES, SB        |         | Bronze Lacquer                 |
| .19 | 692  | TAN           |         | Tan Lacquer                    |
| .20 | 693  | KPD, BLACK    |         | Black Lacquer                  |
| .21 | 696  | EAB, SB       |         | Satin Brass Lacquer            |
- .16 keying symbol/codes:
- |    |      |                           |
|----|------|---------------------------|
| .1 | GGMK | Great Grand Master Keyed  |
| .2 | GMK  | Grand Master Keyed        |
| .3 | MK   | Master Keyed              |
| .4 | KA   | Keyed Alike               |
| .5 | KD   | Keyed Different           |
| .6 | SK   | Separate Key (no masters) |



.17 Hardware codes:

.1	LH	Left Hand
.2	RH	Right Hand
.3	LHR	Left Hand Reverse
.4	RHR	Right Hand Reverse
.5	LHA	Left Hand Active
.6	RHA	Right Hand Active
.7	LHRA	Left Hand Reverse Active
.8	RHRA	Right Hand Reverse Active
.9	SGL,SGLE	Single
.10	PR	Pair
.11	D/A	Double Acting
.12	O/S	Opposite Swing
.13	D/E	Double Egress
.14	DR	Door
.15	FR	Frame
.16	HM	Hollow Metal
.17	AL	Aluminum
.18	PS	Pressed Steel
.19	P/LAM	Plastic Laminate
.20	KAL	Kalamein
.21	HMD	Hollow Metal Door
.22	HMF	Hollow Metal Frame
.23	CIF	Channel Iron Frame
.24	PSF	Pressed Steel Frame
.25	WD	Wood
.26	WD/DR	Wood Door
.27	WD/FR	Wood Frame
.28	CYL	Cylinder
.29	H/O	Hold Open
.30	O/H	Overhead
.31	U/C	Undercut
.32	B/S	Back Set
.33	NRP	Not Removable Pin
.34	TB	Thru Bolts
.35	CTB	Countersunk Thru Bolts

.36	TMS	Template Machine Screws
.37	MS	Machine Screws
.38	STS	Self Tapping Screws
.39	WS/LS	Wood Screws & Lead Shields
.40	TRR	Labeled for Temperature Rise Rating.
.41	A Label, 3 Hour Label or 180MFR	Labeled for 180 minutes (3 hour) Fire Protection Rating.
.42	B Label, 1-1/2 Hour Label or 90 MFR	Labeled for 90 minutes (1-1/2hour) Fire Protection Rating.
.43	C Label, 3/4 Hour Label or 45 MFR	Labeled for 45 minutes (3/4 hour) Fire Protection Rating.
.44	20 MIN Label or 20 MFR	Labeled for 20 minutes Fire Protection Rating.

### **PART - 3 EXECUTION**

#### **3.1 EXAMINATION**

- .1 Verification of Conditions: Examine doors, frames, related items and conditions under which work of this section is to be performed and identify conditions detrimental to proper and timely completion. Do not proceed until unsatisfactory conditions have been corrected.
- .2 Confirm kickplate and threshold sizes before ordering.

#### **3.2 INSTALLATION**

- .1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide to Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association, except as otherwise indicated in this Section and elsewhere in the Contract Document.
- .2 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .3 Barrier Free Access: Mount all hardware in full conformity with authorities having jurisdiction. Confirm mounting heights with Consultant prior to commencement of frame and door preparation.
- .4 Install all miscellaneous hardware as shown on details and specified.
- .5 Do not use wall stops on gypsum board, demountable or moveable partitions.
- .6 Mineral core doors: Pre-drill 3 mm diameter pilot holes for all hardware items. Manual turn fasteners into pilot holes. If installer does not follow this method, it may void door manufacturer warranty.
- .7 Provide even margins between doors and jambs and doors and flooring and/or thresholds as follows:
  - .1 Hinge side: 1.6 mm.
  - .2 Latchside and head: 1.6 mm.
  - .3 Flooring and/or thresholds: 12 mm.
  - .4 Flooring, fire rated assemblies: 6 mm.

### 3.3 **HARDWARE MOUNTING HEIGHTS**

- .1 Install and mount hardware as follows:
  - .1 Door knobs and lever: 965 mm centre line from finish floor
  - .2 Deadlock cylinder: 1370 mm centre line from finish floor
  - .3 Deadlatch cylinders: 1370 mm centre line from finish floor
  - .4 Door pulls: 1069 mm centre line from finish floor
  - .5 Push plates: 1090 mm centre line from finish floor
  - .6 Push bars: 1069 mm centre line from finish floor
  - .7 Top hinges: 125 mm down from top of door to top of hinge
  - .8 Bottom hinges: 250 mm up from finish floor to bottom of hinge
  - .9 Intermediate hinges: equally spaced between top and bottom hinges
  - .10 Floor stops: maximum 150 mm from lock edge when door is in fully open position
  - .11 Exit devices: to manufacturer's instructions
  - .12 Kickplates: maximum 3 mm from bottom of door to bottom of kickplate

### 3.4 **ADJUSTING AND CLEANING**

- .1 Clean hardware with materials and methods as recommended by hardware manufacturer. Repair or replace defective hardware.
- .2 Remove protective material where present.
- .3 Adjust operable parts for correct function.
- .4 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

**PART - 1      GENERAL**

**1.1          SUMMARY**

- .1      Section Includes:
  - .1          Labour, Products, equipment, and services necessary to complete the work of this Section.
  - .2          This Section includes glazing work not specified in other Sections. Refer to other Sections for other glazing.
- .2      Related Requirements

**1.2          SUBMITTALS**

- .1      Shop drawings:
  - .1          Submit shop drawings indicating manufacturing and installation details.
- .2      Product Data: Submit manufacturer's product specifications, including the PVB interlayer products. Include documentation of compliance with specified requirements, referenced tests, and compatibility of all products in contact with glazing.
  - .1          Provide Installer signed letter listing all products to be used, with signed letters from each glass, sealant, glazing tape, and blocking manufacturer certifying their compatibility.
  - .2          Provide a sample warranty and instructions for handling, storing, installing, cleaning, and protecting each type of glass and glazing material.
- .3      Samples:
  - .1          Submit samples for each type of glass and of glazing materials identifying quality and type of glass if required by the Consultant before commencing work.
  - .2          Ensure samples are clearly labelled with manufacturer's name and type.
- .4      Certificates:
  - .1          Submit manufacturer's certification compatibility of glass and glazing materials.
- .5      Test Results:
  - .1          Provide test results in accordance with ASTM C1087 and ASTM C794 showing compatibility of applied sealants with accessories used in butt-joint glazing systems and determine strength, ability of cured sealant to maintain a bond to substrate under severe conditions and characteristics of peel properties of a cured-in-place elastomeric joint sealants for use in butt-joint glazing. Provide a statement and test data confirming sealant used in design indicated to accommodate design load requirements without failure.
- .6      Operations and Maintenance Manual: Information on cleaning, maintenance, and replacement of all types of glass or glazing products shall be included in the Operations and Maintenance Manual.

**1.3          QUALITY ASSURANCE**

- .1      Installer Qualifications: Glazier shall have minimum five (5) years' experience in the successful installation of glazing products similar to those specified for this Project.

- .2 Glazing Installation Standard: Comply with recommendations of the GANA (Glass Association of North America), "Glazing Manual" and "Glazing Sealing Systems Manual" except where more stringent requirements are called for by manufacturers or these specifications. Refer to GANA for definitions of glass and glazing terms not otherwise defined.
- .3 Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction, provide type of products indicated which comply with OBC, ANSI Z97.1, and requirements of CPSC 16 CFR Part 1201 for category II materials.
- .4 Single Source Responsibility: Provide materials obtained from one source for each type of glass and glazing product indicated, and for visually related areas.
- .5 Pre-installation Conference: at least two weeks prior to commencing work of this Section, arrange for manufacturer's technical representative to visit the site and review preparatory and installation procedures to be followed, conditions under which the work will be done, and inspect the surfaces to receive the work of this Section. Advise the Consultant of the date and time of the meeting.
- .6 Manufacturer's site inspection: Have the manufacturer's technical representative inspect the Work at suitable intervals during application and at conclusion of the work of this Section, to ensure the Work is correctly installed. When requested, submit manufacturer's inspection reports and verification that the work of this Section is correctly installed.

1.4 **DELIVERY, STORAGE AND HANDLING**

- .1 Handle and store materials and products in accordance with manufacturer's recommendations. Deliver and store packaged materials and products in original, undamaged containers with manufacturer's labels and seals intact.

**PART - 2 PRODUCTS**

2.1 **PERFORMANCE/DESIGN CRITERIA**

- .1 Glass Strength:
  - .1 Provide glass products in the thickness and strengths required to meet or exceed the following criteria based on project loads and in-service conditions.
  - .2 Minimum thickness of annealed or heat-treated glass products to be selected so the worst case probability of failure does not exceed the following:
    - .1 8 breaks per 1000 for glass installed vertically less than 15 degrees from the vertical plane and under wind action.
    - .2 5 breaks per 1000 for heat soaked tempered glass as a result of verifiable NiS inclusion.
    - .3 1 break per 1000 for glass installed 15 degrees or more from the vertical plane and under action of wind and/or snow.
  - .3 Glass at guards, balustrades, and where glass is likely to be subjected to human impact shall comply with safety glass requirements of CAN/CGSB 12.20 and CAN/CGSB 12.1, and building code.
  - .4 Provide annealed, heat strengthened, and tempered lights where required by the building code.

- .5 Glass thicknesses and glass types specified, indicated, or scheduled in the Contract Documents are minimums required. Glass designer/engineer to modify as required to satisfy design and building code requirements, and requirements of authorities having jurisdiction, and any such modifications shall be clearly indicated on shop drawings.
- .2 Glazing systems shall be capable of withstanding normal thermal movements, wind loads and impact loads, without failure, including loss due to defective manufacture, fabrication and installation; deterioration of glazing materials; and other defects in construction.
- .3 Protect laminated glass interlayer from damage or discolouration resulting from contact with deleterious and incompatible sealants, substances, and materials. Comply with manufacturer's recommended installation instructions.

## 2.2 **GLASS**

- .1 Float glass (GL-F): CAN/CGSB-12.3, glazing quality polished.
- .2 Tempered Safety Glass (GL-T):
  - .1 ASTM C1048, Kind FT (fully tempered), Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), and meeting requirements of ANSI Z97.1, tong and roller marks free, minimum thickness 6 mm.
  - .2 Ensure surface compression is equal to or greater than 68.9 MPa (10 000 psi)
  - .3 Tempered glass material to come from one tempering furnace and be tempered to minimize distortion variance.
    - .1 Roller-wave distortion not to exceed 0.127 mm (0.005") from peak to valley.
    - .2 Maximum peak to valley roller-wave 0.8 mm (0.003") in the central area and 0.20 mm (0.008") within 267 mm (10.5") of the leading and trailing edge.
    - .3 Maximum bow and warp 0.79 mm per lineal 305 mm (1/32" per lineal foot).
- .3 Laminated safety glass (GL-L): CAN/CGSB-12.1, Type 1, Class B, fabricated with minimum 1.6 mm clear polyvinylbutyral interlayer between 2 lites of 3 mm thick glass, minimum overall 7.6 mm thick.
- .4 Laminated Tempered safety glass (GL-LT): transparent laminated tempered glass conforming to ASTM C1172, Kind LT, and meeting requirements of ANSI Z97.1, with two or more lites of flat glass, all of which are tempered safety glass (GL-T) as specified above and bonded by minimum 1.6 mm clear polyvinylbutyral interlayer.
- .5 Plastic Film (FLM): flexible polyester material with acrylic, pressure sensitive, permanent adhesive.
  - .1 Fire Classification: Class A.
  - .2 Types and applications: as indicated in Section 09 06 00 Finishes Schedule.

## 2.3 **FIRE PROTECTION RATED GLASS**

- .1 Fire-rated glass, non-impact rated, non-wired:
  - .1 Monolithic ceramic glazing:
    - .1 Fire rated, clear ceramic glazing material for use in non-impact safety-rated locations, not functioning as a barrier to heat.
    - .2 Fire-ratings: as indicated or scheduled, from 20 minutes to 90 minutes with hose stream test.

- .3 Surface finish:
  - .1 Premium Grade: clear glass, polished for superior optical clarity.
- .4 Basis of Design: Technical Glass Products 'FireLite'.
- .2 Fire rated, impact safety resistant glass, non-wired:
  - .1 Film-faced ceramic glazing:
    - .1 Fire-rated and impact safety-rated, clear ceramic glazing material with surface applied impact safety film, and listed for use in doors, sidelites, transoms, and borrowed lites in both interior and exterior applications, not functioning as a barrier to heat.
    - .2 Fire-ratings: as indicated or scheduled, from 20 minutes to 90 minutes, 3 hours in doors where applicable, with hose stream test.
    - .3 Impact Safety Resistance: ANSI Z97.1-2009 and CPSC 16 CFR 1201 (Cat. I and II).
    - .4 Surface finish:
      - .1 Premium Grade: clear glass, polished for superior optical clarity.
    - .5 Basis of Design: Technical Glass Products 'FireLite Plus'.

## 2.4 **GLAZING MATERIALS**

- .1 General - Glazing materials (fire-rated and non-fire-rated): Select glazing sealants, tapes, gaskets, and additional glazing materials of proven compatibility with other materials they will contact, including glass products, seals of insulating glass units and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.
- .2 Shims, spacers and setting blocks: 45, 70 and 90 Durometer A hardness plus/minus 5 respectively, neoprene rubber, resistant to oxidation and permanent deformation under load.
- .3 Glazing gaskets: Extruded neoprene or EPDM of approved profile. Tensile strength of 7300 kPa; Durometer A hardness of 50 plus/minus 5; 25% maximum permanent set; 300 % minimum elongation at break; and resistant to ozone, showing no cracks.
- .4 All glazing materials, products, primers, and cleaning solvents: Mutually compatible.
- .5 Colours for glazing materials: As selected later and not necessarily standard colours.

## 2.5 **FABRICATION**

- .1 Accurately size glass to fit openings allowing clearances recommended by the Flat Glass Marketing Association. Cut glass clean and free of nicks and damaged edges. Grind smooth and polish exposed glass edges. Do not cut or abrade tempered, heat treated, or coated glass.
- .2 Take field measurements and levels required to verify and supplement those shown on the Drawings for the proper layout and installation of the work. Co-ordinate dimensional tolerances in adjacent building elements and confirm prior to commencement of work.
- .3 Sandblast glass at depth recommended by the glass manufacturer and to patterns indicated. Do not weaken glass by sandblasting. Apply protective coating.

**PART - 3 EXECUTION**

**3.1 INSPECTION**

- .1 Verify dimensions at the site before proceeding with fabrication or glazing units.
- .2 Ensure that openings are free from distortion, and that surfaces are free from protrusions that will obstruct face and edge clearances.
- .3 Ensure that wood is sealed; ferrous metals are painted, or zinc coated; and that surfaces are suitable for adhesion of the glazing materials.
- .4 Ensure that movable units to be glazed are adjusted for proper operation.
- .5 Ensure that surfaces to receive mirrors are sealed.
- .6 Ensure that ambient and surface temperatures are above 5 degree C.

**3.2 PREPARATION**

- .1 Inspect hollow metal and other glass framing for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners, existence of minimum required face or edge clearances, and effective sealing of joinery.
- .2 Provide written report listing conditions detrimental to performance of glazing work.
- .3 Do not perform glazing work prior to correction of unsatisfactory conditions. Commencement of installation indicates Installer's acceptance of substrate.
- .4 Ensure rabbets, stops and glass edges are free of dust, dirt, moisture, oil and other foreign matter detrimental to, or obstructing the glazing material.
- .5 Clean contact surfaces with solvent and apply primers to surfaces to receive tapes and sealants in accordance with the manufacturer's instructions. Ensure surfaces are free of moisture and frost.
- .6 Immediately before glazing clean glazing channels and other framing members to receive glass.
  - .1 Remove coatings which are not firmly bonded to substrates.
  - .2 Promptly complete glazing both sides of a lite once started, to prevent re-entry of dust and dirt in glazing channels.
- .7 Clean surfaces thoroughly prior to installation of films. Prepare surfaces using the methods recommended by the film's manufacturer for achieving the best result for the substrate under the project conditions.

**3.3 INSTALLATION - GENERAL**

- .1 Handle and install glass in accordance with manufacturer's directions. Prevent nicks, abrasions, and other damage likely to develop stress on edges.
- .2 Remove and replace glazing stops in original locations, using original fasteners, securely set and undamaged.
- .3 Use setting blocks and spacers as required to properly support the glass, centred in place in the glazing space independent of the materials and to uniformly distribute its load.
- .4 Use a minimum of 2 setting blocks, located at the quarter points. Locate spacers at jamb edges of glass, uniformly spaced at 600 mm o.c. maximum, and 300 mm maximum from top and bottom.
- .5 Assess coloured glass units for colour uniformity and arrange to avoid abrupt variation in appearance.



- .6 Set glass properly centred with uniform bite and face and edge clearance, free from twist, warp, or other distortion likely to develop stress.
- .7 Leave labels on glass until it has been set and inspected and approved. Leave glass whole and without cracks, scratches, or other defects and with setting in perfect condition at completion, to the approval of the Consultant.
- .8 Remove rejected, broken or damaged glass due to defective materials or improper setting and replace with perfect materials. Units producing distorted vision will be rejected and replaced at the reasonable discretion of the Consultant.

#### 3.4 **INTERIOR GLAZING**


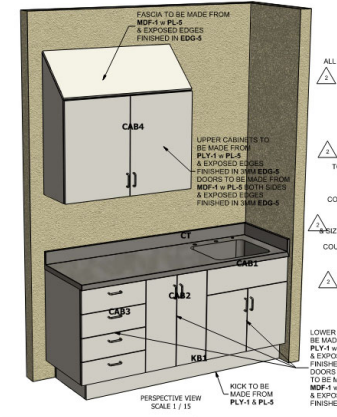

- .1 Unless otherwise specified, all interior glazing shall be dry glazing.
- .2 Provide glazing gasket around entire perimeter of glass. Make tight butt joint at corners of lights. Place setting blocks at sill and spacers at both jambs as required to centre the unit in the frame. Place the unit into the frames and apply the stops against the gaskets. Tighten the screws or clips to obtain positive uniform pressure avoiding excessive pressure.
- .3 Ensure rattle-free cushioning.
- .4 Remove non-permanent labels promptly after installation and promptly clean adhesive and other residue from both surfaces of all glass.

#### 3.5 **PROTECTION AND CLEANING**




- .1 Protect glass from contact with contaminating substances resulting from construction operations or cleaning of adjacent materials.
- .2 Remove and replace glass which is broken, chipped, cracked, abraded, scratched, or damaged in other ways during the construction period, including natural causes, accidents and vandalism.
- .3 Clean glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of Substantial Performance in each area of project. Clean glass by method recommended by glass manufacturer.
- .4 Clean and make good to the approval of the Consultant, surfaces soiled or otherwise damaged in connection with the work of this Section. Pay the cost of replacing finishes or materials that cannot be satisfactorily cleaned.
- .5 Upon completion of the work, remove all debris, equipment and excess material resulting from the work of this Section from the site.

END OF SECTION


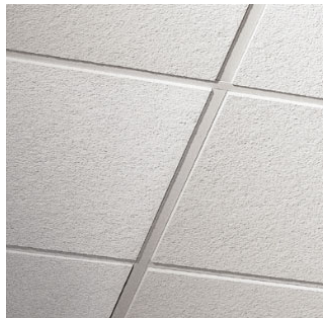
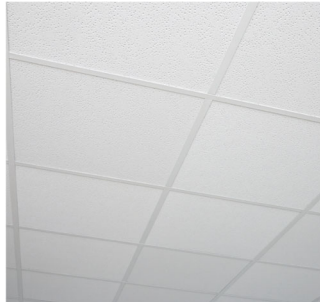
NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION	SAMPLE IMAGE
DIVISION 05 – METALS				
ST-12	Custom Wall-mounted Stainless-Steel Counter & Double Sink	16 GA. 304 Brushed Stainless Steel	Soiled Utility Room	
ST-15	Stainless-Steel Counter & Sink	16GA. #4B Brushed Stainless Steel 180 Grit	Medication Room	<div></div>

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION	SAMPLE IMAGE
<b>DIVISION 06 – WOOD, PLASTICS AND COMPOSITES</b>				
<b>PLAM-1</b>	Plastic Laminate	Manufacturer: Wilsonart Code #: D427-60 Colour: Linen	Medication Room, Staff Lounge	
<b>PLAM-2</b>	Plastic Laminate	Manufacturer: Wilsonart Code #: 8247 Colour: Clearwater Oak Finish: Matte Finish	Team Station Change RM Bench	
<b>SSM-1</b>	Solid Surfacing	Manufacturer: DuPont Product: Corian® Solid Surface Colour: Sand Storm	Staff Lounge Countertop	
<b>DIVISION 08- OPENINGS</b>				
<b>HP-1</b>	Cabinet Hardware Pull	Manufacturer: Amerock Product: Wire Pulls 3-3/4 inch (96mm) Center-to-Center Code #: BP76313CS26D Material: Carbon Steel Finish: Brushed Chrome		





NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION	SAMPLE IMAGE
FLM-1	Applied Film	Manufacturer: 3M™ Product: Privacy Film, 2 mil (0.05 mm) Code #: ID ID 7100055482 UPC 00051115574764 L: 100' x W: 60"  Finish: Matte	Existing Windows	
<b>DIVISION 09 - FINISHES</b>				
ACT-1	Acoustic Ceiling Tile	Manufacturer: USG Ceiling Solutions Product: USG DONN® BRAND DX®/DXL™ Halcyon™ Acoustical Panels Acoustical Suspension System 2'x4' Colour: Coordinating Matte White 3756	See RCP	
ACT-2	Acoustic Ceiling Tile	Manufacturer: USG Ceiling Solutions Product: USG DONN® BRAND DX®/DXL™ Clean Room™ Acoustical Panels Acoustical Suspension System 2'x4' Colour: Coordinating Matte White 3756	See RCP Procedure Rooms	
GWB-1	Gypsum Board Ceiling	Manufacturer: CGC Product: Sheetrock Brand Ultralight Panels 13mm Framing per specification	See RCP	




NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION	SAMPLE IMAGE
RSF-1	Resilient Sheet Flooring and Cove Base	Manufacturer: Tarkett Product: IQ OPTIMA Code #: 245 Colour: FOGGY SHORES WG	See Finishes Plan	
RSF-2	Resilient Sheet Flooring and Cove Base	Manufacturer: Tarkett Product: IQ OPTIMA Code #: 260 COLOUR: SHARKTALE WG	See Finishes Plan	
PT-1	Paint	Manufacturer: PPG (Dulux) Product: Paint Code #: PPG1020-1 Colour: Atrium White	All painted walls/ceilings where indicated	
PT-2	Paint	Manufacturer: PPG (Dulux) Product: Paint Code #: PPG1040-4 Colour: How Handsome	Accent Paint Finish, See Finishes Plan	





NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION	SAMPLE IMAGE
<b>DIVISION 10 - SPECIALTIES</b>				
<b>CG-1</b>	Corner Guard	Manufacturer: Construction Specialties Product: Acrovyn® Corner Guard. with a 1/4" (6.4mm) radius and 2" (50.8mm) legs. Code #: SSM-25N Colour: 933 Mission White		
<b>SWP-x</b>	Wall Protection	Manufacturer: Construction Specialties Product: 0.060" Acrovyn Wall Covering w/ Acrovyn Trims Colour: 933 Mission White	See Finishes Plan	
<b>SD-1</b>	Surface Mounted Soap Dispenser	Manufacturer: PURELL Product: ES4 Push-Style 5.51"x3.90"x9.33"	See drawings.	
<b>HSD-1</b>	Hand Sanitizer	Manufacturer: PURELL Product: ES4 Push-Style 5.51"x3.88"x14.12"	See drawings.	

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION	SAMPLE IMAGE
<b>PTD-1</b>	Surface Mounted Paper Towel dispenser	Manufacturer: Cascades PRO Product: Mechanical No-Touch Roll Towel Dispenser Code #: C345 Colour: White	Washrooms	
<b>TPH-1</b>	Surface Mounted Double-roll Toilet Paper Holder	Manufacturer: Cascades PRO Product: Tandem Jumbo Roll Bath Tissue Dispenser, Double Roll, Code #: C381 Colour: White	Washrooms	
<b>MIR-1</b>	Stainless Steel Channel Frame Mirrors	Manufacturer: American Specialties, Inc. Product: 0620 , Channel Frame Mirror Finish: Stainless Steel Size: Height: 30" Width: 18"	Washrooms	
<b>CH-1</b>	Coat Hook	Manufacturer: American Specialties, Inc. Product: Single Robe Hook Code #: 7340-S Colour and Finish: Satin #4 Stainless Steel	Washrooms	

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION	SAMPLE IMAGE
GRB-1	Grab Bar	Manufacturer: American Specialties, Inc. Product: 1-1/2" diameter [ø38] grab bar with snap-on flange covers Code #: 3800 Peened Option Finish: Stainless Steel Size: Width: 24"	Washrooms	
GRB-3	Grab Bar	Manufacturer: American Specialties, Inc. Product: 1-1/2" diameter [ø38] grab bar with snap-on flange covers Code #: 3800 Peened Option Finish: Stainless Steel Size: Height: 30" Width: 30"	Washrooms	
GRB-5	Grab Bar	Manufacturer: Frost Product: Swing Up Grab Bar Code #: 1055-S Finish: Stainless Steel	Washrooms	
CRT-1	Silentia Screens	Manufacturer: Silentia Product: Mobile Single Screens, 15 Panels Colour: White Height: 5'5"	Pre-op Bay, Post-op Bay	

End of Section



**PART - 1      GENERAL**

**1.1          SUMMARY**

- .1      Section Includes: Labour, Products, equipment and services necessary to complete the work of this Section.

**1.2          ACTION SUBMITTALS**

- .1      Product Data: Submit product data for each type of product.
  - .1          Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.
- .2      Fire-rated assembly listings:
  - .1          Submit fire-rated assembly listings for each required fire resistance rated assembly for work of this section.
- .3      Samples: For the following products:
  - .1          Trim Accessories: Full size sample in 300 mm long length for each trim accessory indicated.

**1.3          ADMINISTRATIVE REQUIREMENTS**

- .1      Pre-installation meeting:
  - .1          Two (2) weeks prior to commencing work of this Section, arrange for manufacturer's technical representative to visit the site and review preparatory and installation procedures to be followed, conditions under which the work will be done, and inspect the surfaces to receive the work of this Section.
  - .2          Establish a procedure to maintain optimum working conditions and to coordinate this work with related and adjacent work.
  - .3          Review products, conditions, and other performance requirements.
  - .4          Advise the Consultant of the date and time of the meeting.

**1.4          QUALITY ASSURANCE**

- .1      Installer Qualifications: Subcontractor executing the work of this section shall have a minimum of 10 years continuous experience in successful installation of work of type and quality indicated and specified.
- .2      Install work level to tolerance of 3 mm in 3000 mm.
- .3      Select studs with maximum deflection of L/360 at lateral force of 240 Pa for maximum heights indicated.
- .4      Fire test response characteristics: For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
- .5      Sound transmission characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by a qualified independent testing agency.

**1.5 ENVIRONMENTAL REQUIREMENTS**

- .1 When the outdoor temperature is less than 13°C ensure that heat is introduced in sufficient time, before work commences, to bring surrounding materials up to these temperatures; and maintained until materials installed by this Section have cured.
- .2 Do not install paper-faced gypsum panels until installation areas are fully enclosed and conditioned.
- .3 Maintain temperature between 10 degree C and 21 degree C both day and night, 24 hours before, during and after entire gypsum board joint finishing and until the permanent heating system is in operation or the building is occupied.
- .4 Do not install work in any area unless satisfied that work in place has dried out, and that no further installation of damp materials is contemplated.
- .5 Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
  - .1 Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - .2 Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- .2 Store materials on the job site in their original packaging until ready for actual use.
- .3 Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.
- .4 Handle gypsum products with care to avoid damage.
- .5 Do not store joint compounds for extended periods, as they are subject to aging.

**PART - 2 PRODUCTS**

**2.1 PERFORMANCE/DESIGN CRITERIA**

- .1 Single source responsibility: Obtain gypsum board products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.
- .2 Fire resistance rating: Where gypsum board systems with fire resistance ratings are indicated or required, provide materials and installations that are identical with those of applicable assemblies tested by fire testing laboratories acceptable to authorities having jurisdiction.
- .3 Follow applicable requirements of ASTM C754 for installation of steel framing.
- .4 Design system members to withstand own dead load, super-imposed dead loads, to maximum allowable deflection of L/240, without permanent deformation.
- .5 Sheet metal thicknesses indicated herein pertains to the "minimum base steel thickness exclusive of coating".

**2.2 MATERIALS**

- .1 Products: Refer to Section 00 01 30, List of Materials for Products, manufacturer, designation and other requirements.

- .2 Glass scrim interior gypsum board:
  - .1 Coated inorganic fiberglass mat-faced water-resistant treated gypsum board, non-combustible water and mould-resistant core encased in a moisture-resistant fiberglass mat on both sides, conforming to the physical properties of ASTM C1396/C1396M and ASTM C1177/C1177M; rating of 10 "No Mold Growth" as tested for 4 weeks according to ASTM D3273, fire rated where indicated.
  - .2 Acceptable Products: Georgia-Pacific "DensArmor Plus Fireguard and Fireguard C Interior Panel", or equivalent by CGC.
- .3 Impact resistant gypsum board:
  - .1 Mould and moisture resistant, glass scrim faced.
  - .2 Impact resistance performance:
    - .1 Surface abrasion surface damage: Level 3 to ASTM C1629.
    - .2 Surface indentation surface damage: Level 1 to ASTM D5420.
    - .3 Soft-body impact penetration: Level 3 to ASTM E695.
    - .4 Hard-body impact penetration: Level 2 to ASTM C1629.
  - .3 Thickness: 15.9 mm minimum, Type X.
- .4 Tile backer board: ASTM C1178/C1178M, 12 mm thick, 1200 mm wide x maximum practical lengths, ends square cut, square edges, glass mat both sides, face side treated with heat-cured copolymer water and vapour resistant coating, Dens-Shield by G-P Gypsum Corporation or other acceptable equivalents.
- .5 Cement board: Durock Cement Board by CGC Inc., PermaBase by Unifix Inc., Wonderboard by Roc-Crete Ltd., or Panaroc by Westroc Ltd.
- .6 Column Covers: High density gypsum, reinforced with continuous filament glass fibre mat and structural reinforcing as required per ASTM C1381 and ASTM C1355.
  - .1 Glass Content: 5 to 6 percent by weight.
  - .2 Density: 100 to 115 pcf.
  - .3 Flammability:
    - .1 Flame Spread Index: 0 to ASTM E84 and ASTM E136.
    - .2 Smoke Development Index: 0 to ASTM E84 and ASTM E135.
  - .4 Impact Resistance: 8.0 ft.-lb./in<sup>2</sup> to ASTM D256.
  - .5 Product: Refer to Section 00 01 30, List of Materials.
- .7 Steel studs: ASTM C645, minimum 0.46 mm base metal thickness, hot-dipped galvanized to ASTM A653/A653M G60 (Z180) zinc coating, roll formed, widths as indicated, with knock-out holes for mechanical and electrical services. Use 20 gauge studs for cement board and fiber reinforced panels.
- .8 Floor and ceiling tracks (runners): ASTM C645, metal thickness to match studs, hot-dipped galvanized to ASTM A653/A653M G60 (Z180) zinc coating, roll formed, width to suit studs.
  - .1 For openings wider than 914 mm, provide 0.836 mm minimum thickness for header.
- .9 Runner fasteners:
  - .1 To metal concrete inserts: Use 10 mm Type S-12 Pan Head screws.

- .2 To suspended ceilings: Use prefinished clips to match ceiling grid, as manufactured by CGC or approved equivalent.
- .10 Furring runners and channels: ASTM C645, minimum 0.46 mm base metal thickness, hot-dipped galvanized to ASTM A653/A653M G60 (Z180) zinc coating, roll formed.
- .11 Resilient steel furring channels: ASTM C645, 12.7 mm x 65 mm, 0.46 mm base metal thickness, hot-dipped galvanized to ASTM A653/A653M G60 (Z180) zinc coating, roll formed; Hat shaped resilient furring channel for direct wall furring where resilient channels are indicated.
- .12 Fasteners for furring members: Type and size recommended by furring manufacturer for substrate and application indicated.
- .13 Channel bridging: 1.37 mm bare steel thickness, 38 mm deep with minimum 12.7 mm wide flange.
- .14 Backing plate: Galvanized steel sheet for blocking and bracing in length and width indicated, minimum base metal 0.7 mm thick.
- .1 Elimination of backer plates or direct attachment of accessories or equipment to studs will not be permitted.
- .15 Attachment clips: Sized to suit acoustical ceiling grid members, complete with screws and other fastening system, Revoe Clips by Revoe Manufacturing Ltd.
- .16 Hangers, tie wires, inserts, anchors: Manufacturer's standard.
- .17 Insulating strip: Rubberized, moisture resistant 3 mm thick foam strip, 12 mm wide, with self-sticking adhesive on one face, lengths as required.
- .18 Casing beads, corner beads: 0.48 mm hot dipped galvanized steel, perforated flanges, designed to be concealed with joint compound; one piece length per location.
- .19 Reveal trims: Extruded 6063-T5 aluminum, designed to be concealed with joint compound, maximum lengths, reveal width and depth as indicated, Final Forms I 500 Series by Gordon Inc. or other approved equivalents.
- .20 Acoustical sealant: Acoustical sealant by Tremco Ltd.
- .21 Joint and laminating compounds: to ASTM C475, as recommended by gypsum board and tile backer board manufacturer, high bond, low shrinkage and asbestos-free.
- .22 Joint tape: 50 mm wide reinforced tape.
- .23 Acoustical insulation (Sound Attenuation Blankets): CAN/ULC-S702, mineral (glass and rock wool) fibre, flame spread and smoke developed in conformance with OBC requirements and other authorities having jurisdiction in accordance with CAN/ULC-S102. Non-combustible in accordance with requirements of CAN/ULC-S114. Sufficient thickness to meet required STC rating for sound-rated partitions and of width to suit metal framing spacing and other miscellaneous spacings.
- .24 Acoustic putty pads: asbestos free gypsum based synthetic rubber moldable putty pad, 177.8 mm x 177.8 mm x 3 mm, non-conductive, of 1.6 kg/l density, tested to UL 263, in red colour, to match Hilti CP 617L Firestop Putty Pad by Hilti (Canada) Corp., for covering electrical boxes in acoustic partitions.
- .25 Security mesh: ASTM A1011, security mesh of expanded carbon steel with nominal 19 mm openings, minimum 3.048 mm thick, Dramex Expanded Metal Corporation or other approved equivalents."

**PART - 3 EXECUTION**

**3.1 EXAMINATION**

- .1 Examine areas and substrates including welded hollow-metal frames and framing for compliance with requirements and other conditions affecting performance.
- .2 Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged. Remove rejected panels from site and replace with undamaged panels at no additional cost to the Owner.
- .3 Do not proceed with installation until the building is completely enclosed and protected from exposure to the elements.
- .4 Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 INSTALLATION - GENERAL**

- .1 Comply with ASTM C754 and ASTM C840, Standard Specification for Application and Finishing of Gypsum Board.

**3.3 INSTALLATION - PARTITION AND WALL FRAMING**

- .1 Align partition top and bottom tracks and secure by screws at 600 mm o.c. maximum.
- .2 Place studs vertically at 400 mm oc, unless otherwise noted, and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in top and bottom tracks.
- .3 Screw attach end studs to top and bottom tracks. Screw attach intermediate studs to bottom tracks. Secure intermediate studs to top tracks by crimping or by other means of fastening acceptable to Consultant.
- .4 Continuously cross brace steel studs at 1500 mm on centre to provide rigid installation to manufacturer's instructions.
- .5 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.
- .6 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using clips or other approved means of fastening placed alongside frame anchor clips.
- .7 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .8 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
- .9 Provide stud, furring channel, and backing plates secured between studs for attachment of fixtures, electrical boxes, grab bars, washroom accessories, and other items. Comply with details indicated and with stud and gypsum board manufacturers' written recommendations.
- .10 Terminate partitions at ceiling height except where indicated otherwise.
- .11 Install continuous insulating strips to isolate studs from exterior window framing.
- .12 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
- .13 Apply two continuous beads of acoustical sealant at junctions of metal framing and structure, including bottom and top tracks, where partitions abut fixed building components.

Fill junction completely and continuously from floor to ceiling, or to structure for full height partitions.

- .14 Acoustic putty pads: Apply acoustic putty pads to the exterior of electrical boxes in acoustic partitions, completely sealing pads against the stud within the stud cavity and fitting around conduit and cables, in accordance with manufacturer's recommendations.
- .15 Frame for gypsum board faced vertical bulkheads within and at termination of ceilings.
- .16 Mechanically fasten resilient channels perpendicular to wall framing starting at 50 mm up from floor and end with 150 mm to the underside of structure at no more than 610 mm o.c. Install where indicated.
- .17 Secure security mesh to each stud with #8 pan head type self tapping screws with minimum through penetration of 6 mm at maximum 200 mm o.c. and within 50 mm of mesh edge or secure mesh with 3 mm x 13 mm long fillet welds at maximum 200 mm o.c. and within 50 mm of mesh edge. Overlap joints by minimum 50 mm.

#### 3.4 **INSTALLATION – ATTACHMENT CLIPS**

- .1 Place attachment clips over acoustic ceiling main/cross tee from top. Line up pre-drilled hole on clip with hole on main/cross tee and screw clip to main/cross tee with 12.7 mm wafer screw.
- .2 Screw through pre-drilled holes in attachment clip into top track of stud partition. Do not screw through ceiling grid.
- .3 Do not damage ceiling grid system during installation of these clips.

#### 3.5 **INSTALLATION - WALL FURRING**

- .1 Space wall furring runners vertically at 600 mm o.c., and secure through alternate flanges of runners. Shim runners as required to present a true, plumb line for application of gypsum board.
- .2 Locate furrings not more than 50 mm away from all openings, interior corners, intersections, frames, jambs, control joints and the like.
- .3 At windows, doors or similar openings having returns, and around corners, install lengths of mitred and bent pieces of furring horizontally spaced approximately 600 mm o.c. Form mitres by cutting the flanges and bending the web. Do not cut web to form corners.
- .4 Mechanically fasten resilient channel perpendicular to wall framing starting at 50 mm up from floor and end within 150 mm to the underside of structure, at no more than 600 mm o.c. Install where indicated.

#### 3.6 **INSTALLATION - SUSPENDED CEILING FRAMING**

- .1 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.
- .2 Provide additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of light fixtures and diffusers.
- .3 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

#### 3.7 **INSTALLATION - GYPSUM PANELS**

- .1 Do not apply gypsum panels until bucks, anchors, blocking, electrical and mechanical work are approved.

- .2 Apply gypsum panels to furring or framing using screw fasteners, at 300 mm oc., and at closer spacings as required for fire resistance rated assemblies. Space fasteners in tile bakers boards a maximum of 200 mm o.c.
- .3 Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- .4 Install gypsum panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1.6 mm of open space between panels. Do not force into place.
- .5 Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- .6 Attach gypsum panels to framing provided at openings and cutouts.
- .7 Control Joints
  - .1 Prior to installation review exact locations of control joints with the Consultant. Install purpose made control joint metal trim at following locations:
    - .1 Where partition, wall, or ceiling traverses a construction joint (expansion, seismic, or building control element) in the base building structure.
    - .2 Furring or partition abuts a structural element or dissimilar wall or ceiling.
    - .3 Ceiling abuts a structural element, column or dissimilar wall, partition, or other vertical penetration.
    - .4 Construction changes within a partition or ceiling.
    - .5 Partition or furring runs exceeding 9100 mm and total area between control joints exceeding 84 m<sup>2</sup>
    - .6 Partition and ceiling runs on column lines or at joints in ceiling runs.
    - .7 In interior ceilings without perimeter relief exceeding 9100 mm in either direction and total area between control joints exceeding 84 m<sup>2</sup>
    - .8 In interior ceilings with perimeter relief exceeding 15000 mm and total area between control joints exceeding 230 m<sup>2</sup>
  - .2 Install control joints full height floor to ceiling or door header to ceiling in partitions and furring runs.
  - .3 Install control joints from wall to wall in ceiling areas.
- .8 Cover both faces of steel stud partition framing with gypsum panels in concealed spaces.
  - .1 Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 0.7 sq.m. in area.
  - .2 Fit gypsum panels around ducts, pipes, and conduits.
  - .3 Where partitions intersect open joists and other structural members projecting below underside of slabs and decks, cut gypsum panels to fit profile formed by joists and other structural members; allow 6 mm to 10 mm wide joints to install sealant.

- .9 Gypsum board single layer application:
  - .1 On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
  - .2 On partitions and walls, apply gypsum panels parallel to framing, unless otherwise indicated or required by fire resistance rated assembly, and minimize end joints.
  - .3 Stagger abutting end joints not less than one framing member in alternate courses of board.
- .10 Gypsum board multilayer application - ceilings: Apply gypsum board indicated for base layers before applying base layers on partitions and walls; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face layer joints one framing member, 400 mm minimum, from parallel base layer joints, unless otherwise indicated or required by fire resistance rated assembly.
- .11 Gypsum board multilayer application – partitions and walls: Apply gypsum board indicated for base layers and face layers parallel to framing with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
  - .1 Furring members: Apply base layer parallel to framing and face layer either vertically parallel or perpendicular to framing with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
- .12 Single layer fastening method: Fasten gypsum panels to supports with steel drill screws.
- .13 Multilayer fastening method: Fasten base layers with screws; fasten face layers with adhesive and supplementary fasteners, unless otherwise indicated or required by fire resistance rated assembly.
- .14 Laminating to substrate: Where gypsum panels are indicated as directly adhered to a substrate, comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.
- .15 Tile backer board: Apply tile backer board where ceramic tile finish is scheduled. Comply with manufacturer's written installation instructions. Maintain 6 mm gap where panels abut other construction or penetrations.

### 3.8 **INSTALLATION - CEMENT BOARD**

- .1 Fabricate and pre-cut cement board to required sizes and with necessary cutouts.
- .2 Install cement board with edges centred on steel framing and joints staggered in adjacent rows. Fit ends and edges closely but do not force together.
- .3 Install cement board fasteners at 150 mm o.c. with perimeter fasteners between 10 mm to 16 mm from ends and edges.
- .4 Install cement board joint filler in accordance with cement board manufacturer's directions to produce watertight, filled joints without voids, cracks and excess joint filler.

### 3.9 **INSTALLATION - ACOUSTICAL INSULATION**

- .1 Install acoustical insulation to partitions indicated. Provide continuous coverage between studs and run continuously from floor to ceiling, or to structure for full height partitions, over door frames and openings and around corners.
- .2 Install acoustical insulation within induction units where partitions meet window mullions.



- .3 Pack acoustical insulation around cut openings in gypsum board, behind outlet boxes around plumbing, heating or structural items passing through the system and at abutting walls.
- .4 Secure acoustical insulation to one interior face of gypsum board with adhesive or mechanical fasteners or by other approved means.
- .5 For partitions receiving acoustical insulation, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919, Standard Practice for Use of Sealants in Acoustical Applications, and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings

### 3.10 **INSTALLATION - FIRE RATED ASSEMBLIES**

- .1 Construct fire rated assemblies where indicated, to requirements of authorities having jurisdiction.

### 3.11 **INSTALLATION - ACCESSORIES**

- .1 Erect casing beads, corner beads straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured by screw fasteners. Fit corners accurately, free from rough edges.
- .2 Provide corner beads at external corners of gypsum board partitions and where indicated.
- .3 Provide casing beads at gypsum board terminations, at gypsum board wall/ceiling junctions, where gypsum board butts against surfaces having no trim concealing junction and where indicated.
- .4 Construct control joints of two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint. Provide continuous polyethylene dust barrier behind and across control joints.

### 3.12 **INSTALLATION - ACCESS PANELS**

- .1 Install access doors to electrical and mechanical fixtures specified in respective Sections.
- .2 Rigidly secure frames to furring or framing systems.

### 3.13 **INSTALLATION - TAPING AND FILLING**

- .1 Fill joints, casing beads, corner beads, screwholes and depressions on gypsum board surfaces exposed to view to provide smooth seamless surfaces and square neat corners.
- .2 Apply joint compounds and reinforcing tapes in accordance with manufacturer's specifications.
- .3 Fill joints and apply joint compounds by three-coat method. Apply cover coat 175 mm wide, level coat 250 mm wide, and skim coat 300 mm wide.
- .4 Embed reinforcing tape in a cover coat of joint compound. Apply level coat of joint compound when cover coat has dried. Apply skim coat of compound when level coat has dried.
- .5 Feather edges of compounds into surfaces of gypsum boards. After skim coat has dried for at least 24 hours sand to leave smooth for decoration. Do not sand paper face of gypsum board.
- .6 At internal corners: First fill gaps between boards with joint compound. Embed creased reinforcing tape into a thin coat of joint compound applied 50 mm wide at each side of

corner. Apply cover coat. Apply skim coat to one side of joint, and when dry apply skim coat to other side.

- .7 At external corners: Fill to nose of corner bead with joint compound and sand smooth.
- .8 At screwheads and nailheads: Fill holes and depressions with a two coat application of joint compound and sand smooth.
- .9 Finish gypsum board joints above finished ceiling with tape and first coat of joint compound.

### 3.14 **EXISTING BASE BUILDING GYPSUM WALL PARTITIONS**

- .1 All existing Base Building gypsum wall partitions must be repaired, patched, taped, filled and sanded prior to receive new finishes.
- .2 Patching and Repair:
  - .1 Gypsum panel product patch must be mechanically secured; attachment with joint compound material only is not acceptable. The patching material should be cut from gypsum panel product of a type and thickness equal to the original materials so that the patching material is in the same geometric shape as, but slightly larger than, the damaged area. The damaged area is then further enlarged to match exactly the size of the patching material. Restore thermal insulation, if present.
  - .2 Metal runner track is secured to the inside edges of the damaged area. The patching material is screw attached to the exposed face of the runner track with fasteners a maximum of 8 in. (200 mm) apart. The patch should be treated with tape and joint compound to restore appearance to Level 5 gypsum board finish, fire resistance qualities, and acoustical performance.
    - .1 Apply skim coat of topping or all-purpose drying-type compound over the entire wall where patching and repair was performed.

### 3.15 **INSTALLATION TOLERANCES**

- .1 Provide and install studs, framing, shimming, and furring to provide proper support for gypsum board to achieve the following installation tolerances:
  - .1 Do not exceed 3 mm in 3 m variation from plumb, level, and plane.
  - .2 Do not exceed 10 mm from drawings locations.
  - .3 Do not exceed 1.5 mm variation between planes of abutting edges or ends.
  - .4 Install each framing member so fastening surfaces vary not more than 3.2 mm from the plane formed by faces of adjacent framing.
- .2 Suspended and furred ceilings:
  - .1 Level cross furring channels to maximum tolerance of 3 mm in 3 m.
- .3 Installation tolerances gypsum and tile backer board panels:
  - .1 Do not exceed 3 mm in 3 m variation from plumb, level, and plane in exposed surfaces, except at end joint between gypsum board panels.
  - .2 Do not exceed 10 mm from indicated location.
  - .3 Do not exceed 1.5 mm variation between planes of abutting edges or ends.
  - .4 Surface flatness shall not exceed 1.5 mm within 305 mm straight edge. For non-tapered-edge end joints between boards, measure flatness tolerance with end of straight end at centreline of joint.

- .4 Installation tolerances accessories:
  - .1 Alignment with board panels shall not exceed tolerances specified above.
  - .2 End joints shall be flush aligned to maximum offset of 0.5 mm.

3.16 **PROTECTION**

- .1 Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- .2 Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- .3 Remove and replace panels that are wet, moisture damaged, and mold damaged at no additional cost to the Owner.
  - .1 Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - .2 Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

**PART - 1      GENERAL**

**1.1          SUMMARY**

.1      Section Includes:

- .1      Labour, Products, equipment and services necessary to complete the work of this Section.

**1.2          QUALITY ASSURANCE**

- .1      Installer: Trained and approved by the manufacturer and having a minimum three years experience in the installation of the work described in this Section and can show evidence of satisfactory completion of projects of similar size, scope and type. If requested, provide letter of certification from manufacturer stating that installer is certified applicator of its products, and is familiar with proper procedures and installation requirements required by the manufacturer.
- .2      Finish ceiling system: Square with adjoining walls and level within 1:1000, in true plane, free from distorted, warped, soiled or damaged panels or grid.
- .3      Comply with ASTM C635/C635M Intermediate Duty and C636/C636M except as otherwise specified herein.
- .4      Maximum deflection of completed ceiling system: 1/360 of span.
- .5      Design suspended ceiling system for adequate support of electrical fixtures as required by Electrical Safety Authority.
- .6      Pre-installation meeting: Two weeks prior to commencing work of this Section, arrange for manufacturer's technical representative to visit the site and review preparatory and installation procedures to be followed, conditions under which the work will be done, and inspect the surfaces to receive the work of this Section. Advise the Consultant of the date and time of the meeting.

**1.3          SUBMITTALS**

.1      Product Data:

- .1      For each type of product, certifying compliance with the specified or named product or material.
- .2      Prior to ordering products or materials, submit manufacturer's printed product datasheets for each type of product. Include product characteristics, performance criteria, physical size, finish and limitations for products listed in selected designs.

.2      Samples: Duplicate full size samples of each type acoustical units and 300 mm long grid members.

.3      Provide shop drawings, load diagrams, and design calculations signed and stamped by a professional engineer licensed in the Province of Ontario. Ensure that the proposed ceiling and suspension system comply with the requirements of the Ontario building Code 2006, and with the seismic requirements for the project location.

- .1      Shop drawings: Indicate typical plans, reflected ceiling plans, and sections of the suspended ceiling system as well as details on connections to the building, suspension system layout, spacing, locations, member sizes and thicknesses, fasteners, hangers, and all relevant accessories. Indicate materials and finishes.

- .2      Load diagrams: Indicate dead and live loads to be carried by the building structure, and method in which vertical building deflections are handled.

- .3 Design calculations: Provide complete set of design calculations showing design and seismic loads. Indicate seismic vulnerability for project location.

#### 1.4 **ENVIRONMENTAL CONDITIONS**

- .1 Permit wet work to dry before commencement of installation.
- .2 Maintain uniform minimum temperature of 15°C and humidity of 20 - 40% before and during installation.
- .3 Store materials in work area 48 hours prior to installation.

#### 1.5 **EXTRA STOCK**

- .1 Provide two percent of each pattern and type of acoustical units. Store where directed. Extra stock to be same production run as installed materials.

### **PART - 2 PRODUCTS**

#### 2.1 **MATERIALS**

- .1 Basis of Design – Acoustic Tile Products: Refer to Section 09 06 00 Finishes Schedule for a complete list of acoustic tile products, designations, manufacturers, sizes and colours.
  - .1 Products by other manufacturers similar in function, design, performance, and construction complying with requirements of this Section may be incorporated into the Work subject to Consultant's acceptance.
- .2 Exposed main tee: Hot dipped galvanized steel to ASTM A653/A653M minimum Z90 coating designation, 24 mm exposed face and 38 mm high bulb tee design with double web and separate exposed cap piece, maximum length, with reversible and integral splice. Prefinish tee in baked enamel, standard colour.
- .3 Exposed cross tee: Hot dipped galvanized steel to ASTM A653/A653M minimum Z90 coating designation, exposed face to match main tees, 38 mm high bulb tee design of same fabrication as main tee, with override stepped ends to allow cross tee flange to sit on main tee flange providing flush exposed faces, and with positive interlock to main tee, grid module to suit acoustical panels. Finish to match main tees.
- .4 Main tee splices: Designed to lock lengths of main tees together so that joined lengths of tee function structurally as a single unit with tee faces at joint perfectly aligned and presenting a tight seam.
- .5 Hangers and wires: Galvanized hangers and 2.6 mm minimum galvanized steel wire.
- .6 Hold-down clips: Spring steel clips by the grid system manufacturer.
- .7 Wall moulding: Prefinished galvanized steel, nominal 25 mm x 25 mm with nominal 25 mm exposed face, hemmed edges. Finish to match main tees.
- .8 Shadow wall moulding: Prefinished galvanized steel, 19 mm x 19 mm reveal with nominal 25 mm exposed face, hemmed edges. Finish to match main tees.
- .9 Adhesive: Recommended by acoustic unit manufacturer.

### **PART - 3 EXECUTION**

#### 3.1 **INSTALLATION - GENERAL**

- .1 Install work in accordance with ASTM C636/C636M and to manufacturer's instructions except where specified otherwise.
- .2 Do not commence installation until work above ceiling has been inspected by Consultant.
- .3 Lay out system in accordance with reflected ceiling plans.

- .4 Ensure work is co-ordinated with location of related components.

### 3.2 **INSTALLATION - GRID SYSTEM**

- .1 Centre acoustical ceiling suspension systems on room axis; install equal border pieces, unless otherwise indicated.
- .2 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
- .3 Install supplemental suspension system where ducts or other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support suspension system members. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- .4 Install hanger wires plumb and securely anchored to the building structural framing, independent of walls, pipes, ducts, and metal deck; install additional framing and hangers to bridge interference items.
- .5 Do not bend or twist hangers as a means of levelling. Form double loops tightly and lock to prevent vertical movement or rotation within the loop.
- .6 Install wall moulding at intersection of ceiling and vertical surfaces to provide correct ceiling height.
- .7 Provide additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of light fixtures and diffusers.
- .8 Use longest practical lengths of tees, furring and running channels to minimize joints. Make joints square, tight, flush and reinforced with concealed splines. Assemble framework to form a rigid and interlocking system.
- .9 Run main tees at right angles to length of light fixtures.
- .10 Interlock cross tees to main tees to provide rigid assembly.
- .11 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.

### 3.3 **INSTALLATION - ACOUSTICAL PANELS**

- .1 Neatly cut acoustic units for mechanical and electrical and other services.
- .2 Carefully fit acoustic units in place; no broken edges permitted.
- .3 Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.
- .4 Provide hold-down clips at acoustical system to hold units tight to grid system within 6000 mm of an exterior door and an operable window.
- .5 Install adhesive bonded acoustic units to clean, dry and firm substrate.

END OF SECTION

**PART - 1      GENERAL**

**1.1      REFERENCE STANDARDS**

- .1      ASTM International (ASTM)
  - .1      ASTM D2047, Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
  - .2      ASTM E648, Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
  - .3      ASTM E662, Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
  - .4      ASTM F1066, Standard Specification for Vinyl Composition Floor Tile.
  - .5      ASTM F1303, Standard Specification for Sheet Vinyl Floor Covering with Backing.
  - .6      ASTM F1344, Standard Specification for Rubber Floor Tile.

**1.2      ACTION AND INFORMATIONAL SUBMITTALS**

- .1      Submit in accordance with Division 01.
- .2      Product Data:
  - .1      Submit manufacturer's instructions, printed product literature and data sheets for flooring, adhesive, primer, sealer, and include product characteristics, performance criteria, physical size, finish and limitations.
- .3      Samples:
  - .1      For each colour and type selected, submit duplicate 300 x 300 mm sample pieces of sheet material, 300 mm long edge strips and base.
- .4      Low-Emitting Materials:
  - .1      Submit listing of adhesives and sealants used in building, showing compliance with VOC and chemical component limits or restriction requirements.

**1.3      MAINTENANCE MATERIAL SUBMITTALS**

- .1      Extra Materials:
  - .1      Provide extra materials of resilient sheet flooring and adhesives in accordance with Division 01.
  - .2      Provide 2% of each type and colour of material installed.
  - .3      Extra materials one piece and from same production run as installed materials.
  - .4      Identify each roll of sheet flooring and each container of adhesive.
  - .5      Deliver to Owner, upon completion of the work of this section.
  - .6      Store where directed by Owner.

**1.4      CLOSEOUT SUBMITTALS**

- .1      Submit in accordance with Division 01.
- .2      Operation and Maintenance Data: submit operation and maintenance data for resilient flooring for incorporation into manual.

1.5 **QUALITY ASSURANCE**

- .1 Products: Provide like Products from same production run. Install Products in sequence from sequentially numbered dye lots.
- .2 Install work of this Section straight and level to variation of 1:1000.
- .3 Maintenance seminars: Provide, to the Owner, training seminars and recommendations on Product maintenance procedures.
- .4 Testing of concrete floors: Test floors that have been cured for minimum 28 days, and after preparation for Product installation is complete and patching or levelling compound is fully cured. Conduct testing simultaneously on floors free of sealer, curing compounds, oil, grease and other agents detrimental to the test and the Product performance, and in strict conformance with test kit manufacturer's written instructions. Locate test sites to cover representative installation areas. Do not proceed with work when the test results do not conform to the specified allowable.
  - .1 Moisture vapour emission of concrete floors: Maximum 3 lbs per 1000 sq.ft. per 24 hour. Test floors to ASTM F1869 using anhydrous calcium chloride method.
    - .1 Conduct a minimum three (3) tests for first 100 m<sup>2</sup> and one (1) test for each subsequent 100 m<sup>2</sup> or fraction thereof, with one within 1000 mm of an outside wall for slabs on grade.
  - .2 Alkalinity of concrete floors: Acceptable range of 5 to 9 on the pH scale. Test floors using distilled water and pH paper.
    - .1 Conduct 2 tests for every moisture vapour emission test.
  - .3 Building must be enclosed with ambient conditions equivalent to those after building occupancy.
- .5 Mock-ups:
  - .1 Provide mock-up in accordance with Division 01.
  - .2 Before installation, provide 600 mm x 600 mm mock-up of each specified resilient tile flooring for review by Consultant.
  - .3 Mock-up to demonstrate:
    - .1 selected material
    - .2 pattern, texture and colour schemes
    - .3 direction of lay
    - .4 finish fits to walls and doorways
    - .5 seam finish
    - .6 inside corner and outside corner, and base installation.
    - .7 Feature strip and metal edge strip.
  - .4 Location of mock-ups as directed by the Consultant.
  - .5 Correct mock-up deficiencies, at no additional cost to Owner, as directed by Consultant.
  - .6 When accepted, mock-ups will demonstrate minimum standard of quality required for this work.



**1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Division 01 with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location, indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect resilient flooring from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

**1.7 SITE CONDITIONS**

- .1 Ensure high ventilation rate, with maximum outside air, during installation.
  - .1 Vent directly to outside.
  - .2 Do not let contaminated air recirculate through a district or whole building air distribution system.
  - .3 Maintain extra ventilation for 1 month minimum after building occupation.
- .2 Maintain air temperature and structural base temperature at flooring installation area above 20 degree C for 48 hours before, during and for 48 hours after installation

**PART - 2 PRODUCTS**

**2.1 RESILIENT FLOORING MATERIALS**

- .1 Basis of Design: Refer to List of Materials, Section 09 06 00, for complete list of all products, designations, manufacturers, sizes, finishes and colours.

**2.2 ACCESSORIES**

- .1 Resilient base: continuous, top set, complete with premoulded end stops and external corners, cut lengths minimum 2400 mm, model and sizes as indicated in Section 09 06 00, Finishes Schedule.
- .2 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.
- .3 Flooring adapters, Trims, Transition and Reducer Strips: purpose made; constructed of first grade quality raw materials, smooth and free from imperfections, types as indicated on Section 09 06 00 Finishes Schedule.
- .4 Welding rod: Compatible with resilient sheet flooring and recommended by the flooring manufacturer.
- .5 Sub-floor filler and leveller:
  - .1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
  - .2 Have not less than the following physical properties:
    - .1 Compressive strength - 25 MPa.
    - .2 Tensile strength - 7 MPa.
    - .3 Flexural strength - 7 MPa.

- .4 Density - 1.9.
- .3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.
- .4 Ready for use in 48 hours after application.
- .6 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.
- .7 Cleanser: neutral cleanser detergent. Exact type as recommended by flooring manufacturer.

## **PART - 3 EXECUTION**

### **3.1 EXAMINATION**

- .1 Examine conditions, substrates and work to receive work of this Section.
- .2 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Consultant.
  - .2 Inform Consultant 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 Consultant.
- .3 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.

### **3.2 PREPARATION**

- .1 Prepare for installation in accordance with manufacturer's written recommendations.
- .2 Prepare subfloor smooth, level, true, sound and free of cracks, holes, other defects and irregularities, in accordance with flooring manufacturers' recommendation.
- .3 Mechanically remove contamination on the substrate that may cause damage to the resilient flooring material, cause telegraphing, or prevent proper adhesion. Permanent and non-permanent markers, pens, crayons, paint, etc., shall not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material
- .4 Remove old, existing adhesives to prevent residual bleeding through to new flooring or interfering with bonding of new adhesives.
- .5 Remove sub-floor ridges and bumps and fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- .6 Apply sub-floor filler to low spots and cracks to achieve floor level to a tolerance of 1:1000, allow to cure.
- .7 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler is completely cured and dry.
- .8 Sweep and vacuum clean substrates to be covered by resilient products immediately before primer application.
- .9 Prime concrete slab to resilient flooring manufacturer's written instructions.

3.3 **MANUFACTURER'S INSTRUCTIONS**

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

3.4 **APPLICATION - FLOORING**

- .1 Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
- .2 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive that can be covered by flooring before initial set takes place.
- .3 Resilient tile flooring:
  - .1 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern.
  - .2 Border tiles: half tile width minimum.
  - .3 Install flooring to indicated pattern with joints aligned.
- .4 As installation progresses, and after installation roll flooring with 45 kg minimum roller to ensure full adhesion.
- .5 Cut flooring neatly around fixed objects.
- .6 Continue flooring over areas which will be under built-in furniture.
- .7 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- .8 Terminate resilient flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
- .9 Install edge strips at unprotected or exposed edges where flooring terminates.
- .10 Provide carpet/flooring adapter at interface of carpet and work of this Section, straight and true. Where carpet/resilient flooring interface occurs at doorway, locate adapter underneath door in its closed position.

3.5 **APPLICATION - BASE**

- .1 Lay out base to keep number of joints at minimum.
- .2 Clean substrate and prime with one coat of adhesive.
- .3 Apply adhesive to back of base.
- .4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- .5 Install straight and level to variation of 1:1000.
- .6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.
- .7 Miter internal corners. Use premoulded sections for external corners.
- .8 Use type of wall base as indicated on the List of Materials, 00 01 30.

3.6 **CLEANING**

- .1 Leave Work area clean at end of each day.

- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
  - .1 Remove excess adhesive from floor, base and wall surfaces without damage.
  - .2 Clean, seal and wax floor and base surface to flooring manufacturer's printed instructions.
- 3.7 **PROTECTION**
  - .1 Protect installed products and components from damage during construction.
  - .2 Protect new floors in accordance with manufacturer's printed instructions.
  - .3 Repair damage to adjacent materials caused by resilient flooring installation.

**END OF SECTION**

## **PART - 1      GENERAL**

### **1.1            SUMMARY**

#### **.1            Section Includes:**

- .1            Labour, Products, equipment and services necessary to complete the work of this Section.

### **1.2            QUALITY ASSURANCE**

- .1            Applicator experience: Having minimum of five years proven satisfactory experience. When requested, provide a list of the last three comparable projects including, name and location, consultant, start and completion dates, and value of the painting work.
- .2            Applicator qualification: Qualified journeypersons, painters, as defined by local jurisdiction shall be engaged in painting and decorating work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyperson in accordance with trade regulations.
- .3            Materials, preparation and quality of work: In conformance with requirements of the latest edition of the Architectural Painting Specification Manual by the Master Painters Institute, referred to as the MPI Painting Manual in this Section, issued by the local MPI Accredited Quality Assurance Association having jurisdiction.
- .4            Manufacturers and products: Listed under the Approved Product List section of the MPI Painting Manual.
- .5            Maintenance seminars: Provide, to the Owner, training seminars and recommendations on Product maintenance procedures.
- .6            Pre-installation meeting: Two weeks prior to commencing work of this Section, arrange for manufacturer's technical representative to visit the site and review preparatory and installation procedures to be followed, conditions under which the work will be done, and inspect the surfaces to receive the work of this Section. Advise the Consultant of the date and time of the meeting.
- .7            Manufacturer's site inspection: Have the manufacturer's technical representative inspect the Work at suitable intervals during application and at conclusion of the work of this Section, to ensure the Work is correctly installed. When requested, submit manufacturer's inspection reports and verification that the work of this Section is correctly installed.
- .8            All surfaces requiring painting shall be inspected by the Consultant who shall notify the Consultant and General Contractor in writing of any defects or problems, prior to commencing painting work, or after the prime coat shows defects in the substrate.
- .9            Ensure written confirmation is received from steel fabricators of the specific surface preparation procedures and primers used for steel work to ascertain appropriate and compatible finish materials.

### **1.3            SAMPLES AND MOCK-UPS**

- .1            Samples: Provide duplicate minimum 300 mm square samples of surfaces or acceptable facsimiles requested painted with specified paint or coating in colours, gloss, sheen and textures required to MPI Painting Manual standards for review. When approved, samples become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.

- .2 Sample installations: When requested by the Consultant, prepare and paint designated surface, area, room or item in each colour scheme to requirements specified, with specified paint or coating showing selected colours, gloss, sheen, textures and quality of work to MPI Painting Manual standards for review and approval. When approved, surface, area, room and items become acceptable standard of finish quality and workmanship for similar on-site work.

#### 1.4 **SUBMITTALS**

- .1 List of painting materials: Submit duplicate copy of list of painting materials for review prior to ordering materials. If requested, provide an invoice list of all paint materials ordered for project work to Consultant indicating manufacturer, types and quantities for verification and compliance with specification and design requirements.
- .2 Material Safety Data Sheets (MSDS): Submit duplicate copies prior to commencement of work for review and for posting at job site as required.
- .3 Project Data Manual: At project completion provide an itemized list complete with manufacturers' application instructions, paint type and colour coding for all colours used for Owner's later use in maintenance.

#### 1.5 **PRODUCT DELIVERY, STORAGE AND HANDLING**

- .1 Deliver all painting materials in sealed, original labelled containers bearing manufacturer's name, brand name, type of paint or coating and colour designation, standard compliance, materials content as well as mixing and/or reducing and application requirements.
- .2 Store all paint materials in original labelled containers in a lockable, dry, heated and well ventilated single designated area meeting the minimum requirements of both paint manufacturer and authorities having jurisdiction and at a minimum ambient temperature of 7 degree C. Only material used on this project to be stored on site.
- .3 Where toxic, volatile, explosive, flammable materials are being used, provide adequate fireproof storage lockers and take all necessary precautions and post adequate warnings such as no smoking signs as required.
- .4 Take necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect the environment from hazard spills. Store materials that constitute a fire hazard in suitable closed and rated containers and removed from the site on a daily basis.
- .5 Comply with requirements of authorities having jurisdiction, in regard to the use, handling, storage and disposal of hazardous materials.

#### 1.6 **SCHEDULING**

- .1 Schedule painting operations to prevent disruption of and by other Sections.
- .2 Schedule painting operations in occupied facilities to prevent disruption of occupants in and about the building. Perform painting after facility working hours in accordance with Owner's operating requirements. Schedule work such that painted surfaces will have dried before occupants are affected. Obtain written authorization from Consultant for changes in work schedule.

## 1.7 PROJECT CONDITIONS

- .1 Unless specifically pre-approved by the Consultant, and the product manufacturer, do not perform work when the ambient air and substrate temperatures are below 10 degree C for both interior and exterior work.
- .2 Do not perform exterior work unless environmental conditions are within MPI and manufacturer's requirements or until adequate weather protection is provided. Where required, provide suitable weatherproof covering and sufficient heating facilities to maintain minimum ambient air and substrate temperatures for 24 hours before, during and after work is completed.
- .3 Do not perform interior work unless adequate continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above minimum requirements for 24 hours before, during and 48 hours after work is complete, unless required otherwise by manufacturer's instructions. Provide supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
- .4 Do not perform work when the relative humidity is above 85% or when the substrate temperature is less than 3 degree C above the measured dew point.
- .5 Do not perform work when the maximum moisture content of the substrate exceeds:
  - .1 12 % for concrete and masonry.
  - .2 15% for wood.
  - .3 12 % for plaster and gypsum board.
- .6 Conduct all moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple cover patch test.
- .7 Test concrete, masonry and plaster surfaces for alkalinity as required.
- .8 Apply work only to dry, clean, properly cured and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect the quality of finished surfaces.
- .9 Do not perform work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted or decorated.

## 1.8 EXTRA STOCK

- .1 At project completion provide 4 liters of each type and colour of paint from same production run used in unopened cans, properly labelled and identified for Owner's later use in maintenance. Store where directed.

## 1.9 WASTE MANAGEMENT AND DISPOSAL

- .1 Paint, stain and wood preservative finishes and related materials such as thinners, solvents are regarded as hazardous products and are subject to regulations for disposal. Obtain information on these controls from applicable authorities having jurisdiction.
- .2 Separate and recycle waste materials. Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility. Materials that cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

- .3 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
- .4 Strictly adhere to the following procedures to reduce the amount of contaminants entering waterways, sanitary and storm drain systems or into the ground:
  - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
  - .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 an approved legal manner in accordance with hazardous waste regulations.
  - .5 Empty paint cans are to be dry prior to disposal or recycling (where available).
  - .6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
- .5 Set aside and protect surplus and uncontaminated finish materials not required by the Owner and deliver or arrange collection for verifiable re-use or re-manufacturing.

## **PART - 2 PRODUCTS**

### **2.1 MATERIALS**

- .1 Only materials listed in the latest edition of the MPI Approved Product List (APL) are acceptable for use on this project. Provide material from a single manufacturer for each system used.
- .2 Other materials not listed in the APL shall be the highest quality product of an MPI listed manufacturer and shall be compatible with paint materials being used as required.
- .3 All materials used shall be lead and mercury free and shall have low VOC content where possible.
- .4 Where required, use only materials having a minimum MPI Environmentally Friendly E2 or E3 rating based on VOC (EPA Method 24) content levels.
- .5 Where indoor air quality is an issue, use only MPI listed materials having a minimum E2 or E3 rating.
- .6 Provide materials having good flowing and brushing properties and capable to dry or cure free of blemishes, sags, air entrapment.
- .7 Where required, paints and coatings shall meet flame spread and smoke developed ratings to code requirements and authorities having jurisdiction.

### **2.2 EQUIPMENT**

- .1 Painting and Decorating Equipment: to best trade standards for type of product and application.



- .2 Spray Painting Equipment: of ample capacity, suited to the type and consistency of paint or coating being applied and kept clean and in good working order at all times.

### 2.3 MIXING AND TINTING

- .1 Unless otherwise specified or pre-approved, provide materials ready-mixed and pre-tinted. Re-mix materials in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and color and gloss uniformity.
- .2 Mix paste, powder or catalyzed materials in strict accordance with manufacturer's written instructions.
- .3 Do not exceed amount of thinner beyond manufacturer's recommendations. Do not use kerosene or organic solvents to thin water-based materials.
- .4 If required, 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 Consultant.

### 2.4 FINISH AND COLORS

- .1 The Consultant will select colours from a manufacturer's full range of colours. Refer to Section 09 06 00, Finishes Schedule for identification and location of colours.
- .2 Where required by authorities having jurisdiction, finish exit and vestibule doors in contrasting colour to walls and a different colour than any other door in the same area.
- .3 Access doors, prime coated butts and other prime painted hardware, registers, radiators and covers, exposed piping and electrical panels: To match adjacent surfaces, unless otherwise noted or where pre-finished.
- .4 Where other applied finishes and nosing are not specified at stairs, ramps and landings providing access and exit for persons with visual impairment, provide colour contrast slip resistant finish and warning strips at treads and landings.

### 2.5 GLOSS AND SHEEN RATINGS

- .1 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following MPI values:

Gloss Level	Description	Units@ 60 degrees	Units@ 85 degrees
G1	Matte or Flat finish	Max. 5	Max. 10
G2	Velvet finish	Max. 10	10 to 35
G3	Eggshell finish	10 to 25	10 to 35
G4	Satin finish	20 to 35	Min. 35
G5	Semi-Gloss finish	35 to 70	
G6	Gloss finish	70 to 85	
G7	High-Gloss finish	More than 85	

## **PART - 3 EXECUTION**

### **3.1 CONDITION OF SURFACES**

- .1 Prior to commencement of work thoroughly examine and test as required conditions and surfaces scheduled to be painted. Do not commence work until adverse conditions and defects have been corrected and surfaces and conditions are acceptable to the Consultant.

### **3.2 SURFACE PREPARATION**

- .1 Prepare all surfaces in accordance with MPI requirements.
- .2 Sand, clean, dry, etch, neutralize and test surfaces under adequate illumination, ventilation and temperature requirements.
- .3 Remove and securely store miscellaneous hardware, surface fittings and fastenings such as electrical plates, mechanical louvers, door and window hardware, hinges, knobs, locks, trim, frame stops, removable rating/hazard/instruction labels, washroom accessories, light fixture trim, from wall and ceiling surfaces, doors and frames, prior to commencement of work. Carefully clean and replace items upon completion of work in each area. Do not use solvent or reactive cleaning agents on items that will mar or remove finishes. Remove doors to finish bottom and top edges and re-hang doors when work is complete.
- .4 Protect all adjacent interior surfaces and areas, including rating/hazard/instruction labels on doors, frames, equipment, piping, from painting operations and damage using drop cloths, shields, masking, templates, or other suitable protective means and make good damages caused by failure to provide such protection.
- .5 Make good substrate defects and sand ready for finishing particularly after the first coat is applied. Start of finishing on defective surfaces indicates acceptance of substrate and any costs of making good defects shall be borne by this Section including re-painting of entire defective surface.
- .6 Confirm preparation and primer used with fabricator of steel items.

### **3.3 APPLICATION**

- .1 Do not perform work unless substrates are acceptable and until heating, ventilation, lighting and completion of work of other Sections are acceptable for applications of products.
- .2 Apply materials in accordance with MPI Painting Manual Premium Grade finish and manufacturers' requirements.
- .3 Work specified is intended to cover surfaces satisfactorily when applied at proper consistency and in accordance with manufacturer's recommendations.
- .4 Tint each coat of finish progressively lighter to enable confirmation of number of coats.
- .5 Unless otherwise approved by the Consultant, apply a minimum of four coats of paint where deep or bright colors are used to achieve satisfactory results.
- .6 Sand between each coat to provide an anchor for next coat and to remove defects visible from a distance up to 1000 mm.
- .7 Do not apply finishes on surfaces that are not sufficiently dry. Unless manufacturer's directions state otherwise, each coat shall be sufficiently dry and hard before a following coat is applied.

- .8 Prime coat of stain or varnish finishes may be reduced in accordance with manufacturer's directions.
- .9 Paint finish shall continue through behind all wall-mounted items.
- .10 Unless noted otherwise, field-apply finish paint to all structural steel work, which will remain exposed and subject to normal view by pedestrians or occupants on the completed exterior or interior of the building.

#### 3.4 **INTERIOR FINISHING SYSTEMS**

- .1 Finish interior surfaces in accordance with MPI Painting Manual requirements:
- .2 Galvanized Metal: Doors, frames, railings, misc. steel, pipes, overhead decking, ducts.
  - .1 INT 5.3M: High performance architectural latex G5 finish.
- .3 Plaster and Gypsum Board:
  - .1 INT 9.2B: High performance architectural latex G5 finish.

#### 3.5 **MECHANICAL, ELECTRICAL EQUIPMENT AND RELATED SURFACES**

- .1 Unless otherwise specified or noted, finish all unfinished conduits, piping, hangers, ductwork and other mechanical and electrical equipment with color and texture to match adjacent surfaces, in the following areas:
  - .1 Where exposed-to-view in exterior and interior areas.
  - .2 In interior high humidity interior areas.
  - .3 In boiler room, mechanical and electrical rooms.
- .2 In unfinished areas leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
- .3 Touch up scratches and marks on factory finished equipment with products compatible with factory finish.
- .4 Do not paint over nameplates.
- .5 Paint the inside of all ductwork where visible behind louvers, grilles and diffusers for a minimum of 450 mm or beyond sight line, whichever is greater, with primer and one coat of flat black paint.
- .6 Paint the inside of light valances gloss white.
- .7 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- .8 Paint or band all fire protection piping and sprinkler lines in accordance with mechanical specification requirements. Keep sprinkler heads free of paint.
- .9 Paint or band all natural gas piping in accordance with mechanical specification requirements.
- .10 Back prime and paint face and edges of plywood service panels for telephone and electrical equipment before installation to match adjacent wall surface. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

### 3.6 **FIELD QUALITY CONTROL AND STANDARD OF ACCEPTANCE**

- .1 Painted interior surfaces will be considered to lack uniformity and soundness if any of the following defects are apparent to the Consultant:
  - .1 Brush and roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas, and foreign materials in paint coatings.
  - .2 Evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.
  - .3 Damage due to touching before paint is sufficiently dry or any other contributory cause.
  - .4 Damage due to application on moist surfaces or caused by inadequate protection from the weather.
  - .5 Damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).
- .2 Painted surfaces will be considered unacceptable if any of the following are evident under natural lighting source for exterior surfaces and final lighting source (including daylight) for interior surfaces:
  - .1 Visible defects are evident on vertical and horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1000 mm.
  - .2 Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
  - .3 When the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.
- .3 Make good painted surfaces rejected by the Consultant and at the no extra cost to the Owner. Touch up small affected areas. Repaint large affected areas or areas without sufficient material dry film thickness. Remove runs, sags of damaged paint by scraper or by sanding prior to application of paint.

### 3.7 **PROTECTION**

- .1 Protect interior surfaces and areas, equipment and any labels and signage from painting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.
- .2 Erect barriers or screens and post signs to warn of or limit or direct traffic away or around work area as required.

### 3.8 **CLEAN-UP**

- .1 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.
- .2 Keep work area free from an unnecessary accumulation of tools, equipment, surplus materials and debris.
- .3 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.

- .4 Clean equipment and dispose of wash water / solvents as well as all other cleaning and protective materials (e.g. rags, drop cloths, masking papers, etc.), paints, thinners, paint removers / strippers in accordance with the safety requirements of authorities having jurisdiction.

### 3.9 **EXISTING SURFACES**

- .1 Finish or refinish existing surfaces of items or rooms where noted, including new work which has been incorporated into the existing work and existing work which has been damaged, altered or otherwise disturbed during renovation operations.
- .2 Refinish surfaces or rooms adjacent to rooms where alterations or renovations have been carried out and which have been damaged or otherwise disturbed by the alterations or renovations. Where such damages occur, refinish completely.
- .3 Remove from existing surfaces rust, scale, oil grease, mildew, chemicals and other foreign matters.
- .4 If coatings on existing surfaces have failed so as to affect the proper performance or appearance of materials to be applied, or if such coatings can be easily removed, remove them and prepare the substrates properly. Dull hard or glossy surfaces by sanding, sandblasting or by other abrasive methods prior to finishing.
- .5 Refinish surfaces entirely between changes of planes which have been incorporated into the existing work and existing work which has been damaged, altered or otherwise disturbed during renovation operations.

END OF SECTION

**PART - 1      GENERAL**

**1.1      SUMMARY**

.1      Section Includes:

.1      Labour, Products, equipment and services necessary to complete the work of this Section, including but not limited to:

.1      Wall coverings (WP)

.2      Corner guards (CG)

.3      Handrail

**1.2      QUALITY ASSURANCE**

.1      Installer: Trained and approved by the manufacturer and having a minimum three years experience in the installation of the work described in this Section and can show evidence of satisfactory completion of projects of similar size, scope and type. If requested, provide letter of certification from manufacturer stating that installer is certified applicator of its products, and is familiar with proper procedures and installation requirements required by the manufacturer.

.2      Maintenance seminars: Provide, to the Owner, training seminars and recommendations on Product maintenance procedures.

.3      Pre-installation meeting: Two weeks prior to commencing work of this Section, arrange for manufacturer's technical representative to visit the site and review preparatory and installation procedures to be followed, conditions under which the work will be done, and inspect the surfaces to receive the work of this Section. Advise the Consultant of the date and time of the meeting.

.4      Source limitations: Obtain each type of product from a single manufacturer.

.5      Products: Provide like Products from same production run. Install Products in sequence from sequentially numbered dye lots.

**1.3      SUBMITTALS**

.1      Samples: Three 300 mm x 300 mm samples of each wall covering material and three 300 mm long samples of handrail and chair rail.

.2      Maintenance data: Printed manufacturer's maintenance instructions giving specific warnings of maintenance practices of substances, which may stain or otherwise damage the wall coverings or handrails.

**1.4      SAMPLE INSTALLATION**

.1      Apply each type of covering to a sample area on the project and obtain the approval of the Consultant of such applications before proceeding. Locations of sample areas shall be as directed by the Consultant.

.2      Sample areas of wall covering shall be full height, as indicated on Drawings, and include one outside corner and one covering material joint.

.3      Sample areas of rail shall be full length, and include one outside corner, and one end cap.

- .4 Promptly revise or replace coverings on sample areas at no additional cost to the Owner until approval of the Consultant is obtained. The approved sample area installations shall be the standard for acceptance of the remaining work.

## 1.5 **STORAGE**

- .1 Store materials with manufacturer's seals and labels intact. Store materials flat in clean, dry storage area at temperatures over 10 deg C and normal humidity.

## 1.6 **PROJECT CONDITIONS**

- .1 Environmental Limitations: Do not commence work until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- .2 Lighting: Do not commence work until a lighting level of not less than 160 lux is provided on the surfaces to receive wall covering.
- .3 Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall covering manufacturer for full drying or curing.

## 1.7 **EXTRA STOCK**

- .1 Provide minimum 5% of each type and colour of wall covering and handrail material in unopened packages, and accessories installed. Store the extra materials at locations as directed by the Owner. Extra stock shall be of same production run as installed materials.

# **PART - 2 PRODUCTS**

## 2.1 **MATERIALS**

- .1 Basis of Design: Refer to Section 09 06 00 Finishes Schedule, for complete list of corner guards and protective wall covering products, designations, manufacturers, sizes, finishes and colours.
- .2 Aluminum Retainers: Extruded aluminum retainers 6063-T6 alloy, nominal 0.62" thick. Minimum strength and durability properties as per ASTM B221. Supplied by manufacturer.
- .3 Fasteners: non corrosive and compatible with aluminium retainers supplied by manufacturer.
- .4 Adhesive: Mildew resistant, nonstaining, strippable adhesive, for use with specific wall covering and substrate application, as recommended in writing by wall covering manufacturer.
- .5 Primer/Sealer: Mildew resistant primer/sealer, and recommended in writing by wall covering manufacturer for intended substrate.
- .6 Sealant: antimicrobial, 100% silicone sealant.

## 2.2 **ACCESSORIES**

- .1 Wall covering and rails manufacture to supply a packaged system, containing all materials needed to complete wall covering and crash rails design.
- .2 Supply all primers and adhesive required to install wall coverings, as per manufacturer's recommendations.

**PART - 3      EXECUTION**

**3.1            INSPECTION**

- .1      Examine areas, which are to receive the work of this Section and proceed only if conditions are satisfactory. Verify adequacy of support at substrate. Report unsuitable substrates. Commencement of work shall imply acceptance of conditions.
- .2      Substrates shall be smooth, dry, free of dust and dirt.

**3.2            PREPARATION**

- .1      Remove materials from packaging and acclimatize materials in the installation areas not less than 24 hours before installation.
- .2      Test surfaces for moisture and alkali content prior to application of materials. Moisture content shall be less than 4%. Neutralize and seal surfaces in accordance with manufacturer's directions.
- .3      Where substrate has been painted, apply a thin coat of adhesive over substrate and allow drying for one hour.
- .4      Comply with manufacturer's written instructions for surface preparation.
- .5      Clean substrates of substances that could impair wall covering's bond, including mold, mildew, oil, grease, incompatible primers, dirt, and dust.
- .6      Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.
- .7      Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

**3.3            INSTALLATION – WALL COVERINGS**

- .1      Apply materials in strict accordance with manufacturer's instructions and as specified; report discrepancies immediately to Consultant.
- .2      Install materials free from tears, ripples or air pockets. Horizontal joints in wall covering are not permitted except upon specific, written approval of the Consultant.
- .3      Take special care to prevent plaster particles, grit, dirt, or other extraneous matter from being imbedded beneath the wall covering.
- .4      Spread adhesive in a uniform coat to back of material and apply material to wall within time recommended by adhesive manufacturer. Thoroughly wash excessive adhesive off material and adjacent surfaces as application progresses.
- .5      On gypsum board construction, avoid scoring gypsum board face by using a metal strip cutting base.
- .6      Neatly and carefully trim around fixtures, door frames and the like, as indicated on Drawings.
- .7      Match adjacent panels for colour, pattern, texture and direction of nap where applicable. All panels shall be uniform in colour and texture. Remove material, which fails to match when applied, and replace with matching material.



- .8 Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

#### 3.4 **INSTALLATION – HAND RAILS**

- .1 Apply materials in accordance with manufacturer's instructions.
- .2 Install aluminum crash rail retainer to platform bracket base with fasteners, supplied by the manufacturer.
- .3 Snap on crash rail cover overtop of retainer.
- .4 Install end caps and corners where required, and as shown on Drawings.
- .5 All covers shall be uniform in colour and texture. Remove material, which fails to match when applied, and replace with matching material.
- .6 Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items, if removed to install handrail.

#### 3.5 **INSTALLATION – CORNER GUARDS**

- .1 Install work in accordance with manufacturer's written installation instructions and as shown on drawings.

#### 3.6 **PATCHING**

- .1 Perform cutting, fitting and patching of wall covering material as required to accommodate fixtures, railing brackets and other appurtenances occurring in surfaces to receive coverings. Maintain covering pattern regardless of position of appurtenances.

#### 3.7 **CLEANING**

- .1 Immediately upon completion of installation, clean wall covering and accessories in accordance with manufacturers recommended cleaning method.
- .2 Remove surplus materials, and debris upon completion of work.

END OF SECTION

## **PART - 1      PRODUCTS**

### **1.1            SUMMARY**

#### **.1            Section Includes:**

.1            Labour, Products, equipment and services necessary to complete the work of this Section in accordance with the Contract Documents. The work of this Section includes but is not limited to:

.1            Washroom accessories

### **1.2            QUALITY ASSURANCE**

.1            Source Limitations: Provide like products of same manufacturer unless otherwise approved by Consultant.

### **1.3            SUBMITTALS**

.1            Shop Drawings: Indicate materials, products and finishes and showing in large scale detail the construction, reinforcing, anchorage and, where permitted, the location of exposed fastenings.

.1            Submit engineered shop drawings

.2            Maintenance data: Three copies of a list of the accessories requiring supplies together with names and addresses of local distributors of the supplies.

.3            Samples for Verification: Full size, for each accessory item to verify design, operation, and finish requirements. Approved full-size Samples will be returned and may be used in the Work.

.4            Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

.1            Identify locations using room designations indicated on Drawings.

.2            Identify products using designations indicated on Drawings.

### **1.4            CLOSEOUT SUBMITTALS**

.1            Operation and Maintenance Data: Provide maintenance data for toilet and bath accessories for incorporation into manual.

### **1.5            MAINTENANCE MATERIAL SUBMITTALS**

#### **.1            Tools**

.1            Provide special tools required for assembly, disassembly or removal for toilet and bath accessories.

.2            Deliver special tools to Contracting Authority.

### **1.6            DELIVERY, STORAGE AND HANDLING**

.1            Carefully wrap accessories ensuring protection during shipping and storage.

.2            Store accessories inside the building in the location directed, and so that their identification is readily visible, and in the general order in which they will be required for installation.

**1.7 COORDINATION**

- .1 Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- .2 Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

**PART - 2 PRODUCTS**

**2.1 ACCEPTABLE MANUFACTURERS**

- .1 Basis of Design: Accessories specified are based on Products by Bobrick Washroom Equipment of Canada, except where specifically specified otherwise.
  - .1 Products by other manufacturers similar in function, design, performance, and construction complying with requirements of this Section may be incorporated into the Work subject to Consultant's acceptance, in accordance with Section 01 25 13, Product Substitution Procedures.
- .2 Provide accessories for the Work from one manufacturer unless specified otherwise.

**2.2 MATERIALS**

- .1 Sheet steel: To ASTM A653/A653M-11 with ZF001 designation zinc coating.
- .2 Stainless steel: ASTM A167-99 (2009), type 304, with BA finish.
- .3 Stainless Steel Tubing: Type 304, commercial grade, seamless welded, 1.2 mm wall thickness.
- .4 Supply for installation under other Sections, mounting devices and reinforcement required to be built-in for support of grab bars and imposed loads. Be responsible for giving proper notice to other Sections and supplying such reinforcement when required by other Sections for building in.
- .5 Concealed screws and bolts hot dip galvanized, exposed fasteners to match face of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.
- .6 For mental health areas use tamper resistant fasteners, hexalobular conforming to ISO 10664 or other tamper resistant fastener design as accepted by Consultant.

**2.3 FABRICATION**

- .1 Fabricate accessories true, square, rigid, free from distortion and from defects detrimental to appearance and performance.
- .2 Butt visible joints straight and accurate. Mitre corner joints.
- .3 Except as otherwise specified, fabricate accessories for concealed mounting by non-corrosive metal, expansion type, toggle type or other approved type of positive, mechanical anchors to suit the construction to which the accessory is to be mounted.

- .4 Exposed fasteners, where permitted, shall be finished to match the adjacent accessory surface, and shall be countersunk. Where accessories are to be mounted to sheet metal, provide a 3 mm thick minimum full-size metal back-up plate drilled and tapped to receive machine screws and finished to match the adjacent sheet metal surface.
- .5 Where specified as frameless, provide accessories in one piece fronts with 90 degree formed returns at their edges and openings. Continuously weld returns and ground smooth at the corners.
- .6 Where accessory fronts are framed, frame edges, both inside and outside, shall have 90 degree formed returns continuously welded and ground smooth at the corners. Doors shall also have 90 degree formed returns as specified.
- .7 Provide full length concealed stainless steel piano hinges. Hinged elements shall have concealed, mechanically-retained, rubber bumpers for silent closing, and shall close flush with faces of fronts or frames.
- .8 Unless otherwise specified, portions of sheet metal accessory interiors which are visible in the completed work shall be stainless steel. Changes in plane shall be formed or continuously welded and ground smooth.
- .9 Sheet metal accessory parts concealed in the finished installation shall be galvanized sheet steel.
- .10 Hem edges of sheet metal accessible by users or maintenance personnel.
- .11 Accessories for flange-type mounting shall have forged brass, full flanges drilled and countersunk for three mounting fasteners. Fix flanges to tubes using solid silver soldering.
- .12 Back paint components where contact is made with building finishes to prevent electrolysis.
- .13 Shop assemble components and package complete with anchors and fittings.
- .14 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.
- .15 Provide steel anchor plates and components for installation on studding and building framing.
- .16 Engrave lettering on accessories to a depth of minimum 0.254 mm. Size, location and type face of lettering to selection by Consultant. Maintain engraving edges straight and sharp.

## 2.4 **ACCESSORIES**

- .1 Refer to Section 00 01 30 List of Materials for additional manufacturer and product information.
- .2 Soap Dispenser (SD): Counter-mounted plastic valve equipped with stainless steel spring to dispense liquid and lotion soaps, and synthetic detergents, complete with stainless steel piston and spout assembly, escutcheon locks to body with concealed locking mechanism with special key to open, B-822 by Bobrick,.
- .3 Coat hook (CH): surface mount, double robe hook, stainless steel, B-76727 by Bobrick,. Provide one per barrier-free stall and all barrier-free washrooms on back of door.
- .4 Toilet paper holder (PTD): surface-mount, two rolls, second roll to automatically drop in place, theft-resistant, heavy duty spindles, stainless steel, B-2860 by Bobrick,.

- .5 Waste Receptacle (WR): recessed 18-8S, type 304 stainless steel with satin finish, minimum 102 mm required deep recess, consisting of cabinet, flange and waste receptacle. One piece seamless flange construction. Waste receptacle exposed edges hemmed for safe handling. secured to cabinet with tumbler lock keyed to match other washroom accessories. Capacity of minimum 454 litres. B-3644 by Bobrick.

## 2.5 **FINISHES**

- .1 Where steel is specified as having a chrome plated finish, pretreat including mechanical removal of imperfections and buffing, degreasing, removal of degreaser, electrolytic cleaning, intermediate treatments of acid washes and cold water rinses in preparation for and to suit plating, nickel plating pretreatment, nickel plating, hard chromium plating with a final hot water rinse.
- .2 Finish stainless steel to a standard No. 4 mechanical finish. Where possible, arrange sheet stainless steel so that the grain of the finish runs vertically in the finished installation.
- .3 Manufacturer's or brand names on face of units not acceptable.

## **PART - 3 EXECUTION**

### 3.1 **INSTALLATION**

- .1 Install and secure accessories rigidly in place.
- .2 Stud walls: Provide steel back-plate to stud prior to gypsum board finish. Provide plate with threaded studs or plugs.
- .3 Hollow masonry units or existing gypsum board: Use toggle bolts drilled into cell/wall cavity.
- .4 Install grab bars on built-in anchors provided by manufacturer.
- .5 Fill units full with necessary supplies shortly before Substantial Performance.

END OF SECTION

**PART - 1      GENERAL**

**1.1      SUMMARY**

- .1 Section Includes: Labour, Products, equipment and services necessary to complete the work of this Section, including but is not necessarily limited to the following:
  - .1 Laboratory furniture including casework, Stainless Steel bench tops, sinks, service fittings.
  - .2 Electrical boxes, outlets and switches, etc., in furniture and equipment.
  - .3 All miscellaneous metal channels, angles, plates, closure plates and other items required to complete the work of this Section.

**1.2      DESCRIPTION**

- .1 Factory finished laboratory casework system of steel table components, steel cabinets, stainless steel countertops, all lab sinks and laboratory service fittings.
- .2 Coordinate with mechanical and electrical Sections for installation of fixtures and service fittings, outlet boxes, sinks, duct stubs for laboratory equipment.
- .3 Provide templated holes and cut-outs necessary for installation of fixtures and service fittings and to permit passage of service lines which penetrate laboratory casework components.
- .4 Design and coordinate table system with cabinets which it surrounds, supports or is integrated. Design system to permit securement of interlocking reinforcing members as well as attachments required to interface with mechanical and electrical Sections for securing their respective work.
- .5 Provide complete support for adjustable shelving and cabinets, counter tops, mechanical and electrical fixtures, fittings and service lines required to make the assembly properly functional.
- .6 Make provision for relocating cabinets without the use of special tools.
- .7 Do not fix any casework to walls. All casework to be free standing or pushed against the walls as indicated.
- .8 Support counter tops on table frame properly spaced.

**1.3      RELATED WORK**

- .1 Mechanical: Supply and installation of mechanical plumbing, piping, and service fittings piping brackets for service legs; duct connections/brackets and related accessories; canopies/brackets and framing; connections and ducting to solvent/acid storage cabinets; exhausting; venting; supplying of similar servicing from point of rough-in to final connection at items requiring such services, and which are located in or on work of this Section.
- .2 Electrical Division: Supply and installation of electrical outlets in power poles; computer/telephone outlets mounted on or in walls, and work of this Section.

**1.4      SAMPLE INSTALLATION**

- .1 Provide on-site a full module sample including one base cabinet with each type of countertop, including sinks, acid and solvent cabinets installed, complete with all mechanical and electrical services.

- .2 Proceed with the furniture installation only after the sample has been reviewed and approved by the Consultants and Owner.
- .3 If acceptable, these samples may be incorporated into the final work.

## 1.5 **QUALITY ASSURANCE**

- .1 Supervision
  - .1 Prior to installation of equipment, arrange for each equipment manufacturer's qualified representative to meet and discuss the procedures to be adopted and conditions under which the equipment will be installed.
  - .2 During installation, arrange for each qualified representative to be present to ensure that such installation is in accordance with the manufacturer's requirements.
- .2 Qualifications
  - .1 Fabricator: Skilled craftsmen in accordance with the best industry practice in shop of a company specializing in Work specified having a minimum 15 years of continued experience, having successfully completed other laboratory projects of similar or greater magnitude.
- .3 Determine detailed requirements of authorities having jurisdiction; give and post all notices, and comply with laws, ordinances, rules and regulations bearing on conduct of Work. If any Work is performed with knowledge that it is contrary to such laws and ordinances, rules and regulations and without such notice to Consultant, bear costs arising out of this action.

## 1.6 **SHOP DRAWINGS**

- .1 Show and describe items; dimensions; finishes, installation details; anchors and fastenings; details of furniture and equipment construction and related work.
- .2 Clearly indicate:
  - .1 Details of laboratory furniture, including bench and construction sections.
  - .2 Location of each furniture unit in plan and elevation for each assembly.
  - .3 Location for roughing-in of plumbing, including sinks, faucets, strainers, cocks, and electrical services.
  - .4 Coordinate elevations to each related room plan. Similar repetitious elevations shall be repeated and included with each room plan for purposes of coordinating electrical wire mould, service ducts, and access panels.
  - .5 Owner's equipment items as shown on Drawings, do not form part of the work of this Section unless otherwise noted. They are shown for floor space requirements and service connections. Laboratory shop drawings shall show each item of equipment in plan and elevation based on architectural drawings and Equipment Schedule. Confirm equipment sizes and services with Owner prior to shop drawing submission.
  - .6 Provide dimensions of bench locations from building grid lines and walls.
  - .7 On request, provide test reports by independent testing laboratories indicating results of furniture finish, laboratory top materials, and fume hood linings.
- .3 Shop drawings for leg frame system shall bear the stamp and signature of professional engineer licensed to practice in Province of Alberta.

## 1.7 **SAMPLES**

- .1 Samples: Submit samples of the following:
  - .1 Each bench top material, 150 x 150 mm cut on external corner.
  - .2 Each standard colour of cabinet finish, on 150 x 150 mm steel sheet.
  - .3 Each item of cabinet hardware.
  - .4 Each item of plumbing brass.
  - .5 One base cabinet complete with cupboard and drawer.
  - .6 One cut-away wall case of sufficient size to show construction.

## 1.8 **MAINTENANCE INSTRUCTIONS**

- .1 Submit maintenance instructions and manuals.
- .2 Maintenance instructions shall specify warnings or any maintenance practice or materials which may damage or disfigure each item.
- .3 Maintenance manuals shall include the following information:
  - .1 Prints of reference drawings.
  - .2 Prints of elementary wiring and connection diagrams.
  - .3 List and catalogue information on recommended spare parts.
  - .4 Description of operation.
  - .5 Descriptive literature on tracking down possible causes of breakdown or failure of equipment.

## 1.9 **DELIVERY, STORAGE AND HANDLING**

- .1 Protect against damage including excessive humidity.
- .2 Do not deliver until building is fully enclosed and conditions are acceptable.

## **PART - 2 PRODUCTS**

### 2.1 **ACCEPTABLE MANUFACTURERS**

- .1 Basis of Design: Labworks Inc.
  - .1 Systems by Bedcolab Ltd, CIF Furniture Limited or MottLab Inc similar in function, design, aesthetic, performance, and construction complying with requirements of this Section may be incorporated into the Work subject to acceptance by the Consultant.

### 2.2 **MATERIALS**

- .1 Sheet Steel: Mild steel, sold rolled furniture grade to requirements of ASTM A1008/A1008M, Grade C or higher, with smooth surfaces to furniture quality.
- .2 Galvanized Sheet Steel: Commercial quality galvanized sheet steel to ASTM A653/A653M, Designation Z275.
- .3 Stainless Steel:
  - .1 Sheet: ASTM A167, Type 316 alloy.



.2 Finish: Unless otherwise indicated, AISI no. 4 Brushed finish.

.4 Sealant: One component, clear silicone base sealant, chemical curing conforming to CAN/CGSB 19.13, anti-fungus composition, DC-786 by Dow Corning, or Sanitary 1700 by GE Silicone.

## 2.3 **COUNTERTOP MATERIALS**

.1 Stainless Steel countertops: Made from stainless-steel sheet, not less than 0.062-inch (1.59-mm) nominal thickness, with No. 4 satin finish.

## 2.4 **CABINET HARDWARE**

.1 Flush Finger Pulls: Provide handles for drawers and hinged doors in black PVC set flush within thickness of door and drawers.

.2 Door Catches: Provide adjustable zinc-plated, spring-loaded, nylon roller. Acceptable Type; #1-9710, by Amerock Company.

.3 Strike Plates: Provide strike plates fabricated of stainless steel, designed to be secured to cabinet stile without twisting, fixed with a single self-tapping screw.

.4 Door Hinges: Provide five knuckle-type barrel door hinges of 14 Ga steel screwed into door and fastened to cabinet side stile with two counters sunk 8 – 32 cadmium-plated machine screws.

.5 Built-in Drawer Stops: Resilient type recommended by manufacturer.

.6 Press Plugs: Provide plugs for cabinet sides and floors finished in nickel-plated steel.

.7 Shelf Clips:

.1 Clips for base cabinets; zinc-finished steel. Acceptable Type; Roll-It #101.

.2 Clips for tall storage cabinets; zinc-finished steel. Acceptable Type; Roll-It #103.

## 2.5 **GENERAL FABRICATION REQUIREMENTS**

.1 For shop welding conform to the requirements of CSA W59.1. Have work done by a firm fully certified according to CSA W47. All welders employed in the field shall be qualified as Class "O" as defined in CSA W47.

.2 For welding operations, conform to other safety requirements of CSA W117.

.3 Make work in true planes with adequate fastenings. Build and erect work plumb, true, square, straight, level and accurate to sizes detailed, free from distortion or defects detrimental to appearance or performance.

.4 Fabricate all parts and sub-assemblies (doors, drawers, track, and back panels) to allow interchangeability in the field without requiring special tools.

.5 Provide all cut-outs, holes and other provisions, required for installing mechanical and electrical service fittings, located in service strip, fitments, equipment, turrets, and bench tops. Coordinate size and other requirements for cut-outs, and holes, with Mechanical and Electrical Works.

.6 Align end panels, top rails, bottoms and vertical posts, at intersections in same plane, without overlap.

.7 Grind exposed welds flush and smooth to match adjacent surfaces.

## 2.6 DESIGN REQUIREMENTS

- .1 Modular system to be made of tubular style framing combined with rectangular formed steel uprights.
- .2 Tubular Frames / Table Supports to be adjustable height in 1" increments and complete with levelers.
- .3 Rear frame to be used for carrying services and electrical conduit.
  - .1 Rear upright supports to be equipped with slots for adjustable shelving and levelers.
  - .2 All services supplied with hose and quick disconnect to reach ceiling panel supply.
- .4 Assembled frame to be self-supporting without needing to be anchored to the building.
- .5 The modular system must ship complete from the factory with minimal on-site assembly.
- .6 Modular system must meet the minimum design and performance requirements of SEFA and UL 962. Tables not covered by cUL listing must be factory inspected by the Electrical Safety Authority and have a CSA Special Inspection label indicating compliance with the CSA standard SPE-1000.

## 2.7 TABLE SYSTEM CONSTRUCTION

- .1 Rear Support Structure
  - .1 Nominal rear frame dimensions: as indicated on drawings.
  - .2 Rear Uprights:
    - .1 2" x 3" 14 ga. powder coated cold rolled steel.
    - .2 2" diameter nylon leveling glide 3/8" x 2-1/2" long threaded stem.
  - .3 Upper Cross Rail: 16 ga. powder coated cold rolled steel or stainless steel.
  - .4 Load Capacity: Rear Upright to support up to 3 shelves loaded to a combined maximum of 300lbs. Shelf depths available as 12" or 15" deep.
  - .5 Uprights to house services, electrical and data cables: High voltage cabling to be in a separate upright from gas piping.
  - .6 Wire management tray to be under countertop.
  - .7 Rear posts have slots punched on 1" increments starting at nominal 59" above the finished floor.
- .2 Tubular Table Assembly
  - .1 Nominal table assembly dimensions: as indicated on drawings.
  - .2 Tubular Table Legs:
    - .1 2" outside square, 14ga. powder coated cold rolled steel or stainless steel outer leg.
    - .2 1-3/4" outside square, 11ga. powder coated cold rolled steel or stainless steel inner telescoping leg.
    - .3 2" diameter nylon leveling glide 3/8" x 2-1/2" long threaded stem
  - .3 Capable of vertical height adjustment in 1" increments.

- .4 Table assembly to be fastened to the rear upright with two (2) hex 3/8" socket head bolts.
- .5 Hanging Rails: Front apron and rear support are to have rails allowing suspended cabinets to hang from.
- .6 Leveling Bolt: Frame to be fitted with a leveling bolt which will allow the legs to be adjusted for proper alignment of work surface height.
- .7 Load Capacity: Table frame to support 1000lbs including the work surface.
- .3 Shelves
  - .1 Nominal shelf dimensions: as indicated on drawings.
  - .2 Shelf requirements:
    - .1 Shelves constructed of powder coated cold rolled steel.
    - .2 Shelves to be flush with the face of the rear rectangular posts.
    - .3 Shelf brackets to be constructed powder coated cold rolled steel.
    - .4 Top, angled shelves to have a front 1" high retaining lip.
    - .5 Vertical shelf adjustment in 1" increments.
- .4 Plumbing/Fixtures
  - .1 Rear upright structure to support a maximum of three plumbing fixtures on left side.
  - .2 Fixtures to be needle valve style with a single serrated hose end angled towards front of bench. Additional valve fixture hole angled towards the rear of the bench is to be capped for potential future use.
  - .3 Plumbing lines to be polyurethane routed out the top of the upright.
  - .4 All burning gas tubing to be specified as stainless steel.
  - .5 All plumbing to have service hose at the top of the upright with additional 4' of hose length to reach the ceiling supply panel.
  - .6 Plumbing to be arranged that they services cannot be intermixed.
  - .7 All service valves and quick disconnects to be keyed and color coded. Only plug and body connects of the same key will couple and allow flow.
- .5 Service Connections
  - .1 Electrical, data and plumbing services to terminate with cable or hose coming out of the top of the rear support upright.
  - .2 Electrical services to have a 20 amp cord extending 4' above the top of the upright.
  - .3 Data services to have a male plug extending 4' above the top of the upright.
- .6 Ceiling Service Panels
  - .1 Panels to be compatible with most T-grid acoustical suspended ceiling structures.
  - .2 Panel to provide a means to mount and disconnect quick connect service fixtures, electrical and data outlets.
  - .3 Panel to accommodate single sided and back to back bench configurations.
  - .4 Panels ship with cover plates. Data outlets, electrical outlets, junction boxes and service fixtures to be ordered separately.

- .5 Panels to be 23- $\frac{3}{4}$ " x 23- $\frac{3}{4}$ " x 1", 14 gauge cold rolled steel with a powder coated finish.

## 2.8 **BASE CABINET CONSTRUCTION**

- .1 Materials and Thickness: Use following minimum U.S. standard steel thickness for furniture manufacturing:
- .2 16 Ga for tubular rails and legs for tables.
- .3 14 Ga drawer slides and side suspension channels.
- .4 18 Ga for cabinet sides, vertical and horizontal front members, service cover panels, table and knee-hole frames, front rails, gusset plates and gable legs.
- .5 18 Ga for drawer fronts, false panels, door fronts, cabinet floors and back panels, shelves, bottoms and sides of drawers, back of drawer bodies, drawer dividers, and closing panels, furring and filler panels, bin bodies, follow block spacers and pull-out shelves.
- .6 20 Ga for backs of drawer fronts and back of doors.
- .7 Casework shall be constructed in accordance with the best practices of the metal casework industry. Under bench units shall be suspended from leg frame countertop assembly or floor mounted where indicated. They shall be in sizes indicated on drawings, with a variation in width not more than  $\pm 3$  mm ( $\frac{1}{8}$ "). First class quality shall be established by the use of proper machinery, tools, dies, fixtures and skilled workmanship such that the fit of doors and drawers shall allow vertical and horizontal openings of minimal tolerance.

## 2.9 **BASIC CABINET FRAME**

- .1 Cabinet frames shall be spot-welded into a rigid modular case construction.
- .2 Provide "HAT" shaped channels installed at rear vertical corners and at center and third points respectively on 18", 24", 36", 48", and 58" frames, prepunched to receive drawer suspension tracks and shelf clips.
- .3 Provide one-piece die-formed cabinet construction with return flanges turned up. Spot-weld flanges to cabinet sides. Provide sink cabinets with galvanized bottom painted to match cabinet.
- .4 Cabinet construction shall be electro spot-welded to form a strong well-fitted, one-piece unit.
- .5 Exposed horizontal structural cabinet members between doors and drawers are unacceptable.

## 2.10 **BASE CABINET COMPONENTS**

- .1 Provide removable back panels for cupboard section of base cabinets. Provide partial back panels 8- $\frac{7}{8}$ " in height to accommodate plumbing at sink units.
- .2 Shelving edges; turned down on all four sides 1", and returned under on front and back  $\frac{5}{8}$ ".
- .3 Fabricate doors of 2 telescoping metal panels, coated internally with an acceptable laminated sound-deadening material extending continuously full-width and top to bottom. Reinforce hinged side of door adequately with cold-formed steel components to insure firm fastening and to prevent sagging. Secure recessed hinges in place, and provide positive door closer by nylon roller friction catches, mounted at a central location on the vertical

height of pull side of doors. Provide each hinged door with black PVC flush fitting pull and 2 rubber bumpers.

- .4 Doors, drawers, tracks and back panels shall be interchangeable in the field without requiring special tools.

#### 2.11 **DRAWERS**

- .1 Fabricate drawer fronts of 2 telescoping metal panels totally filled internally with sound-deadening material to eliminate possible drumming effect. Form removable outside panel with lip to fit over inside panel on top edge, and to lock into position at bottom with locking tabs to form a rigid, one-piece  $\frac{3}{4}$ " thick drawer front.
- .2 Provide drawer operation on 1" diameter nylon wheels with steel ball bearings, with 1 wheel on drawer slide and 1 on drawer suspension track. Mechanically fix and lock drawer suspension tracks to vertical posts.
- .3 Provide built-in stops to prevent inadvertent removal of drawers, with allowance for drawer to be removed by lifting front of drawers and pulling out.
- .4 Provide flush fitting pulls on drawers.

#### 2.12 **FILE DRAWER CABINETS**

- .1 Construct file drawer cabinets in similar manner to standard base cabinets, and consisting of 1 upper standard height drawer and 1 lower double height file drawer.
- .2 Provide file drawer with full extension drawer tracks, complete with built-in standard size file supports and hangers.

#### 2.13 **FLOOR CABINET CONSTRUCTION**

- .1 Materials and Thickness: Use the following standard thickness for this furniture manufacturing.
  - .1 18 Ga stainless steel furniture steel for sides, top, back, bottom, false bottom, shelves and removable bases on tall storage cabinets.
  - .2 11 Ga stainless steel for leveling device brackets on floor storage cabinets only.

#### 2.14 **WALL AND FLOOR CABINET CONSTRUCTION**

- .1 Materials and Thickness: Use the following standard thickness for this furniture manufacturing.
  - .1 18 Ga stainless steel furniture steel for sides, top, back, bottom, false bottom, shelves and removable bases on tall storage cabinets.
  - .2 11 Ga stainless steel for leveling device brackets on floor storage cabinets only.

#### 2.15 **WALL STORAGE CABINETS - OPEN FRONT**

- .1 Provide an inverted "U" channel filler to enclose space for bottom track fitting flush with cabinet floor.
- .2 Design of cabinet shall enable it to be easily converted to a sliding glass door cabinet.

#### 2.16 **MOBILE CABINETS**

- .1 Mobile cabinets shall be the same construction as fixed base cabinets with the following modifications:

- .2 Toe kick space shall be eliminated
  - .1 Cabinet underside shall be reinforced with 14 gauge steel channels to provide caster mounting points.
  - .2 A counterweight shall be provided to prevent the cabinet from tipping when one drawer is opened. Counterweight not required for cabinets without drawers.
  - .3 Drawers shall be rated at 50 lbs maximum.
  - .4 Four casters shall be provided with a load rating of 165 lbs each.

## 2.17 **STAINLESS STEEL FILLER PANELS**

- .1 Where indicated filler panels shall be in Type SST.1 stainless steel, Type 304, Type SS.F.1 satin finish No.4, of similar construction to that of prepainted steel filler panels.
- .2 Joints in exposed stainless steel surfaces shall be ground and polished to the same finish as the rest of the surfaces.
- .3 All stainless steel nuts, screws, bolts, rivets, etc., shall be of the same type stainless as in the sheet material and shall have a finish closely resembling that of the rest of the surfaces.
- .4 The welds in stainless steel surfaces shall be made without discoloration and shall be ground, polished and passivated to blend harmoniously with the adjacent material. All joints in stainless steel tops shall be welded by the Argon Arc process.
- .5 All metal surfaces shall be isolated from direct contact with dissimilar metals, concrete and masonry.

## 2.18 **COUNTERTOPS AND SINKS**

- .1 Countertops, General: Provide units with smooth surfaces in uniform plane, free of defects. Make exposed edges and corners straight and uniformly beveled. Provide front and end overhang of 25 mm, with continuous drip groove on underside 13 mm from edge.
- .2 Sinks, General: Provide sizes indicated or laboratory casework manufacturer's closest standard size of equal or greater volume, as approved by Consultant.
  - .1 Outlets: Provide with strainers and tailpieces, NPS 1-1/2 (DN 40), unless otherwise indicated.
  - .2 Overflows: Where indicated, provide overflow of standard beehive or open-top design with separate strainer. Height 50 mm less than sink depth. Provide in same material as strainer.
- .3 Stainless Steel Countertops and Sinks:
  - .1 Countertop Fabrication: Fabricate with factory cutouts for sinks, holes for service fittings and accessories, and butt joints assembled with epoxy adhesive and concealed metal splines. White in colour.
    - .1 Countertop Configuration: As indicated.
    - .2 Countertop Construction: Uniform throughout full thickness.
  - .4 Sink Fabrication: Molded in one piece with smooth surfaces, coved corners, and bottom sloped to outlet; 13-mm minimum thickness. White in colour.
    - .1 Provide with polypropylene strainers and tailpieces.
    - .2 Provide sinks for drop-in installation with 6-mm thick lip around perimeter of sink.

- .3 Provide integral sinks in stainless steel countertops, bonded to countertops with invisible joint line.
- .4 Provide manufacturer's recommended adjustable support system for table- and cabinet-type installations.

## 2.19 **FURNITURE FINISH**

### .1 Preparation and Painting

- .1 Prepare all surface, make free of defects with welds ground smooth and indistinguishable from surrounding metal.
- .2 Components shall be sprayed in an electro-static three-stage process with a high-temperature, high-solid (60% minimum), semi-gloss (50°), baking epoxy ester. The resulting paint coating shall provide a uniform coating on all surfaces of each component that has a minimum thickness of 1.2 mm. Components shall be properly baked and cured to deliver the following performance requirements.

### .2 Colours: as selected by Consultant from manufacturer's standard selection.

### .3 Physical Performance of Coatings

- .1 Pencil Hardness: 4H minimum per ASTM D3363
- .2 Abrasion Resistance: 3.5 mg maximum weight loss per 100 cycles when tested on a calibrated E40101 Taber Abrasion Tester using 1000 mg wheel pressure from a CS10 wheel per ASTM D4060.
- .3 Humidity Resistance: No visible effect after a 100 hour exposure in saturated humidity at 100°F per ASTM D2247.
- .4 Moisture Resistance: No visible effect caused by 200°F +/- 5°F water trickled for 5 minutes over a test panel inclined at 45°. No visible effect caused by a 100 hour continuous application of a 70°F water soaked 2" x 3" x 1" cellulose sponge that remains wet throughout the entire test period.
- .5 Salt Spray Resistance: No visible effect after a 250-hour salt spray test per ASTM B117.
- .6 Adhesion: Minimum of 100 squares retain finish after a test panel is scored into 100 squares 1/16" x 1/16" by a razor blade that cuts completely through the finish with a minimum of substrate penetration and any loose particles are removed by a soft brush per ASTM D3359, Method B.
- .7 Cold Crack: No effect caused by 10 cycles of temperature change from 20° for 60 minutes to 125°F for 60 minutes.
- .8 Adhesion and Flexibility: No peeling or cracking of finish or no metal exposure when a test sample is bent 180° once over a 1/4" mandrel per ASTM D522.
- .9 Impact Resistance: No cracking of finish or metal exposure when a steel ball is dropped from a calibrated stand to deliver 100 inch pounds of impact per ASTM D2749.
- .10 Gloss: Gloss of 50 +/- 5 when the finish surface is measured at 60° reflectance per ASTM D523.

### .4 Chemical Resistance Performance

- .1 Test panels shall withstand the following tests with no loss of adhesion or film protection, no discoloration or change in gloss, or no film softening.

- .2 Acids: Minimum of 5 drops (0.25) shall be applied to the test site on panel and covered with a watch glass for 60 minutes, then washed and dried.
  - .1 Hydrochloric Acid 37%\*, 30%, 20%, 10%
  - .2 Sulphuric Acid 70%\*, 60%, 25%
  - .3 Nitric Acid 50%\*, 30%, 10%
  - .4 Phosphoric Acid 75%, 25%
  - .5 Acetic Acid 98%, 50%
  - .6 Formic Acid 60%\*
- .5 Solvents: Minimum of 5 drops (0.25 ml) shall be applied to the test site on panel and covered with a watch glass for 60 minutes, then washed and dried. Volatile solvents shall be applied by a saturated cotton ball method.
  - .1 Ethyl Alcohol Butyl Alcohol
  - .2 Methyl Alcohol Ethyl Acetate
  - .3 Ethyl Ether Methylene Ketone
  - .4 Toluene Acetone
  - .5 Benzene Carbon Tetrachloride
  - .6 Formaldehyde (37%) Gasoline
  - .7 Naphtha Kerosene
  - .8 Xylene Glycerine
  - .9 Furfural Ether
- .6 Bases and Salts: Minimum of 5 drops (0.25 ml) shall be applied to the test site on panel and covered with a watch glass for 60 minutes, then washed and dried.
  - .1 Sodium Hydroxide 40%, 10%
  - .2 Ammonium Hydroxide 28%
  - .3 Potassium Hydroxide 40%, 10%
  - .4 Hydrogen Peroxide 5%
  - .5 Zinc Peroxide Saturated
  - .6 Sodium Sulphide Saturated
  - .7 Sodium Carbonate Saturated
  - .8 Sodium Chloride Saturated

2.20

**FINISHES**

- .1 Stainless Steel Furniture Finish
  - .1 Stainless Steel: All stainless steel furniture in this section shall be constructed of stainless steel with a #4 brushed finish. Grain direction shall be horizontal except where cabinet dimensions do not permit.
  - .2 Metal: Finish metal casework with manufacturer's standard two-coat, chemical-resistant, baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils (0.05 mm).



**PART - 3      EXECUTION**

**3.1            INSTALLATION GENERAL**

- .1 Cooperate and coordinate with Mechanical and Electrical Divisions to ensure proper installation and/or final connections to service fixtures, sinks, fume hoods or similar items. Cut necessary holes and/or openings in equipment which may be required for installation of mechanical and electrical service lines.
- .2 Fit and assemble work in shop where possible. Execute work according to details and reviewed shop drawings. Where shop fabrication is not possible, make trial assembly in shop.
- .3 Install laboratory furniture plumb with countertops level to 1.6 mm in 3000 mm.
- .4 Install components in a secure, neat and complete installation with levelling to a tolerance of 6 mm in 3 m.
- .5 Level base cabinets by adjusting levelling screws.
- .6 Make joints to provide smooth surface, free of lips, cracks or other defects.
- .7 Secure sink cabinets permanently to floor construction using masonry anchors or toggle bolts spaced at maximum of 750 mm o.c., minimum four for each cabinet.
- .8 After installation fit and adjust operation hardware.
- .9 Install casework plumb, true and level and anchor to floors or ceiling as required. Scribe accurately components to adjacent surfaces. Do not install any casework fixed to walls, but free standing against walls where indicated.
- .10 Provide continuous competent supervision for installation of work, which include unloading, uncrating and moving into building.

**3.2            INSTALLATION – TABLE SYSTEM**

- .1 Install casework within system, align and set level with levelling devices, in accordance with reviewed shop drawings.
- .2 At wall locations secure wall cabinets to face of finished walls and partitions, applying self-tapping screws through wall finish material into each concealed stud flange.
- .3 Install components to effect a secure, neat and complete installation.

**3.3            INSTALLATION – BASE CABINETS**

- .1 Locate base cabinets accurately to accommodate all sinks where specified, set level, plumb and secure in place. For fixing components such as spring nuts, bolts and washers, galvanized finish. Install components to effect a secure, neat and complete installation.
- .2 Level floor-mounting base cabinets by adjusting leveling screws.

**3.4            INSTALLATION – FILLER PANELS**

- .1 Locate filler panels accurately to fill voids between shelving units, at leg frames, walls, service duct enclosures, and exposed horizontal structural cabinet members between doors and drawers which prohibit the continuation of the shelving on both sides.
- .2 Filler panels to be flush with existing shelving, same finish and style.

**3.5 INSTALLATION - COUNTER TOPS**

- .1 Install tops in accordance with reviewed shop drawings, securing them in position by rigid concealed fixing methods, free of movement, or rocking when completed.
- .2 Connect counter tops of similar or dissimilar materials with 6 mm x 25 mm blind spline and concealed tight-joint fasteners, level, flush with hairline joints. Fill joints with sealant. Clean sealant from exposed surfaces in a manner precluding surface damage.
- .3 Mechanically fix all tops to leg frames from underside.
- .4 Cut tops for self-rimming sinks only so large as to permit entry of sink into counter top, allowing sink rim to lay flush on top providing sufficient material for maximum support on all edges. Seal cut surfaces with black paint. Cut-outs shall be radicalized corner cuts to prevent splitting of the laminate. Angled corner cuts are unacceptable.

**3.6 CLEAN-UP**

- .1 Promptly as work proceeds and upon completion, clean up and remove from the site on a daily basis, all rubbish and surplus materials resulting from work under this section.
- .2 On completion, touch up marred or abraded finished surfaces.
- .3 Wipe down surfaces to remove fingerprints and marking, leave in clean condition.

END OF SECTION



## **DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS SURVEY REPORT**

Suite 201- Reno Project  
20 Wynford Drive, Toronto, ON

Prepared for:

**Ms. Suzanna Afonso**

Senior Project Manager,  
Redevelopment

**Michael Garron Hospital**

825 Coxwell Avenue,  
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M4C 3E7

Prepared by:

**Ms. Marina Laccona, CET, CRSP**

Senior Project Manager

MLEC Project Number: 1025-053



## **Executive Summary**

ML Environmental Consulting Inc. (MLEC) was retained by Michael Garron Hospital to conduct a Designated Substances and Hazardous Materials Assessment within the project specific work area of Suite 201 located at the above noted address. It is our understanding that the purpose of this assessment is to comply with Section 30 of the Occupational Health and Safety Act (OHSA), which prescribes building owner responsibilities to determine the presence of designated substances prior to any demolition, renovation or construction projects.

Our scope of work was an assessment of designated substances as well as hazardous materials such as polychlorinated biphenyls (PCBs), ozone-depleting substances (ODSs), and visible mould that may be present and impacted by the proposed work. The designated substances assessment included those substances designated under the OHSA including, but not limited to, such as asbestos, lead, mercury and silica.

ML Environmental Consulting Inc. (MLEC) was on-site on August 22<sup>nd</sup>, 2025 to perform the assessment. The assessment was conducted by Ms. Marina Laccona.

Based on the visual assessment, Table A provides a summary of designated substances and hazardous materials identified or presumed to be present within the project specific work areas.

**Table A**  
**Survey Findings and Recommendations**  
**Suite 201- Reno Project**  
**20 Wynford Drive, Toronto, Ontario**  
**August 22<sup>nd</sup>, 2025**

Material(s)	Designated Substances	Present/ Presumed	Recommendations
Black mastic beneath vinyl sheet flooring and beige mastic beneath ceramic tiles	<b>Asbestos</b>	Present	<b>For construction related projects which would directly impact the material</b> , work must be performed in accordance with Ontario Regulation 278/05, <i>Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations</i> - made under the Occupational Health and Safety Act. Any asbestos-containing waste must be handled and disposed of according to Ontario Regulation 347, (as amended) - General - Waste Management
Paint	<b>Lead</b>	Presumed	<b>For construction related projects which would directly impact the material</b> , Ministry of Labour guideline " <i>Lead on Construction Projects</i> " (April 2011) should be followed.
Concrete, Drywall, Ceiling Tiles	<b>Silica</b>	Presumed	<b>For construction related projects which would directly impact the material</b> , Ministry of Labour guideline " <i>Silica on Construction Projects</i> " (April 2011) should be followed.
Compact Fluorescent light tubes	<b>Mercury</b>	Presumed	Mercury waste must be handled and disposed of according to Ministry of Environment Regulation 347/90 as amended - made under the Environmental Protection Act for disposal of hazardous waste and may be subject to Leachate Criteria (Schedule 4) of this Regulation
<b>Hazardous Materials</b>			
Light ballasts	<b>PCBs</b>	Presumed	Management, handling and transfer of PCBs are governed by Ontario Regulation 362/90 - Waste Management - PCBs, under the Ontario Environmental Protection Act as well as the PCB Regulation SOR/2008-273 under the federal Environmental Protection Act. Disposal of PCBs must be performed in accordance with these regulations.



Please note, the following are other building materials that are **presumed** to contain asbestos: *including but not limited to, roofing felts, tars, membranes, fire doors, vibration dampeners, electrical components, etc.* These materials will not be directly impacted by the proposed demo project.

Suspected designated substances and/or hazardous building materials not identified within this survey that are uncovered during demolition activities (e.g. asbestos), should be properly assessed by a qualified person prior to disturbance. Materials not sampled during this assessment should be presumed to contain asbestos until proven otherwise by laboratory testing.

This survey satisfies requirements of the Occupational Health and Safety Act with regards to the presence/absence of designated substances and hazardous materials identified within the accessible areas of the buildings.

We trust that you will find this report to be complete within our terms of reference. This executive summary is part of, and must be reviewed with the complete inspection report.

Should you have any questions regarding the information contained in this report, or require further assistance please contact our office.

Prepared by:

**ML Environmental Consulting Inc.**

A handwritten signature in black ink, appearing to read 'Marina Laccona', is written over a horizontal line.

**Marina Laccona, CET, CRSP**

Senior Project Manager

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## **APPENDICES**

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**APPENDIX III Background Information, Applicable Regulations, Standards and Guidelines**





August 31<sup>st</sup>, 2025

**Michael Garron Hospital**

825 Coxwell Avenue,  
Toronto, Ontario  
M4C 3E7

**Attn: Ms. Suzanna Afonso**

Senior Project Manager, Redevelopment

**Re: Designated Substances and Hazardous Materials Survey - Suite 201**

20 Wynford Drive, Toronto, Ontario

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## **1.0 Introduction**

ML Environmental Consulting Inc. (MLEC) was retained by Michael Garron Hospital to perform a Designated Substances and Hazardous Materials Survey within the project specific work area of Suite 201 within the building located at the above noted address. The purpose of this assessment is to comply with Section 30 of the Occupational Health and Safety Act (OHSA), which prescribes building owner responsibilities to determine the presence of designated substances prior to any demolition, renovation or construction projects.

Identified designated substances were documented, and MLEC has provided recommendations to ensure these materials are handled and/or managed safely in accordance with the procedures as stated within Ontario Regulation 278/05 "*Regulation respecting Asbestos on Construction Projects and in Building and Repair Operations*" as defined under the Occupational Health & Safety Act as well as industry guidelines for other designated substances and hazardous materials where applicable.

Section 30 of the Occupational Health & Safety Act requires that prior to commencing a construction project (renovation or demolition) the Owner must report the presence of all designated substances within the work areas. This report must be provided to the constructor and subcontractors prior to construction and renovation activities.

## 1.1 Scope of Work

MLEC's assessment consisted of a review of the accessible areas within the project specific work area to determine the presence of designated substances and hazardous building materials. No destructive testing was performed at the time of our assessment. Concealed locations such as spaces above solid ceilings, pipe chases and shafts were accessed via existing access panels in representative locations where applicable.

Collection of samples of building materials which would be directly impacted by the proposed project, and analysis for potential designated substances was performed, which included potential asbestos-containing materials. Other designated substances and/or hazardous materials were identified visually and/or presumed to be present.

## 2.0 Assessment Methodology

A description of the methodology used to assess for the more common designated substances typically found in buildings including; asbestos, lead, silica and mercury, as well as, the common hazardous materials including; Polychlorinated Biphenyls (PCBs), Ozone Depleting Substances (ODSs), and mould can be found in the following sections.

Remaining designated substances including acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates and vinyl chloride, which are not commonly observed in buildings, were visually identified where possible or were reported if used as part of industrial processes if present.

### 2.1 Asbestos

MLEC conducted a visual assessment within the project specific work areas to locate, identify, and sample suspected asbestos-containing building materials. Any material containing greater than 0.5% of asbestos fibres by dry weight is considered to be an asbestos-containing material as per Ontario Regulation 278/05.

Our visual inspection was performed to identify suspect asbestos-containing materials (ACM), which are visually distinct from other building materials. Bulk samples of the suspect asbestos-containing materials, were collected by removing a small portion of the building material to determine its composition. Samples collected were sealed in self-sealed sterile bags, labeled



using a MLEC reference number and transported to the NVLAP approved laboratory for analysis. The laboratory used for analysis was EMC Scientific Inc. located in Mississauga, Ontario.

The number of samples collected of each suspected homogenous asbestos-containing building material was determined based on the requirements detailed in Table 1 "Bulk Material Samples" of Ontario Regulation 278/05. Submitted samples were analyzed using Polarized Light Microscopy (PLM) method EPA/600/R-93/116, unless otherwise stated. The laboratory certificate of analysis for the bulk sample analysis can be found in **Appendix II**.

The asbestos analysis was completed using a stop positive approach. A single sample in a sample set found to be at or above the threshold of 0.5% asbestos is required to deem a material to be asbestos-containing. However, all samples in a particular sample set must be found to be below the threshold of 0.5% asbestos to determine that a materials in not asbestos-containing. Therefore, the analytical laboratory will not analyze subsequent samples in a sample set when one of the samples is identified to be above the threshold limit. In such cases the entire sample set will be determined to be asbestos-containing material.

*Please note that non-friable organically bound (NOB) materials such as, but not limited to, vinyl floor tiles, vinyl sheet flooring, adhesives, etc. contain very small fibres bound in a matrix and as such the PLM method of detection may lead to false negatives when used for these types of materials. Therefore, at the request of the client, MLEC will submit samples for Transmission Electron Microscopy (TEM) or Gravimetric analysis which are more precise analytical techniques performed by the laboratory capable of detecting fibres in NOB materials, should the lab deem it necessary to do so.*

### **Exclusions:**

Materials which may contain asbestos were not sampled during our assessment for various reasons, including the following;

- Samples were not collected from materials and locations that may endanger the surveyor or compromise the integrity of building components (e.g. roofing materials).
- The material is inaccessible without performing major destructive testing.
- Non-friable materials were assumed to contain asbestos, and were only sampled if requested by the client.
- Asbestos cement products (i.e. transite based) were visual identified unless requested by the client.

- No physical inspection of crawl spaces, interior of mechanical ducting, voids and similar inaccessible areas or confined spaces was performed, and therefore, MLEC cannot report on the presence of asbestos in these areas.
- Inspection of live electrical equipment was not performed.
- Surveyor did not access areas with a ladder to a height of greater than 8 vertical feet.
- The surveyor did not document or assess concealed spaces, which exist that are not accessible via access hatches.
- Areas where sufficient knowledge of the building has not been provided to MLEC to determine the location of these spaces (e.g. Interstitial spaces).
- MLEC collected samples from materials were visually distinct and will make no assumptions pertaining to date of installation regarding previous work that includes 'match existing finish' clauses.

## 2.2 Lead

MLEC conducted a visual assessment within the project specific work areas to locate, and identify suspected lead-containing materials.

Should bulk samples be collected, the following would be conducted: collection of samples from painted surfaces which would be directly impacted by the proposed scope of work by scraping paint from representative painted substrates and/or collecting flaking paint samples, in the attempt to collect all possible layers present. Paint samples collected were then placed in a sterile self-sealing plastic bag, transported and submitted to an independent laboratory for analysis. Submitted samples were analyzed using Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B), unless otherwise stated. The laboratory used for lead analysis is Caducen Environmental Laboratories located in Ottawa, Ontario.

***Please note that no sampling for lead was conducted as part of this assessment.***

*Please note that other potential lead-containing materials (e.g. tile glazing, solder, etc.), were not sampled and are presumed to contain lead.*

## 2.3 Mercury

A visual assessment for equipment, which is likely to contain mercury, was completed within the project specific work area. Information on the type of equipment (i.e., gauges, switches, batteries, thermostats, etc.), model and serial numbers and quantities was recorded, where available and applicable. Mercury may also be present in the form of mercury vapour within compact fluorescent light tubes.

*Inspection for the presence of mercury or mercury-containing fluid in inaccessible areas including, but not limited to, ceiling spaces, wall cavities and crawlspaces, or as internal parts of heating, ventilation and air conditioning (HVAC) mechanisms or other equipment, was not performed. Sampling of potential mercury-containing materials was beyond the scope of this assessment.*

## 2.4 Silica

An assessment for the presence of silica was conducted within the project specific work area. The potential presence of silica in building materials such as concrete, masonry, stone, terrazzo, refractory brick, ceiling tiles, drywall, plaster, etc. was noted during the assessment.

Sampling of potential silica-containing materials was beyond the scope of this assessment.

## 2.5 Mould

A visual assessment for the potential presence of mould was completed within the project specific work areas. This involved an intrusive visual assessment of building materials for evidence of mould or water damage.

Mould growth may be present in inaccessible areas including, but not limited to, ceiling spaces and wall cavities, where applicable.

*Sampling of potential mould contaminated materials was beyond the scope of this assessment. Samples may be collected if requested by the client.*

## 2.6 Ozone Depleting Substances (ODSs)

A visual assessment of equipment likely to contain ozone-depleting substances (ODSs) was completed within the project specific work areas. Information on the type of equipment, manufacturer and type and quantity of refrigerants was recorded, where available and applicable.

*Sampling of potential ODSs was beyond the scope of this assessment.*

## 2.7 Polychlorinated Biphenyls (PCBs)

A review for the presence of PCBs in electrical equipment was not completed within the project specific work areas. Equipment that is generally suspected to contain PCBs includes lamp ballasts, transformers, hydraulic fluid, compressors, switchgear and capacitors.

*Conclusions and recommendations regarding the presence of PCBs within the buildings are based on limited observation. Information labels on electrical equipment such as transformers and capacitors were observed where present and easily accessible to identify potential PCB content. Bulk sampling was not performed of dielectric fluids or materials in transformers or capacitors.*

*Light ballasts are a component of fluorescent and HID light fixtures. Light fixtures were not disassembled to examine ballasts at the time of the assessment. Depending on the age of the building assumptions will be made as to the potential for ballasts to contain PCBs. The exact extent and/or number of fluorescent lamp ballasts containing PCBs, if any, within the work area, will not be commented on.*

## 2.8 Other Designated Substances

All other designated substances including, acrylonitrile, arsenic, benzene, coke oven emissions, ethylene oxide, isocyanates and vinyl chloride were visually identified where possible or were reported if used as part of industrial processes, if present. Sampling of these materials was beyond the scope of this assessment.

### 3.0 Assessment Results and Discussion

The results of the assessment for designated substances and hazardous materials are discussed below.

#### 3.1 Acrylonitrile

Not applicable for the building type assessed.

#### 3.2 Arsenic

Not applicable for the building type assessed.

#### 3.3 Asbestos

The Laboratory Certificates of Analysis for the bulk samples collected during this assessment can be found in **Appendix II** with results summarized in **Table 1**. Samples found to be asbestos-containing are bolded and highlighted in yellow.

**Table 1**  
**Sample Results for Suspected Asbestos-Containing Materials**  
**Suite 201 Reno Project**  
**20 Wynford Drive, Toronto, Ontario**  
**August 22<sup>nd</sup>, 2025**

MLEC Sample #	Building Material	Location	Asbestos Content
A1a-c	Drywall joint compound (DWJC)	Walls	ND
A1d	DWJC, 2 phases: white compound and caulking	Beneath baseboards	ND
A1e	DWJC over plaster	Wall	ND
A2a-c	Texture coat on ceiling, 2 phases: white tc and white compound	Common Corridor	ND
A3a-b	Plaster, 3 phases: white, light grey and grey	Walls	ND

A3c-e	Plaster, 2 phases: white and light grey	Walls and column	ND
<b>A4a</b>	VSF and mastic, 4 phases: grey vinyl flooring, yellow mastic, grey cementitious, and	<b>Original operating room</b>	ND
	<b>black mastic</b>		<b>1% Chrysotile</b>
A4b-c	VSF and mastic, 4 phases: grey vinyl flooring, yellow mastic, grey cementitious,  black mastic	Original operating room	ND  NA
A5a-c	Yellow mastic beneath ceramic tile	Large room	ND
<b>A6a</b>	<b>Beige mastic beneath ceramic tile</b>	<b>Original operating room (small room)</b>	<b>2% Chrysotile</b>
A6b-c	Mastic beneath ceramic tile	Original operating room (small room)	NA

ND - None detected (no asbestos fibres were observed)

### 3.3.1 Friable Building Materials

#### Applied Sprayed Fireproofing

No sprayed fireproofing material was observed within the project specific work areas.

#### Texture Coat

Texture (stipple or stucco) coat material observed on the Common Corridor ceiling within the project specific work was sampled (Sample Set A2) and analyzed for asbestos content using the PLM method of detection. The material was found not to contain asbestos.

#### Thermal Insulating Materials

Mechanical pipes and fittings observed within the project specific work areas were not insulated or insulated with a material not suspected to contain asbestos (ie fiberglass).

Ductwork observed within the project specific work areas were not insulated or insulated with a material not suspected to contain asbestos (ie fiberglass).



### 3.3.2 Non-friable Building Materials

#### Acoustic Ceiling Tiles

Ceiling tiles observed within the project specific work areas were manufactured within the last 20 years, as indicated by a manufacturers date stamp on the backside, therefore are not suspected to contain asbestos and were not sampled.

#### Drywall Joint Compound

Drywall joint compound applied to gypsum board was observed to be present in the project specific work area. The material was sampled (Sample Set A1) and analyzed for asbestos content using the PLM method of detection. The material was found not to contain asbestos.

#### Plaster

Plaster observed within the project specific work area was sampled (Sample Set A3) and analyzed for asbestos content using the PLM method of detection. The material was found not to contain asbestos.

#### Vinyl Sheet Flooring and Associated Mastic

Vinyl sheet flooring and associated mastic observed within the project specific work area were sampled (Sample Set A4) and analyzed for asbestos content using the PLM method of detection. Vinyl sheet flooring, yellow mastic and leveling compound were found not to contain asbestos. Black mastic was found to contain **1% Chrysotile asbestos**.

#### Mastic beneath Ceramic tiles

Mastics observed beneath ceramic tiles were sampled (Sample Sets A5 & A6) and analyzed for asbestos content using the PLM method of detection. Sample Set A5, described as yellow mastic and sampled in the previously renovated area, was found not to contain asbestos. Sample Set A6, described as beige mastic and sampled in an area not previously renovated, was found to contain **2% Chrysotile asbestos**.

#### Other Materials

No other accessible building materials suspected of containing asbestos were observed within the project specific work area.

## **Presumed Asbestos-Containing Materials**

A number of materials which may contain asbestos were not sampled during the assessment. If present these materials should be presumed to contain asbestos until laboratory analysis proves otherwise. These materials include:

- Fire door core materials
- Fire resistant cladding materials
- Mechanical packing materials such as ropes and gaskets
- Wiring components and insulation, breakers
- Roofing materials and felts

*Please note that these materials will not be directly impacted by the proposed renovations.*

## **3.4 Benzene**

No benzene was observed within the project specific work area.

## **3.5 Coke Oven Emissions**

Not applicable for the building type assessed.

## **3.6 Ethylene Oxide**

Not applicable for the building type assessed.

## **3.7 Isocyanates**

Not identified to be present in the assessed project specific work area.

## **3.8 Lead**

Paints were not sampled as part of this assessment and should be presumed to contain concentrations of lead. It should be noted that, trace concentrations of lead are likely a constituent of the plumbing, solder used to affix pipe-fittings, mortar, glazing on ceramic tile finishes and may be present in batteries associated with back-up power generators.

The aforementioned list of suspected lead- containing materials were not sampled as part of the assessment.

Therefore, it is recommended that these materials be treated as containing concentrations of lead and removed in accordance with the *Ministry of Labour Guideline regarding Lead on Construction Projects (April 2011)*.

### **3.9 Mercury**

Mercury vapour is presumed to be present in compact fluorescent light tubes observed to be on the ground within the project specific work area.

### **3.10 Silica**

Silica (including free crystalline silica) is presumed to be a constituent of concrete, drywall, and ceiling tiles observed within the project specific work area.

### **3.11 Vinyl Chloride**

Vinyl chloride was not observed within the project specific work area.

### **Other Hazardous Materials**

### **3.12 Mould**

No mould was observed within the project specific work area. Please note that a comprehensive mould investigation was beyond the scope of work for this assessment.

### **3.13 Ozone Depleting Substances (ODSs)**

ODSs (refrigerants) are not presumed to be present within project specific work area. No samples of refrigerants were taken as part of this investigation.

### 3.14 Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs) are presumed to be present within light ballasts of the project specific work areas, as per the Maintenance Manager.

## 4.0 Conclusions & Recommendations

Conclusions and recommendations based on the results of this assessment are provided in the following sections for each designated substance and hazardous material. General findings are summarized in **Table 2**.

**Table 2**  
**Survey Findings and Recommendations**  
**Suite 201 Reno Project**  
**20 Wynford Drive, Toronto, Ontario**  
**August 22<sup>nd</sup>, 2025**

Material(s)	Designated Substances	Present/ Presumed	Recommendations
Black mastic beneath vinyl sheet flooring and beige mastic beneath ceramic tiles	<b>Asbestos</b>	Present	<b>For construction related projects which would directly impact the material</b> , work must be performed in accordance with Ontario Regulation 278/05, <i>Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations</i> - made under the Occupational Health and Safety Act. Any asbestos-containing waste must be handled and disposed of according to Ontario Regulation 347, (as amended) - General - Waste Management
Paint	<b>Lead</b>	Presumed	<b>For construction related projects which would directly impact the material</b> , Ministry of Labour guideline " <i>Lead on Construction Projects</i> " (April 2011) should be followed.
Concrete, Drywall, Ceiling Tiles	<b>Silica</b>	Presumed	<b>For construction related projects which would directly impact the material</b> , Ministry of Labour guideline " <i>Silica on Construction Projects</i> " (April 2011) should be followed.
Compact Fluorescent light tubes	<b>Mercury</b>	Presumed	Mercury waste must be handled and disposed of according to Ministry of Environment Regulation 347/90 as amended - made under the Environmental Protection

Material(s)	Designated Substances	Present/ Presumed	Recommendations
			Act for disposal of hazardous waste and may be subject to Leachate Criteria (Schedule 4) of this Regulation
<b>Hazardous Materials</b>			
<b>Light ballasts</b>	<b>PCBs</b>	Presumed	Management, handling and transfer of PCBs are governed by Ontario Regulation 362/90 - Waste Management - PCBs, under the Ontario Environmental Protection Act as well as the PCB Regulation SOR/2008-273 under the federal Environmental Protection Act. Disposal of PCBs must be performed in accordance with these regulations.

Please note, the following are other building materials that are **presumed** to contain asbestos: *including but not limited to, roofing felts, tars, membranes, fire doors, vibration dampeners, electrical components, etc.* These materials will not be directly impacted by the proposed project.

Based on our findings, the following procedures are recommended for materials which will be **directly impacted**:

- **Asbestos** - Non-friable materials (mastics) should be removed using Type 1 Operations, depending on the removal method employed and type of tools used as outlined in Ontario Regulation 278/05, Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations - made under the Ontario Occupational Health and Safety Act
- **Lead** - Remedial work of paint applications containing any concentration of lead should be undertaken in a manner so as to avoid generating fine particulate matter or dust (i.e., avoid sanding). Furthermore, if welding/torching of materials containing lead is to be undertaken efforts should be made to remove surface coatings containing lead and follow control measures as indicated in the Ministry of Labour Lead Guideline.

Additional details regarding lead abatement operations can be found in the Ministry of Labour Guidelines - Lead on Construction Projects.

- **Silica** - Precautions should be taken as required during renovation and demolition projects on concrete (i.e., coring through concrete slabs, demolition of masonry or concrete units, ceramic tiles, brick etc.) to ensure that workers' exposure levels to silica do not exceed 0.05 mg/m<sup>3</sup>.

Removal or disturbance of presumed silica-containing building materials should be performed following applicable guidelines:

- Silica - Ministry of Labour guideline, "Silica on Construction Projects", April 2011.
- **Mercury** - Avoid breaking lamps or separating mercury liquid from components. MLEC recommends recycling mercury-containing materials at an appropriate facility. Significant quantities of mercury waste must be disposed of as hazardous waste in accordance with Ontario Regulation 347/90.
- **PCBs** - Management, handling and transfer of PCBs are governed by Ontario Regulation 362/90 - Waste Management - PCBs, under the Ontario Environmental Protection Act as well as the PCB Regulation SOR/2008-273 under the federal Environmental Protection Act. Disposal of PCBs must be performed in accordance with these regulations.

Disposal of designated substances waste must be performed in accordance with Ontario Regulation 347 (as amended), which may require leachate testing (Schedule 4 - Criteria), where applicable.

Suspected designated substances and/or hazardous building materials not identified within this survey that are uncovered during demolition activities (i.e. asbestos), should be properly assessed by a qualified person prior to disturbance.

Materials not sampled during this assessment should be presumed to contain asbestos until proven otherwise by laboratory testing or date of installation.

This survey satisfies requirements of the Occupational Health and Safety Act with regards to the presence/absence of designated substances and hazardous materials identified within the accessible areas of the buildings.

We trust that you will find this report to be complete within our terms of reference. This executive summary is part of, and must be reviewed with the complete inspection report.

Should you have any questions regarding the information contained in this report, or require further assistance please contact our office.

## **5.0 Limitations**

The scope of services for the project is limited to the items in the request for services by the client. ML Environmental Consulting Inc. (MLEC) will not be accountable or liable for withheld information, pre-existing and/or unknown environmental conditions. MLEC's inspection was only visual in nature and does not include for conclusions or recommendations pertaining to inaccessible areas. As conditions may change over time, observations, conclusions and sampling results are valid only at the time of our inspection. In preparing this report, ML Environmental Consulting Inc. relied upon information supplied by others, such as independent analytical laboratories and as such has not made any independent verification of such information pertaining to the sample analysis.

MLEC makes no warranties, expressed or implied. Services provided were carried out by trained professionals and technical staff in accordance with applicable Ontario Regulations, best practices and accepted industry standards for industrial hygiene, which were in place at the date when the work was conducted. MLEC cannot warrant against undiscovered environmental liabilities. If any information becomes available that differs from the findings in this report, we request that we be notified immediately to reassess the conclusions provided herein.

No other person or entity is entitled to use or rely upon this report without the express written consent of MLEC and the person or entity to who it is addressed. Any use that a third party makes of this report, or any reliance based on conclusions and recommendations made, are the responsibility of such third parties.

This report has been prepared for the sole use of the person or entity to who it is addressed. MLEC accepts no responsibility for damages suffered by third parties as a result of actions based on this report. MLEC will not endorse the sole use of this report, for future renovations or repairs.

Should you have questions or concerns, please do not hesitate to contact our office.

Prepared by:

**ML Environmental Consulting Inc.**



**Marina Laccona, CET, CRSP**

Senior Project Manager



**APPENDIX I**  
**Site Photographs**





**Photograph 1** – View of typical building materials observed within the area and where **black floor mastic** and **beige ceramic tile mastic** are **asbestos-containing**.



**Photograph 2** – Typical view above ceiling.



**Photograph 3** – View above ceiling.



**Photograph 4** – View above ceiling.



**Photograph 5** – View of date stamped ceiling tile.



**Photograph 6** – View of sampled drywall joint compound and plaster which do not contain asbestos.



**APPENDIX II**  
**Asbestos Laboratory Certificate of Analysis**

# Laboratory Analysis Report

To:

**Marina Laccona**  
ML Environmental Consulting Inc.  
10-225 The East Mall, Suite 1249  
Toronto, Ontario  
M9B 0A9

**EMC LAB REPORT NUMBER:** A124286

**Job/Project Name:** 20 Wynford

**Analysis Method:** Polarized Light Microscopy – EPA 600

**Date Received:** Aug 22/25

**Date Analyzed:** Aug 29/25

**Analyst:** Chengming Li

**Reviewed By:** Malgorzata Sybydló

**Job No:**

**Number of Samples:** 22

**Date Reported:** Aug 29/25

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
A1a	A124286-1	DWJC wall	White, joint compound	ND			100
A1b	A124286-2	DWJC wall	White, joint compound	ND			100
A1c	A124286-3	DWJC wall	White, joint compound	ND			100
A1d	A124286-4	DWJC beneath baseboard	2 Phases: a) White, joint compound b) Colourless, caulking	ND ND			100 100
A1e	A124286-5	DWJC over plaster	White and off white, joint compound	ND			100
A2a	A124286-6	Texture coat on ceiling	2 Phases: a) White, texture coat b) White, joint compound	ND ND			100 100
A2b	A124286-7	Texture coat on ceiling	2 Phases: a) White, texture coat b) White, joint compound	ND ND			100 100
A2c	A124286-8	Texture coat on ceiling	2 Phases: a) White, texture coat b) White, joint compound	ND ND			100 100
A3a	A124286-9	Plaster	3 Phases: a) Off white, joint compound b) White, plaster c) Grey, plaster	ND ND ND			100 100 100

**EMC LAB REPORT NUMBER:** A124286

**Client's Job/Project Name/No.:** 20 Wynford

**Analyst:** Chengming Li

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
A3b	A124286-10	Plaster	3 Phases: a) White, plaster b) Light grey, plaster c) Grey, plaster	ND			100
				ND			100
				ND			100
A3c	A124286-11	Plaster	2 Phases: a) White, plaster b) Light grey, plaster	ND			100
				ND			100
A3d	A124286-12	Plaster	2 Phases: a) White, plaster b) Light grey, plaster	ND			100
				ND			100
A3e	A124286-13	Plaster	2 Phases: a) White, plaster b) Light grey, plaster	ND			100
				ND			100
A4a	A124286-14	VSF + mastic	4 Phases: a) Grey, vinyl flooring b) Yellow, mastic c) Grey, cementitious material d) Black, mastic	ND			100
				ND			100
				ND			100
				Chrysotile	1		99
A4b	A124286-15	VSF + mastic	4 Phases: a) Grey, vinyl flooring b) Yellow, mastic c) Grey, cementitious material d) NA	ND			100
				ND			100
				ND			100
				NA			
A4c	A124286-16	VSF + mastic	4 Phases: a) Grey, vinyl flooring b) Yellow, mastic	ND			100
				ND			100

**EMC LAB REPORT NUMBER:** A124286

**Client's Job/Project Name/No.:** 20 Wynford

**Analyst:** Chengming Li

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
			c) Grey, cementitious material d) NA	ND NA			100
A5a	A124286-17	Mastic (large room)	Yellow, mastic	ND			100
A5b	A124286-18	Mastic (large room)	Yellow, mastic	ND			100
A5c	A124286-19	Mastic (large room)	Yellow, mastic	ND			100
A6a	A124286-20	Mastic (small room)	Beige, mastic	Chrysotile	2		98
A6b	A124286-21	Mastic (small room)	NA	NA			
A6c	A124286-22	Mastic (small room)	NA	NA			

**Note:**

1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

## APPENDIX III

### **Background Information** **Applicable Regulations, Standards and Guidelines**

The *Occupational Health and Safety Act* (OHSA) sets out in general terms, the duties of employers and others to protect the health and safety of workers from hazards that may be present in the workplace. Section 30 of the OHSA required building owners or their representatives (constructors, contractors, architects, etc.) to prepare a list of designated substances present in areas where renovation or construction activities will be performed within the facility. If designated substances are identified to be present, all potential contractors and subcontractors bidding on the project must be provided a copy of the list as part of the tendering package. Provisions are also made under O. Reg. 213/91 to protect workers from situations where exposure to hazardous materials is possible on a construction site.

Materials intended for disposal are subject to the requirements of O. Reg. 347/90. Under this regulation, information on the type of waste is used to classify the waste based on its hazardous properties or characteristics.

Ontario Regulation 490/09 made under the Occupational Health and Safety Act consolidated the eleven previous designated substance regulations on July 1, 2010. Ontario Regulation 490/09 is applicable to industrial workplaces not construction projects.

In accordance with the Ontario Occupational Health and Safety Act and Regulations, the owner is required to prepare a list of designated substances at the site before beginning a project (Section 30). The list of designated substances is as follows:

Acrylonitrile  
Arsenic  
Asbestos  
Benzene  
Coke Oven Emissions  
Ethylene Oxide  
Isocyanates  
Lead  
Mercury  
Silica  
Vinyl Chloride

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In addition to the designated substances listed above other common hazardous materials also included as part of this assessment are as follows:

Polychlorinated Biphenyls  
Ozone-Depleting Substances  
Mould

Background information for the eleven designated substances typically found in buildings and other hazardous materials such as PCBs, ODSs and mould are provided below.

### **Acrylonitrile**

Acrylonitrile (ACN) aka. Vinyl cyanide is an explosive, flammable liquid used in the manufacture of acrylic fibres, rubber materials, and pesticide fumigants. Exposure to acrylonitrile occurs mostly from inhalation. Acrylonitrile primarily affects the nervous system and lungs and if in contact with the skin will cause redness and blistering. Acrylonitrile is regulated in industrial workplaces by *Ontario Regulation 490/09 - Designated Substances*.

### **Arsenic**

Arsenic is a naturally occurring element found in air, water and soil. In the environment, arsenic is combined with oxygen chlorine, and sulfur to form inorganic arsenic compounds. Arsenic is used in metallurgy for hardening copper, lead and certain metal alloys; in the manufacture of certain types of glass; in pigment production; in insecticides, fungicides, and rodenticides; is a by-product in the smelting of copper ores; and in semiconductor manufacturing. Exposure to arsenic occurs by cigarette smoking, drinking contaminated water or contaminated foods. High concentrations of inorganic arsenic can irritate the lungs and throat. Ingestion of high levels of inorganic arsenic can result in death. Lower concentrations of arsenic can cause nausea and vomiting, decreased production of red and white blood cells, abnormal heart rhythm, and damage to blood vessels. Ingestion or inhalation of low concentrations of inorganic arsenic for a prolonged period of time can cause darkening of the skin. Skin contact with inorganic arsenic may cause redness and swelling. Arsenic is regulated in industrial workplaces by *Ontario Regulation 490/09 - Designated Substances*.

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## **Asbestos**

Asbestos is the name given to a group of six different fibrous minerals (amosite, chrysotile, crocidolite, and the fibrous varieties of tremolite, actinolite, and anthophyllite) that occur naturally in the environment. Asbestos minerals have long fibres that readily separate and are strong, flexible and heat resistant. These characteristics have resulted in the use of asbestos in many building materials, including but not limited to, roofing shingles, floor and ceiling tiles, cement products, paper products, adhesives, insulation materials, plaster, drywall joint compounds and many more. In addition, asbestos has also been used in manufactures products such as brake pads, transmission parts, packaging, gaskets, heat-resistant fabrics and coatings. Asbestos exposure through inhalation can cause serious lung problems such as asbestosis, mesothelioma or cancer.

Asbestos is regulated by the following Regulations made under the OHSA:

- *Ontario Regulation 490/09 - Designated Substances* - Regulates worker exposure to asbestos during manufacturing of asbestos containing products
- *Ontario Regulation 278/05 - Asbestos on Construction Projects and in Buildings and Repair Operations* - Prescribes detailed procedures for removal of asbestos-containing materials.

The *General Waste Management Regulation* (O. Regulation 347/90), under the *Environmental Protection Act* (EPA) of Ontario - Sets requirements for the proper disposal of asbestos waste in Ontario.

## **Benzene**

Benzene is a colourless liquid with a sweet odour. Benzene is highly flammable and is formed from both natural processes and human manufacturing. Benzene is used in industry to make chemicals which are used to produce resins, plastics, nylon and synthetic fibres. It is also used to make rubbers, detergents, dyes, lubricants, drugs and pesticides. Benzene is a natural component of crude oil, gasoline, and cigarette smoke. Inhalation of benzene may cause drowsiness, dizziness and unconsciousness. Long-term benzene exposure may lead to effects on the bone marrow, anemia and leukemia. Benzene is regulated in industrial workplaces by *Ontario Regulation 490/09 - Designated Substances*.

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### Coke Oven Emissions

Coke Oven Emissions come from large ovens that are used to heat coal to produce coke, which is used into manufacture iron and steel. The emissions area complex mixtures of dust, vapours, and gases that typically include carcinogens such as cadmium and arsenic. Chemicals recovered from coke oven emissions are used as raw materials for producing items such as plastics, solvents, dyes, paints and insulation. Workers in the aluminum, steel, graphite, electrical and construction industries may be exposed to coke oven emissions via inhalation and absorption through the skin. Exposure to coke oven emissions increases the risk of lung and kidney cancers. Coke Oven Emissions are regulated in industrial workplaces by *Ontario Regulation 490/09 - Designated Substances*.

### Ethylene Oxide

Ethylene oxide is a flammable gas with a sweet odour. It is used primarily to manufacture ethylene glycol used to make antifreeze and polyester. Small amounts are also used by hospitals to sterilize equipment and in pesticides. Exposure to ethylene oxide occurs primarily through inhalation and ingestion and can cause irritation of the eyes, nose, throat, skin and lungs. Lymphoma and leukemia are cancers most frequently associated with exposure to ethylene oxide. Stomach and breast cancers may also be associated with exposure. Ethylene Oxide is regulated in industrial workplaces by *Ontario Regulation 490/09 - Designated Substances*.

### Isocyanates

Isocyanates are a group of low molecular weight aromatic and aliphatic compounds. They are used in flexible and rigid foams, fibres, coatings such as paints and elastomers. Isocyanates are irritants to the mucous membranes and eyes and respiratory tract. Exposures lead to excessive tear secretion, dry throat, dry cough, chest pains and difficulty breathing. Direct skin contact can cause skin irritation and rashes. Isocyanates are a sensitizer and subsequent exposures may result in adverse reactions following a period of initial exposure. Isocyanates are regulated in industrial workplace by *Ontario Regulation 490/09 - Designated Substances*.

### Lead

Lead is a naturally occurring bluish grey metal. Lead is found in fossil fuels, mining operations and in manufacturing. Lead is used in the production of batteries, metal products such as solder and pipe, lead-based paints and ammunition. Exposure to lead can occur through

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inhalation, ingestion and to a lesser degree absorption. Lead can damage the nervous system, kidneys, and reproductive system. Lead affects the digestive system and causes anemia. Lead compounds may be carcinogenic and teratogenic.

- *Ontario Regulation 490/09 - Designated Substances* - Establishes a regulatory limit for occupational exposure to airborne lead that may be present in an industrial workplace.
- The occupational exposure limit (OEL) for airborne lead dust or fumes is a Time Weighted Average (TWA) of 0.05 milligram per cubic metre of air (mg/m<sup>3</sup>).

It should be noted that *Ontario Regulation 490/09 - Designated Substances* does not apply to construction projects. The Ministry of Labour, *Guideline regarding Lead on Construction Projects (April 2011)*, provides guidance in the measures and procedures to ensure worker safety and prevent exposure to building occupants during construction activities.

## Mercury

Mercury is a naturally occurring metal which has several forms. Metallic mercury is a shiny, silver, odourless liquid. If heated it forms a colourless, odourless gas. Exposure to mercury occurs through inhalation, ingestion and older dental fillings. Mercury is a neurotoxin and leads to serious illness at high levels. Mercury may damage the brain, kidneys, and developing fetus. Mercury is regulated in industrial workplace by *Ontario Regulation 490/09 - Designated Substances*. Ontario's Waste Management (O. Regulation 347/90) under the *Environmental Protection Act* provides directives for the disposal of hazardous materials such as mercury.

## Silica

Silica is a component of sand, gravel, concrete, and natural stone. Silica sand is used in glass making, abrasive industries, foundries and many other industrial sectors. Finely divided silicates or silica cause major damage to the lungs, including silicosis and cancer.

- *Ontario Regulation 490/09 - Designated Substances* - Establishes a regulatory limit for occupational exposure to airborne silica that may be present in an industrial workplace. The occupational exposure limit (OEL) for airborne silica is a Time Weighted Average (TWA) of 0.05 milligram per cubic metre of air (mg/m<sup>3</sup>) for cristobalite and 0.10mg/m<sup>3</sup> for Quartz and Tripoli.
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It should be noted that *Ontario Regulation 490/09 - Designated Substances* does not apply to construction projects. The Ministry of Labour, *Guideline regarding Silica on Construction Projects (April 2011)*, provides guidance in the measures and procedures to ensure worker safety and prevent exposure to building occupants during construction activities.

## **Vinyl Chloride**

Vinyl chloride is a colorless, flammable gas at normal temperatures with a sweet odour. It is used to make polyvinyl chloride (PVC), which is used to make a variety of plastic products, including pipes, coatings, furniture, etc. Inhalation of high concentration of vinyl chloride for prolonged periods can result in permanent liver damage, immune system reactions, nerve damage and liver cancer. Vinyl Chloride is regulated in industrial workplace by *Ontario Regulation 490/09 - Designated Substances*.

## **Polychlorinated Biphenyls (PCBs)**

PCBs persist in the environment for many years and do not break down easily. They were widely used in the manufacture of sealing and caulking compounds, cutting oils, inks and paint additives, and coolants for certain electrical equipment such as transformers and capacitors prior to 1980. Adverse health effects associated with PCBs include a severe form of acne (chloracne), swelling of the upper eyelids, discolouring of the nails and skin, numbness in the arms and/or legs, weakness, muscle spasms, chronic bronchitis, and problems related to the nervous system. In addition, there is some evidence to link long-term, high-level PCBs exposure in occupational settings to an increased incidence of cancer, particularly liver and kidney cancer.

- Ontario Regulation 362 under the *Environmental Protection Act*, prohibits the use of PCBs in electrical equipment installed after July 1, 1980.
- The *Canadian Environmental Protection Act*, (CEPA, 1999), Federal PCB regulations have been published by the Canada Gazette Part II (SOR/2008-273) and impose specific deadlines for the elimination of all PCBs.

## **Ozone Depleting Substances (ODSs)**

Ozone-depleting substances (ODS) generally contain chlorine, fluorine, bromine, carbon, and hydrogen in varying proportions and are often described by the general term halocarbons. Chlorofluorocarbons (CFCs), carbon tetrachloride, and methyl chloroform are important human-produced ozone-depleting gases that have been used in many applications including

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refrigeration, air conditioning, foam blowing, cleaning of electronics components, and as solvents. Another important group of human-produced halocarbons is the halons, which contain carbon, bromine, fluorine, and (in some cases) chlorine and have been mainly used as fire extinguishers. the use of ODSs is regulated in Ontario under the Environmental Protection Act (EPA), Part VI, the Ozone Depleting Substances - General Regulation (R.R.O. 1990, Reg. 356 amended to O. Reg. 351/93) and the Refrigerants Regulation (O. Reg. 189/94 amended to O. Reg. 180/07) and under the Canadian Environmental Protection Act (CEPA), Ozone-Depleting Substances Regulations, 1998 SOR/99-7 and Federal Halocarbon Regulation 2003 (SOR/2003-289) that applies to federal land, aboriginal land and federal works and undertakings.

## **Mould**

Health Canada considers indoor mould growth to be a significant health hazard. The word mould is a common term referring to fungi that can grow on building materials in homes or other buildings. Damp conditions and mould growth in homes increases the risk of respiratory allergy symptoms and exacerbate asthma in mold-sensitive individuals.

There are currently no regulations in Canada pertaining specifically to mould in buildings. The Ontario Ministry of Labour has published an alert, employers are required by section 25(2)(h) of the Occupational Health and Safety Act to take every precaution reasonable in the circumstances for the protection of workers.

There are various industry guidelines and other resources that outline procedures for the investigation and remediation of mould. The following is a resource list :

- *Bioaerosols: Assessment and Control*, American Conference of Governmental Industrial Hygienists (ACGIH) - 1999
  - *Clean-Up Procedures for Mould in Houses*, Canada Mortgage and Housing Corporation (CMHC) - 2004
  - *Mould Guidelines for the Canadian Construction Industry*, Canadian Construction Association - 2018
  - *Field Guide for the Determination of Biological Contaminants in Environmental Samples*, and American Industrial Hygiene Association (AIHA) - 2004
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- Fungal Contamination in Public Buildings: Health Effects and Investigation Methods, Health Canada - 2004
- *Guidelines on Assessment and Remediation of Fungi in Indoor Environment*, New York City Department of Health, Bureau of Environmental & Occupational Disease Epidemiology - 2000
- Institute of Inspection Cleaning and Restoration Certification - IICRC S520 – Standard and Reference Guide for Professional Mould Remediation – Third Edition 2015
- *Indoor Air Quality in Office Buildings: A Technical Guide*, Health Canada, Report of the Federal-Provincial Advisory Committee on Environmental and Occupation Health – 1995