bélanger salach architecture

Specification Volume 1
Architectural

Interprofessional Health Simulation Centre

Laurentian University
3rd Floor, Education Building
935 Ramsey Lake Road, Greater Sudbury, Ontario, P3E 2C6

BSA Project No. 26071
Issued for Construction | November 6th, 2026

Specifications Seal – Architectural

The following Consultants' seal is applicable to specific Sections of the Specification completed by **Bélanger Salach Architecture** as noted in Section 00 01 10 – Table of Contents except Specification Sections and Appended documents / reports which have been prepared and / or signed and sealed by other consultants.

Amber Salach, Principal	**7174**
Name, Title	Professional Registration Number
Signature	**November 6, 2026** Date

ONTARIO ASSOCIATION OF ARCHITECTS
SARA AMBER MARIE SALACH
LICENCE
7174

END OF SECTION

PART 1 ARCHITECTURAL

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01 61 00	Common Product Requirements	5 pages
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Division 04 – Masonry – NOT USED

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06 10 53	Miscellaneous Rough Carpentry	10 pages
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Division 07 – Thermal and Moisture Protection

07 21 00	Mineral Wood Insulation	5 pages
07 84 00	Firestopping	31 pages
07 92 00	Joint Sealants	12 pages

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08 14 00	Wood Doors	12 pages
08 71 00	Door Hardware	11 pages
	Finishing Hardware Schedule	13 pages
08 80 00	Glazing	9 pages

Division 09 – Finishes

09 21 16	Gypsum Board Assemblies	13 pages
09 22 16	Non-Structural Metal Framing	6 pages
09 29 53	Partition Gap Closure	4 pages
09 51 13	Acoustical Panel Ceilings	10 pages
09 54 26	Wood Ceilings	8 pages
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09 65 16.23	Resilient Vinyl Sheet Flooring	12 pages
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09 72 16.13	Protective Wall Coverings	9 pages
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09 80 00	Acoustic Treatment	4 pages
09 91 23	Interior Painting	19 pages
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Division 10 – Specialties

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10 26 13	Corner Guards	6 pages
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Division 12 – Furnishings

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Division 13 – Special Construction – NOT USED

Division 14 – Conveying Equipment – NOT USED
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Division 32 – Site Improvements – NOT USED

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(NOT USED)

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5.1. Specifications

(NOT USED)

5.2. Drawings

(NOT USED)

END OF SECTION

SUPPLEMENTARY CONDITIONS TO
THE STIPULATED PRICE CONTRACT (CCDC 2-2020)

These Supplementary Conditions are made as of the 6 day of November, 2026 between Laurentian University of Sudbury (the "Owner") and **[CONTRACTOR]** (the "Contractor"). Other than the Supplementary Conditions contained herein, the Stipulated Price Contract (CCDC 2-2020) between the Owner and the Contractor remains in full force and effect (the "Contract"). The Owner and the Contractor hereby agree to supplement and amend the Definitions and General Conditions of the Contract as set out herein. Notwithstanding General Condition 1.1.7, where there is anything in the Contract which is inconsistent with these Supplementary Conditions, the provisions of these Supplementary Conditions shall govern. Throughout the Contract Documents, reference to the General Conditions or a paragraph of the General Conditions shall include these Supplementary Conditions unless the context requires otherwise. Where a General Condition or paragraph of the General Conditions of the Contract is deleted by these amendments, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, unless stated otherwise herein, and the numbering of the deleted item will be retained, unused.

SC# **Supplementary Conditions**

SC#1 Add the following to the list of Contract Documents in paragraph 3.1 of ARTICLE A-3 – CONTRACT DOCUMENTS:

- Supplementary Conditions to CCDC 2 – 2020
- *Drawings*
- *Specifications*
- Submission Form D - Price Schedules dated **[Ξ]**
- Proper Invoice Checklist

SC#2 Revise ARTICLE A-5 - PAYMENT by, (a) deleting the phrase "the issuance of the" in the first line of paragraph 5.1.3 and replacing it with the phrase "receipt of the *Consultant's*"; and (b) deleting paragraph 5.3.1 and replacing it with the following:

"5.3 Interest

.1 If either party fails to make payments as they become due under the terms of the *Contract* or in an award by arbitration or a court, interest shall also become due and payable on such unpaid amounts at 1% above the prime rate or the rate specified by the *Construction Act* (Ontario), if applicable. Such interest shall be compounded on a monthly basis. The prime rate shall be the rate of interest quoted by CIBC Main Branch, Commerce Court West, Toronto, Ontario for prime business loans as it may change from time to time."

SC#3 Add the following new paragraph 5.4 to ARTICLE A-5 – PAYMENT:

"5.4 *Owner* is entitled to set off against any amounts otherwise due to *Contractor* pursuant to the terms of this *Contract*, any amounts which are due or owed to *Owner* from or by *Contractor* pursuant to the terms of the *Contract*, or being disputed in accordance with the terms of the *Contract*."

SC#4 Add the following new ARTICLE A-9 – CONFLICT OF INTEREST:

"**ARTICLE A-9 – CONFLICT OF INTEREST**

9.1 The *Contractor*, all of the *Subcontractors* and *Suppliers* and any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall not engage in any activity or provide any services or work where such activity or the provision of such services or work creates a conflict of interest, in the sole opinion of the *Owner* with the provision of the *Work* pursuant to the *Contract*. The *Contractor* acknowledges and agrees that a conflict of interest, as described in this Article A-9, includes, but is not limited to, the use of *Confidential Information* where the *Owner* has not specifically authorized such use.

9.2 The *Contractor* shall disclose to the *Owner*, in writing, without delay, any actual or potential situation that may be reasonably interpreted as either a conflict of interest or a potential conflict of interest, including the retention of any *Subcontractor* or *Supplier* that is directly or indirectly affiliated with or related to the *Contractor*."

SC#5 Add the following new definitions:

Applicable Law

Applicable Law means all public laws, statutes, ordinances, codes, acts, orders, by-laws, rules, regulations, *Governmental Consents*, binding policies and guidelines, and requirements of all *Governmental Authorities*, which now or hereafter, may be applicable to and enforceable against the *Owner*, the *Contractor* or the *Work*, or any part thereof, including those relating to employment, zoning, building, life/safety, environment and health. Whenever the term "applicable legislation" is used in the *Contract,* it shall be deemed amended to read "*Applicable Law*".

Confidential Information

Confidential Information means all the information or material of the *Owner* that is of a proprietary or confidential nature, whether it is identified as proprietary or confidential or not, including but not limited to information and material of every kind and description (such as drawings and move-lists) which is communicated to or comes into the possession or control of the *Contractor* at any time, but *Confidential Information* shall not include information that:

1) is or becomes generally available to the public without fault or breach on the part of the *Contractor*, including without limitation breach of any duty of confidentiality owed by the *Contractor* to the *Owner* or to any third party, but only after that information becomes generally available to the public;
2) the *Contractor* can demonstrate to have been rightfully obtained by the *Contractor* from a third party who had the right to transfer or disclose it to the *Contractor* free of any obligation of confidence;
3) the *Contractor* can demonstrate to have been rightfully known to or in the possession of the *Contractor* at the time of disclosure, free of any obligation of confidence; or
4) is independently developed by the *Contractor* without use of any *Confidential Information*.

Construction Act Document

Construction Act Document means a *Notice of Non-Payment*, a notice of adjudication given pursuant to Section 13.7 of Part II.1 of the *Construction Act* (Ontario) or any documents or responses to adjudication to be given or provided pursuant to Part II.1 of the *Construction Act* (Ontario).

Construction Schedule

Construction Schedule means the schedule for the performance of the *Work* provided by the *Contractor* and accepted by the *Owner* and the *Consultant* pursuant to GC 3.5 – CONSTRUCTION SCHEDULE, including any amendments to the *Construction Schedule* made pursuant to the *Contract Documents*.

Deficiency Holdback

Deficiency Holdback has the meaning given in paragraph 5.10.1 of GC 5.10 – DEFICIENCY HOLDBACK.

Force Majeure

Force Majeure means an event that is, (a) beyond the reasonable control of a party; and (b) makes a party's performance of its obligations under this *Contract* impossible or so impractical as reasonably to be considered impossible in the circumstances. Force Majeure includes, war, riots and civil disorder; storm, flood, earthquake or other severely adverse weather conditions; and confiscation, expropriation or other similar action by a

Governmental Authority, provided that Force Majeure shall not include any event that is caused by the negligence or intentional action of a party or such party's subcontractors or agents or employees, strikes, lockouts or similar labour actions or any event that a diligent party could reasonably have been expected to take into account at the time of the execution of this *Contract* and avoid or overcome in the carrying out of its obligations under this *Contract*. Force Majeure shall not include insufficiency of funds or failure to make any payment required hereunder.

GLC Provision

GLC Provision has the meaning given in paragraph 3.8.7 of GC 3.8 – LABOUR AND PRODUCTS.

Governmental Authority

Governmental Authority means any federal, provincial, territorial, regional, municipal or local government authority, quasi-governmental authority, court, government or self-regulatory organization, commission, board, tribunal, organization, or any regulatory, administrative or other agency or any political or other subdivision, department, or branch of any foregoing having legal jurisdiction in any way over the *Owner*, any aspect of the performance of the *Contract*, in each case to the extent it has or performs legislative, judicial, regulatory, administrative or other functions within its jurisdiction.

Governmental Consent

Governmental Consent means any license, right, permit, franchise, privilege, registration, direction, decree, consent, order, permission, approval, or authority to be issued or provided by, a *Governmental Authority* and for clarity includes an agreement between the Owner and any *Governmental Authority*.

Hazardous Material

Hazardous Material means, any contaminant, waste or subject waste (as defined in the *Environmental Protection Act,* R.S.O. 1990, c. E. 19, as amended from time to time (the "**EPA**")), toxic substance (as defined in the *Canadian Environmental Protection Act*, *1999,* S.C. 1999, c. 33 as amended from time to time (the "CEPA")), dangerous goods (as defined in the *Transportation of Dangerous Goods Act*, *1992*, S.C. 1992, c. 34 as amended from time to time (the "TGDA")) or pollutant (as defined in the EPA), or any other substance which when released to the natural environment is likely to cause in some immediate or foreseeable future time, material harm or degradation to the natural environment or material risk or harm to human health. Whenever the terms "toxic and hazardous substances" is used in the *Contract*, it shall be deemed amended to read "Hazardous Material".

Lien Holdback

Lien Holdback has the meaning given in paragraph 5.10.1 of GC 5.10 – DEFICIENCY HOLDBACK.

Notice of Non-Payment

A *Notice of Non-Payment* is a notice delivered pursuant to Section 6.4(2) of the *Construction Act* in the manner and form prescribed in the *Construction Act*.

Overhead

Overhead means all site and head office operations and facilities, all site and head office administration and supervision; all duties and taxes for permits and licenses required by the authorities having jurisdiction at the *Place of the Work*; all requirements of the *Specifications*, including but not limited to submittals, warranty, quality control, insurance and bonding; calculations, testing and inspections; meals and accommodations; and, tools, expendables and clean-up costs.

Owner's Representative

Owner's Representative means any firm or individual engaged by the *Owner* to monitor the *Project* on its behalf or to represent it in any other capacity during the construction of the Project. Unless the *Owner* notifies the *Contractor* of a change in the *Owner's Representative*, the *Owner's Representative* for the *Project* is: **[●]**.

Person

Person includes any individual, company, corporation, partnership, firm, trust, sole proprietorship, government or government agency, authority or entity howsoever designated or constituted.

Proper Invoice Checklist

Proper Invoice Checklist means the checklist attached to this *Contract* as Exhibit "2".

Statutory Declaration

Statutory Declaration means the form of the *Statutory Declaration* to be delivered by the *Contractor* upon applications for progress payment, release of holdback and final payment is attached to this *Contract* as Exhibit "1".

Submittals

Submittals means documents or items required by the *Contract Documents* to be provided by the *Contractor*, such as,

(a) *Shop Drawings*, samples, models, mock-ups to indicate details or characteristics, before the portion of the Work that they represent can be incorporated into the Work; and

(b) record drawings and manuals to provide instructions to the operation and maintenance of the Work.

Total Performance of the Work

Total Performance of the Work means the point at which all Work has been performed to the requirements of the *Contract Documents* and the *Consultant* has issued a written certificate to the *Owner* confirming that the *Work* has been completed in accordance with the requirements of the applicable lien legislation in the jurisdiction of the *Place of the Work*.

WSIB

WSIB has the meaning given in paragraph 9.4.3 of GC 9.4 – CONSTRUCTION SAFETY.

SC#6 Delete the definition of "Change Directive" and replace with the following new definition:

Change Directive

A *Change Directive* is a written instruction prepared by the *Consultant* on a form prescribed by the *Owner* and signed by the *Owner* directing the *Contractor* to proceed with a change in the *Work* prior to the *Owner* and the *Contractor* agreeing upon adjustments in the *Contract Price* and the *Contract Time*, and is subsequently documented as a *Change Order*.

SC#7 Delete the definition of "Owner" and replace it with the following new definition:

Owner

Owner means the Governing Council of Laurentian University but for clarity does not include the Consultant.

GENERAL CONDITIONS OF THE STIPULATED PRICE CONTRACT

SC#8 Delete the first sentence of paragraph 1.1.1 and replace it with "The intent of the *Contract Documents* is to include the construction, labour, *Products*, *Construction Equipment* and other services necessary, complementary or ancillary, for the performance and completion of the *Work* by the *Contractor* in accordance with the *Contract Documents* or properly inferable from them."

SC#9 Add the following sentence at the end of paragraph 1.1.3: "The *Contract*, including the *Contract Documents*, constitutes the entire agreement between the *Owner* and the *Contractor* with respect to the *Work*."

SC#10 Add the following to the end of paragraph 1.1.6:

"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. The *Drawings* are, in part, diagrammatic and are intended to convey the scope of the *Work* and indicate general and appropriate locations, arrangement and sizes of fixtures, equipment and outlets. The *Contractor* shall obtain more accurate information about the locations, arrangement and sizes from study and coordination of the *Drawings*, including *Shop Drawings* and shall become familiar with conditions and spaces affecting these matters before proceeding with the *Work*. Where site conditions require reasonable minor changes in indicated locations and arrangements, the *Contractor* shall make such changes at no additional cost to the *Owner*. Similarly, where known conditions or existing conditions interfere with new installation and require relocation, the *Contractor* shall include such relocation in the *Work*. The *Contractor* shall arrange and install fixtures and equipment in such a way as to conserve as much headroom and space as possible. The schedules are that portion of the *Contract Documents* wherever located and whenever issued, compiling information of similar content and may consist of *Drawings*, tables and/or lists."

SC#11 Delete paragraph 1.1.7 in its entirety and replace it with the following:

"1.1.7

.1 In the event of ambiguities, conflicts or inconsistencies between or among any of the provisions of this *Contract*, the provisions shall govern in the following order of precedence with each taking precedence over those listed subsequently:

(a) material and finishing schedules shall govern over *Drawings*;
(b) *Specifications* shall govern over *Drawings* and material and finishing schedules;
(c) the General Conditions shall govern over *Specifications*;
(d) Supplementary Conditions shall govern over the General Conditions;
(e) the executed Agreement between the *Owner* and the *Contractor* shall govern all documents;
(f) dimensions shown on *Drawings* shall govern over dimensions scaled from *Drawings*; and
(g) later dated documents shall govern over earlier documents of the same type.

.2 Notwithstanding the order of precedence set out in paragraph 1.1.7.1, the following rules of interpretation shall govern the interpretation of all *Contract Documents*, including disputes within a *Contract Document*:

(a) the provision of amendments in writing to this *Contract* signed by the parties and *Change Order* shall govern and take precedence only over those specific provisions of this *Project* agreement expressly amended thereby;
(b) any provision establishing a higher standard of safety, reliability, durability, performance or service shall take precedence over a provision establishing a lower standard of safety, reliability, durability, performance or service;
(c) if the *Contract Documents* contain inconsistent provisions dealing with the same matter, the *Contractor* shall provide the better quality or greater quantity of *Work* or materials, as applicable, unless the *Owner* otherwise directs in writing;

(d) if any of the *Specifications*, *Drawings* or material and finishing schedules for the *Work* are inconsistent or in conflict, any work necessary and described in (or reasonably inferred from) the *Specifications* but not shown on the *Drawings* or material and finishing schedules, or necessary and shown on (or reasonably inferred from) the *Drawings* or material and finishing schedules but not described in the *Specifications* shall be deemed to be part of the Work and carried out as part of the *Contract*; and

(e) if any of the documents within a sub paragraph of paragraph 1.1.7.1 are inconsistent or in conflict, documents of more recent date within that sub paragraph shall govern over prior documents described within the same sub paragraph."

SC#12 Delete paragraph 1.1.9 and replace it with the following:

"1.1.9 Contracts, *Drawings*, *Specifications*, models, documents and copies thereof furnished by the *Contractor* or the *Owner* are and shall remain the property of the *Owner*, with the exception of the signed contract set belonging to the *Contractor*. Such documents and models are to be used by the *Contractor* only with respect to the *Work* and are not to be used on any other work. Such documents and models are not to be copied or revised in any manner without the written authorization of the *Owner*."

SC#13 Add the following new paragraphs 1.1.11 and 1.1.12

"1.1.11 The *Contractor* acknowledges and agrees that it shall at all times comply with the Laurentian University Code of Ethics and the commitments set out in all *Owner* policies and include the following:

.1 In performing the *Work*, the *Contractor* shall at all times comply with the *Accessibility for Ontarians with Disabilities Act*, 2005, and all regulations made thereunder ("**AODA**"). Without limiting the generality of the foregoing, the *Contractor* shall have in place all accessibility plans, policies, practices and procedures required by AODA and shall ensure that all personnel of the *Contractor* engaged in performing the *Work*, including without limitation those personnel of the *Contractor* who may deal with members of the public or other third parties on behalf of the *Owner*, have received all training required by AODA. The *Owner* shall have the right, upon request, to inspect and obtain copies of the accessibility plans, policies, practices and procedures maintained by the *Contractor* in relation to AODA, as well as reasonable evidence that personnel of the *Contractor* performing the *Work* have received all training required by AODA. In delivering the *Work*, the *Contractor* shall provide information and communications in accessible formats and with communication supports, upon request by the *Owner*, members of the public or other third parties, in accordance with the requirements of AODA.

.2 The *Contractor* shall familiarize itself with Ministry of Labour Guidelines for Contractors found at: https://www.labour.gov.on.ca/english/hs/pubs/constructor/

1.1.12 The *Consultant* shall furnish to the *Contractor* without charge, one reproducible set of *Drawings* and two copies of the *Specifications*, exclusive of those required by jurisdictional authorities and the executed *Contract Documents*."

SC#14 Delete paragraph 1.4.1 in its entirety and replace it with the following:

"1.4.1 The *Owner* shall be entitled to assign its rights under the *Contract* to any lender as security for the obligations of the *Owner* to such lender. In addition, with the consent of the *Contractor* (which consent shall not be unreasonably withheld), the *Owner* shall be entitled to assign its rights to, and to have its obligations assumed by, any purchaser of the *Project*. No assignee shall be entitled to enforce any rights under this *Contract* unless such assignee has agreed to assume all obligations thereunder; upon such purchaser assuming the remaining obligations hereunder the *Owner* shall be released therefrom. The *Contractor* shall not assign the *Contract* or any portion thereof without the written consent of the *Owner*, which consent may be arbitrarily withheld."

SC#15 Add the following new GC 1.5 – EXAMINATION OF DOCUMENTS AND SITE:

"**GC 1.5 EXAMINATION OF DOCUMENTS AND SITE**

1.5.1 The *Contractor* declares and represents that in entering into the *Contract* with the *Owner* for the performance of the *Work*, it has either investigated for itself the character of the *Work* to be done and all local conditions, including the location of any utility which can be determined from the records or other information available at the offices of any *Person*, including a municipal corporation and any board or commission thereof having jurisdiction or control over the utility that might affect its acceptance of the *Work*, or that, not having so investigated, the *Contractor* has assumed and does hereby assume all risk of conditions now existing or arising in the course of the *Work* which might or could make the *Work*, or any items thereof more expensive in character, or more onerous to fulfil, than was contemplated or known when the *Contract* signed.

1.5.2 The *Contractor* also declares that in entering into this *Contract,* the *Contractor* did not and does not rely upon information furnished by the *Owner* or any of its agents or servants respecting the nature or confirmation of the ground at the site of the *Work*, or the location, character, quality or quantity of the materials to be removed or to be employed in the construction of *Work*, or the character of the construction machinery and equipment or facilities needed to perform the *Work*, or the general and local performance of the *Work* under the *Contract* and expressly waives and releases the *Owner* from all claims with respect to the said information with respect to the *Work*."

SC#16 Add the following new GC 1.6 – CONFIDENTIALITY:

"**GC 1.6 CONFIDENTIALITY**

1.6.1 The *Contractor* shall keep confidential all *Confidential Information* and shall not, without the prior written consent of the *Owner*, disclose such *Confidential Information*, except in strict confidence, to its professional advisors. Before granting such access to a third party, the *Contractor* agrees to have such third party sign an agreement causing it to be bound by terms substantially the same as those of the *Contractor* with respect to such *Confidential Information*. The *Contractor* further agrees to comply with any applicable policies of the *Owner* in relation to its *Confidential Information*.

1.6.2 The matters that are subject to the confidentiality requirements of this GC 1.5 – CONFIDENTIALITY shall not include information that: (i) has become generally available to the public other than as a result of a disclosure by the *Contractor* or any of its representatives; (ii) was available to the *Contractor* or its representatives on a non-confidential basis before the date of this *Contract*; or (iii) becomes available to the *Contractor* or its representatives on a non-confidential basis from a *Person* other than the *Owner* or any of its representatives who is not, to the knowledge of the *Contractor* or its representatives, otherwise bound by confidentiality obligations to the *Owner* in respect of such information or otherwise prohibited from transmitting the information to the *Contractor* or its representatives.

1.6.3 At the *Owner's* request, the *Contractor* shall promptly return to the *Owner* any *Confidential Information* of the *Owner* then in the *Contractor's* possession or under the *Contractor's* control, except for *Confidential Information* necessary to perform the *Contractor's* duties under this *Contract*.

1.6.4 If any unauthorized disclosure of, loss of, or inability to account for, *Confidential Information* occurs, *Contractor* shall notify the *Owner* immediately by *Notice in Writing*.

1.6.5 If any *Confidential Information* contains information received in confidence from a third party, the *Contractor* shall, on request by the *Owner*, enter into any non-disclosure agreement that the third party may reasonably require on terms no more onerous than those in this *Contract*."

SC#17 Add the following new GC 1.7 – OWNER'S REPRESENTATIVE:

"**GC 1.7 OWNER'S REPRESENTATIVE**

1.7.1 The *Owner* shall designate an *Owner's Representative* authorized to act on the *Owner's* behalf and shall specify in written notice to the *Contractor* any limits on the representative's authority.

1.7.2 Subject to any notified limitations in authority, the *Contractor* may rely upon any written instructions or directions provided by the *Owner's Representative*.

1.7.3 The *Owner's Representative* shall take all reasonable steps to be accessible to the *Contractor* during performance of the *Contract* and shall render any necessary decisions or instructions promptly to avoid delay in the performance of the *Contract*."

SC#18 Add the following new GC 1.8 – RELATIONSHIP BETWEEN THE PARTIES:

"**GC 1.8 RELATIONSHIP BETWEEN THE PARTIES**

1.8.1 The *Contractor* acknowledges acting strictly as an independent contractor under *Applicable Law*, and not as an employee of the *Owner*. Nothing in this *Contract* will be deemed or construed to create a joint venture, partnership, or agency relationship between the parties for any purpose. Neither the *Contractor*, nor any employee, *Subcontractor*, *Supplier* or agent of the *Contractor*, shall hold themselves out as being or shall be construed to be employees or agents of the *Owner*. The *Contractor*, its *Subcontractors*, its *Suppliers* and their respective employees will not be entitled to any benefits, policy, programme or practice, including, but not limited to, vacation pay, holiday pay, health insurance, unemployment insurance, workers' compensation insurance, and fringe benefit plan made available to employees of the *Owner*."

SC#19 Add the following to the end of paragraph 2.2.2:

"The *Contractor* shall not be entitled to rely on such inspections as a limitation of its obligations under the *Contract Documents*."

SC#20 Add the following to the end of paragraph 2.2.5:

"In the event that the certificate for payment is for an amount less than the full amount stated on the application for payment, the *Consultant* will issue a *Notice of Non-Payment* in respect of the disputed amount."

SC#21 Delete the words "Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER" from paragraph 2.2.7 and add the following sentence at the end of the paragraph: "and shall make findings as to the performance thereunder by both parties to the *Contract*."

SC#22 Add the following paragraph to the end of paragraph 2.2.13:

"If, in the opinion of the *Contractor*, the *Supplemental Instruction* involves an adjustment in the *Contract Price* or the *Contract Time*, the *Contractor* shall, within five *Working Days* of receipt of a *Supplemental Instruction* provide the *Consultant* with a written notice to that effect. In the event that the *Contractor* needs additional information to determine whether a *Supplemental Instruction* involves an adjustment of the *Contract Price* or the *Contract Time*, the *Contractor* may issue a written request to the *Consultant* seeking such additional information. The *Contractor* shall, within five *Working Days* of receipt of such additional information, provide the *Consultant* with a written notice if, in the opinion of the *Contractor*, the *Supplemental Instruction* involves an adjustment in the *Contract Price* or the *Contract Time*. Failure to provide written notification within the time stipulated in this paragraph 2.2.13 shall be deemed an acceptance of the *Supplemental Instruction* by the *Contractor* without adjustment in the *Contract Price* or *Contract Time*."

SC#23 Add the following new paragraph 2.2.19:

"2.2.19 In any written or printed notice to the *Contractor* in respect of general, special, or other repairs, or of any work of any nature required to be done under any of the provisions of the *Contract*, or of any other matter, it shall not be obligatory upon the *Consultant* to specify minutely or in detail everything required, nor to

specify by measurement the exact extent thereof, or the precise spot or spots where the work or material may be defective or faulty or where any of the requirements of the *Specifications* have not been observed; but a reference in such notice to the clause or clauses bearing upon the matter, and a description of the locality in general terms, and sufficiently clear, in the opinion of the *Consultant*, to indicate where the defect or trouble exists, shall be deemed to be, and shall be, ample notice."

SC#24 Add the following new paragraph 2.2.20:

"2.2.20 Neither the *Contractor* nor any *Subcontractor*, *Supplier* or other third party shall have any claim against the *Consultant* as a result of the performance or non-performance of the *Consultant's* services. The *Contractor* shall include this provision in any contracts it makes with its *Subcontractors*, *Suppliers* and others and shall require such *Subcontractors*, *Suppliers* and others to include the same term in their contracts with sub-subcontractors, sub-suppliers and others."

SC#25 Add the words "and *Owner*" after the words "*Consultant*" in the second and third lines of paragraph 2.3.2, and delete the phrase "reasonable notice" and replace it with "48 hours' notice" in paragraph 2.3.2.

SC#26 Add "or the *Owner"* in the first line after *"Consultant"* in paragraph 2.3.5.

SC#27 Add the following to the end of paragraph 2.3.2:

"If the *Contractor* notifies the *Consultant* that the *Work* is ready for testing, review or inspection and subsequent to such notification the *Contractor* is not prepared for a test, inspection or approval of *Work* by the *Consultant* and the *Consultant* is required to make a subsequent visit, the cost of any such unnecessary visit by the *Consultant* may be deducted from amounts payable to the *Contractor*."

SC#28 Add the following new paragraph 2.3.8:

"2.3.8 The *Consultant* or the *Owner* may conduct periodic reviews of the *Work* in progress, to determine general conformance with the requirements of the *Contract Documents*. Such reviews, or lack thereof, shall not give rise to any claims by the *Contractor* in connection with construction means, methods, techniques, sequences and procedures, nor in connection with construction safety at the *Place of Work*, responsibility for which belongs exclusively to the *Contractor*. The undertaking of periodic site review by the Consultant or Owner and their employees and agents shall not be construed as supervision of actual construction, nor make them responsible for providing a safe place for work."

SC#29 Revise paragraph 2.4.1 by, (a) adding the phrase "at the Contractor's expense" after the phrase "correct defective work" in the first sentence; (b) inserting the phrase "or the *Owner*" in the first sentence after the phrase "rejected by the *Consultant*"; and (c) adding the following to the end of the paragraph:

"The *Contractor* shall also,

.1 rectify, in a manner acceptable to the *Owner* and the *Consultant*, all defective work and deficiencies throughout the *Work*, whether or not they are specifically identified by the *Consultant*; and

.2 prioritize the correction of any defective work, which, in the sole discretion of the *Owner*, adversely affects the day to day operations of the *Owner* or which, in the sole discretion of the *Consultant*, adversely affects the progress of the *Work*."

SC#30 Add the phrase "and the *Owner*" after the word "*Consultant*" in the first line of paragraph 2.4.3.

SC#31 Add the following new paragraph 2.4.4:

"2.4.4 Neither acceptance of the *Work* by the *Consultant* or the *Owner*, nor any failure by the *Consultant* or the *Owner* to identify, observe or warn of defective *Work* or any deficiency in the *Work* shall relieve the *Contractor* from the sole responsibility for rectifying such defect or deficiency at the *Contractor's* sole cost, even where such failure to identify, observe or warn is negligent."

SC#32 Add the following new paragraph 3.1.3:

"3.1.3 All *Products*, materials, equipment work, means, methods, techniques and procedures shall be performed in strict compliance with *Occupational Health and Safety Act*, R.S.O, 1990, c. O.1, as amended from time to time and Ontario Regulation 213/91, as amended from time to time and other *Applicable Law* as it relates to health and safety of work site, personnel, occupants, and public."

SC#33 Add the following new paragraphs 3.1.8 to 3.1.10:

3.1.8 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.

3.1.9 The *Contractor* agrees that the *Owner* shall not be liable for any loss of, or damage to, the *Contractor's* materials or equipment located at the *Place* of the *Work* or any associated lands, properties, facilities or buildings belonging to or managed by the *Owner*.

3.1.10 The *Contractor* represents and warrants that, on behalf of the *Contractor* and each of its agents, employees, *Subcontractors* and representatives, that it has all training licenses and certifications required or necessary with respect to providing the *Work*."

SC#34 Delete paragraphs 3.2.2.1 to 3.2.2.4 in their entirety.

SC#35 Delete paragraph 3.2.3.2 in its entirety and replace it with the following:

".2 coordinate and schedule the activities and work of other contractors and *Owner's* own forces with the *Work* of the *Contractor* and connect as specified or shown in the *Contract Documents*."

SC#36 Add the following wording at the end of paragraph 3.2.3.3: "Failure by the *Contractor* to so report shall invalidate any claims against the *Owner* by reason of the deficiencies in the work of other contractors or *Owner's* own forces except those deficiencies not then reasonably discoverable; and".

SC#37 Revise paragraph 3.2.3 by, (a) deleting the word "and" from paragraph 3.2.3.2; (b) deleting the period at the end of paragraph 3.2.3.3 and replacing it with a semi-colon; and (c) adding the following new paragraphs 3.2.3.4 to 3.2.3.6:

".4 retain overall responsibility for compliance with the applicable health and construction safety legislation at the *Place of Work;*

.5 until *Total Performance of the Work*, stop any unsafe work and instruct the party responsible to cure the condition, and shall remove any person failing to comply from the *Place of the Work*; and

.6 where the *Contractor* believes that the work of other contractors or of the *Owner's* own forces may compromise any of the warranties to be provided pursuant to this *Contract*, promptly give *Notice in Writing* to the *Consultant* and the *Owner* and include in such notice the reasons why the *Contractor* believes a warranty or a warranties will be compromised together with the *Contractor's* recommendation for avoiding such result."

SC#38 Add the following new paragraph 3.2.7:

"3.2.7 The *Owner* shall have the right to enter upon and take possession of the *Work* in whole or in part for the purpose of placing fittings and equipment or for other use before completion of the *Contract* if such entry and taking of possession does not prevent or interfere with the *Contractor's* efforts to complete the *Work*

in the time specified. Such entry and taking of possession shall not be considered as acceptance of the *Work* nor shall it in any way relieve the *Contractor* from its responsibilities under the *Contract*."

SC#39 Replace the word "law" in paragraph 3.3.2 with the words "*Applicable Law"*.

SC#40 Delete paragraph 3.4.1 in its entirety and replace it with the following:

"3.4.1 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 be undertaken with the standard of care described in paragraph 3.14.1 of GC 3.14 – CONTRACTOR STANDARD OF CARE. 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*. Provided it has exercised the degree of care and skill described in this paragraph 3.4.1, the *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the *Contract Documents*, which the *Contractor* could not reasonably have discovered through the exercise of the required standard of care."

SC#41 Add the following new paragraph 3.4.2:

"3.4.2 If, at any time, the *Contractor* finds errors, inconsistencies, or omissions in the *Contract Documents* or has any doubt as to the meaning or intent of any part thereof, including laying out of the *Work*, the *Contractor* shall immediately notify the *Consultant*, and request instructions, a *Supplemental Instruction, Change Order,* or *Change Directive,* as the case may require, and the *Contractor* shall not proceed with the work affected until the *Contractor* has received such instructions, a *Supplemental Instruction*, *Change Order* or *Change Directive*. Neither the *Owner* nor the *Consultant* will be responsible for the consequences of any action of the *Contractor* based on oral instructions."

SC#42 Delete paragraph 3.5.1 in its entirety and replace it with the following:

"The Contractor shall:

.1 Seven calendar days prior to site mobilization, submit to the *Owner* and the *Consultant* for their approval a *Construction Schedule* indicating critical milestone dates for the Project as required to demonstrate that the *Work* will be performed in conformity with the *Contract Time*. The *Contractor* shall provide the schedule information required by this paragraph 3.5.1.1 in both electronic format and hard copy. The *Contractor* shall not amend the accepted *Construction Schedule* without the written consent of the *Owner*;

.2 monitor the progress of the *Work* relative to the Construction Schedule, or any successor or revised schedule approved by the *Owner*, update the Construction Schedule on a monthly basis or as otherwise stipulated in the *Contract Documents*;

.3 advise the *Consultant* by *Notice* in *Writing* of any slippage in the *Construction Schedule* or any other schedule and of any revisions required to the *Construction Schedule* as a result of extension of the *Contract Time* as provided in GC 6 – CHANGES IN THE WORK;

.4 at all times perform the *Work* required hereunder as diligently and expeditiously as is consistent with the highest professional standards and the orderly progress of the *Work*, within the *Contract Time* and in accordance with the *Construction Schedule* and any revisions thereto, in order to maintain the desired development and construction schedule for the *Project*, and in order not to delay the *Work* or any aspect of the construction of the *Project*;

.5 at all times provide sufficient personnel to accomplish its services within the *Contract Time* and in accordance with the *Construction Schedule* and any revisions thereto;

.5 provide the expertise and resources, such resources including sufficient manpower and equipment, as are necessary to maintain progress under the accepted baseline *Construction Schedule* or revised schedule accepted by the *Owner* pursuant to GC 3.5 - CONSTRUCTION SCHEDULE;

.5 provide overtime work without change to the *Contract Price* if such work is deemed necessary by the *Contractor* to meet the *Construction Schedule*; and

.6 ensure that the *Contract Price* includes all costs required to phase or stage the *Work*."

SC#43 Add the following new paragraphs 3.5.2 to 3.5.6:

"3.5.2 If requested by the *Owner*, the *Contractor* shall promptly provide to the *Owner* and the *Consultant* a two week look-ahead schedule indicating the major activities to be undertaken or constructed in such two week period.

3.5.3 The *Contractor* is responsible for performing the *Work* within the *Contract Time*. Any schedule submissions revised from the accepted baseline *Construction Schedule* or revised schedule accepted by the *Owner* during construction are not deemed to be approved extensions to the *Contract Time.* All extensions to the *Contract Time* must be made in accordance with the *Contract Documents*.

3.5.4 If the *Owner* specifically requests the *Contractor* to have work performed at overtime rates in order to complete the *Work* (or any change in the *Work*) or any part thereof earlier than the *Contractor* would otherwise be obliged to finish such *Work* (or change in the *Work*) or any part thereof under the *Contract Documents*, the additional net cost of such overtime (less any savings realized by the *Contractor* through the earlier completion of the *Work*) shall be chargeable to the *Owner*.

3.5.5 If 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 if the *Contractor* has given notice of such to the *Owner* or the *Consultant* pursuant to paragraph 3.5.1.3, the *Contractor* shall take appropriate steps to cause the actual progress of the *Work* to conform to the *Construction 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. If the *Contractor* intends to apply for a change in the *Contract Price* in relation to a schedule recovery plan, the *Contractor* shall proceed pursuant to Part 6 of the General Conditions – CHANGES IN THE WORK.

3.5.6 Time shall in all respects be of the essence of this *Contract*. Notwithstanding the foregoing, if the *Contractor* is delayed in the performance of its obligations or services under this *Contract* or under the *Construction Schedule* for a period of seven days or more as a result of *Force Majeure*, the *Contractor* shall be entitled to request an extension or extensions to the required completion date(s) set out in the *Construction Schedule*, provided that the *Contractor* shall not be entitled to any additional compensation as a result of such *Force Majeure* event or the delay occasioned thereby and shall not be compensated for any additional costs, directly or indirectly arising as a result of such *Force Majeure* event or the delay occasioned thereby (including, without limiting the generality of the foregoing, any additional costs arising out of winter construction). No controversy or dispute of any kind between the parties or between the *Contractor* and the *Consultant* or the *Owner* (or the *Owner's Representative*) and the *Consultant* shall constitute a cause for stoppage of the performance of the *Contractor's* obligations or services or for a delay or extension."

SC#44 Revise paragraph 3.6.1 by (a) adding "acceptable to the *Owner* and *Consultant*" after "appoint a competent representative" in the first sentence; and (b) deleting "except for a valid reason" and replacing it with "without prior consultation with and agreement in writing by the *Owner* and the *Consultant*" in the second sentence.

SC#45 Delete the words ", except with respect to Article A-6 of the Agreement - RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING" from the end of paragraph 3.6.2.

SC#46 Add the following new paragraph 3.6.3:

"3.6.3 The *Owner* shall have the right to immediately terminate the contract should the *Contractor* fail to comply with *Occupational Health and Safety Act*, R.S.O., 1990, c. O.1, as amended from time to time and Ontario Regulation 213/91, as amended from time to time and other *Applicable Law* as it relates to health and safety of work site, personnel, occupants, and public."

SC#47 Revise paragraph 3.7.1 by adding the phrase “including any warranties and service agreements which extend beyond the term of the *Contract*” after the phrase “under subcontract” in the second line.

SC#48 Revise paragraph 3.7.1.2 by adding the phrase “including any required contract security” after the phrase “the *Contract Documents*”.

SC#49 Replace the words “Should the *Owner* not object” in the third line of paragraph 3.7.2 with “Upon obtaining the written approval of the Owner.”

SC#50 Add the following new paragraph 3.7.4 and renumber the current paragraphs 3.7.4 to 3.7.6 accordingly:

“3.7.4 The *Contractor* agrees not to change *Subcontractors* without prior written approval of the *Owner*, which approval shall be in the sole discretion of the Owner.”

SC#51 Add the following new paragraphs 3.7.7 to 3.7.9:

“3.7.7 The *Contractor* covenants that each subcontract or supply contract which the *Contractor* enters into for the purpose of performing the *Work* shall expressly provide for the assignment thereof to the *Owner* (at the option of the *Owner*) and the assumption by the *Owner* of the obligations of the *Contractor* thereunder, upon the termination of the *Contract* and upon written notice by the *Owner* to the other parties to such subcontracts or supply contracts, without the imposition of further terms or conditions; provided, however, that until the *Owner* has given such notice, nothing herein contained shall be deemed to create any contractual or other liability upon the *Owner* for the performance of obligations under such subcontracts or supply contracts and the *Contractor* shall be fully responsible for all of its obligations and liabilities (if any) under such subcontracts and supply contracts. The *Contractor* shall be fully responsible to ensure that all *Subcontractors* and *Suppliers* are familiar with and perform all activities and supply products in accordance with *Applicable Law*, including the *Occupational Health and Safety Act*, R.S.O., 1990, c. O.1, as amended from time to time and Ontario Regulation 213/91, as amended from time to time. The *Owner* reserves the right to terminate the contract should either *Supplier* or *Subcontractor* fail to comply with any regulation, practice or procedure as determined by current health and safety legislation. The *Contractor* shall not be eligible for any claims resulting from non-compliance of *Suppliers* and *Subcontractors*.

3.7.8 The *Owner* may assign to the *Contractor*, and the *Contractor* agrees to accept, any contract procured by the *Owner* for work or services or *Products* required on the *Project* that has been pre-tendered or pre-negotiated by the *Owner*. As part of its acceptance for any contract procured by the *Owner*, the *Contractor* shall be entitled to apply a mark-up of no more than ten percent to the value of the assigned contract.

3.7.9 The *Contractor* agrees and confirms that all *Contractor* agents, employees, *Subcontractors* and representatives will carry the required *Owner* identification badges and shall properly display them at all times while on the *Owner’s* property. When required, the *Contractor* shall also ensure *Contractor* vehicles are appropriately branded and carry the correct markings including the *Contractor’s* name and registration numbers (e.g., TSSA number). All *Owner* provided badges shall be returned to the *Owner* immediately upon completion of the *Contract*. The *Contractor* shall be financially responsible for all lost or unreturned badges.”

SC#52 Revise paragraph 3.8.1 by, (a) deleting the word “The” at the beginning of paragraph 3.8.1 and replacing it with “Unless otherwise specified in the *Contract*, the”; and (b) adding the following sentence at the end of the paragraph: “The *Contractor* represents and warrants that the *Products* provided in accordance with the *Contract Documents* are not subject to any conditional sales contracts and are not subject to any security rights claimed or obtained by any third party which may subject any of the *Products* to seizure and/or removal from the *Place* of the *Work*.”

SC#53 Delete paragraph 3.8.2 in its entirety and replace it with the following:

"3.8.2 Except as otherwise specifically stated in the *Contract Documents*, *Products* provided shall be new and shall conform to all current applicable specifications of the Canadian Standards Association, Canadian Standards Board or General Standards Board, ASTM, National Building Code, provincial and municipal building codes, fire safety standards, and all *Governmental Authorities* and regulatory agencies having jurisdiction at the *Place of the Work*. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*. *Products* brought on to the *Place of the Work* by the *Contractor* shall be deemed to be the property of the *Owner*, but the *Owner* shall be under no liability for loss thereof or damage thereto arising from any cause whatsoever. The said *Products* shall be at the sole risk of the *Contractor*. Workmanship shall be, in every respect, first class and the *Work* shall be performed in accordance with the best modern industry practice."

SC#54 Add the following new paragraphs 3.8.4 to 3.8.8:

"3.8.4 Upon receipt of a written notice from the *Consultant* or *Owner,* the *Contractor* shall immediately dismiss, from the *Place of the Work*, tradesmen and labourers whose *Work* is unsatisfactory to the *Consultant* or *Owner* or who are considered by the *Consultant* or *Owner* to be unskilled or otherwise objectionable. *Products* provided shall be new, unless the *Contract Documents* stipulate otherwise or the *Owner* or the *Consultant* directs that a particular product which is not new be utilized.

3.8.5 The cost for overtime required beyond the normal *Working Day* to complete individual construction operations of a continuous nature, such as pouring or finishing of concrete or similar work, or *Work* that the *Contractor* elects to perform at overtime rates without the *Owner* requesting it, shall not be chargeable to the *Owner*. Tradesmen and labourers whose work is unsatisfactory to the *Consultant* or who are considered by the *Consultant* to be unskilled or otherwise objectionable shall be excluded from the *Work* upon notice from the *Consultant*.

3.8.6 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* and the *Consultant*. The *Owner* shall provide all relevant information on the *Products* to be supplied by the *Owner*.

3.8.7 The *Contractor* acknowledges and agrees that any part of the work performed by the *Contractor* on behalf of the *Owner* that falls under the provisions of any collective agreements by which the *Owner* is bound, or which the *Owner* is contractually required to apply to the *Contract*, shall in each case be performed by employees covered by the applicable collective agreement. Without limiting the generality of the foregoing, such collective agreements include:

.1 where applicable, the current provincial agreement covering construction work in the industrial commercial and institutional sector of the construction industry in the Province of Ontario between the Electrical Trade Bargaining Agency of the Electrical Contactors' Association of Ontario (the "ETBA") and the International Brotherhood of Electrical Workers and the IBEW Construction Council of Ontario (the "Electricians' Union" Local 353);

.2 where applicable, the current provincial agreement covering construction work in the industrial commercial and institutional sector of the construction industry in the Province of Ontario between Mechanical Contractors' Association of Ontario (the "MCAO") and the Ontario Pipe Trades Council (the "Plumbers' Union");

.3 where applicable, the current provincial agreement covering construction work in the industrial commercial and institutional sector of the construction industry in the Province of Ontario between the Canadian Automatic Sprinkler Association (the "CASA") and the United Association of Journeyman and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada, local 853 (the "Sprinkler Fitters' Union");

.4 where applicable, the current provincial agreement covering construction work in the industrial commercial and institutional sector of the construction industry in the Province of Ontario between a council of employers' associations consisting of the Ontario Painting Contractors Association, the Acoustical Association of Ontario and the Interior Systems Contractors Association of Ontario (the "Employer Bargaining Agency") and the International Union of Painters and Allied Trades and the Ontario Council of the International Union of Painters and Allied Trades (the "Painters' Union");

.5 where applicable, the current provincial agreement covering construction work in the industrial commercial and institutional sector of the construction industry in the Province of Ontario between the Carpenters' Employer Bargaining Agency (the "CEBA") and the Carpenters' District Council of Ontario, United Brotherhood of Carpenters and Joiners of America (the "Carpenters' Union");

.6 incorporate the terms of understanding as set out in the "Letter of Understanding, Carpentry Construction Work on Smaller Projects" between Laurentian University and Carpenter's Union Local 27, as amended from time to time; and

.7 incorporate the terms of understanding as set out in the "Letter of Understanding, Sheet Metal Workers" between Laurentian University and the Sheet Metal Workers' International Association, Local 30, as amended from time to time.

This paragraph 3.8.7 (the "**GLC Provision**") shall apply to each *Subcontractor mutatis mutandis* and the *Contractor* shall include this *GLC Provision*, with all necessary changes, in each of its contracts with *Subcontractors* for any applicable part of the delivery or performance of the *Work*.

3.8.8 Without limiting the generality of paragraph 3.8.7, the *Contractor* shall not employ any persons for the Work whose labour affiliation, or lack thereof, is incompatible with other labour employed in connection with the *Work*. Any costs arising from labour disputes as a result of the employment of any such person by the *Contractor*, its *Subcontractors* or *Suppliers*, shall be the sole expense of the *Contractor*. Any part of the *Work* that is the work of union members represented by the union locals under the provisions of any collective agreements by which the *Owner* is bound, shall in each such case be performed only by an employer also bound by such agreement.

3.8.8 The *Contractor* shall give due consideration to the environment in the discharge of its duties under and pursuant to this *Contract*, including, without limitation, using environmentally friendly materials and/or processes consistent with prudent industry practices. The *Contractor* shall consider the energy intensity of its products and services, in the event that the *Owner* requests such information related to the carbon footprint of this aspect of their business. The *Contractor* shall comply with all *Applicable Law*, including without limitation any waste, recycling, electric and electronic equipment regulations. The *Contractor* shall use Eco-logo or green products whenever commercially available. To the extent required by the *Owner*, the *Contractor* shall provide the *Work* in accordance with the *Owner's* environmental policy, and abide by LEED or BOMA building requirements if the *Contractor* is providing *Work* to a LEED or BOMA certified property."

SC#55 Delete paragraph 3.9.1 in its entirety and replace it with the following:

"3.9.1 The *Contractor* shall keep one copy of the current *Contract Documents*, *Supplemental Instructions*, contemplated *Change Orders*, *Change Orders*, *Change Directives*, cash allowance disbursement authorizations, reviewed *Shop Drawings*, submittals, reports (including any reports or orders by *Governmental Authorities*) and records of meetings at the *Place* of the *Work*, in good order and available to the *Owner* and *Consultant*."

SC#56 Add the words “AND OTHER SUBMITTALS” to the title of GC 3.10 – SHOP DRAWINGS after the words “SHOP DRAWINGS” such that the title of GC 3.10 is “SHOP DRAWINGS AND OTHER SUBMITTALS”.

SC#57 Add the phrase “and *Submittals*” after the words “*Shop Drawings*” in paragraphs 3.10.2, 3.10.4, 3.10.7, 3.10.8, 3.10.8.2, 3.10.9, 3.10.10, and 3.10.11.

SC#58 Delete paragraph 3.10.1 in its entirety and replace it with the following:

“3.10.1 The *Contractor* shall provide *Shop Drawings* and *Submittals* as required in the *Contract Documents* and as the *Consultant* may reasonably request. The *Contractor* shall submit all *Drawings* in triplicate and in reproducible form. The Contractor shall also, (a) prepare and maintain current as-built *Drawings* which shall consist of the *Drawings* and *Specifications* revised by the *Contractor* during the *Work*, showing changes to the *Drawings and Specifications*, which current as-built *Drawings* shall be maintained by the *Contractor* and provided to the *Consultant* for review with each application for payment pursuant to paragraph 5.2.5 of GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT; and (b) provide as-built *Drawings* upon completion of the *Work*. The *Contractor* shall grant the *Owner* a perpetual and royalty-free licence to use, display and modify such *Shop Drawings* and as-built *Drawings*.”

SC#59 Delete paragraph 3.10.3 in its entirety and replace it with the following :

“3.10.3 Prior to the first application for payment, the *Contractor* and the *Consultant* shall jointly prepare a schedule of the dates for submission and return of *Shop Drawings* and any *Submittals*.”

SC#60 Delete paragraph 3.10.8.1 in its entirety and replace it 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”.

SC#61 Delete paragraph 3.10.12 in its entirety and replace it with the following:

“3.10.12 The *Consultant* will review and return *Shop Drawings* and *Submittals* in accordance with the schedule agreed upon in paragraph 3.10.3, or, in the absence of such schedule, with reasonable promptness. If, for any reason, the *Consultant* cannot process them within the agreed-upon schedule or with reasonable promptness, the *Consultant* shall notify the *Contractor* 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 provided in the *Contract*.”

SC#62 Add the following new paragraphs 3.11.3 to 3.11.8:

“3.11.3 The *Contractor* shall take all reasonable steps to prevent interference with adjacent properties. The *Contractor* shall not close or obstruct streets, sidewalks, alleys, or other public thoroughfares unless all permits required by *Applicable Law* have been obtained. Any damage to public property, private property, or to utilities, including business interruption losses resulting from the negligent acts or omissions or default of the *Contractor* shall be paid, corrected or remedied by *Contractor* in a manner approved by the *Owner* and the party whose property has been damaged, all at no additional cost to *Owner* and not as a cost to the *Project*.

3.11.4 If work or storage areas in addition to areas provided by the premises are required, the *Contractor* shall be responsible for making arrangements to obtain the additional areas, whether adjacent to the premises or not, and for making permit and rental payments that may be required.

3.11.5 In carrying out the *Work*, the *Contractor* must minimize damage or injury to any adjacent property and, except as otherwise provided in this *Contract*, if injury or damage is done, it must make good the same, at its own expense, in the manner directed by, and to the satisfaction of, the *Consultant*. The *Contractor* shall be responsible for any and all damages, or claims for damages for injury or accidents done or

caused by it or its employees or agents, or resulting from the prosecution of the works, or any of its operations, or caused by reason of the existence or location or condition of the works, or of any materials, plant or machinery used thereon or therein, or which may happen by reason thereof, or arising from any act of commission or omission on its part, or on the part of any of its agents or employees, in connection with the *Contract*, and covenants and agrees to hold the *Owner* harmless and indemnified from all such damages and claims for damage; and in case of *Contractor's* failure, neglect or omission to observe and perform faithfully and strictly, all the provisions of the *Contract*, the *Consultant* may, either with or without notice (except where in this *Contract*, notice is specially provided for, and then upon giving the notice therein provided for), take such steps, procure such material, plant, trucks and men, and do such work or things as it may deem advisable toward carrying out and enforcing the same, and any and all expenses so incurred may be deducted or collected by the *Owner*, and any such action by the *Consultant* as it is herein empowered to take, shall not in any way relieve the *Contractor* or its surety from any liability under the *Contract*.

3.11.6 If the *Contractor* enters into the lands or buildings of the Province or of any municipality or of any *Person* or enters into any highway or road under the jurisdiction and control of any public authority for the purpose of making any survey, examination, investigation, inspection or other arrangement or lays any pipes or appurtenances in, upon, through, over or under any highway or road under the jurisdiction and control of any public authority and in so doing disturbs any such lands, buildings, highways or roads, such lands, buildings, highways or roads shall be restored to their original condition without unnecessary delay.

3.11.7 The *Contractor* must (if it is practicable in the opinion of the *Consultant*) keep the roadway open for travel for the use of the public, for such width as the *Consultant* may direct. Where, in the opinion of the *Consultant*, it is not practicable to keep a roadway open for the full flow of traffic, it may permit the *Contractor* to close or partially close such roadway and to provide for a detour of the traffic or a part thereof. In each such case and before putting into effect the closure or detour, the *Contractor* shall present its proposal for closure or detour to any *Governmental Authority* having jurisdiction over any of the roadways which will be affected by the proposed closure of the said authority or authorities. The *Contractor* must provide a sufficient number of "NO THOROUGHFARE", "DETOUR" or other proper notices, which it must cause to be placed and maintained in good order in conspicuous places wherever any roadway, sidewalk, or thoroughfare is torn up or dangerous, and so long as it remains unsafe or unfinished. When any work is carried on at night, the *Contractor* must supply, at its own expense, a sufficient number of electric or other approved and efficient lights, to enable the same to be done in an efficient and satisfactory manner, and the *Consultant* shall have the power to order additional lights to be put on at the *Contractor's* expense if in the opinion of the *Consultant,* they are, or may be, required.

3.11.8 The method of use and the character of all explosives shall be subject to the approval of the *Consultant*. The *Contractor* shall ensure that the charges of explosives used by the *Contractor* and the time at which they are exploded shall be such as not to cause damage to person or property or to cause unreasonable inconvenience. Explosives shall be properly housed and protected as provided by *Applicable Law*, and no explosives known to have deteriorated shall be used. Approved methods of handling and thawing of frozen explosives shall be followed, and the greatest care shall be exercised at all times by the *Contractor* in blasting operations."

SC#63 At the end of the paragraph 3.13.1, add the following:

"The *Contractor* shall remove accumulated waste and debris at least once a week as a minimum or as required by the nature of the *Work."*

SC#64 In paragraph 3.13.2, in the fourth line add the word "materials," between the word "tools" and the words "*Construction Equipment*".

SC#65 In paragraph 3.13.3, in the first and second lines add the word "materials," between the word "tools" and the words "*Construction Equipment*".

SC#66 Add the following new paragraphs 3.13.4 to 3.13.6:

"3.13.4 In the event that the *Contractor* fails to remove waste and debris as provided in this GC 3.13, then the *Owner* or the *Consultant* may give the *Contractor* 24 hours written notice to meet its obligations respecting clean up. Should the *Contractor* fail to meet its obligations pursuant to this GC 3.13 within the 24 hour period following delivery of the notice, the *Owner* may remove such waste and debris and deduct from payments otherwise due to the *Contractor*, the *Owner's* costs for such clean up, including a reasonable mark-up for administration costs.

3.13.5 From the commencement of the *Work* until the *Total Performance* of the *Work* the *Contractor* shall in accordance with accepted industry practices and using reasonable efforts maximum waste diversion from landfill for any and all waste generated by the Work.

3.13.6 Upon *Substantial Performance of the Work*, the *Contractor* shall remove from the *Place* of the *Work* products, tools, construction machinery, and equipment brought onto the *Place* of the *Work* by *Contractor* or its *Subcontractors*. If the *Contractor* fails to comply with its obligations under this paragraph, the *Owner* may remove the debris and other items and charge the *Contractor* the full cost of such removal including an overhead charge of 15%."

SC#67 Add the following new GC 3.14 – CONTRACTOR STANDARD OF CARE:

"**GC 3.14 CONTRACTOR STANDARD OF CARE**

3.14.1 In performing its services and obligations under the *Contract*, the *Contractor* shall exercise the 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 performance of the *Contractor's* obligations, duties and responsibilities shall be judged against this standard. The *Contractor* shall exercise the same standard of care, skill and diligence in respect of any *Products*, personnel or procedures which it may recommend to the *Owner*.

3.14.2 The *Contractor* further 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 any of its appointed representatives, 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, liabilities or contingent liabilities that would have a material effect on the financial ability of the *Contractor* to perform its work under the *Contract*."

SC#68 Add the following new GC 3.15 – OCCUPANCY OF THE WORK:

"**GC 3.15 OCCUPANCY OF THE WORK**

3.15.1 Where the *Project* contemplates *Work* by way of renovations in buildings which will be in use or be occupied during the course of the *Work*, or where the *Project* involves *Work* that is adjacent to a structure which is in use or is occupied, the *Contractor*, without in any way limiting its responsibilities under this *Contract*, shall take all reasonable steps to avoid interference with fire exits, building access and egress, continuity of electric power and all other utilities, to suppress dust and noise, to avoid conditions likely to propagate mould or fungus of any kind, and all other steps reasonably necessary to promote and maintain the safety and comfort of the users and occupants of such structures or adjacent structures. Without *Owner's* prior approval, the *Contractor* shall not permit any worker or *Subcontractors* to use any existing facilities including, without limitation, lavatories, toilets, entrances and parking areas other than those designated by the *Owner*."

SC#69 Add the following new GC 3.16 – CONTRACTOR'S USE OF PERMANENT EQUIPMENT OR SYSTEMS:

"**GC 3.16 CONTRACTOR'S USE OF PERMANENT EQUIPMENT OR SYSTEMS**

3.16.1 With the prior written approval of the *Owner*, the *Contractor* may make use of elements of the mechanical and electrical systems or equipment comprising a permanent part of the *Work* for the purpose of providing heat or power to the *Project* during the final stages of construction. In such event, and before the issuance of the certificate of *Substantial Performance* of the *Work*, the *Contractor* shall clean and make good, to the satisfaction of the *Consultant*, such systems and equipment as it had been permitted to use. The *Contractor* shall pay any and all costs associated with such use, cleaning and making good.

3.16.2 Where the *Contractor* has made use of elements of the mechanical and electrical systems or equipment comprising a permanent part of the *Work*, as described in paragraph 3.16.1, the *Contractor* shall obtain, from the manufacturer or *Supplier* of the systems or equipment used, a confirmation from such manufacturer or *Supplier* that the warranty on such systems or equipment begins on the date of *Substantial Performance* of the *Work* and is not impaired in scope or reduced in time by virtue of the *Contractor's* use of such systems or equipment."

SC#70 Delete paragraph 4.1.4 in its entirety and replace it 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 be reallocated, at the *Consultant's* direction, to cover the shortfall, and, in that case, there shall be no additional amount added to the *Contract Price* for *Overhead* and profit. Only 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*."

SC#71 Delete paragraph 4.1.5 in its entirety and replace it with the following:

"4.1.5 The unexpended total cash allowance amount shall be deducted from the Contract Price by Change Order."

SC#72 Add the following new paragraph 4.1.8:

"4.1.8 The *Owner* may direct the *Contractor* to conduct a competitive procurement process for any work, materials or *Products* for which payment is made from a cash allowance."

SC#73 Delete GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER in its entirety.

SC#74 Revise paragraph 5.2.3 by (a) deleting the words "*Products* delivered to the *Place of the Work*" in the first and second lines and substituting "*Products* delivered and incorporated into the *Work*, less the amount of all previous payments claimed"; and (b) adding the following to the end of the paragraph:

"No amount claimed shall include *Products* delivered to the *Place of the Work* unless the *Products* are free and clear of all security interests, liens, and other claims of third parties."

SC#75 Delete paragraphs 5.2.1 to 5.2.7 and replace it with the following:

"5.2.1 Applications for payment on account as provided in Article A-5 of the Agreement - PAYMENT may be made **[insert interval – monthly, quarterly or reference a milestone schedule attached]** as the *Work* progresses. The *Contractor's* applications for payment shall be submitted to the *Owner* on or before **[the 16th of each month]** and the amount claimed shall be for the value of any portion of the *Work* performed and *Products* installed under the *Contract* as of the last day of the applicable payment period less the aggregate of previous payments and holdback amounts.

5.2.2 The *Contractor* shall submit to the *Consultant*, at least 15 calendar days before the first application for payment, a schedule of values of the various parts of the *Work*, divided so as to facilitate evaluation of applications for payment, aggregating the total amount of the Contract Price. The schedule of values

shall be made out in such form and supported by such evidence as the *Consultant* may reasonably direct and when accepted by the *Consultant*, shall be used as the basis for applications for payment, unless it is found to be in error.

5.2.3 Before the *Contractor* submits each application for payment, the *Contractor* shall document the progress of the *Work* on site to establish the value of the Work performed. The *Consultant* or the *Owner* may attend at the site to verify the progress of the *Work* and the value of the *Work* performed as documented by the *Contractor*. No payment shall be claimed for *Products* delivered to the *Place of the Work*, or elsewhere, prior to their incorporation into the *Work* without the *Owner's* prior consent to the delivery and such evidence as the *Consultant* may reasonably require to establish the value and delivery of such *Products*.

5.2.4 The *Contractor* shall submit to the *Consultant*, at least 15 calendar days before each application for payment:

.1 a statement based on the schedule of values;
.2 supporting documentation related to the schedule of values including invoices, receipts, payrolls and equipment rental schedules; and
.3 any other supporting information as the *Owner* or *Consultant* may direct.

If the *Consultant* is not satisfied with the evidence provided, the *Consultant* shall request the *Contractor* to supply further evidence. If the Contractor is in receipt of such a request for further evidence from the *Consultant*, it may not submit an application for payment until 5 calendar days after it has provided the requested evidence.

5.2.5 Each *Contractor's* application for payment shall be in a form prescribed by the *Owner* and shall include the information required for a "Proper Invoice" in Section 6.1 of the *Construction Act* (Ontario) and the following information:

.1 a confirmation that the submittals set out in GC 5.2.4 were submitted at least 15 calendar days prior to the date of submission of the application for payment and that the amounts claimed in such application for payment correspond to the schedule of values submitted in accordance with GC 5.2.4;

.2 evidence as the Consultant may direct in accordance with 5.2.7;

.3 a detailed breakdown showing (a) the costs and expenses incurred or paid by the *Contractor* during the immediately preceding payment period (up until the last working day) to any *Subcontractor*, *Supplier*, employee or labourer for any portion of the *Work* actually performed and for *Products* actually incorporated into the *Work*, and (b) such *Work* and such *Products*;

.4 a *Statutory Declaration* and releases from *Subcontractors* and *Products Suppliers* arising out of or in connection with the *Work* for the relevant dates;

.5 a clearance certificate issued by the WSIB;

.6 the names of *Subcontractors* and *Products Suppliers* to be paid and the amount to be paid to each;

.7 the total amount of expenditures to date and the total estimated expenditures to be made for the remaining balance of the *Work*;

.8 the purchase order number assigned to the Contract;

.9 the information set out in the Proper Invoice Checklist; and

.10 any other information as the Owner or the Consultant may direct.

If an application for payment does not include all information required by this GC 5.2.5, it shall not be considered a "Proper Invoice" for the purposes of the *Construction Act*. If the *Owner* or the *Consultant* determine that an application for payment does not include all information required by this GC 5.2.5, the application for payment shall be rejected and the *Contractor* shall resubmit the application for payment with all required information. For clarity, the *Owner* shall have no obligation to make a payment and the time periods set out in this GC 5.2 and in Section 6.4 of the *Construction Act* shall not apply until the

Contractor has submitted an application for payment that includes all information required by this GC 5.2.5.

5.2.6 Upon receipt of a written request from the *Owner*, the *Contractor* shall also make available to the *Owner* the *Contractor's* files setting forth the addresses of all *Subcontractors*, labourers and *Products Suppliers* and the names of all labourers involved in the *Work*, and *Owner* shall have the right to make and retain copies of the same. The Contractor assumes liability for any and all taxes, fees, duties, withholdings or similar charges, whether domestic or foreign, including, without limitation federal, provincial and local taxes, value added taxes, goods and services taxes, property taxes or other governmental charges. Taxes shall be separately stated by the *Contractor* on each *Contractor's* application for payment.

5.2.7 Applications for payment for *Products* delivered to the *Place of the Work* but not yet incorporated into the *Work* shall be supported by such evidence as the *Consultant* may reasonably require to establish the value and delivery of the *Products*.

5.2.8 Where the *Contractor* is required to perform testing and/or commissioning activities in respect of a portion of the *Work*, an application for payment in respect of such portion of the *Work* may only be submitted once such testing and/or commissioning has been successfully completed by the *Contractor* as determined by the *Consultant*. For clarity, an application for payment submitted prior to successful completion of required testing and/or commissioning shall not be considered a "Proper Invoice" for the purposes of the *Construction Act* and the *Consultant* shall not issue a certificate of payment in respect of such application for payment.

SC#76 Delete paragraph 5.3.1.2 in its entirety and replace it with the following:

".2 the *Consultant* will issue to the *Owner* and copy to the *Contractor*, no later than 14 calendar days after the receipt of the application for payment, a certificate for payment in the amount applied for, or in such other amount as the *Consultant* determines to be properly due. If the *Consultant* issues a certificate for payment for an amount less than the full amount stated on the application for payment, the *Consultant* will issue a *Notice of Non-Payment* in respect of the disputed amount,"

SC#77 Delete paragraph 5.3.1.3 in its entirety and replace it with the following:

".3 the *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 of the Agreement - PAYMENT in the amount set out in the certificate for payment on or before the day that is 28 calendar days following receipt by the *Consultant* of the application for payment"

SC#78 Add the following new paragraphs 5.3.2 to 5.3.6:

"5.3.2 If the *Contractor* fails to provide all documentation as required by GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT, the *Contractor* or *Owner* shall be entitled to return the application for progress payment to the *Contractor* for completion. The review period by the *Consultant* and payment period by the *Owner* will commence upon receipt of a complete application for progress payment.

5.3.3 The issuance of a certificate of payment will constitute a representation by the *Consultant* to the *Owner*, based on the *Consultant's* observations at the *Place of the Work* and the data comprising the application for payment, that to the best of the *Consultant's* knowledge, information and belief, the *Work* has progressed to the point indicated; that in the opinion of the *Consultant*, the quality of the *Work* is in accordance with the *Contract Documents*; and that the *Contractor* is entitled to payment under the *Contract Documents* in the amount certified. In addition, the *Consultant's* final certificate for payment issued pursuant to paragraph 5.7.2 of GC 5.7 – FINAL PAYMENT will constitute a further representation that the conditions precedent to the *Contractor's* being entitled to final payment as set forth in GC 5.7 – FINAL PAYMENT have been fulfilled.

5.3.4 The *Consultant* or the *Owner* may decline to approve an application for payment and may withhold a certificate for payment in whole or in part, if in the *Consultant's* opinion it is unable to make representations to the *Owner* as provided in paragraph 5.3.2 of this GC 5.3 – PROGRESS PAYMENT.

The *Consultant* or the *Owner* may also decline to approve any application for payment or, because of subsequently discovered evidence, testing or subsequent inspections, the *Consultant* or the *Owner* may provide for a withholding of funds to offset a previous payment made pursuant to any certificate for payment previously issued or the *Owner* may refuse to make payment, to such extent as may be necessary in its opinion to protect the *Owner* from loss because of:

.1 defective work not remedied;

.2 third party claims filed or reasonable evidence indicating possible filing of such claims;

.3 failure of the *Contractor* to make payments promptly to *Subcontractors*, *Suppliers* or for labour, *Products* or equipment;

.4 damage to work of other contractors; or

.5 unsatisfactory prosecution of the *Work* by the *Contractor* or any *Subcontractor*.

5.3.5 No payment made by the *Owner* under this *Contract* nor any partial or entire use or occupancy of the *Work* by the *Owner* shall constitute an acceptance of any portion of the *Work* or any *Products* which are not in accordance with the requirements of the *Contract Documents*.

5.3.6 If the *Owner* has reasonable grounds for believing that any amount included in previous applications for payment of the *Contractor* or paid to the *Contractor* by the *Owner* has not been paid to *Subcontractors*, *Suppliers* or other third parties to whom such amounts are due, then the *Owner* may withhold payment in respect of such amount from any future payments until satisfactory evidence of payment is provided to the *Owner* by the *Contractor*."

SC#79 Add the following at the end of paragraph 5.4.1:

"The issuance of the list of items to be completed or corrected does not relieve the *Contractor* from its obligations to correct and/or complete the deficiencies in the performance of the *Contract*."

SC#80 Add the phrase "and correcting any deficient *Work*, as applicable" after the phrase "date for finishing the *Work*." in paragraph 5.4.3.

SC#81 Add the following new paragraphs 5.4.4 to 5.4.6:

"5.4.4 Prior to submitting its written application for *Substantial Performance of the Work*, the *Contractor* shall submit to the *Consultant* all:

.1 guarantees;
.2 warranties;
.3 certificates;
.4 final testing and balancing reports;
.5 distribution system diagrams;
.6 spare parts;
.7 a complete manual for the operation and recommended maintenance of all systems, equipment, materials and finishes, and other similar concepts for use by the *Owner*;
.8 samples;
.9 reports and correspondence from authorities having jurisdiction in the *Place of the Work*;
.10 *Shop Drawings*;
.11 inspection certificates;
.12 a complete set of as-built drawings describing the as-built condition of all aspects of the *Work*;

.13 waste audit reporting;

.14 logs and reports related to compliance with the Federal Halocarbon Regulations (2003), as amended from time to time;

.15 any spare parts or materials left over to the Contractor and required by *Owner*; and

.16 any other materials or documentation required to be submitted under the *Contract Documents*,

together with written proof acceptable to the *Owner* and the *Consultant* that the *Work* has been substantially performed in conformance with the requirements of municipal, governmental, and utility authorities having jurisdiction in the *Place of the Work*. The *Consultant* shall not be required to certify *Substantial Performance of the Work* if the submittals referred to in this paragraph 5.4.4 are not provided by the *Contractor*.

5.4.5 The acceptance by the *Contractor* of the certificate of *Substantial Performance of the Work*, or the acceptance of a certificate by a *Subcontractor* or for any payment due thereunder shall constitute a waiver by either the *Contractor*, or the *Subcontractor*, as the case may be, of all claims whatsoever against the *Owner* under this *Contract* or any trade contract whether for a change in the *Contract Price*, extension of *Contract Time*, or otherwise, except those made in writing prior to the *Contractor's* application for payment upon *Substantial Performance of the Work* and still unsettled.

5.4.6 The *Contractor* shall conform to all requirements of *Applicable Law* in force in the jurisdiction of the *Place* of the *Work* with respect to publishing a copy of the Certificate of Substantial Performance. As applicable, the *Contractor* shall provide suitable evidence of the publication to the *Consultant* and *Owner*. If the *Contractor* fails to publish such notice and the publication of the notice is a requirement of *Applicable Law* in the *Place* of the *Work*, the *Owner* shall be at liberty to publish and back charge the *Contractor* its reasonable costs for doing so."

SC#82 Revise paragraph 5.5.1.1 by adding the following to the end of the sentence: ", and the application by the *Contractor* shall be accompanied by:

.1 a certificate, issued by the agency providing workers' compensation insurance to the *Contractor*, verifying that coverage is in force at the time of making application for payment, and that coverage will remain in force for at least 60 days thereafter; and

.2 a declaration by the *Contractor*, in a form approved by the *Consultant*, verifying performance of the *Work* in compliance with all applicable regulatory requirements respecting environmental protection, fire safety, public safety and occupational health and safety;"

SC#83 Replace the words "submit CCDC 9A 'Statutory Declaration'" in paragraph 5.5.1.2 with the words "submit a *Statutory Declaration*".

SC#84 Replace the period at the end of paragraph 5.5.1.2 with ", and" and add the following new paragraph 5.5.1.3:

".3 submit a statement that no written notices of liens have been received by it."

SC#85 Replace the words "the statement as provided in paragraph 5.5.1" in paragraph 5.5.2 with "the *Statutory Declaration*".

SC#86 Delete paragraph 5.5.3 in its entirety.

SC#87 Replace the word "law" in the last sentence of paragraph 5.5.4 with "*Applicable Law*".

SC#88 Delete paragraph 5.5.5 in its entirety.

SC#89 Delete GC 5.6 – PROGRESSIVE RELEASE OF HOLDBACK in its entirety.

SC#90 Delete paragraph 5.7.1 in its entirety and replace it with the following:

"5.7.1 When the *Contractor* considers that the *Work* is completed, as defined in the lien legislation applicable to the *Place of the Work* or if such definition does not exist, in accordance with other *Applicable Law*, industry practice or provisions which may be agreed to between the parties, the *Contractor* shall submit an application for final payment. The *Contractor's* application for final payment 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, together with,

.1 complete and final as-built *Drawings*;
.2 the *Contractor's* written request for release of the *Deficiency Holdback*, including a statement that no written notices of lien have been received by it;
.3 a *Statutory Declaration*;
.4 a written statement that the *Work* has been performed to the requirements of the *Contract Documents*, and itemizing approved changes in the *Work* and the *Consultant's* written instructions and modifications indicated by the *Governmental Authorities* having jurisdiction;
.5 the evidence of workers' compensation compliance required by paragraph 10.4.1 of GC 10.4 – WORKERS' COMPENSATION;
.6 a certificate of publication in accordance with paragraph 5.4.6 of GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK;
.7 a clearance certificate issued by the WSIB;
.8 such other materials or documentation as may be required to be submitted under the *Contract Documents*; and
.9 any other requirement for an application for payment set out in GC 5.2.5.

The *Work* shall be deemed not to be completed until all of the aforementioned documents have been delivered."

SC#91 Delete paragraphs 5.7.2, 5.7.3 and 5.7.4 and replace them with the following:

"5.7.2: the *Consultan*t will issue to the *Owner* and copy to the *Contractor*, no later than 14 calendar days after the receipt of the application for final payment, a certificate for payment in the amount applied for, or in such other amount as the *Consultant* determines to be properly due. If the *Consultant* issues a certificate for payment for an amount less than the full amount stated on the application for final payment, or does not issue a certificate for payment, the *Consultant* will issue a *Notice of Non-Payment* in respect of the disputed amount.

5.7.3: Subject to the provision of paragraph 10.4.1 of GC 10.4 - WORKERS' COMPENSATION, and any lien legislation applicable to the *Place of the Work*, the *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 of the Agreement - PAYMENT in the amount set out in the certificate for payment on or before the day that is 28 calendar days following receipt by the *Consultant* of the application for final payment."

SC#92 Add the following new GC 5.10 – DEFICIENCY HOLDBACK:

"**GC 5.10 DEFICIENCY HOLDBACK**

5.10.1 Notwithstanding any provisions contained in the *Contract Documents* concerning certification and release of monies to the *Contractor*, the *Owner* reserves the right to establish a deficiency holdback at the time of the review for *Substantial Performance of the Work,* based on a 200% dollar value of the deficiencies to be corrected and work to be completed as listed by the *Consultant* (the "*Deficiency Holdback*"). If the *Consultant* determines, at the time the *Consultant* issues a final certificate for payment as set out in GC 5.7 – FINAL PAYMENT, that there are still outstanding deficiencies or incomplete work, then the *Owner*

may retain some or all of the *Deficiency Holdback* as required for the *Owner* to correct the deficiencies or complete the *Work*. This *Deficiency Holdback* is separate from and in addition to the holdback referred to in the General Conditions (the "*Lien Holdback*"). All references to "holdback" in the *Contract* shall be taken to be references to the "*Lien Holdback*" unless specifically stated to be references to the *Deficiency Holdback*."

SC#93 Add the following new GC 5.11 – RIGHT TO DISPUTE AMOUNTS:

"**GC 5.11 RIGHT TO DISPUTE AMOUNTS**

5.11.1 The *Owner* may, in its sole discretion, pay amounts to the *Contractor* that have not been certified by the *Consultant* for any reason. Any payment by the *Owner* shall not constitute acceptance of any portion of the *Work* or *Products* which are not in accordance with the requirements of the *Contract Documents* or acceptance by the *Owner* of any amounts set out in an application for payment. The *Owner* reserves the right to dispute any amounts set out in an application for payment at any time during the *Contract Time*, whether or not it has previously made a payment in respect of such amounts."

SC#94 Delete paragraph 6.1.2 in its entirety and replace it with the following:

"6.1.2 No changes in the *Work* shall proceed without a written *Change Order* or *Change Directive* signed by the *Owner* and no claim for any change in the *Contract Price* or for any extension or alteration of the *Contract Time* shall be valid except as shown on the *Change Order* or *Change Directive*, as the case may be. No course of conduct or dealing between the parties, no express or implied acceptance of alterations or additions to the *Work* and no claim that the *Owner* has been unjustly enriched by any alteration or addition to the *Work*, whether in fact there is any such unjust enrichment or not, shall be the basis of a claim for payment under this *Contract* or any extension of the *Contract Time* without a *Change Order* or *Change Directive*.

6.1.3 If any change or deviation in, or omission from the *Work* is made by which the amount of work to be done is decreased, or if the whole or a portion of the work is dispensed with, no compensation is claimable by the *Contractor* or any *Subcontractor* for any loss of anticipated profit in respect thereof.

6.1.4 Quotations for changes to the *Work* shall be accompanied by itemized breakdowns together with detailed, substantiating quotations or cost vouchers from *Subcontractors* and *Suppliers,* submitted in a format acceptable to the *Consultant* and including any costs associated with extensions in *Contract Time.*

6.1.5 When both additions and deletions covering related *Work* or substitutions are involved in a change to the *Work*, payment, including *Overhead* and profit, shall be calculated on the basis of the net difference, if any, with respect to that change in the *Work*.

6.1.6 No extension to the *Contract Time* shall be granted for changes in the *Work* unless the *Contractor* can clearly demonstrate that such changes significantly alter the overall construction schedule submitted at the commencement of the *Work.* Extensions of *Contract Time* and all associated costs are to be included in the relevant *Change Order*."

SC#95 Add the following new paragraphs 6.2.3 to 6.2.5:

"6.2.3 The value of a change shall be determined in one or more of the following methods as directed by the *Consultant*:

.1 by estimate and acceptance of a lump sum;

.2 by negotiated unit prices which include the *Contractor's Overhead* and profit, or;

.3 by the actual cost to the Owner, such costs to be the actual cost after all credits included in the change have been deducted, plus the following ranges of mark-up on such costs:

.1 for *Change Orders* with a value of $0 to $15,000 the total *Subcontractor/Supplier* mark-up including *Overhead* and profit shall be 10% and the total *Contractor* mark-up including *Overhead* and profit shall be 5%.

.2 for Change Orders in excess of $15,000, the total Subcontractor/Supplier mark-up including Overhead and profit shall be 5% and the total Contractor mark-up including Overhead and profit shall be 3%.

Such mark-ups are deemed to include all necessary supervision, general account items, general clean-up, small tools, as-built drawings and job safety necessary to perform the change. Additional bonding costs are excluded from the mark-ups but may be included as a cost, using the value declared for bonding by the *Contractor* in its bid to the *Owner*, unless otherwise agreed by the parties.

6.2.4 All quotations will be submitted in a complete manner listing:
.1 quantity of each material;
.2 unit cost of each material;
.3 man hours involved;
.4 cost per hour;
.5 *Subcontractor* quotations submitted listing items 1 to 4 above and item 6 below; and
.6 mark-up.

6.2.5 The *Owner* and the *Consultant* will not be responsible for delays to the *Work* resulting from late, incomplete or inadequately broken down valuations submitted by the *Contractor.*"

SC#96 Amend paragraph 6.3.6.1 by, (a) deleting the final period and replacing it with the following: "calculated as follows:

.1 10% for profit plus 5% for *Overhead* on work by the *Contractor's* own forces up to the value of $15,000 and 5% for profit plus 3% for *Overhead* on work by the *Contractor's* own forces in excess of $15,000; and

.2 10% fee on amounts paid to *Subcontractors* or *Suppliers* under subparagraph 6.3.7.9 for changes up to the value of $15,000 and 5% on changes over $15,000.

Unless a *Subcontractor's* or *Supplier's* price has been approved by the *Owner,* the *Subcontractor* or *Supplier* shall be entitled to its actual net cost as determined in accordance with paragraph 6.3.7, plus 10% for profit and 5% for *Overhead* on such actual net cost for changes in the *Work*, up to the value of $15,000 and 5% for profit and 3% for *Overhead* on such actual net cost changes in the *Work* in excess of $15,000."

SC#97 Add the following new paragraph 6.3.6.4:

".4 Upon receipt of a *Change Directive*, the *Contractor* shall provide the *Owner* a non-binding written estimate of the costs associated with the related change in the *Work* no later than two calendar days of receipt of any such *Change Directive*."

SC#98 Delete paragraph 6.3.6.2 and replace it with the following:

".2 If a change in the *Work* results in a net decrease in the *Contract Price* in excess of $15,000 the amount of the credit shall be the net cost, with deduction for *Overhead* and profit. If a change in the *Work* results in a net decrease in the *Contract Price* of $15,000 or less, the amount of the credit shall be the net cost, without deduction for *Overhead* or profit."

SC#99 Insert the phrase "while directly engaged in the *Work*" after the words "in the direct employ of the *Contractor*" in paragraph 6.3.7.1.

SC#100 Delete paragraphs 6.3.7.1(1) to 6.3.7.1(4) and replace them with the following:

"(1) carrying out the *Work*, including necessary supervisory services;

(2) engaged in the preparation of *Shop Drawings*, fabrication drawings, coordination drawings and *Project* record drawings; or

(3) engaged in the processing of changes in the *Work*."

SC#101 Delete the words "or others" and replace them with ", as approved by the *Owner*, acting reasonably" after the words "delivery cost thereof" in the third line of paragraph 6.3.7.6.

SC#102 Add the phrase ", provided that any such cost in excess of $10,000.00 shall be subject to the *Owner's* prior written approval within 2 *Working Days* after receipt by the *Owner* of written request for such approval from the *Contractor*" to the end of paragraph 6.3.7.10.

SC#103 Delete the words "and damages for infringements of patents and cost of defending suits therefor" from paragraph 6.3.7.12.

SC#104 Add the phrase ", excluding income taxes and capital taxes and other taxes personal to the *Contractor*" immediately prior to the semi-colon at the end of paragraph 6.3.7.14.

SC#105 Add the following to the end of paragraph 6.3.7:

"All other costs attributable to the change in the *Work* including the costs of all administrative or supervisory personnel are included in *Overhead* and profit calculated in accordance with the provisions of paragraph 6.1.5 of GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES."

SC#106 Add the following new paragraphs 6.3.14:

"6.3.14 Notwithstanding anything in this *Contract* to the contrary, the *Owner*, without invalidating the *Contract*, may make minor adjustments in the *Work* consistent with the intent of the *Contract Documents* by delivering a *Change Directive*. Such adjustments in the *Work* shall not involve adjustment to the *Contract Price* or the *Contract Time* if they are within the general scope of the *Work*, if the *Change Directive* indicates that no adjustment shall be made to the *Contract Price* or the *Contract Time* as a result thereof and if such minor adjustments are reasonably inferable in the *Contract Documents* even though not expressly included."

SC#107 Add the following new paragraph 6.4.5

"6.4.5 Notwithstanding anything in the *Contract* to the contrary, the *Contractor* represents and warrants that it has investigated the *Place of the Work* and of all local conditions which might affect its obligations and has satisfied itself as to the nature and extent of the *Work* to be done under the *Contract Documents* and as to the facilities and difficulties attending the execution of the *Work*, including subsurface conditions. Notwithstanding anything in the *Contract* to the contrary, to the extent the *Contractor* has not so investigated, it is willing to assume and does hereby assume responsibility for all loss and damage from any cause whatsoever which such an investigation might have avoided and agrees to indemnify the *Owner* from all risk thereof and of conditions arising and developing in the course of the *Work* which might make it more onerous and more expensive to fulfil or perform than was contemplated or known when this *Contract* was signed. Notwithstanding anything in the *Contract* to the contrary, the *Contractor* acknowledges that in entering into this *Contract* it has not relied upon any information furnished by the *Owner*, or the *Consultant* or any of their respective officers and employees in relation to the *Place of Work*."

SC#108 Delete paragraph 6.5.1 in its entirety and replace it with the following:

"6.5.1 If the *Contractor* is delayed in the performance of the *Work* by a proven act or omission of the *Owner* or the *Consultant* contrary to the provisions of the *Contract Documents*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* determines, and the *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity). In the event of a dispute as to the amount of such costs such dispute shall be resolved in accordance with Part 8 of the General Conditions - DISPUTE RESOLUTION."

SC#109 Revise paragraph 6.5.2 by, (a) deleting the words "in consultation with the *Contractor*." at the end of the first sentence; and (b) and deleting the last sentence and replacing it with the following:

"The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* at the noted per diem rate as the result of such delay provided that said delay does not result from the act or omission of the *Contractor* or anyone employed or engaged by *Contractor* directly or indirectly. The *Owner* shall not be responsible for any consequential, indirect or special damages (including without limitation, loss of profits, loss of opportunity or loss of productivity)."

SC#110 Delete paragraph 6.5.3 in its entirety and replace with the following:

"6.5.3 If the *Contractor* is delayed in the performance of the *Work* by *Force Majeure*, then, except as otherwise provided in this GC 6.5, the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The extension of time shall not be less than the time lost as a result of the event causing the delay, unless the *Contractor* agrees to a shorter extension. The *Contractor* shall not be entitled to payment for costs incurred by such delays unless such delays result from the actions of the *Owner."*

SC#111 Revise paragraph 6.5.4 by, (a) replacing "10 *Working Days*" with "five *Working Days*"; and (b) adding the following to the end of the paragraph:

"A notice of claim with respect to any delay shall indicate the reasons for such delay and the best estimate of the *Contractor* as to its estimated duration and the likely effect upon the time to complete the *Work*. Upon termination of the circumstances giving rise to the delay, the *Contractor* shall give to the *Owner* a *Notice in Writing* of the termination of the delay."

SC#112 Add the following new paragraphs 6.5.6, 6.5.7 and 6.5.8:

"6.5.6 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone directly or indirectly employed or engaged by the *Contractor,* or by any cause within the *Contractor's* control, then the *Contract Time* shall not be extended. The *Owner* shall be reimbursed by the *Contractor* for all reasonable costs incurred by the *Owner* as the result of such delay, including, but not limited to, the cost of all additional services required by the *Owner* from the *Consultant* or any sub-consultants, project managers, or others employed or engaged by the *Owner*, and in particular, the costs of the *Consultant's* services during the period between the date of *Substantial Performance of the Work* stated in Article A-1, as the same may be extended through the provision of these General Conditions, and any later or actual date of *Substantial Performance of the Work* achieved by the *Contractor*.

6.5.7 For clarity, no claim for delay shall be made and the *Contract Time* shall not be extended due to climatic or weather conditions unless such weather conditions constitute *Force Majeure*.

6.5.8 The *Contractor* shall be responsible for the care, maintenance and protection of the *Work* in the event of any delay in the performance of the *Work* in accordance with paragraphs 6.5.1, 6.5.2 or 6.5.3. In the event of such delay in the performance of the *Work*, the *Contractor* shall be reimbursed by the *Owner* for the reasonable costs incurred by the *Contractor* for such care, maintenance and protection, but excluding the costs of the *Contractor's* head office personnel. The *Contractor's* entitlement to costs pursuant to this

paragraph 6.5.8, if any, shall be in addition to amounts, if any, to which the *Contractor* is entitled pursuant to paragraphs 6.5.1, 6.5.2 or 6.5.3."

SC#113 Delete GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE in its entirety.

SC#114 Add the words "or a proposal" after the word "assignment" in paragraph 7.1.1.

SC#115 Revise paragraph 7.1.2 by, (a) inserting the phrase "or fails or neglects to maintain the latest *Construction Schedule*" after the word "properly" in the first line; and (b) inserting the phrase "including failure of the *Contractor* to pay its *Subcontractors*, suppliers or employees on a timely basis" after the word "degree" in the second line.

SC#116 Add the following after the words "as may be subsequently agreed in writing by the parties,": "or if the *Contractor* is delayed for 30 *Working Days* or longer in the performance of the *Work* and notwithstanding anything else herein provided,".

SC#117 Revise paragraph 7.1.5.3 by, (a) inserting the phrase "and all other costs incurred by the *Owner* as a result of such termination" after the word "WARRANTY"; and (b) inserting the phrase "including expenses" after the word "*Work*".

SC#118 Delete paragraph 7.1.6 in its entirety.

SC#119 Add the following new paragraphs 7.1.7 to 7.1.13:

"7.1.7 In addition to its right to terminate the *Contract* set out herein, the *Owner* may terminate this *Contract* at any time for any other reason and without cause upon giving the *Contractor* 15 *Working Days' Notice in Writing* to that effect. In such event, the *Contractor* shall be entitled to be paid for all *Work* performed to the date of termination including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the termination of the *Contract*, but in no event shall the *Contractor* be entitled to be compensated for any loss of profit on unperformed portions of the *Work*, or for any indirect, special, or consequential losses or damages incurred. If the Contractor and /or its *Subcontractors* fail to comply with the *Occupational Health and Safety Act*, R.S.O., 1990, c. O.1, as amended from time to time and Ontario Regulation 213/91, as amended from time to time, or any other relevant and current legislation pertaining to health and safety work practices on a work site, the Owner shall have the right to immediately terminate the Contract.

7.1.8 The *Owner* may suspend *Work* under this *Contract* at any time for any reason and without cause upon giving the *Contractor* 10 days' *Notice in Writing* to that effect. In such event, the *Contractor* shall be entitled to be paid for all *Work* performed to the date of suspension and be compensated for all actual costs incurred arising from the suspension, including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the suspension of the *Work*, but in no event shall the *Contractor* be entitled to be compensated for any indirect, special, or consequential losses or damages incurred.

7.1.9 In the case of either a termination of the *Contract* or a suspension of the *Work*, the *Contractor* shall use its best commercial efforts to mitigate the financial consequences to the *Owner* arising out of the termination or suspension, as the case may be.

7.1.10 Upon the resumption of the *Work* following a suspension of the *Work*, the *Contractor* will endeavour to minimize the delay and financial consequences arising out of the suspension.

7.1.11 The *Contractor's* obligations under the *Contract* as to quality, correction, and warranty of the *Work* performed by the *Contractor* up to the time of termination or suspension shall continue after such termination of the *Contract* or suspension of the *Work* and shall survive termination by the *Contractor*.

7.1.12 In the event of termination pursuant to paragraph 7.1.7, the *Owner* shall be entitled to, (a) take possession of the *Work* and the *Products* at the *Place of the Work;* (b) subject to the rights of third

parties, utilize the *Construction Equipment* at the *Place of the Work* on mutually acceptable rental rates to be paid to the *Contractor;* and (c) complete the *Work*.

7.1.13 If the *Owner* terminates this *Contract* in accordance with the provisions of this *Contract*, the *Contractor* shall immediately cease the *Work*, place no additional orders and if requested by the *Owner*, the *Contractor* shall use best efforts to cancel any existing orders, subcontracts and contracts specified by the *Owner* upon terms satisfactory to the *Owner*. Notwithstanding any termination pursuant to this *Contract*, the *Contractor* shall take such steps as are reasonably necessary to preserve and protect *Work* completed and in progress and to protect materials, supplies, plant and equipment at the *Place of the Work* or in transit, pending the *Owner's* instructions, and the *Contractor* shall dispose of same in accordance with the *Owner's* instructions. Should this *Contract* be terminated by the *Owner* for convenience in accordance with paragraph 7.1.7, the *Contractor* shall be reimbursed for any costs it may incur in connection with the preservation or protection of the *Work*."

SC#120 Delete paragraph 7.2.2 in its entirety.

SC#121 Delete paragraphs 7.2.3.1 to 7.2.3.3 in their entirety.

SC#122 Revise paragraph 7.2.3.4 by deleting the words "except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER".

SC#123 Delete the period at the end of paragraph 7.2.5 and replace it with ", including the costs of demobilization. The Contractor shall not be entitled to any recovery for consequential, indirect or special damages."

SC#124 Add the following new paragraphs 7.2.6 and 7.2.7:

"7.2.6 The *Contractor* shall not be entitled to give notice of the *Owner's* default or terminate the *Contract* in the event the *Owner* withholds certificates or payment or both in accordance with the *Contract* because of:

.1 the *Contractor's* failure to pay all legitimate claims promptly; or
.2 the failure of the *Contractor* to discharge construction liens which are registered against the title to the *Place of the Work.*

7.2.7 If the Contractor stops the *Work* or terminates the *Contract* as provided in this GC 7.2 – CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, *Contractor* shall ensure the *Place of the Work* is left in a secure and safe condition as required by all authorities having jurisdiction at the *Place of the Work* and the *Contract Documents*."

SC#125 Add the phrase "Unless either party has referred a matter to adjudication pursuant to Section 13.5 of the *Construction Act*," to the beginning of paragraph 8.1.1.

SC#126 Delete paragraph 8.1.2 in its entirety and replace it with the following:

"8.1.2 If a dispute arises under the *Contract* in respect of a matter in which the *Consultant* has no authority under the *Contract* to make a finding, and provided that neither party has referred a matter to adjudication pursuant to Section 13.5 of the *Construction Act*, the procedures set out in paragraph 8.1.3 and

paragraphs 8.2.3 to 8.2.8 of GC 8.2 - NEGOTIATION, MEDIATION AND ARBITRATION, and in GC 8.3 - RETENTION OF RIGHTS apply to that dispute with the necessary changes to detail as may be required."

SC#127 Add the following new paragraph 8.1.4:

"8.1.4 Either party may refer a matter set out in Section 13.5(1) of the *Construction Act* to adjudication pursuant to Part II.1 of the *Construction Act*. The parties agree that no other matter may be referred to adjudication unless the parties agree in writing."

SC#128 Add the following new paragraph 8.1.5:

"8.1.5 The parties agree that no other matter may be referred to adjudication unless the parties agree in writing. The parties agree and consent that any *Construction Act Document* may be sent to the other party(s) and any adjudicator via electronic mail and that service of such *Construction Act Documents* will be effective at the time and date of sending, except that where an electronic mail message is sent after 4:00 p.m. Eastern Time, service of such *Construction Act Documents* will be deemed to be effective the following day. The e-mail message to which a *Construction Act Document* is attached shall include the sender's name, address, telephone number and the name and telephone number of a person to contact in the event of a transmission problem. Any *Construction Act Documents* shall be served in accordance with this section unless the parties subsequently agree otherwise in writing or an adjudicator directs otherwise."

SC#129 Add the following new paragraph 8.2.9:

"8.2.9 Notwithstanding anything in GC 8 – DISPUTE RESOLUTION to the contrary, if any *Person* that is not a party to this *Contract* brings a claim against the *Owner* by way of an application, action, counterclaim, third party claim or any other manner which also involves or relates in any way to a dispute or an issue in dispute between the *Owner* and the *Contractor*, then the parties shall cause all such claims and disputes to be resolved in the court having jurisdiction over the claim brought against the *Owner* by such third party."

SC#130 Add the following to the end of paragraph 9.1.1: ", provided, however, the foregoing shall not excuse the *Contractor* from its own negligence or the negligence of those for whom the *Contractor* is responsible at law nor for any breach of the *Contract* by the *Contractor.*"

SC#131 Delete paragraph 9.1.1.1 and replace it with the following:

".1 errors in the Contract Documents, except those prepared or to be prepared by the Contractor;"

SC#132 Add the following new paragraph 9.1.5:

"9.1.5 "If the *Contractor* has caused damage to the work of another contractor on the *Project*, the *Contractor* agrees upon due notice to settle with the other contractor by negotiation or arbitration. If the other contractor makes a claim against the *Owner* on account of damage alleged to have been so sustained, the *Owner* shall notify the *Contractor* and may require the *Contractor* to defend the action at the *Contractor's* expense. The *Contractor* shall satisfy a final order or judgment against the *Owner* and pay the costs incurred by the Owner arising from such action."

SC#133 Delete paragraph 9.2.5.3 in its entirety and replace it with the following:

".3 take all reasonable steps, including stopping the *Work* to ensure that,

(a) no person's exposure to any toxic or hazardous substances exceeds any applicable time weighted levels prescribed by *Applicable Law* at the *Place of the Work*, and

(b) no property is injured or destroyed as a result of exposure to or the presence of the Hazardous Material."

SC#134 Delete the period at the end of the sentence and replace it with ", and" in paragraph 9.2.5.4.

SC#135 Add the following new paragraph 9.2.5.5:

".5 in addition to the steps described in subparagraph 9.2.5.3, take any further steps it deems necessary to mitigate or stabilize any conditions resulting from encountering toxic or hazardous substances or materials."

SC#136 Add the following to paragraph 9.2.6, after the word "responsible" in the second line:

"or whether any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damages to the property of the *Owner* or others,".

SC#137 Add the phrase ", but excluding any consequential, indirect or special damages, and any claims for loss of profits or opportunity" after the word "delay" in paragraph 9.2.7.3.

SC#138 Add the following to paragraph 9.2.8, after the word "responsible" in the second line:

"or whether any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damages to the property of the *Owner* or others,".

SC#139 Add the following new paragraphs 9.2.10 to 9.2.12:

"9.2.10 "The *Contractor* shall indemnify and hold harmless the *Owner*, *Consultant*, other consultants, *Subcontractors*, *Suppliers* and their agents and employees, from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of or resulting from exposure to, or the presence of, toxic or hazardous substances or materials which were brought onto or made at the *Place of the Work* after the *Contractor* commenced the *Work*. This obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity set out in GC 12.1 - INDEMNIFICATION or which otherwise exist respecting a *Person* or party described in this paragraph.

9.2.11 Without limiting its other obligations under this GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES, the *Contractor* acknowledges that its obligations under the *Contract* include compliance with EPA, CEPA and TGDA. The *Contractor* acknowledges that the *Owner* may suffer loss and damage should the *Contractor* fail to comply with EPA, CEPA and TGDA and agrees to indemnify and hold harmless the *Owner* with respect to any loss or damage to which the *Owner* is exposed by the *Contractor's* failure to comply. The *Contractor* expressly agrees that such loss and damage shall be included within the scope of the *Contractor's* indemnity described in paragraph 12.1.1. The *Contractor* acknowledges that should it fail to comply with EPA, CEPA and TGDA, such failure will constitute a failure to comply with the *Contract* to a substantial degree within the meaning of paragraph 7.1.2 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.

9.2.12 The *Contractor* shall comply with all requirements of the Federal Halocarbon Regulations (2003) and all subsequent amendments thereto insofar as the Federal Halocarbon Regulations (2003) are applicable to the *Work*."

SC#140 Delete paragraph 9.4.1 in its entirety and replace it with the following:

"9.4.1 "The *Contractor* shall be solely responsible for construction safety at the *Place of the Work* and for compliance with the rules, regulations and practices required by the applicable construction health and safety legislation and shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the *Work*. The *Contractor* shall assume overall responsibility, carry out and discharge all duties and obligations of, and be designated or registered as the "prime contractor", "constructor" or equivalent role with respect to the health and construction safety legislation applicable to the *Place of the Work* and the *Project*, including responsibility for all health and safety at the *Place of the Work* and over the *Owner* and the *Owner's* other contractors. In order to effectively exercise that responsibility, the *Owner* authorizes the *Contractor* to supervise the *Owner's* own forces at the *Place of the Work* with respect to applicable health and construction safety matters and, where reasonably necessary due to health or construction safety considerations, deny the *Owner's* own forces or its other contractors access to the *Place of Work*."

SC#141 Add the following new paragraphs 9.4.2 to 9.4.8:

"9.4.2 The *Owner* has authority in an emergency to stop the progress of the *Work* whenever in its opinion such stoppage may be necessary to ensure the safety of life, or of the *Work* or neighbouring property. In the event that the *Contractor* receives such notice, it shall immediately stop the *Work* and secure the *Project* site. The *Owner's* authority in an emergency to stop the progress of the *Work* includes the authority to make changes in the *Work*, and to order, assess and award the cost of such work, extra to the *Contract* or otherwise, as may in its opinion may be necessary. The Owner shall within two *Working Days* confirm in writing any such instructions.

9.4.3 Prior to commencement of the *Work*, the *Contractor* shall ensure that:

.1 it submits to the Owner a current clearance certificate issued by the Workplace Safety and Insurance Board or equivalent in the Province of the Place of the Work ("**WSIB**") and confirmation from the WSIB of the Contractor's current WSIB CAD-7 performance rating;

.2 it submits to the Owner copies of the Contractor's insurance coverage that has application to the Project;

.3 it submits to the Owner documentation of the Contractor's in-house safety-related programs;

.4 it submits to the Owner documentation of the Contractor's site specific Health and Safety plan;

.5 a copy of the Notice of Project is filed with the Ministry of Labour naming itself as "constructor" under the occupational health and safety legislation applicable to the Place of the Work, if required, or a copy of any provincially prescribed "Notice of Project" and all necessary permits, notifications and related health and safety documents;

.6 each work space is properly delineated and protected by the necessary safety measures required by such legislation;

.7 it notifies the Owner of any infraction or non-compliance with the Contractor's health and safety directions, instructions, plans or policies by any of the Owner's own forces or its other contractors and takes immediate action to ensure no further infractions or non-compliance;

.8 all other contractors, labour, Consultant, personnel and site staff are fully familiar with the safety policy and procedure set down for the Project and shall ensure that the Contractor is responsible

for ensuring such procedure in accordance with the rules, regulations and law of the work place; and

.9 it conducts an inspection of the *Place of the Work* and submits to the Owner pre and post inspection reports.

9.4.4 The *Contractor* shall file any notices or any similar document required pursuant to the *Contract* or the safety statutes and regulations in force at the *Place of the Work*. This duty of the *Contractor* will be considered to be included in the *Work* and no separate payment therefore will be made to the *Contractor*.

9.4.5 The *Contractor* shall promptly report in writing to the *Owner* and the *Consultant* all accidents of any sort arising out of or in connection with the performance of the *Work*, whether on or adjacent to the job site, giving full details and statement of witnesses. If death or serious injuries or damages are caused, the accident shall be promptly reported by the *Contractor* to the *Owner* and the *Consultant* in addition to any reporting required under the applicable safety regulations.

9.4.6 The *Contractor* hereby represents and warrants to the *Owner* that appropriate health and safety instruction and training have been provided and will be provided to the *Contractor's* employees, *Subcontractors* and *Suppliers*, before the *Work* is commenced and agrees to provide the *Owner*, if requested, proof of such instruction and training.

9.4.7 The *Contractor* shall indemnify and save harmless the *Owner*, its agents, officers, directors, employees, consultants, successors and assigns from and against the consequences of any and all safety infractions committed by the *Contractor* under the occupational health and safety legislation applicable in the *Place of Work*, including the payment of legal fees and disbursements on a solicitor and client basis.

9.4.8 The *Owner* undertakes to include in its contracts with other contractors and/or in its instructions to its own forces the requirement that the other contractors or own forces, as the case may be, will comply with health and safety directions, instructions, plans and policies of the *Contractor* with respect to coordination of work and with respect to occupational health and safety related matters and require its other contractors to provide the *Contractor* with a written and signed acknowledgement and agreement to that effect. The text of such instructions is attached to these Supplementary Conditions as Exhibit **[•]**."

SC#142 Add the following phrase after the word "*Owner"* in paragraph 9.5.2.4: "and the *Consultant*, and their respective agents and employees,".

SC#143 Add "but excluding any consequential, indirect or special damages, and any claims for loss of profit or opportunity" before ", and" in paragraph 9.5.3.3.

SC#144 Delete paragraph 9.5.3.4 in its entirety.

SC#145 Delete paragraph 10.1.2 in its entirety and replace it with the following:

"10.1.2 Any increase or decrease in cost to the *Contractor* due to changes in government sales taxes, custom duties or excise taxes occurring after the date of the tender shall increase or decrease the *Contract Price* accordingly. For greater certainty, the parties agree that the *Contractor* is not entitled to any mark-up for profit, *Overhead* or otherwise in connection with any increase in taxes or duties and that the *Contract Price* will be increased only by the actual amount of increased taxes or duties actually paid to the government. If any such taxes or duties be retroactively reduced, the *Owner* shall be entitled to withhold payment to the *Contractor* of a sum equal to the amount of such tax or duty reduction but only after the *Contractor* has received the benefit of such tax or duty reduction."

SC#146 Add the following new paragraphs 10.1.3 to 10.1.5:

"10.1.3 When an exemption from or recovery of, government sales taxes, customs duties or excise taxes is applicable to the *Contract*, the *Contractor* shall, at the request of the *Owner* (or its agent) assist, join in, or make application for any exemption, recovery or refund of all such taxes and duties and all amounts recovered or exemptions obtained shall be for the sole benefit of the *Owner*. The *Contractor* agrees to

endorse over to the *Owner* any cheques received from *Governmental Authorities* as may be required to implement the foregoing.

10.1.4 The *Contractor* shall maintain accurate records of equipment, material and component costs reflecting the taxes, customs duties, excise taxes and value added taxes paid.

10.1.5 Customs duties penalties, or any other penalty, fine or assessment levied against the *Contractor* shall not be treated as a tax or customs duty for purposes of this GC 10.1."

SC#147 Delete paragraphs 10.2.2 and 10.2.3 in their entirety and replace them with the following:

"10.2.2 The *Owner* shall obtain and pay for development approvals, building permit, permanent easements, and rights of servitude necessary for the performance of the *Work*.

10.2.3 The *Contractor* shall be responsible for the procurement of all permits, licences, inspections, and certificates, which are necessary for the performance of the *Work* other than those that are the responsibility of the *Owner* pursuant to paragraph 10.2.2. All necessary permits, licenses and certificates shall include the approval of *Drawings and Specifications* required by applicable provincial labour legislation. The *Contract Price* includes the cost of these permits, licences, inspections, and certificates, and their procurement."

SC#148 Delete first sentence of paragraph 10.2.5 and replace it with the following: "The *Contractor* shall, to the extent only of the *Contractor's* expertise, experience and knowledge, be responsible for verifying that the *Contract Documents* are in compliance with *Applicable Laws*, ordinances, rules, regulations, or codes relating to the *Work*."

SC#149 Delete the phrase "performs work knowing it to be contrary" in the first sentence of paragraph 10.2.6 and replace it with the phrase "performs work that is contrary".

SC#150 Delete paragraph 10.2.7 in its entirety.

SC#151 Delete GC 11.1 – INSURANCE in its entirety and replace it with the following:

"**GC 11.1 INSURANCE**

11.1 Without restricting the generality of GC 12 – INDEMNIFICATION, WAIVER OF CLAIMS AND WARRANTY, the *Contractor* shall provide, maintain, and pay for the following insurance coverages. Unless otherwise stipulated, the duration of each insurance policy shall be from the date of commencement of the *Work* until the expiration of the warranty periods set out in the *Contract Documents*. Prior to commencement of the *Work* and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the *Contractor* shall promptly provide the *Owner* with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any amending endorsements:

.1 **General Liability Insurance**

General liability insurance shall be in the name of the *Contractor,* with the *Owner* and the *Consultant* named as additional insureds, with limits of not less than $10,000,000 inclusive per occurrence for bodily injury, death, and damage to property, including loss of use thereof, for itself and each of its employees, *Subcontractors* and/or agents. The insurance coverage shall not be less than the insurance required by IBC Form 2100, or its equivalent replacement, provided that IBC Form 2100 shall contain the latest edition of the relevant CCDC endorsement form. To achieve the desired limit, umbrella, or excess liability insurance may be used. All liability coverage shall be maintained for completed operations hazards from the date of *Substantial Performance of the Work*, as set out in the certificate of *Substantial Performance of the Work,* on an ongoing basis for a period of six years following *Substantial Performance of the Work*. Where the *Contractor* maintains a single, blanket policy, the addition of the *Owner* and the *Consultant* is limited to liability arising out of the *Project* and all operations necessary or incidental thereto. The policy

shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of any cancellation and of change or amendment restricting coverage.

.2 **Automobile Liability Insurance**

Automobile liability insurance in respect of licensed vehicles shall limits of not less than $2,000,000 inclusive per occurrence for bodily injury, death and damage to property, covering all licensed vehicles owned or leased by the *Contractor*, and endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of any cancellation, change or amendment restricting coverage. Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles registered in the name of the *Contractor.*

.3 **Property and Boiler and Machinery Insurance**

.1 Builder's Risk property insurance shall be in the name of the *Contractor* with the *Owner* and the *Consultant* named as additional insureds. The policy shall insure against all risks of direct physical loss or damage to the property insured which shall include all property included in the *Work*, whether owned by the *Contractor* or the *Owner* or owned by others, so long as the property forms part of the *Work*. The property insured also includes all materials and supplies necessary to complete the *Work*, whether installed in the *Work* temporarily or permanently, in storage on the *Project* site, or in transit to the *Project* site, as well as temporary buildings, scaffolding, falsework forms, hoardings, excavation, site preparation and similar work. The insurance shall be for not less than the sum of the amount of the *Contract Price* and the full value of products that are specified to be provided by the *Owner* for incorporation into the *Work*, if applicable, with the deductible of $10,000 payable by the contractor. The insurance shall include the foregoing and, otherwise, shall not be less than the insurance required by IBC Form 4042 or its equivalent replacement provided that the IBC Form 4042 shall include the latest addition of the relevant CCDC endorsement form. The coverage shall be based on a completed value form and shall be maintained continuously until 10 days after the date of the final certificate of payment.

.2 Boiler and machinery insurance shall be in the name of the *Contractor*, with the *Owner* and the *Consultant* named as additional insureds, for not less than the replacement value of the boilers, pressure vessels and other insurable objects forming part of the *Work*. The insurance provided shall not be less than the insurance provided by the "Comprehensive Boiler and Machinery Form" and shall be maintained continuously from commencement of use or operation of the property insured and until 10 days after the date of the final certificate for payment.

.3 The policies shall allow for partial or total use or occupancy of the *Work.*

.4 The policies shall provide that, in the case of a loss or damage, payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. The *Contractor* shall act on behalf of the *Owner* for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the *Contractor* shall proceed to restore the *Work*. Loss or damage shall not affect the rights and obligations of either party under the *Contract* except that the *Contractor* shall be entitled to such reasonable extension of the *Contract Time,* relative to the extent of the loss or damage, as the *Consultant* may determine in consultation with the *Contractor* and the *Owner*.

.5 The *Contractor* shall be entitled to receive from the *Owner*, in addition to the amount due under the *Contract*, the amount at which the *Owner's* interest in restoration of the *Work* has been appraised, such amount to be paid as the restoration of the *Work* proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT. In addition, the *Contractor* shall be entitled to receive from the payments made by the insurer the amount of the *Contractor's* interest in the restoration of the *Work*.

.6 In the case of loss or damage to the *Work* arising from the work of other contractors, or the *Owner's* own forces, the *Owner*, in accordance with the *Owner's* obligations under paragraph 3.2.2.4 of GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, shall pay the *Contractor* the cost of restoring the *Work* as the restoration of the *Work* proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT.

.4 **Contractors' Equipment Insurance**

"All risks" contractors' equipment insurance covering construction machinery and equipment used by the *Contractor* for the performance of the *Work*, excluding boiler insurance, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner.* The policies shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of cancellation, change or amendment restricting coverage. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance of his equipment, the *Owner* agrees to waive the equipment insurance requirement.

11.1.2 The *Contractor* shall be responsible for deductible amounts under the policies except where such amounts may be excluded from the *Contractor's* responsibility by the terms of GC 9.1 - PROTECTION OF WORK AND PROPERTY and GC 9.2 - TOXIC AND HAZARDOUS SUBSTANCES.

11.1.3 Where the full insurable value of the *Work* is substantially less than the *Contract Price*, the *Owner* may reduce the amount of insurance required to waive the course of construction insurance requirement.

11.1.4 If the *Contractor* fails to provide or maintain insurance as required by the *Contract Documents*, then the *Owner* shall have the right, but without obligation, to provide and maintain such insurance and provide evidence of same to the *Contractor*. The *Contractor* shall pay the costs thereof to the *Owner* on demand, or the *Owner* may deduct the amount that is due or may become due to the *Contractor*.

11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the *Place of the Work*.

11.1.6 All insurance policies shall contain a cross-liability and severability of interest endorsement."

SC#152 Delete GC 11.2 – CONTRACT SECURITY in its entirety and replace it with the following:

"**GC 11.2 – CONTRACT SECURITY**

11.2.1 The *Contractor* shall, prior to the commencement of the *Work* or within the time specified by the *Owner*, provide to the *Owner* the following contract security and any other contract security specified in the *Contract Documents*:

.1 a performance bond for 50% of the *Contract Price; and*

.2 a labour and materials bond for 50% of the *Contract Price*.

Such bonds shall be issued by a duly licensed surety company authorized to transact the business of suretyship in the province or territory of the Place of the Work acceptable to the *Owner* and shall be maintained in good standing until the fulfillment of the *Contract*. The form of such bonds shall be in accordance with the latest edition of the CCDC approved bond forms."

SC#153 Delete GC 12.1 – INDEMNIFICATION in its entirety and replace it with the following:

"**GC 12.1 – INDEMNIFICATION**

12.1.1 The *Contractor* shall indemnify and hold harmless the *Owner*, its directors, officers, employees and agents, harmless from and against any and all claims, damages, losses, liabilities, demands, judgments, causes of action, legal proceedings, economic loss (including lost profits), penalties or other sanctions

and any and all costs and expenses arising in connection therewith (including legal fees and disbursements on a substantial indemnity basis) (hereinafter called "claims"), that may, directly or indirectly, result from, arise out of, or be in relation to, (a) the performance by *Contractor*, or by any of its employees, *Subcontractors, Suppliers* or other *Persons* for whom it is responsible, of the *Work* (including, without limitation, claims that directly or indirectly arise out of, or are attributable to, loss of use or damage to the *Work*, the *Owner's* property or equipment, the *Contractor's* property or equipment or equipment or property adjacent to the *Place of the Work* or death or injury to the *Contractor's* personnel); (b) any breach, violation or non-performance by the *Contractor*, or by any of its employees, *Subcontractors* or other persons for whom it is responsible, of any term, condition, representation, warranty or covenant contained in this *Contract*; (c) any failure or delay by the *Contractor* to make or maintain any registration, coverage or payments or file any return or information required by *Applicable Law*; (d) any negligent act or omission of the *Contractor* or any of its employees, *Subcontractors, Suppliers* or other *Persons* for whom it is responsible at law or in equity; (e) any claim that the *Work*, or its use by the University, directly or indirectly, violate or infringe any intellectual property right or other proprietary right of any person; and/or (f) any failure of the *Contractor* or any *Subcontractor* to comply with the requirements of the *GLC Provision*.

12.1.2 The provisions of GC 12.1 - INDEMNIFICATION shall survive the termination of the *Contract,* howsoever caused and no payment or partial payment, no issuance of a final certificate of payment and no occupancy in whole or in part of the *Work* shall constitute a waiver or release of any of the provisions of GC 12.1 - INDEMNIFICATION."

SC#154 Delete GC-12.2 in its entirety and replace with the following:

"**GC 12.2 WAIVER OF CLAIMS**

12.2.1 Waiver of Claims by *Owner*

As of the date of the final certificate for payment, the *Owner* expressly waives and releases the *Contractor* from all claims against the *Contractor* including without limitation those that might arise from the negligence or breach of contract by the *Contractor* except one or more of the following:

.1 those made in writing prior to the date of the final certificate for payment and still unsettled;

.2 indemnification for claims advanced against the *Owner* by third parties for which a right of indemnification may be asserted by the *Owner* against the *Contractor* pursuant to the provisions of this *Contract*;

.3 those arising from a breach of *Applicable Law* by the *Contractor*;

.4 those arising from the provisions of GC 12.1 – INDEMNIFICATION or GC 12.3 – WARRANTY;

.5 those arising from the provisions of GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES or from the provisions of GC 9.5 – MOULD and arising from the *Contractor* bringing or introducing any toxic hazardous substances and materials, or mould to the *Place of Work* after the *Contractor* commences the *Work*;

.6 damages arising from the *Contractor's* actions which result in substantial defects or deficiencies in the *Work* where "substantial defects or deficiencies" means any defect or deficiency in the Work where the reasonable cost of repair of such defect or deficiency exceeds: (a) for a *Contract Price* of $2,000,000 or less, the sum of $50,000, before applicable taxes; and (b) for a *Contract Price* of $2,000,000 or more, the sum of $100,000, before applicable taxes;

.6 those made in writing within a period of 2 years from the date of *Substantial Performance* of the *Work*, as set out in the certificate of *Substantial Performance* of the *Work* and arising from any liability of the *Contractor* for damages resulting from the *Contractor's* performance of the *Contract* with respect to substantial defects or deficiencies in the *Work* for which the *Contractor* is proven responsible.

12.2.2 Waiver of Claims by *Contractor*

As of the date of the final certificate for payment, the *Contractor* expressly waives and releases the *Owner* from all claims which it has, or reasonably ought to have knowledge of that could be advanced, against the *Owner* including without limitation those that might arise from the negligence or breach of contract by the *Owner* except:

.1 those made for which *Notice in Writing* was given prior to the *Contractor's* application for final payment and still unsettled; and

.2 claims for which a right of indemnity could be asserted by the *Contractor* pursuant to the provisions of paragraphs 12.1.4 or 12.1.5 of GC 12.1 – INDEMNIFICATION.

12.2.3 GC 12.2 – WAIVER OF CLAIMS shall govern over the provisions of paragraph 1.3.1 of GC 1.3 – RIGHTS AND REMEDIES.

12.2.4 "*Notice in Writing* of a claim" as provided for in GC 12.2 – WAIVER OF CLAIMS to preserve a claim or right of action which would otherwise, by the provisions of GC 12.2 – WAIVER OF CLAIMS, be deemed to be waived, must include the following:

.1 a clear and unequivocal statement of the intention to claim;
.2 a statement as to the nature of the claim and the grounds upon which the claim is based; and
.3 a statement of the estimated quantum of the claim.

12.2.5 The party giving "*Notice in Writing* of claim" as provided for in GC 12.2 – WAIVER OF CLAIMS shall submit within a reasonable time a detailed account of the amount claimed.

12.2.6 Where the event or series of events giving rise to a claim under paragraphs 12.2.1 or 12.2.2 has a continuing effect, the detailed account submitted under paragraph 12.2.5 shall be considered to be an interim account and the party making the claim shall submit further interim accounts, at reasonable intervals, giving the accumulated amount of the claim and any further grounds upon which it is based. The party making the claim shall submit a final account after the end of the effects resulting from the event or series of events.

12.2.7 No action or failure by the *Owner* will constitute a waiver of any right or duty afforded either of them under the *Contract*, nor shall any such action or failure to act constitute any approval of or acquiescence in the breach thereunder except as may be specifically agreed in writing."

Delete paragraph 12.3.1 in its entirety and replace with the following:

"12.3.1 The *Contractor* warrants that the *Work* is free from any defect in workmanship and materials and complies in all respects with the provisions of the *Contract Documents* and the *Contractor* agrees to correct promptly, at its own expense, defects or deficiencies in the Work which appear (i) in the case of *Work* covered by the extended warranties set out in the *Specifications*, prior to the end of the extended warranty period, and (ii) in the case of all other *Work*, prior to and during the period of two years from the date of *Substantial Performance of the Work*. The *Contractor* shall also pay at its own expense for any damage to other work or property or to *Persons* resulting from any defects or deficiencies in the *Work* which appear during the warranty period. The carrying out of the replacement work and the making good of all defects shall be executed at such time as is convenient to the *Owner* and this may entail overtime work on the part of the *Contractor*. Additional charges for overtime work in this regard shall be borne by the *Contractor* at its expense. These warranties shall enure to the benefit of any subsequent owner of the Project or any part thereof."

SC#155 Delete the word “The” from the beginning of paragraph 12.3.2 and replace it with “Subject to paragraph 3.4.1 of GC 3.4 – DOCUMENT REVIEW, the”.

SC#156 Delete the words “one year” from paragraph 12.3.3.

SC#157 Add the phrase “Except for the provisions of paragraph 12.3.6 and subject” to the beginning of paragraph 12.3.4 and delete the phrase “during the one year warranty period” at the end of paragraph 12.3.4 and replace it with the phrase “during the warranty periods specified in the *Contract Documents*.”

SC#158 Delete paragraph 12.3.6 in its entirety and replace it with the following:

“12.3.6 The *Contractor* shall be responsible for obtaining *Product* warranties in excess of one year on behalf of the *Owner* from the manufacturer. These *Product* warranties shall be issued by the manufacturer to the benefit of the *Owner*.”

SC#159 Add the following new paragraphs 12.3.7-12.3.12:

“12.3.7 If any defect is corrected under the conditions of GC 12.3 – WARRANTY, the time period for the warranty in that particular item in the *Work* shall begin again from the date when the defect is corrected and if such defect be corrected more than once the time period for warranty applicable shall begin again from the latest date when such defect is corrected.

12.3.8 Where required by the *Contract Documents*, the *Contractor* shall provide a maintenance bond at no additional cost to the *Owner* as security for the performance of the *Contractor’s* obligations as set out in GC 12.3 – WARRANTY.

12.3.9 The Contractor shall provide fully and properly completed and signed copies of all warranties and guarantees required by the Contract Documents, containing:

.1 the proper name of the *Owner*;
.2 the proper name and address of the *Project*;
.3 the date the warranty commences, which shall be at the “date of *Substantial Performance of the Work*” unless otherwise agreed upon by the *Consultant* in writing;
.4 a clear definition of what is being warranted and/or guaranteed as required by the *Contract Documents*; and
.5 the signature and seal (if required by Applicable Law of the Contract) of the company issuing the warranty, countersigned by the Contractor.

12.3.10 The *Contractor* shall ensure that its *Subcontractors* are bound to the requirements of GC 12.3 – WARRANTY for the *Subcontractor’s* portion of the *Work.*

12.3.11 The *Contractor* shall ensure that all warranties, guarantees or other obligations for *Work*, services or *Products* performed or supplied by any *Subcontractor, Supplier* or other *Person* in connection with the *Work* are obtained and available for the direct benefit of the *Owner.* In the alternative, the *Contractor* shall assign to the *Owner* all warranties, guarantees or other obligations for *Work*, services or *Products* performed or supplied by any *Subcontractor, Supplier* or other *Person* in connection with the *Work* and such assignment shall be with the consent of the assigning party, where required by *Applicable Law*, or by the terms of that party’s contract. Such assignment shall be in addition to, and shall in no way limit, the warranty rights of the *Owner* under the *Contract Documents*.

12.3.12 The *Contractor* shall commence or correct any deficiency within 2 *Working Days* after receiving a notice from the *Owner* or the *Consultant*, and shall complete the *Work* as expeditiously as possible, except in the case where the deficiency prevents maintaining security or where basic systems essential to the ongoing business of the *Owner* and/or its tenants cannot be maintained operational as designed. In those circumstances all necessary corrections and/or installations of temporary replacements shall be carried out immediately as an emergency service. Should the *Contractor* fail to provide this emergency service within 8 hours of a request being made during the normal business hours of the *Contractor*, the

Owner is authorized, notwithstanding GC 3.1, to carry out all necessary repairs or replacements at the *Contractor's* expense."

SC#160 Add the following new **PART 13 – OTHER PROVISIONS**:

"**PART 13 OTHER PROVISIONS**

GC 13.1 OWNERSHIP OF MATERIALS

13.1.1 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*. All *Work* and *Products* delivered to the *Place of the Work* by the *Contractor* shall be the property of the *Owner.* The *Contractor* shall remove all surplus or rejected materials as its property when notified in writing to do so by the *Consultant*.

GC 13.2 CONSTRUCTION LIENS

13.2.1 In the event that a claim for lien is registered against the *Project* by a *Subcontractor, Sub-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 10 calendar days, ensure that any and all claims for lien and certificates of action are discharged, released, or vacated by the posting of security or otherwise; and

.2 in the case of written notices of lien, ensure that such notices are withdrawn, in writing.

13.2.2 In the event that the *Contractor* fails to comply with the requirements of paragraph 13.2.1, the *Owner* may fulfil those requirements without *Notice in Writing* to the *Contractor* and the *Contractor* shall reimburse the *Owner* on demand for all costs and associated expenses incurred by the *Owner*, including the costs of posting security and all legal fees and disbursements associated with discharging or vacating the claim for lien or certificate of action and defending the action. If the *Contractor* fails to pay such reimbursement the *Owner* shall have the right, if it so elects, and without prejudice to any other rights or remedies, to set off and deduct all such costs and expenses from any amount owing to the *Contractor*.

13.2.3 Notwithstanding any other provision in the *Contract*, the *Consultant* shall not be obligated to issue a certificate and the *Owner* shall not be obligated to make payment to the *Contractor* if, at the time such certificate or payment was otherwise due:

.1 a claim for lien has been registered against the *Project* lands; or

.2 if the *Owner* or mortgagee of the *Project* lands has received written notice of a lien; or

.3 the *Owner* or *Consultant* reasonably believe that any party has purported to retain title to *Products* or materials in respect of which an application for payment has been made.

13.2.4 Without limiting the foregoing, the *Contractor* shall, if requested by the *Owner*, defend, indemnify and save the *Owner* harmless from the amount of all such claims and the costs of defending any and all actions commenced against the *Owner* pursuant to the construction/builder's lien legislation in force at the *Place of the Work*, including the legal costs of the *Owner*, unless the lien was a direct result of a breach of the *Contract* by the *Owner* or the non-payment by the *Owner* of a valid charge or claim under the *Contract*.

13.2.5 GC 13.2 – CONSTRUCTION LIENS does not apply to construction/builder's liens claimed by the *Contractor.*

GC 13.3 ACCELERATION OF THE WORK

13.3.1 If, in the opinion of the *Consultant*, the *Contractor* is failing to perform the *Work* in accordance with any agreed schedule, or is otherwise in danger of failing to complete the *Work* in accordance with the time requirements of the *Contract Documents*, in either case after giving effect to extensions of time in accordance with GC 6.5 - DELAYS, then the *Contractor* shall, upon written notice from the *Consultant*, use its best efforts to accelerate the *Work* in order to catch up and keep abreast of the agreed schedule.

GC 13.4 AUDIT

13.4.1 For seven years following the expiry or termination of this *Contract*, the *Contractor* shall maintain and retain complete and accurate records and documents pertaining to this *Contract* and the furnishing of the *Work* including all necessary records to substantiate all charges and payments under this *Contract* and that the *Work* was completed in accordance with the *Contract* and with *Applicable Law*. During the term of this *Contract* and for seven years after the term, the *Contractor* shall permit and assist the *Owner* in conducting audits of the operations of the *Contractor* to verify all charges and payments under this *Contract* and that the *Work* was completed in accordance with the *Contract* and with *Applicable Law*. The *Owner* shall provide the *Contractor* with at least 10 *Working Days'* prior notice of its requirement for such an audit. If any such audit or inspection, reveals the payments paid by the *Owner* to be incorrect, so that such error resulted in an overpayment by the *Owner* equal to or greater than three percent of *Contract Price* required to be paid by the *Owner* in accordance with this *Contract*; or reveals any breach, violation or non-performance by the *Contractor* of any term, condition, representation, warranty or covenant contained in this *Contract*, then the *Contractor* shall (in addition to forthwith reimbursing the *Owner* for any overpayment) pay all costs incurred by the *Owner* with respect to any audit(s) and/or inspection(s) that uncovered such error, including the costs of any internal and external auditors, accountants and associates of the *Owner* directly involved with such process.

GC 13.5 DAILY REPORTS/DAILY LOGS

13.5.1 The *Contractor* shall prepare a daily log 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.

13.5.2 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 3.5 – CONSTRUCTION SCHEDULE, and comparing that resourcing to the resourcing anticipated when the most recent version of the *Construction Schedule* was prepared pursuant to GC 3.5 – CONSTRUCTION SCHEDULE.

13.5.3 Upon the request of the *Owner* or the *Consultant*, the *Contractor* shall make available for inspection and copying all of the records generated pursuant to this GC 13.5 – DAILY REPORTS/DAILY LOGS, along with other routine *Project* records ordinarily maintained by the *Contractor*.

GC 13.6 CONTRACTOR DISCHARGE OF LIABILITIES

13.6.1 In addition to the obligations assumed by the *Contractor* pursuant to GC 3.7 – SUBCONTRACTORS AND SUPPLIERS, the *Contractor* agrees to discharge all liabilities incurred by it for labour, materials, services, *Subcontractors* and *Products*, used or reasonably required for use in the performance of the *Work*, except for amounts withheld by reason of legitimate dispute and which have been identified to the party or parties, from whom payment has been withheld. As provided in paragraph 3.7.1 of GC 3.7 – SUBCONTRACTORS AND SUPPLIERS, the *Contractor* shall cause every *Subcontractor* and *Supplier* engaged in the performance of the *Work* to meet the requirements of this GC 13.6 – CONTRACTOR DISCHARGE OF LIABILITIES."

GC 13.7 FIPPA

The parties acknowledge and agree that the *Freedom of Information and Protection of Privacy Act* (Ontario) applies to and governs all recorded information, including any personal information, related to this *Contract* and may require the disclosure of such records to third parties.

END OF SUPPLEMENTARY CONDITIONS

Exhibit "1"

Statutory Declaration

TO BE MADE BY THE CONTRACTOR WHEN APPLYING FOR PROGRESS PAYMENT OR FOR RELEASE OF HOLDBACK, SECURITY DEPOSIT OR BOTH UPON SUBSTANTIAL OR TOTAL PERFORMANCE

C A N A D A	)	IN THE MATTER OF THE CONTRACT
	)	BETWEEN □,
PROVINCE OF ONTARIO	)	OWNER AND □
	)	COMPANY, CONTRACTOR FOR THE
	)	□WORK ON PREMISES
TO WIT:	)	LOCATED AT □,
	)	IN THE PROVINCE OF **[ONTARIO]**
	)	

I, _____ of the _____of _____in the Province of **[ONTARIO]**, do hereby DECLARE THAT:

1. I am _____ of _____, the Contractor named in the Contract abovementioned, and as such have personal knowledge of the facts hereunder declared.

2. All accounts for labour, subcontracts, products, construction machinery and equipment and other indebtedness which may have been incurred by the Contractor in the performance of the Work (as defined in the Contract) and for which the Owner might in any way be held responsible have been paid in full except holdback monies properly retained.

3. There are no claims for lien registered against the Owner or the Place of the Work (as defined in the Contract) and I am not aware of any grounds supporting any claim for lien against the Owner.

4. I MAKE THIS SOLEMN DECLARATION conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath.

DECLARED before me at the **[City/Town/etc.]**)
of **[name]**)
in the Province of Ontario)
day of **[month]** 200_) _____
)

_____
A Commissioner, etc.

Exhibit "2"

PROPER INVOICE CHECKLIST

[NTD: This will be a list of project-specific requirements for a "Proper Invoice" to be prepared by the consultant for each project.]

23422712.6

PART 1 GENERAL

1.1. Reference Standards

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020

.2 Project Supplementary Conditions

1.2. Cash Allowances

.1 Refer to CCDC 2, GC 4.1

.2 Include in Contract Price specified cash allowances.

.3 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 Work.

.4 Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.

.5 Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.

.6 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.

.7 Include progress payments on accounts of work authorized under cash allowances in Consultant's monthly certificate for payment.

.8 All purchases from the Cash Allowances shall be expended as the Owner directs and only through written instructions issued by the Consultant. The form and method of accounting for costs shall be agreed to by the Consultant and Contractor before proceeding with the purchase. Cash Allowance review will be included in the regular site meeting agenda.

.9 Where Work governed by a Cash Allowance is to be tendered to a Subcontractor, the Owner shall have the right to approve all bidders and recommend to the Contractor specific bidders at its own discretion. The Contractor shall solicit a minimum of three (3) sealed bids to be delivered to the Owner's office at the time of closing of the tender. The Owner shall have the right to make the final decision as to the selection of the successful bidder. The Contractor shall be responsible for the accuracy of all tender information provided to such bidders.

.10 Prepare schedule jointly with Consultant and Contractor to show when items called for under cash allowances must be authorized by Consultant for ordering purposes so that progress of Work will not be delayed.

.11 For all Cash Allowance items indicated as “supply only” include in Contract Price the Contractor's charges for handling at site, including unloading, uncrating and storage, equipment rental, protection from elements and damage, labour, installation and finishing, testing, adjusting and balancing, insurance, bonding and other expenses including overhead and profit, but excluding trade discounts, on account of Cash Allowance in accordance with Article GC 4.1 of the General Conditions of the Contract as amended.

.12 Cash Allowances do not include Harmonized Sales Tax (HST)

.13 List the amount of each allowance, for each work specified in each respective specification Section as follows:

Provide a Cash Allowance in the sum of Twenty-Seven Thousand Five Hundred and xx/100 Dollars ($27,500.00) to cover the cost of Independent third-party inspection and testing services in accordance with the requirements of specification Section 01 45 00, Quality Control.

Provide a Cash Allowance in the sum of Thirty-Five Thousand and xx/100 Dollars ($35,000.00) to cover the cost of fabrication and installation of the donor panel and glazing films. Coordination of installation to be included in General Contractor base bid.

PART 2 PRODUCTS

2.1. Not Used.

PART 3 EXECUTION

3.1. Not Used.

END OF SECTION

PART 1 GENERAL

1.1. Administrative

.1 Schedule and administer project meetings weekly or every two (2) weeks as appropriate to the stage of construction, at the call of the Consultant.

.2 Prepare agenda for meetings.

.3 Responsible representatives of the Contractor's and Subcontractor's office and field forces and suppliers shall be obligated to attend. Inform the Owner, Consultant, and those whose attendance is obligatory, of the date of each meeting, in sufficient time to ensure their attendance.

.4 Provide physical space and make arrangements for meetings.

.5 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.6 Reproduce and distribute copies of minutes within three (3) days after meetings and transmit to meeting participants and, affected parties not in attendance.

.7 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2. Preconstruction Meeting

.1 Within 5 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 The Owner, Consultant, Contractor, major Subcontractors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 16.16 - Construction Progress Schedule - Critical Path Method (CPM).

.3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.

.5 Delivery schedule of specified equipment.

.6 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.8 Owner provided products or work by other Contractors.

.9 As-built drawings in accordance with Section 01 78 00 - Closeout Submittals.

.10 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.11 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.

.12 Monthly progress claims, administrative procedures, photographs, hold backs.

.13 Appointment of inspection and testing agencies or firms.

.14 Insurances, transcript of policies.

1.3. Progress Meeting

.1 Conduct progress meetings in accordance with the schedule and/or decisions made at the pre-construction meeting.

.2 Contractor, major Subcontractors involved in Work, the Consultant and the Owner are to be in attendance.

.3 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within three (3) days after meeting.

.4 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review pending changes and substitutions.

.12 Review proposed changes for affect on construction schedule and on completion date.

.13 Other business.

PART 2 PRODUCTS

2.1. Not Used.

PART 3 EXECUTION

3.1. Not Used.

END OF SECTION

PART 1 GENERAL

1.1. Reference Standards

.1 Project Management Institute (PMI Standards)

.1 A Guide to the Project Management Body of Knowledge (PMBOK Guide) - Fifth Edition.

.2 Practice Standard for Scheduling - 2011.

1.2. Definitions

.1 Activity: Distinct, scheduled portion of work performed during course of a project.

.2 Activity Duration: time in calendar units between start and finish of a scheduled activity. See also Duration.

.3 Assumption: factor in planning process that is considered true, real, or certain without proof or demonstration.

.4 Bar Chart (Gantt Chart): graphic display of schedule-related information.

.1 In typical bar chart, schedule activities or work breakdown structure components are listed down left side of chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars.

.5 Baseline: approved version of a work product that can be changed only through formal change control procedures and is used as a basis for comparison.

.6 Budget: approved estimate for a project or work breakdown structure component or schedule activity.

.7 Cash Flow: projection of progress payment requests based on cash loaded construction schedule.

.8 Change Control: process whereby modifications to documents, deliverables, or baselines associated with a project are identified, documented, approved, or rejected.

.9 Completion Milestones: they are firstly Substantial Completion and secondly Final Certificate.

.10 Constraint: scheduled limiting factor that effects execution of a project, program, portfolio, or process.

.11 Contract: mutually binding agreement that obligates a seller to provide a specified product or service or result and obligates a buyer to pay for it.

.12 Control: comparing actual performance with planned performance, analyzing variance, assessing trends, to effect process improvements, evaluating possible alternatives, and recommending appropriate corrective action as needed.

.13 Corrective Action: intentional activity that realigns performance of project work with project management plan.

.14 Critical Path: sequence of activities that represents longest path through a project, which determines shortest possible duration.

.15 Critical Path Activity: activity on critical path in a project schedule.

.16 Critical Path Method (CPM): method used to estimate minimum project duration and determine amount of scheduling flexibility on logical network of paths within schedule model.

.17 Data Date: point in time when the status of the project is recorded.

.18 Decomposition: technique used for dividing and subdividing project scope and project deliverables into smaller, more manageable parts.

.19 Deliverable: unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.

.20 Duration: total number of work periods (not including holidays or other non-working periods) required to complete a schedule activity or work breakdown structure component.

.1 Usually expressed as workdays or work weeks.

.21 Early Finish Date (EF): in Critical Path Method, earliest possible point in time when uncompleted portions of schedule activity can finish based on schedule network logic, data date, and schedule constraints.

.1 Early finish dates can change as Project progresses and changes are made to Project plan.

.22 Early Start Date (ES): in Critical Path Method, earliest possible point in time when uncompleted portions of a schedule activity can start based on schedule network logic, data date, and schedule constraints.

.1 Early start dates can change as Project progresses and changes are made to Project Plan.

.23 Execute: directing, managing, performing, and accomplishing project work; providing deliverables, and providing work performance information.

.24 Finish Date: point in time associated with a schedule activity's completion.

.1 Usually qualified by one of following: actual, planned, estimated, scheduled, early, late, baseline, target, or current.

.25 Float: (also known as slack) amount of time a schedule activity can be delayed without delaying early start date of a successor or violating a schedule constraint.

.1 This resource is available to both the Owner and Contractor.

.26 Forecast: estimate or prediction of conditions and events in project future based on information and knowledge available at time of forecast.

.1 Information is based on projects past performance and expected future performance, and includes information that could impact project in future, a such as estimate at completion and estimate to complete.

.27 Gantt Chart: see Bar Chart.

.28 Impact Analysis: schedule analysis technique that adds a modeled delay to an accepted construction schedule to determined possible outcome of that delay on project completion.

.29 Imposed Date: a fixed date imposed on a schedule activity or schedule milestone, usually in form of a "start no earlier than" and "finish no later than" date.

.30 Lag: amount of time whereby a successor activity is required to be delayed with respect to a predecessor activity.

.31 Late Finish Date (LF): in critical path method, latest possible point in time when uncompleted portions of a schedule activity can finish based on schedule network logic, project completion date, and schedule constraints.

.32 Late Start Date (LS): in critical path method, latest possible point in time when uncompleted portions of a schedule activity can start based on schedule network logic, project completion date, and schedule constraints.

.33 Lead: amount of time whereby a successor activity can be advanced with respect to a predecessor activity.

.34 Logic Diagram: see Project network diagram.

.35 Logical Relationship: dependency between two activities or between an activity and a milestone.

.36 Master Schedule: summary-level schedule that identifies major deliverable; work breakdowns structure components, and key schedule milestones.

.37 Milestone: significant point or event in a project, program, or portfolio.

.38 Monitor: collect project performance data with respect to a plan, procedure performance measures, and report and disseminate performance.

.39 Network: see Project Schedule Network Diagram.

.40 Non-Critical Activities: activities which when delayed, do not affect specified Contract duration.

.41 Project Control System: fully computerized system utilizing commercially available software packages.

.42 Project Management: application of knowledge, skills, tools, and techniques, to project activities to meet project requirements.

.43 Project Management Plan: approved document that describes how project will be executed, monitored, and controlled.

.1 Primary uses of Project management plan are to document planning assumptions and decisions, facilitate communication among stakeholders, and document approved scope, cost, and schedule baselines.

.2 Project management plan may be summary or detailed.

.44 Project Management Planning: development and maintenance of Project Plan.

.45 Project Management Planning, Monitoring and Control System: overall system operated to enable monitoring of Project Work in relation to established milestones.

.46 Project Schedule: planned dates for performing activities and planned dates for meeting milestones.

.47 Project Schedule Network Diagram: graphical representation of logical relationships among project schedule activities.

.1 Always drawn from left to right to reflect Project chronology.

.48 Project Scope: work performed to deliver a product, service, or result with specified features and functions.

.49 Quantified days duration: working days based on 5 day work week, discounting statutory holidays.

.50 Risk: uncertain event or condition that, if it occurs, has positive or negative effect on one or more project objectives.

.51 Schedule: see Project Schedule.

.52 Schedule Data: collection of information for describing and controlling schedule.

.53 Scope: see Project Scope.

.54 Start Date: point in time associated with activity's start, usually qualified by one of following: actual, planned, estimated, scheduled, early, late, target, baseline, or current.

.55 Work Breakdown Structure (WBS): hierarchical decomposition of total scope of work to be carried out by project team to accomplish project objectives and create the required deliverables.

1.3. Administrative Requirements

.1 Project Meeting:

.1 Meet with the Consultant within 10 working days of Award of Contract date, to establish Work requirements and approach to project construction operations.

.2 Participate in regular project progress meetings with owner representative and the Consultant specifically intended to discuss update of detailed schedule and contract changes.

.2 Scheduling:

.1 Ensure that planning process is iterative and results in generally top-down processing with more detail being developed as planning progresses, and decisions concerning options and alternatives are made.

.2 Ensure project schedule efficiencies through monitoring of project in detail to ensure integrity of Critical Path, by comparing actual completions of individual activities with their scheduled completions, and review progress of activities that has started but are not yet completed.

.3 Monitor sufficiently often so that causes of delays can immediately be identified and mitigated.

.3 Project monitoring and reporting:

.1 Keep team aware of changes to schedule, and potential consequences as project progresses.

.2 Use narrative reports to provide advice on seriousness of challenges and measures to overcome them.

.3 Begin narrative reporting with statement on general status of Project followed by summarization of delays, potential problems, corrective measures and project status criticality.

.4 Critical Path Method (CPM) Requirements:

.1 Ensure Master Plan and Detail Schedule are practical and remain within specified contract duration.

.2 Revise Master Schedule and Detail Schedule deemed impractical by owner representative and the Consultant and resubmit for approval.

.3 Change to Contract Duration:

1. Acceptance of Master Schedule and Detail Schedule showing scheduled Contract duration shorter than specified Contract duration does not constitute change to Contract.

2. Duration of Contract may only be changed through bilateral Agreement.

.4 Consider Master Schedule and Detail Schedule deemed practical by the Consultant, showing Work completed in less than specified Contract duration, to have float.

.5 First Milestone on Master Schedule and Detail Schedule will identify start Milestone with an Early Start, "ES", constraint date equal to Award of Contract date.

.6 Calculate dates for completion of milestones from Plan and Schedule using specified time periods for Contract.

.7 Substantial Completion with Late Finish, "LF", constraint equal to calculated date.

.8 Calculations on updates such that if early finish of Interim Certificate falls later than specified Contract duration then float calculation to reflect negative float.

.9 Delays to non-critical activities with float may not be basis for time extension.

.10 Allow for adverse weather conditions normally anticipated and show in Master Plan and Detail Schedule.

1. Specified Contract duration has been predicated assuming normal amount of adverse weather conditions.

.11 Provide necessary crews and manpower to meet schedule requirements for performing Work within specified Contract duration.

1. Simultaneous use of multiple crews on multiple fronts on multiple critical paths may be required.

.12 Arrange participation on and off site of subcontractors and suppliers, as required by the Consultant, for purpose of network planning, scheduling, updating and progress monitoring.

1. Approvals by the Consultant of original networks and revisions do not relieve Contractor from duties and responsibilities required by Contract.

.13 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.4. Action and Informational Submittals

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

.2 Submit to owner representative and the Consultant Project Control System for planning, scheduling, monitoring and reporting of project progress.

.3 Submit Project Control System to owner representative and the Consultant for approval.

.1 Failure to comply with each required submission, may results in progress payment being withheld in accordance with Federal Government's GC 5 Terms of Payment.

.4 Include costs for execution, preparation and reproduction of schedule submittals in bid documents.

.5 Submit letter ensuring that schedule has been prepared in co-ordination with major sub-contractors.

.6 Refer to article "PROGRESS MONITORING AND REPORTING" of this specification Section for frequency of Project control system submittals.

.7 Submit impact analysis of schedule for changes that result in extension of contract duration.

.1 Include draft schedule update and report as outlined in article "PROGRESS MONITORING AND REPORTING".

.8 Submit Project planning, monitoring and control system data as required by owner representative or the Consultant in following form.

.1 USB Drive files in original scheduling software containing schedule and cash flow information, labelled with data date, specific update, and person responsible for update.

.2 Master Schedule Bar Chart.

.3 Construction Detail Schedule Bar Chart.

.4 Listing of project activities including milestones and logical connectors, networks (sub-networks) from Project start to end. Sort activities by activity identification number and accompany with descriptions. List early and late start and finish dates together with durations, codes and float.

.5 Criticality report listing activities and milestones with up to 5 days total float used as first sort for ready identification of critical paths through entire project. List early and late starts and finishes dates, together with durations, codes and float for critical activities.

.6 Progress report in early start sequence, listing for each trade, activities due to start, underway, or finished within 2 months from monthly update date. List activity identification number, description and duration. Provide columns for entry of actual start and finish dates, duration remaining and remarks concerning action required.

1.5. Quality Assurance

.1 Use experienced personnel, fully qualified in planning and scheduling to provide services from start of construction to Final Certificate, including Commissioning.

1.6. Master Schedule

.1 Prepare comprehensive construction Master Schedule (CPM logic diagram) and dependent Cash Flow Projection within 10 working days of finalizing Agreement to confirm validity or alternates of identified milestones.

.1 Master Schedule will be used as baseline.

1. Revise baseline as conditions dictate and as required by owner representative or the Consultant.

2. Owner representative or the Consultant as Project progresses will review and return revised baseline within 10 work days.

.2 Reconcile revisions to Master Schedule and Cash Flow Projections with previous baseline to provide continuous audit trail.

.3 Initial and subsequent Master Schedule will include:

.1 USB Drive containing schedule and cash flow information, clearly labelled with data date, specific update, and person responsible for update.

.2 Bar chart identifying coding, activity durations, early/late and start/finish dates, total float, completion as percentile, current status and budget amounts.

.3 Network diagram showing coding, activity sequencing (logic), total float, early/late dates, current status and durations.

.4 Actual/projected monthly cash flow: expressed monthly and shown in both graphical and numerical form.

1.7. Detail Schedule

.1 Provide detailed project schedule (CPM logic diagram) within 10 working days of Award of Contract date showing activity sequencing, interdependencies and duration estimates. Include listed activities as follows:

.1 Shop drawings.

.2 Samples.

.3 Approvals.

.4 Procurement.

.5 Construction.

.6 Installation.

.7 Testing.

.8 Commissioning and acceptance.

.2 Detail CPM schedule to cover in detail minimum period of 3 months beginning from Award of Contract date with duration of each activity.

.1 Show remaining activities for CPM construction network system up to Final Certificate and develop complete detail as project progresses.

.2 Detail activities completely and comprehensively throughout duration of project.

.3 Relate Detail Schedule activities to basic activities and milestones developed and approved in Master Schedule.

.4 Clearly show sequence and interdependence of construction activities and indicate:

.1 Start and completion of all items of Work, their major components, and interim milestone completion dates.

.2 Activities for procurement, delivery, installation and completion of each major piece of equipment, materials and other supplies, including:

1. Time for submittals, resubmittals and review.

2. Time for fabrication and delivery of manufactured products for Work.

3. Interdependence of procurement and construction activities.

.3 Include sufficient detail to assure adequate planning and execution of Work. Activities generally range in duration from 3 to 15 workdays each.

.5 Provide level of detail for project activities such that sequence and interdependency of Contract tasks are demonstrated and allow co-ordination and control of project activities. Show continuous flow from left to right.

.6 Ensure activities with no float are calculated and clearly indicated on logical CPM construction network system as being, whenever possible, continuous series of activities throughout length of Project to form "Critical Path". Increased number of critical activities is seen as indication of increased risk.

.7 Insert Change Orders in appropriate and logical location of Detail Schedule. After analysis, clearly state and report to owner representative and the Consultant for review effects created by insertion of new Change Order.

1.8. Review of Construction Detail Schedule

.1 Allow minimum 10 work days for review by owner representative and the Consultant of proposed construction Detail Schedule unless otherwise specified.

.2 Upon receipt of reviewed Detail Schedule make necessary revisions and resubmit to owner representative and the Consultant for review within maximum 10 work days unless otherwise specified.

.3 Promptly provide additional information to validate practicability of Detail Schedule as required by owner representative or the Consultant.

.4 Submittal of Detail Schedule indicates that it meets Contract requirements and will be executed generally in sequence.

1.9. Compliance with Detail Schedule

.1 Comply with reviewed Detail Schedule.

.2 Proceed with significant changes and deviations from scheduled sequence of activities that cause delay, only after written receipt of approval by owner representative or the Consultant.

.3 Identify activities that are behind schedule and causing delay. Provide measures to regain slippage.

.1 Corrective measures may include:

1. Increase of personnel with more experience/qualifications on site for effected activities or work package.

2. Increase in materials and equipment.

3. Overtime work.

.4 Submit to Departmental Representative and the Consultant, justification, project schedule data and supporting evidence for approval of extension to Contract completion date or interim milestone date when required. As part of supporting evidence, include:

.1 Written submission of proof of delay based on revised activity logic, duration and costs, showing time impact analysis illustrating influence of each change or delay relative to approved contract schedule.

.2 Prepared schedule indicating how change will be incorporated into overall logic diagram. Demonstrate perceived impact based on date of occurrence of change and include status of construction at that time.

.3 Other supporting evidence requested by owner representative or the Consultant.

.4 Do not assume approval of Contract extension prior to receipt of written approval.

.5 In event of Contract extension, display in Detail Schedule that scheduled float time available for work involved has been used in full without jeopardizing earned float.

.1 Owner representative or the Consultant will determine and advise Contractor number of allowable days for extension of Contract based on project schedule updates for period in question, and other factual information.

.2 Construction delays affecting project schedule will not constitute justification for extension of contract completion date.

1.10. Progress and Reporting

.1 On an ongoing basis, Detail Schedule on job site to show "Progress to Date". Arrange participation on and off site of subcontractors and suppliers, as, and when necessary, for purpose of network planning, scheduling, updating and progress monitoring. Inspect Work with owner representative and the Consultant at least once monthly to establish progress on each current activity shown on applicable networks.

.2 Update and reissue project Work Breakdown Structure and relevant coding structures as project develops and changes.

.3 Perform Detail Schedule update monthly with status dated (Data Date) on last working day of month. Update to reflect activities completed to date, activities in progress, logic and duration changes.

.4 Do not automatically update actual start and finish dates by using default mechanisms found in project management software.

.5 Submit to owner representative and the Consultant copies of updated Detail Schedule.

.6 Requirements for monthly progress monitoring and reporting are basis for progress payment request.

.7 Submit monthly written report based on Detail Schedule, showing Work to date performed, comparing Work progress to planned, and presenting current forecasts. Report summarize progress, defining problem areas and anticipated delays with respect to Work schedule, and critical paths. Explain alternatives for possible schedule recovery to mitigate potential delay. Include in report:

.1 Description of progress made.

.2 Pending items and status of: permits, shop drawings, change orders, possible time extensions.

.3 Status of Contract completion date and milestones.

.4 Current and anticipated problem areas, potential delays and corrective measures.

.5 Review of progress and status of Critical Path activities.

PART 2 PRODUCTS

2.1. Not Used.

PART 3 EXECUTION

3.1. Not Used.

END OF SECTION

PART 1 GENERAL

1.1. Administrative Requirements

.1 Submit to owner representative and the Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals before submission to owner representative or the Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify owner representative and the Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify site measurements and affected adjacent Work are coordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by owner representative 's or the Consultant's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by owner representative or the Consultant’s review.

.10 Keep one reviewed copy of each submission on site.

1.2. Shop Drawings and Product Data

.1 Refer to CCDC 2 GC 3.8.

.2 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.3 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.

.4 Allow 10 work days for the Consultant’s review of each submission.

.5 Adjustments made on shop drawings by the owner representative or the Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the owner representative and the Consultant before to proceeding with Work.

.6 Make changes in shop drawings as owner representative and the Consultant may require, consistent with Contract Documents. When resubmitting, notify owner representative and the Consultant in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, containing:

.1 Date.

.2 Project title and number.

.3 Contractor's name and address.

.4 Identification and quantity of each shop drawing, product data, and sample.

.5 Other pertinent data.

.8 Submissions to include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

1. Subcontractor.

2. Supplier.

3. Manufacturer.

.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of site measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

1. Fabrication.
2. Layout, showing dimensions, including identified site dimensions and clearances.
3. Setting or erection details.
4. Capacities.
5. Performance characteristics.
6. Standards.
7. Operating weight.
8. Wiring diagrams.
9. Single line and schematic diagrams.
10. Relationship to adjacent work.

.9 After owner representative 's and the Consultant's review, distribute copies.

.10 Submit an electronic copy of shop drawings for each requirement requested in specification Sections and as owner representative or the Consultant may reasonably request.

.11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by owner representative or the Consultant where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by owner representative or the Consultant.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within 3 years of date of Contract award for project.

.13 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by owner representative or the Consultant.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of Contract complete with project name.

.14 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by owner representative or the Consultant.

.1 Pre-printed material describing installation of product, system or material, including special notices and Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit electronic copies of Manufacturer's Site Reports for requirements requested in specification Sections and as requested by owner representative or the Consultant.

.16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by owner representative or the Consultant.

.18 Delete information not applicable to project.

.19 Supplement standard information to provide details applicable to project.

.20 If upon review by owner representative and the Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.3. Interference Drawings

.1 The Contractor shall prepare colour-coded interference drawings in order to properly coordinate the work of all trades, such as, but not restricted to, plumbing and fire protection, HVAC, electrical, audio visual and building structure. Interference drawings are to be prepared in consultation with competent trades people/engineers responsible for the work.

.2 Bear all costs involved for the preparation of these drawings and any changes to the drawings necessitated due to interference discovered by their preparation. Advise all trades and the Consultant of any rerouting or relocation required.

.3 If interferences are discovered advise Consultant immediately and do not proceed until adjustments are approved.

.4 Work that progresses prior to the completion and coordination of interference drawings may be subject to removal and reinstallation at no additional cost. Drawings to be provided within 45 days of the award of the contract.

.5 Submit final copies of drawings for the Consultant's records.

1.4. Substitutions

.1 During bidding, Consultant will consider written requests from prime bidders for substitutions, received at least seven (7) working days prior to bid closing date; requests received after that time will not be considered.

.2 All requests for substitution, be it during bidding or at construction stage shall include complete data substantiating compliance with the Contract Documents.

.1 For products:

1. Product identification, including manufacturer's name and address.
2. Manufacturer's literature:
    1. Product description.
    2. Performance test data.
    3. Reference standards.
3. Samples.
4. Name and address of similar projects on which product was used, and date of installation.

.2 For construction methods:

1. Detailed description of proposed method.
2. Drawings illustrating methods.

.3 Itemized comparison of proposed substitution with product or method specified.

.4 Data relating to changes in construction schedule.

.5 Relation to separate contracts.

.3 In making request for substitution, Contractor represents:

.1 He/she has generally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified.

.2 He/she will provide the substitution with the same guarantee as that for product or method specified.

.3 He/she will coordinate installation of accepted substitution into work, making such changes as may be required for work to be complete in all respects.

.4 Requests for substitutions during construction shall state what cost difference if any, will be made in the Contract Price for each substitution, should it be accepted.

.4 Substitutions will not be considered if:

.1 They are indicated or implied on shop drawings or project data submittals without formal request.

.2 Acceptance will require revision of Contract Documents.

1.5. Samples

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to the consultant’s office.

.3 Notify the Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by the Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Consultant before proceeding with Work.

.6 Make changes in samples which the Consultant may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.6. Mock-Ups

.1 Erect mock-ups in accordance with section 01 43 00 - Quality Assurance.

1.7. Photographic Documentation

.1 Submit electronic copy of digital photography in jpg format, monthly with progress statement and as directed by owner representative or the Consultant.

.2 Project identification: name and number of project and date of exposure indicated.

.3 Frequency of photographic documentation: monthly or as directed by owner representative or the Consultant.

.1 Upon completion of: excavation, foundation, framing and services before concealment of Work, and as directed by owner representative or the Consultant.

1.8. Certificates and Transcripts

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

.2 Submit transcription of insurance immediately after award of Contract.

PART 2 PRODUCTS

2.1. Not Used.

PART 3 EXECUTION

3.1. Not Used.

END OF SECTION

PART 1 GENERAL

1.1. General Requirements

.1 The Contractor shall perform the Work in a safe manner and shall comply with all applicable municipal, provincial, and federal legislation and any other regulation by authorities having jurisdiction of construction projects. In the event of conflict between any provisions on the above authorities, the most stringent provision shall apply.

1.2. References

.1 The Occupational Health & Safety Act - Occupational Health & Safety Legislation.

.2 Ont. Reg. 213/91 - Regulation for Construction Projects.

.3 Ont. Reg. 851 - Regulation for Industrial Establishment.

.4 Ont. Reg. 860/90 - Work Place Hazardous Material Information System (W.H.M.I.S.)

.5 The Environment Protection Act:

.1 Ont. Reg. 347 - Waste Management

.2 Ont. Reg. 346 - Air Emissions

.3 Ont. Reg. 362 – PCBs

.4 Ont. Reg. 360 - Spills

.6 Ont. Reg. 5/25 - Ontario Building Code 2024

.7 Transportation of Dangerous Goods Act

.8 Workplace Safety & Insurance Board (WSIB)

.9 CSA S350-M80 – Code of Practice for Safety in Demolition of Structures

.10 CAN/CSA-S269.2 - Access Scaffolding for Construction Purposes.

.11 Canadian Electric Code, Part 1 CSA C22.1-2024 (26th Edition).

1.3. Information Requirement

.1 Prior to commencement of this contract, the Contractor must provide an Occupational Health and Safety Policy and Procedures as described in the Occupational Health and Safety Act for review by the Consultant.

.2 The Contractor shall provide a copy of the company's CAD7 Workplace Safety & Insurance Board Rating for review by the Consultant.

.3 The Contractor shall ensure and provide evidence that any individual with responsibility for the project's implementation is a competent worker as defined in the Occupational Health and Safety Act for approval by the Consultant.

.4 The Contractor where required by the O.H.S.A. Regulations, shall register the project with the Director of Construction Health and Safety Branch of the Ministry of Labour within (30) thirty days of undertaking the project and prior to starting work on the site. A copy of the registration (Notice of Project) must be posted on a visible location on the site and a copy forwarded to the Consultant.

.5 The Contractor shall propose the name of any competent worker as supervisor with accompanying qualification for approval by the Consultant.

.6 The Contractor shall draft and present to the Consultant for review an emergency plan to be used in the case of a critical injury, accident or incident on site. This document must be kept up to date and must be discussed with all trades and Sub-Contractors working on site.

.7 The Contractor shall provide to the Consultant copies of all inspection reports including all accident / incident reports and associated documentation.

1.4. Construction Safety Measures

.1 The Contractor shall conform to and enforce strict compliance with the Occupational Health & Safety Act and Construction Regulations, the Environmental Protection Act, Workplace Hazardous Materials Information System (WHMIS), Transportation of Dangerous Goods Act, and any other pertinent legislation for construction projects.

.1 The Contractor for purposes of the Occupational Health & Safety Act, will be designated as the constructor for this project and will assume all of the responsibilities of the constructor set out in that Act and its Regulations.

.2 The Contractor shall monitor the Work to ensure that all applicable Health & Safety Regulations are followed. Violations will be documented, appropriate action taken, and records kept on file.

.3 The Contractor shall be informed of any minor violations of the Occupational Health & Safety Act or its Regulations and shall correct such minor violations immediately.

.4 The Consultant or its authorized representative shall stop the Work immediately for any major violation of the Occupational Health & Safety Act or its Regulations. The Contractor shall not resume the Work until any such violation has been rectified.

.5 The Contractor shall be responsible for any delay in the progress of the Work due to a violation of legislated or City health and safety requirements, and shall take the necessary steps to avoid delay in the final completion of the Work without additional cost to the Owner.

.2 The Contractor shall provide a telephone, first aid kit, stretcher, blanket, eye wash station, and any other measures foreseeable in the site office, or other appropriate location, for emergency use.

1.5. Inspections and Reports

.1 The Contractor shall note any preventative or corrective measures taken to uphold site safety on Inspection Reports and supply them for review by the Consultant if requested.

.2 The Contractor shall ensure, and provide documented evidence that the work is being inspected especially as it relates to temporary structures, bracing falsework, form work, scaffolds, work platforms, excavations, cranes and hoisting equipment or any other area requiring inspection under the Occupational Health and Safety Act.

1.6. Workplace Hazardous Materials Information System (WHMIS)

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials, and regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada.

.2 Deliver copies of (MSDS) Material Safety Data Sheets to the Consultant on delivery of materials.

.3 Further to the requirements of the Workplace Hazardous Materials Information System (WHMIS), commence application of flammable, noxious or volatile materials only after the following requirements are met:

.1 Notify the Consultant at least 48 hours in advance of the start of application and receive permission to proceed.

.2 Provide adequate ventilation during application.

.3 Provide enclosures as required and as directed by the Consultant to contain fumes / vapours within application area.

.4 Post warning signs and barriers as required by regulations and as directed by the Consultant to restrict access to application area.

.5 Provide workers with necessary respiration devices to safeguard health.

.6 Provide a suitable number of fire extinguishers immediately adjacent to the area of application for volatile and flammable materials.

.7 Material Safety Data Sheets are provided directly to the Consultant for all products brought onto Site, as soon as such materials are brought onto Site where required by the Construction Safety Act. Additional copies of Material Safety Data Sheets to remain on site.

.4 Notwithstanding the requirements of preceding paragraphs, applications which might affect the well being of any occupants and workers on Site or disrupt work of other contractors may be rescheduled by the Consultant for evening or week-end work.

.5 Contractor shall be responsible for ensuring that all information regarding the handling of all materials, avoidance of spills, cleanup, installation of materials, ventilation, smoking regulations and the like, designed to minimize the levels of indoor air pollution in the final work shall be communicated to all subcontractors and Safety Committees.

1.7. Designated Substance Requirements

.1 The Contractor shall propose a work plan for the removal of designated substances, in accordance with all applicable legislation, for review and discussion with the Consultant and Sub-Contractors prior to work in this area proceeding.

.2 Where there is a requirement to dispose or store PCBs or other hazardous wastes, the Contractor shall propose a safe handling plan for review and approval by the Consultant prior to the work in this area proceeding. Permits will have to be secured by the Contractor, as necessary.

.3 Prior to starting work, the Contractor shall register the project as a hazardous waste site and document the waste generated providing documentation describing the proposed activities with the Ministry of the Environment and Energy (MOEE).

.4 The Contractor shall provide evidence of competency with regards to the Environmental Protection Act, Bill 309.

.5 The Contractor shall ensure and provide evidence that all hazardous waste removed from the site is sent to a licensed waste disposal site by a licensed carrier and advise the Consultant when necessary testing is to be carried out.

.6 The Contractor shall retain copies of all hazardous waste manifests on file.

.7 The Contractor shall establish and provide evidence of having established approved PCB storage facilities to accommodate waste generated from on-site activities. Provide evidence that registration procedures are being followed.

.8 The Contractor shall ensure that appropriate handling of all waste materials occur.

.9 The Contractor shall perform regular inspections of the work and note the location and description of designated substances on site and communicate the information to all Sub-Contractors/workers.

.10 The Contractor shall inspect the project daily to monitor compliance with Designated Substances Regulations.

.11 The Contractor shall provide access to the Consultant for review of all inspection reports.

PART 2 PRODUCTS

2.1. Protective Clothing, Equipment and Devices

.1 Comply with requirements of Section 21 - Ont. Reg. 213/91.

.2 The Contractor shall provide six safety helmets at the site for visitors. All visitors must wear safety helmets and approved safety boots and other equipment as required.

2.2. Fall Protection

.1 Comply with requirements of Section 26 - Ont. Reg. 213/91 and Section 85 - Ont. Reg. 516/92.

2.3. Housekeeping

.1 Comply with requirements of Section 35-39 - Ont. Reg. 213/91 and Sections 52-58 - Ont. Reg. 213/91.

.2 The Contractor shall implement a daily job site clean up program for all trades to maintain the Work site in a tidy and safe condition.

.1 Keep work areas, stairways, walkways, clean of obstruction, scrap materials, lumber, rags and other debris.

.2 Pile or stack materials in a orderly manner; wedge or block materials to prevent rolling.

.3 Provide fire extinguishing equipment in sufficient numbers. Have equipment inspected regularly and recharge when necessary.

2.4. Ventilation and Respiratory Protection

.1 Comply with requirements of Section 46 to 47 - Ont. Reg. 213/91 and Section 127 to 128 -Ont. Reg. 516/92.

2.5. Signs

.1 Comply with requirements of Section 44 - Ont. Reg. 213/91.

.2 The Contractor shall post signs in prominent locations and in sufficient numbers to warn workers of a hazard on a project.

.3 The Contractor shall post the Corporation's Safety Awareness Bulletin as supplied by the Consultant

.4 The Contractor shall post signage restricting access to authorized personnel only. Ensure that site access is strictly controlled.

2.6. Confined Space

.1 Comply with requirements of Section 60 to 63 - Ont. Reg. 213/91 and Section 67 to 71 - Ont. Reg. 516/92.

.2 The Contractor shall ensure, if the Work involves entering a confined space, procedures as laid out in Sections of Ont. Reg. 213/91 are followed. Proof of competency shall be provided upon request by the Consultant.

2.7. Public Way Protection

.1 Comply with requirements of Section 64 to 66 - Ont. Reg. 213/91.

.2 The Contractor shall ensure that every measure foreseeable is taken to protect the general public. Where necessary, provide covered ways for public passage.

2.8. Access / Egress

.1 Comply with requirements of Section 70 to 72 - Ont. Reg. 213/91.

2.9. Ladders

.1 Comply with requirements of Section 78 to 84 - Ont. Reg. 213/91 and Section 18, 19 and 73 - Ont. Reg. 516/92.

2.10. Scaffolding and Work Platforms

.1 Comply with requirements of Section 125 to 142 - Ont. Reg. 213/91.

.2 Design and construct scaffolding in accordance with CSA S269.2.

.3 The Contractor shall ensure that all scaffolding over 15 m (49'-0") or 10 m (32'-8"), if shell and tube, is designed and inspected by a Professional Engineer. Provide verification documents for review by the Consultant. Maintain documents on site throughout the project.

2.11. Elevating Work Platforms

.1 Comply with requirements of Section 143 to 149 - Ont. Reg. 213/91 and Sections 51 to 54 Ont. Reg. 516/92.

2.12. Electrical / Mechanical Hazards and Lockout

.1 Comply with requirements of Section 45 and 181 to 195 - Ont. Reg. 213/91 and Sections 40 to 44 - Ont. Reg. 516/92.

.2 Comply with requirements of Sections 48, 60 and 188 - Ont. Reg. 213/91 and Sections 46, 72, 78 to 82 - Ont. Reg. 516/92.

2.13. Roofing

.1 Comply with requirements of Section 207 to 211 - Ont. Reg. 213/91.

.2 The Contractor shall follow the Safety Guidelines for Roofers issued by the Construction Safety Association of Ontario.

2.14. Demolition

.1 Comply with requirements of Section 212 to 221 Ont. Reg. 213/91, Section 72 - Ont. Reg. 516/92 and CSA S350-M80 – Code of Practice for Safety in Demolition of Structures.

PART 3 EXECUTION

3.1. Excavations and Trenches

.1 Comply with requirements of Section 222 to 242 - Ont. Reg. 213/91.

.2 The Contractor shall coordinate and monitor the Work of all trades involved in trenching related work on the project.

.3 If an excavation affects the stability of adjacent structures, the Contractor shall obtain the services of a Professional Engineer at his own cost who will specify in writing precautions to be taken to protect the structure affected.

This record shall be maintained on site and strictly adhered to during the work.

.4 Prefabricated, hydraulic or engineered support systems shall be designed by a Professional Engineer and a record shall be maintained on site which includes the capability of each device.

3.2. Existing Exits and Occupied Floor Areas

.1 Maintain all existing exits and accesses to exits serving portions of the existing building scheduled to remain in use by the Owner, including corridors and doorways, free of impediments and obstructions.

.2 Where an exit or access to exit is unavoidably blocked provide an acceptable alternate exit and/or access route, clearly defined and protected so that it is separated from the construction area by a smoke and dust tight partition equivalent to a 45 minute fire separation. Proposed alternate exits shall be to the satisfaction of authorities having jurisdiction.

.3 At existing occupied floor areas exposed to new construction, provide a temporary dust tight partition equivalent to a 45 minute fire separation.

3.3. Modifications to Existing Fire Alarm System

.1 Where work involves or necessitates modifications to the existing fire alarm system, carefully phase and schedule such work, under the direction and coordination of a technical representative of the manufacturer of the fire alarm equipment, to minimize number and duration of temporary shutdown required.

.2 Whenever such shutdown occurs which will leave all or a portion of the premises without fire alarm protection, notify the Owner and municipal fire department in advance of the time and estimated duration of such shutdown, so that the Owner may institute alternate protective measures acceptable to the fire department.

END OF SECTION

PART 1 GENERAL

1.1. Reference Standards

.1 National Research Council of Canada (NRC):

.1 National Building Code of Canada (NBC)

.2 National Fire Code of Canada (NFC)

.2 National Fire Protection Association (NFPA):

.1 NFPA 51B-19, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work

1.2. Construction Fire Safety

.1 Contractor is responsible for construction fire safety in accordance with NFC.

1.3. Fire Department Briefing

.1 The General Contractor shall coordinate arrangements for the trade Contractors to be briefed on Fire Safety at their pre-work conference by the Fire Chief if required by the Fire Department before any work is commenced as required by the Fire Department.

1.4. Action and Informational Submittals

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit fire safety plan.

1.5. Reporting Fires

.1 Be aware at all times of nearest fire alarm pull station location, nearest telephone, and emergency phone number.

.2 Report fire incidents to Base Fire Department immediately in the following sequence:

.1 Activate nearest fire alarm pull station.

.2 Telephone the Base Fire Department

.3 Person activating fire alarm pull station to remain at main site entrance and direct Fire Department personnel to location of fire.

.4 When reporting a fire by telephone, give location of fire, building name or number, and be prepared to give basic directions (e.g., northeast corner of base compound, visual reference points).

.5 Promptly inform Owner Representative and Senior Firefighter of fire incidents at Work site, regardless of size.

1.6. Fire Safety Plan

.1 Prepare a fire safety plan in cooperation with the local fire department and other applicable regulatory authorities for the Work site before beginning Work on site.

.2 Submit fire safety plan to owner representative who will submit to local fire department for their review. Implement recommendations from local fire department into fire safety plan.

.3 Limit scope of fire safety plan to Work site area only. Existing fire safety plans covering other existing buildings are not the responsibility of this construction contract.

.4 Prepare fire safety plan in conformance with NFC. Include:

.1 Emergency procedures in case of fire, including:

1. sounding fire alarm
2. notifying fire department
3. instructing occupants on procedures to follow when fire alarm sounds
4. evacuating occupants, including special provisions for persons requiring assistance
5. confining, controlling, and extinguishing the fire

.2 Appointment and organization of designated supervisory staff to carry out fire safety duties

.3 Training of supervisory staff and other occupants in their responsibilities for fire safety

.4 Documents, including diagrams, showing type, location and operation of building fire emergency systems.

.5 Holding of fire drills

.6 Control of fire hazards in the building

.7 Inspection and maintenance of building facilities provided for the safety of occupants

.5 Post fire safety plan at each entrance to Work site or near each Work site's health and safety board.

.6 Review fire safety plan a maximum of every 12 months to ensure it takes into account changes in the use and other characteristics of the building. Revise fire safety plan when it can be improved.

1.7. Fire Warning System

.1 Provide a fire warning system for entire Work site, capable of notifying construction personnel of a fire emergency in construction area.

.2 Provide a fire warning system with sufficient coverage so that alarms are capable of being heard throughout building and everywhere on site.

1.8. Fire Protection System Impairment

.1 Maintain existing fire protection systems in an operational state at all times during construction.

.2 Use of fire hydrants, standpipes, or hose systems for purposes other than firefighting, unless authorized by Senior Firefighter, is prohibited.

.3 Existing fire protection and alarm systems will not be obstructed, shut off, disabled, or left inactive at end of each Working Day or shift without written authorization from Senior Firefighter.

.4 Submit written notification to owner Representative and Senior Firefighter 48 hours in advance of planned interruption of services. Submit written notification for operation including shutting down active fire protection system, including water supply, fire suppression, fire detection, and life safety systems.

.5 Where an existing fire protection system that provides fire alarm monitoring becomes impaired in an existing building, provide a fire watch as directed by Senior Firefighter.

.6 Where systems are affected or impaired during the Work, conduct work on fire protection system in accordance with NFC, FMD 4006, and Base Fire Orders.

1.9. Temporary Portable Fire Extinguishers

.1 Provide portable extinguishers, or as otherwise directed by Senior Firefighter.

.2 Provide supplemental portable extinguishers to the following areas or as otherwise directed by Senior Firefighter:

.1 Adjacent to hot works

.2 Areas where combustibles materials are stored

.3 Adjacent to areas where flammable liquids or gases are stored or handled

.4 Near or on internal combustion engines

.5 Adjacent to temporary oil fired or gas fired equipment

.6 Adjacent to bitumen heating equipment

.7 Adjacent to each roof installation or repair work area

.3 Provide portable extinguishers classified and rated as 10-A:80B:C, minimum 20 pounds unless otherwise directed by Senior Firefighter.

.4 Provide dry chemical type extinguishers unless otherwise required by hazard being protected.

.5 Provide a sufficient number of portable extinguishers based on a maximum travel distance between fire extinguishers of 22.9 m.

.6 Inspect and maintain extinguishers in accordance with NFC.

1.10. Installation or Repair of Roofs (Not Applicable)

1.11. Access for Fire Fighting

.1 Provide and maintain access for firefighting operations in accordance with NFC.

.2 Submit written notification to Senior Firefighter a minimum of five Working Days before operation of activities that may cause problems that might impede fire department equipment access and personnel response including

.1 violation of minimum horizontal and overhead clearances

.2 other operations as directed by Senior Fire Fighter, or

.3 erecting of barricades and digging of trenches.

.3 Maintain a minimum 6.0-m clear horizontal width for access routes, or as otherwise directed by Senior Firefighter.

.4 Maintain a minimum 5.0-m vertical clearance for access routes, or as otherwise directed by Senior Firefighter.

1.12. Smoking Restrictions

.1 Smoking is prohibited on the premises.

1.13. Waste Management

.1 Manage waste in accordance with Section 01 74 19 – Waste Management and Disposal, and as follows:

.1 Minimize waste materials.

.2 Do not burn waste materials.

.3 Remove waste from Work site at end of each Working Day or shift, or more frequently when directed by Senior Firefighter.

.4 Storage:

1. Store oily waste in approved receptacles to ensure maximum cleanliness and safety.

2. Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles. Remove at end of each Working Day.

.5 Provide temporary waste bins no closer than 3.0 m to buildings.

1.14. Flammable and Combustible Liquids

.1 Handle, store, and use flammable and combustible liquids in accordance with NFC or as otherwise directed by the Senior Firefighter.

.2 Store flammable and combustible liquids such as gasoline, kerosene, and naphtha in quantities not exceeding 45 litres. Store in approved safety cans bearing Underwriters' Laboratory of Canada or Factory Mutual approved certification mark. Obtain written authorization from Senior Firefighter for storage of quantities of flammable and combustible liquids exceeding 45 litres.

.3 Transfer of flammable or combustible liquids within buildings or on jetties is prohibited.

.4 Transfer of flammable or combustible liquids in vicinity of open flames or any type of heat-producing device is prohibited.

.5 Use of flammable liquids having a flash point below 38 degrees C such as naphtha or gasoline as solvents or cleaning agents is prohibited.

.6 Storing flammable and combustible waste liquids on site is prohibited. Remove daily or more frequently as directed by Senior Fire fighter.

1.15. Hot works

.1 Implement a Hot Works program in accordance with NFC, FMD 4004, and NFPA 51B. Apply Hot Works program to processes involving welding, cutting, roofing, and other hot works when directed by Senior Firefighter.

.2 Obtain a Hot Works permit 48 hours in advance from Senior Firefighter for hot works in work area. Frequency of renewal for hot works permits is at discretion of the Senior Firefighter.

.3 When Work is carried out in dangerous or hazardous areas involving use of heat, provide fire watchers equipped with sufficient fire extinguishers. Determination of dangerous or hazardous areas along with level of protection necessary for Fire Watch is at discretion of the Senior Firefighter.

.4 Provide fire watch service for Work as directed by Senior Firefighter and as defined in Fire Department Briefing. Provide fire watchers trained in use of fire extinguishing equipment.

.5 Carry out hot works processes in areas free of combustible and flammable content.

.6 Where hot works must be carried out in areas where combustibles are present:

.1 Protect flammable and combustible materials within 15.0 m of hot works in accordance with NFC.

.2 Provide a fire watch during hot works and for a minimum of 60 minutes after work is complete, unless otherwise directed by Senior Firefighter.

.3 Conduct a final inspection of area not less than 4 hours after completion of hot works, unless otherwise directed by Senior Firefighter.

.7 Where there is a possibility of sparks leaking onto combustible materials in areas adjacent to areas where the hot works is carried out.

.1 Cover or close openings in walls, floors, or ceilings to prevent passage of sparks to such adjacent areas.

.2 Provide a fire watch during hot works, and a minimum 60 minutes after hot works is complete.

.3 Conduct a final fire watch inspection not less than 4 hours after hot works is complete, unless otherwise directed by Senior Firefighter.

.8 Protection of flammable or combustible materials:

.1 Remove flammable and combustible materials including combustible or flammable dust or residue from area where hot works is carried out.
.2 When removal is not possible, protect materials with a non-combustible covering.

.9 Provide a temporary fire extinguisher within 3.0 m of hot works, minimum size of 20 lbs Type ABC extinguisher, unless otherwise directed by Senior Firefighter.

1.16. Hazardous Substances

.1 Perform Work involving the use of toxic or hazardous materials, chemicals or explosives, or otherwise creating hazard to life, safety or health, in accordance NFC.

.2 Provide temporary mechanical ventilation where flammable liquids, such as lacquers or urethanes are used. Eliminate sources of ignition. Provide written notification to the Senior Firefighter a minimum five days before starting Work and immediately at completion of Work.

1.17. Partial Occupancy Procedures

.1 Implement partial occupancy procedures as required by NBC Division B Part 8 and FMD 4005. Partial occupancy is defined as a Work site adjacent to an area occupied by Departmental or Canadian Forces personnel. This includes:

.1 Phased new construction

.2 Early or partial occupancy of new construction

.3 New construction being added onto an existing building

.4 Renovation or recapitalization of an existing building

.5 Phased renovation or recapitalization of an existing building

.2 Where partial occupancy occurs, implement requirements as indicated in Plans (drawings) and Specifications. This may include temporary construction of a rated fire separation between occupied and construction areas as required by NFC.

.3 If Work occurs in an occupied building, perform fire watch at least every hour, throughout entire site during period of demolition.

.4 If Work occurs in an occupied building and where building does not have a Fire Alarm system or similar automatic monitoring or protection equipment, perform inspections every hour for entire period of construction.

1.18. Questions or Clarification

.1 Direct questions and requests for clarification on Fire Safety to owner representative.

.2 Owner Representative will obtain clarifications from Senior Firefighter. Do not contact Senior Firefighter directly for notification, authorization, or any requests unless situation constitutes an immediate emergency.

1.19. Fire Inspection

.1 Coordinate site inspections by Senior Fire Fighter through owner representative.

.2 Allow Senior Fire Fighter unrestricted access to work site.

.3 Cooperate with Senior Firefighter during routine fire safety inspection of Work site.

.4 Immediately remedy unsafe fire situations observed by Senior Fire Fighter.

PART 2 PRODUCTS

2.10. Not Used.

PART 3 EXECUTION

.1 **Not Used.**

END OF SECTION

PART 1 GENERAL

1.1. Summary

.1 This Section references to laws, by laws, ordinances, rules, regulations, codes, orders of Authority Having Jurisdiction, and other legally enforceable requirements applicable to Work and that are; or become, in force during performance of Work.

1.2. References to Regulatory Requirements

.1 Department of Justice Canada (Jus):

.1 SOR/2018-196 Prohibition of Asbestos and Products Containing Asbestos Regulations

.2 Perform Work in accordance with the current Ontario Building Code (OBC) including amendments up to bid closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.3 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code

.1 Meet or exceed requirements of:

1. Contract Documents.

2. Specified standards, codes, and referenced documents.

1.3. Buy Ontario Procurement Directives

The Owner reserves the right to apply eligibility requirements, and preferences in accordance with applicable provincial procurement directives and trade obligations.

1. Preference for Ontario/Canadian businesses

.1 Ontario-made goods

.2 Canadian-made goods

.3 Ontario-based services

.4 Canadian-based services

2. Restrictions on U.S. businesses (where applicable)

Wherever feasible, preference may be given to Ontario businesses and Canadian businesses in accordance with the Buy Ontario Procurement Directive.

Vendors may be required to provide information confirming the location of their headquarters, principal place of business, workforce, manufacturing operations, or service delivery locations.

Vendors may be requested to identify the origin of goods and services proposed as part of their submission, including the location of manufacturing, assembly, distribution, and service delivery
Pursuant to the Buy Ontario Procurement Directive, U.S. businesses may be excluded from this procurement unless an applicable exemption or exception applies.

"Buy Ontario Procurement Directive" means This procurement is subject to the requirements of the Ontario Buy Ontario Act (Public Sector Procurement), 2025 and the Buy Ontario Procurement Directive.

"Canadian-Made Good" means a good that meets any one of the following criteria:

i. wholly manufactured or originating in Canada;
ii. at least 51% of the total direct costs of producing or manufacturing the good have been incurred in Canada; or
iii. labelled as "Made in Canada" or "Product of Canada".

"Canadian Service" means a service wholly provided by individuals (natural persons) located in Canada.

"Ontario Service" means a service wholly provided by individuals (natural persons) located in Ontario.

"Ontario-Made Good" means a good that meets any one of the following criteria:

i. it is wholly manufactured or originating in Ontario; or
ii. at least 51% of the total direct costs of producing or manufacturing the good have been incurred in Ontario.

1.4. Hazardous Material Discovery

.1 Asbestos: Demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify owner representative and the Consultant.

.2 PCB: Polychlorinated Biphenyl: Stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify owner representative and the Consultant.

.3 Mould: Stop work immediately when material resembling mould is encountered during demolition work. Notify owner representative and the Consultant.

1.5. Building Smoking Environment

.1 Comply with smoking restrictions and municipal by-laws. Smoking is not permitted on the premises.

1.6. Quality Assurance

.1 Regulatory Requirements: Except as otherwise specified, Contractor shall apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:

.1 Regulatory requirements and fees in force on date of Bid submission, and

.2 A change in regulatory requirements or fees scheduled to become effective after date of bid submission and of which public notice has been given before date of bid submission

PART 2 PRODUCTS

2.1. Not Used

PART 3 EXECUTION

3.1. Not Used

END OF SECTION

PART 1 GENERAL

1.1. Reference Standards

.1 National Research Council of Canada (NRC)

.1 National Building Code (NBC), current edition

1.2. Application of Abbreviations and Acronyms

.1 Abbreviations and acronyms may appear in place of frequently utilized wording or expressions within the contract documents**.**

.2 Terms which are not listed within this section may appear under other applicable sections, schedules or on drawings.

.3 The lists of abbreviations and acronyms under this section are applicable to architectural drawings and specifications only. Contractor shall also refer to the abbreviation lists provided by other sub-consultants / disciplines and limit their reference respective to each sub-consultant/discipline's drawings and specifications.

.4 Abbreviations and acronyms may appear in combination with prefixed/suffixed numbers or letters to denote material type, phase of construction or associated reference from other documents. Prefix/suffix numbers or letters shall be separated from the abbreviation or acronym by a hyphen "-" (i.e. CPT-1 refers to 'Carpet' of "Type 1').

1.3. Architectural Abbreviations and Acronyms

Abbreviation	Meaning
A	
AB	Air Barrier
AC	Acoustic
AC MET D	Acoustic metal deck
ACP	Acoustic ceiling panel
AC PLAS	Acoustic plaster
ACS FL	Access flooring
ACU	Acoustic ceiling unit
ACWU	Acoustic wall unit
ADJ	Adjustable
ADO	Automatic door operator
ANNO	Anodized
AL	Aluminum
ARCH	Architectural

ASTC	Apparent sound transmission class
AVB	Air-vapour barrier
B	
BD	Board
BF	Barrier-free
BH	Borehole
BL	Bottom layer
BLDG	Building
BOT	Bottom
B PL	Baseplate
BPP	Ballistic protection panel
BR	Backrest
BRK	Brick
BSMT	Basement
BFS	Bottle filling station
C	
C	Centre
C/C	Centre to centre
C/L	Centreline
C/W	Complete with
CB	Cove base
CEM	Cement
CFG or CFGL	Clear float glass
CG	Corner guard
CH-R	Chair rail
CH-T	Fold-down change table
CJ	Control joint
CLG	Ceiling
CMU	Concrete masonry unit
COL	Column
CONC	Concrete
CONC BL	Concrete block (a.k.a. CMU - Concrete Masonry Unit)
CONC BL LT	Lightweight concrete block
CONC/H	Concrete with hardener finish
CONC/S	Concrete with sealer finish
CPT	Broadloom carpet
CPT T	Carpet tile
CT	Ceramic tile
CUB T	Cubical track
CWT	Ceramic wall tile

D	
D	Depth
DET	Detail
DF	Drinking fountain
DFP	Douglas fir plywood
DIA	Diameter
DIM	Dimension
DIV	Division
DN	Down
DS	Downspout
DW	Dishwasher
DWG	Drawing
E	
EA	Each
EJ or EXP JT	Expansion Joint
EL or ELEV	Elevation
ELEC	Electrical
EF	Exhaust fan
EP	Electrical panel
EPX	Epoxy
EPX TER	Epoxy terrazzo
EQ	Equal
EW	Emergency eye wash station
EX or EXIST	Existing
EXP	Exposed
EXP STR	Exposed structure
EXT	Exterior
F	
FG	Fibreglass
FD	Floor drain
FDN	Foundation
FE	Fire extinguisher
FF or F/F	Force flow heater
FFD	Funnel floor drain
FF&E	Furniture, fixtures and equipment
FH	Fire hydrant
FHC	Fire hose cabinet
FIN	Finish or Finished
FL	Floor
FP	Fireproofing

FRG of FRGL	Fire rated glazing
FTG	Footing
G	
G1S	Good one side
G2S	Good two sides
GA	Gauge
GALV	Galvanized
GF	Ground floor
GL	Glass or glazing
GL BLK	Glass block
GS	Grid system
GR	Grade
GWB	Gypsum wall board
H	
HB	Hose bibb
HC	Hollow core
HC WD	Hollow core wood door
HM	Hollow metal
HOR	Horizontal
HR	Handrail
HSK'G	Housekeeping
HS	Hand sanitizing station
HT or HGT	Height
HTR	Heater
HW	Hot water
HWC	Hygienic wall covering or Hygienic wall cladding
HWS	Hand wash sink
HWT	Hot water tank
I	
ID	Inside diameter
INS or INSUL	Insulation or Insulated
INT	Interior
IT	Information technology
J	
J or JAN	Janitorial
JT	Joint
K	
KPL	Kickplate
L	
LAM	Laminate

LDT	Double tier lockers
LG	Long
LIN	Linoleum
LP	Purse locker
LS	Light standard
LST	Single tier lockers
LVP	Luxury vinyl plank
LVT	Luxury vinyl tile
M	
M	Mirror
MAX	Maximum
MECH	Mechanical
MET	Metal
MFT	Fixed tilt mirror (barrier free)
MIN	Minimum
MOP	Mop holder
MPa	Megapascal
MVR	Vandal resistant mirror
N	
NIC	Not in contract
NO	Number
NOM	Nominal
NRC	Noise reduction coefficient
NTS	Not to scale
O	
OD	Outside diameter
O/C	On centre
O/H	Overhead
OSB	Oriented strand board
OWSJ	Open web steel joist
P	
PA	Public Address
P CONC	Precast concrete
PCT	Porcelain ceramic tile
PL	Plaster
PLAM	Plastic laminate
PLYWD	Plywood
PREFAB	Prefabricated
PREFIN	Prefinished
PT	Paint

PTD	Paper towel dispenser
PTWD	Pressure treated wood
PSF	Pressed steel frame
PSI	Pounds per square inch (lbs/in^2)
PVC	Polyvinyl chloride
PWC	Protective wall covering or protective wall cladding
Q	
QT	Quarry tile
QTY	Quantity
R	
R	Radius
RA	Return air
RB	Resilient wall base or rubber wall base
R CONC	Reinforced concrete
RD	Roof drain
REF	Reference
REQ'D	Required
REV	Revised or revision
RFT	Rubber floor tile
RH	Robe hook
RO	Rough opening
ROW	Right of way
RM	Room
RSF	Rubber sheet flooring
RST	Rubber stair tread
RT	Resilient tile
RTU	Roof top mechanical unit
RWL	Rainwater leader
RWR	Recessed waste receptacle
S	
S	Screen
SAN	Sanitary
SB	Smart board
SCT	Shower curtain track
SC WD	Solid core wood door
SF or SQ FT	Square feet (ft^2)
SIM	Similar
SND	Sanitary napkin disposal
SPEC	Specification
SPF	Spruce-pine-fir

SP FL	Sports flooring
SRWR	Semi recessed waste receptacle
SS	Solid surface
STC	Sound transmission class
STD	Standard
STL	Steel
STN	Stone
STR	Structure or Structural
ST STL	Stainless steel
STWC	Stone wall cladding
SV	Sheet vinyl
SVC	Sheet vinyl cove
T	
T&G	Tongue and groove
TB	Tackboard
TEL	Telephone
TER	Terrazzo
TFL	Thermally fused laminate
TGL	Tempered glazing
TR	Towel rod
TRANSV	Transverse
TRGL	Translucent glazing
TTD	Toilet tissue dispenser
TV	Television
TVM	Television mount
TYP	Typical
U	
U/S	Underside
UG	Underground
UTL	Utility
UTM	Universal transverse mercator
UV	Ultraviolet
V	
VB	Vapour-barrier
VCT	Vinyl composite tile
VENT	Ventilated or ventilation
VERT	Vertical
VEST	Vestibule
VT	Vinyl tile
VWF	Vinyl wall fabric

W	
W	Width
WB	Whiteboard
WD	Wood
WP	Waterproof or waterproofing
WPG	Wired plate glazing
WR	Waste receptacle
WRM	Washroom

1.4. Regulatory and Standard Abbreviations

Abbreviation	Standard or Organization
A	
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
ASHRAE	American Society of Heating Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWAP	American Wire Producers Association
AWMAC	Architectural Woodwork Manufacturers Association of Canada
CaGBC	Canada Green Building Council
CALA	Canadian Association for Laboratory Accreditation
CAN	Standards Council of Canada
CCBFC	Canadian Commission on Building and Fire Codes
CCDC	Canadian Construction Documents Committee
CEC	Canadian Electrical Code (published by CSA)
CEMA	Canadian Electrical Manufacturer's Association
CGA	Canadian Gas Association
CGSB	Canadian Government Standards Board
CGSB	Canadian General Standards Board
CISC	Canadian Institute of Steel Construction
CLSAB	Canadian Lumber Standards Accreditation Board
CSA	Canadian Standards Association
CSC	Construction Specification Canada
DND	Department of National Defence
EPA	Environmental protection Agency
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable Engineers Association

ISO	International Organization for Standardization
ITS	Intertek Testing Services
NAAMM	National Association of Architectural Metal Manufacturers
NBC	National Building Code of Canada, current edition
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Agency
NLGA	National Lumber Grades Authority
NRC	National Research Council of Canada
OBC	Ontario Building Code, current edition
OGCA	Ontario General Contractors Association
OPSS	Ontario Provincial Standard Specifications
SCC	Standard Council of Canada
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
ULC	Underwriters' Laboratories of Canada
WHMIS	Workplace Hazardous Materials Information System

PART 2 PRODUCTS

2.1. Not Used.

PART 3 EXECUTION

3.1. Not Used.

END OF SECTION

PART 1 GENERAL

1.1. Summary

.1 This Section describes administrative and procedural requirements for reactive activities to verify that completed Work conforms to Contract Documents requirements.

.2 Having inspection and testing agencies by Contractor or Owner does not relieve the Contractor of their responsibility to perform Work in accordance with Contract Documents.

1.2. Related Requirements

.1 Section 01 33 00 – Submittal Procedures

1.3. Inspection by Consultant

.1 Give the Consultant advance notice of shop fabrication, field erection and other phases of the Work so as to afford them reasonable opportunity to inspect the Work for compliance with contract requirements. Failure to meet this requirement may be cause for the Consultant to classify the Work as defective.

.2 Uncover any Work that has been designated for special tests, inspections or approvals before such is made, have the inspections or tests satisfactorily completed and make good such Work.

.3 The Consultant may order any part of the Work to be examined if such Work is suspected to be not in accordance with the Contract Documents. If, upon examination such Work is found not in accordance with the Contract Documents, correct such Work and pay the cost of examination and correction. If such Work is found in accordance with the Contract Documents, the Owner will pay the cost of examination and replacement.

1.4. Mock-Ups

.1 Prior to proceeding with the Work, prepare mock-ups as requested in the individual sections of the specifications and in this section. Include for Work of all Sections required to provide mock-ups.

.2 Construct in specified locations or as selected by the Consultant.

.3 Prepare mock-ups for Consultant's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in the Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 Remove mock-ups at conclusion of Work or when acceptable to Consultant.

.6 Provide in-situ mock-up of sound rated walls in order to perform on site testing and confirmation of sound transmission rates.

1.5. Construction Tolerances

.1 Unless more restrictive/demanding requirements are specified in other Sections, the following construction tolerances could be accepted:

.1 "plumb and level" - 3 mm in 3 m (1/8” in 10’-0”).
.2 "square" - 10 seconds more or less than 90 degrees.
.3 "straight" - 3 mm (1/8”) under a 3 m (10’-0”) long straight edge.
.4 Tolerances shall not be cumulative.

PART 2 PRODUCTS

2.1. Not Used.

PART 3 EXECUTION

3.1. Not Used

END OF SECTION

PART 1 GENERAL

1.1. Reference Standards

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2, Stipulated Price Contract, current edition.

.2 Within text of each specifications section, reference may be made to reference standards. Conform to these reference standards, in whole or in part as specifically requested in specifications.

.3 If there is question as to whether products or systems are in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.

.4 Cost for such testing will be borne by Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2. 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 Acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition.

.1 Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of Work.

.3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections.

.1 Inspection does not relieve responsibility of the Contractor to correct defects in the Work.

.2 Inspection is a precaution against oversight and/or error.

.3 Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.4 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.

.5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3. Availability

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Consultant and Owner of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Consultant and Owner at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant and Owner reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4. Storage, Handling and Protection

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber and other moisture sensitive products on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

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

.9 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5. Transportation

.1 Pay costs of transportation of products required in performance of Work.

.2 Transportation cost of products supplied by Owner will be paid for by Owner. Unload, handle and store such products.

1.6. 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 will 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 re-installation at no increase in Contract Price or Contract Time.

1.7. Quality of Work

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Consultant and/or Owner reserves right to require dismissal from site, workers deemed incompetent or careless.

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

1.8. Co-ordination

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9. 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 interference. Install as directed by Consultant.

1.10. Remedial Work

.1 Refer to CCDC 2 and Section 01 73 00 - Execution Requirements.

.2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11. Location of Fixtures

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Consultant of conflicting installation. Install as directed.

1.12. Fastenings

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13. Fastenings - Equipment

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14. Protection of Work in Progress

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

1.15. Existing Utilities

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

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

PART 2 PRODUCTS

2.1. Not Used.

PART 3 EXECUTION

3.1. Not Used

END OF SECTION

PART 1 GENERAL

1.1. Discrepancies and/or Omissions

.1 If the Contractor finds discrepancies in, or omissions from the Drawings, Specifications or other Contract Documents or has any doubt as to the meaning or intent of any part thereof the Consultant shall be notified at once. The Consultant will send written instructions or explanations. Neither the Owner nor the Consultant will be responsible for oral instructions.

.2 Requests For Information (RFI): The contractor shall submit formal "Requests for Information" on a standard form, numbered and dated. Each request shall reference a specification section and or drawings related to the question. The "Information Request" shall be clear and vetted through the contractor and include as well as a "Contractor's Proposed Solution" and room for a "Response". The contractor shall maintain a log of requests to be reviewed at construction meetings.

1.2. Examination

.1 Make a careful examination of the site of the project, and investigate and be satisfied as to all matters relating to the nature of the work to be undertaken, as to the means of access and egress thereto and there from, as to the obstacles to be met with, as to the rights and interests which may be interfered with during the construction of the work, as to the extent of the work to be performed and any and all matters which are referred to in the Drawings, Specifications and other Contract Documents, or which are necessary for the full and proper understanding of the work and the conditions under which it will be performed.

.2 No allowance shall be made subsequently in this connection on behalf of the Contractor for any error or negligence on its part.

.3 Before commencing the work of any Section, the work of other Sections upon which it may depend, shall be carefully examined. Report any defects which might affect the new work in writing to the Consultant. Commencement of new work shall imply acceptance of all work by other Sections upon which the new work depends.

1.3. Control of the Work

.1 The Contractor shall be solely responsible for the proper laying out of the whole of the Work. The Contractor shall check carefully and verify all lines, levels and measurements shown in the Contract Documents.

.2 The Contractor shall possess the necessary technical skills to reasonably evaluate all requirements of the Work, and to have included in the Contract Price all costs for the proper implementation of these requirements in accordance with the Contract Documents.

.3 Without limiting the generality of the foregoing, the Contractor is responsible for the co-ordination of the various parts of the Work so that no part is left in an unfinished or incomplete condition.

.4 Prior to commencing procurement and construction activities, the Contractor shall verify, at the Place of the Work, all 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 Work affected thereby.

PART 2 PRODUCTS

2.1. Not Used.

PART 3 EXECUTION

3.1. Examination Requirements

.1 Verification of Conditions:

.1 Verify that substrate conditions are acceptable for installation of materials, assemblies, and systems in accordance with manufacturer's instructions and recommendations.

.2 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.3 After uncovering, inspect conditions affecting performance of Work.

.4 Proceed with installation only after unacceptable conditions are remedied.

.5 Proceeding with cutting, patching, or installation means acceptance of existing conditions.

3.2. Preparation

.1 Common Requirements for Protection of In-Place Conditions:

.1 Provide supports to ensure structural integrity of surroundings. Provide devices and methods to protect other portions of Project from damage.

3.3. Building Dimensions and Coordination

.1 Ensure that all necessary job dimensions are taken and all trades are co-ordinated for the proper execution of the work. Assume complete responsibility for the accuracy and completeness of such dimensions, and for co-ordination.

.2 Verify that all work, as it proceeds, is executed in accordance with dimensions and positions indicated which maintain levels and clearances to adjacent work, as set out by requirements of the drawings, and ensure that work installed in error is rectified before construction resumes.

.3 Check and verify all dimensions referring to the work and the interfacing of all services. Verify all dimensions, with the trade concerned when pertaining to the work of other trades. Be responsible to see that Subcontractors for various trades cooperate for the proper performance of the Work.

.4 Avoid scaling directly from the drawings. If there is ambiguity or lack of information, immediately inform the Consultant. Be responsible for any change through the disregarding of this clause.

.5 All details and measurements of any work which is to fit or to conform with work installed shall be taken at the building.

.6 Advise Consultant of discrepancies and if there are omissions on drawings, particularly reflected ceiling plans and jointing patterns for paving, ceramic tile, or carpet tile layouts, which affect aesthetics, or which interfere with services, equipment or surfaces. DO NOT PROCEED without direction from the Consultant.

.7 Ensure that each Subcontractor communicates requirements for site conditions and surfaces necessary for the execution of the Subcontractor's work, and that they provide setting drawings, templates and all other information necessary for the location and installation of material, holes, sleeves, insets, anchors, accessories, fastenings, connections and access panels. Inform other Subcontractors whose work is affected by these requirements and preparatory work.

.8 Prepare interference drawings to properly co-ordinate the work where necessitated.

.9 Where work incorporates metric modular components the following rules apply:

.1 Actual opening dimensions in masonry including doors, windows, walls, louvres and actual room sizes are 10 mm (3/8") greater than nominal dimensions given on Drawings. Actual thicknesses of walls, piers and overall lengths of walls or buildings are 10 mm (3/8") less than nominal dimensions given on Drawings unless indicated otherwise.

.2 Unless indicated otherwise Drawing details at scales of 1/2” = 1’-0” (1:10) or larger indicate "actual" rather than "nominal" dimensions.

3.4. Regulatory Requirements

.1 Minimum Standard: unless reference is made in the Contract Documents to other standards, all work shall conform to or exceed the minimum applicable standards of The Building Code, and/or the governing Jurisdictional Authorities.

.2 Construction Safety: include all provisions for construction safety, such as fences, barricades, bracing supports, storage facilities, sanitation facilities, fire protection, standpipes, electrical supply, temporary heat, ventilation, construction equipment with its supports and guards, stairs, ramps, platforms, runways, ladders, scaffolds, guardrails, temporary flooring, rubbish chutes, walkway lighting, and morality lighting, all as required by the Occupational Health and Safety Act, and amendments thereto and the Fire Code Ontario Regulation 388/97 as well as all other applicable regulations of Jurisdictional Authorities.

END OF SECTION

PART 1 GENERAL

1.1. Section Includes

.1 Common requirements for installing, applying, and erecting products. Includes procedures and submittals for cutting and patching to existing conditions, and required repairs arising from tests and destructive inspections.

1.2. Action and Informational Submittals

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

.2 Submit proof of anchor and fastener load carrying capacity for a work result, when requested.

.3 Submit written request before cutting or altering to existing conditions which may affect the following:

.1 structural integrity of existing elements: Submit structural details and calculations performed by a professional structural engineer registered or licensed in Ontario, Canada. Include evidence of unsatisfactory structural integrity of the elements according to owner representative and the Consultant.

.2 integrity of weather-exposed and moisture-resistant elements

.3 efficiency, maintenance, safety, or accessibility of operational elements

.4 visual qualities of sight-exposed elements.

.5 Work of Owner and other contractor(s)

.4 Submit a request for cutting or altering which includes:

.1 identification of the Project; and

.2 location and description of affected existing conditions including changes to structural elements, function of elements, and visual appearance of existing elements; and the location and identification of utilities that will be temporarily out of service during cutting and patching activities.

.5 Submit a work plan including:

.1 a statement why cutting or altering is unavoidable and describe alternatives to cutting and patching if available;

.2 a description of proposed work and proposed Products;

.3 the effect of cutting or altering on work by Owner or other contractors;

.4 written acknowledgement by other contractors affected by cutting or altering, if applicable; and

.5 proposed date(s) and time(s) work will be executed.

1.3. Qualifications

.1 Licensed Professionals: Engage a structural engineer licensed at the Place of the Work, to submit details and calculations when altering existing structural elements.

PART 2 PRODUCTS

2.1. Materials

.1 Patching Materials: If possible, use the same materials found in the existing conditions, except in fire-resistance rated materials and assemblies.

.2 Materials Visible from the Floor Area: Use materials that visually match existing adjacent surfaces, and match existing functional performance.

PART 3 EXECUTION

3.1. Common Installation/Application/Erection Requirements

.1 Fit several parts together, to integrate with other Work.

.2 Remove and replace defective and non-conforming Work.

.3 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.

.4 Notify owner representative and the Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that owner representative and the Consultant will establish course of action.

.5 Improper installation or erection of products, due to failure in complying with these requirements, authorizes owner representative and the Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

.6 Provide openings in non-structural elements for penetrations of mechanical and electrical work.

.7 Conceal pipes, ducts and wiring in floor, wall, partition, and ceiling assemblies in finished areas, except where indicated otherwise.

.8 In addition to the manufacturer's recommendations for safety, access, accessibility, and maintenance, locate equipment, fixtures, and distribution systems where it shall provide minimal interference and shall maximize on usable space.

.1 Location of equipment, fixtures, and outlets indicated on Drawings and specifications are approximate.

.2 Notify owner representative and the Consultant of impending installation and obtain approval for actual locations.

3.2. Life and Fire Safety

.1 Enforce all requirements established by Jurisdictional Authorities and Underwriters for life safety, fire prevention, and fire protection.

3.3. Work Not in Contract

.1 Work not in this Contract (noted N.I.C. on drawings) shall be governed by Article GC 3.2 "Other Contractors" in the General Conditions.

3.4. Documents at Job Site

.1 Maintain at job site, one copy each of the following and make same available to the Consultant upon request:

.1 Contract drawings.
.2 Specifications.
.3 Addenda.
.4 Reviewed shop drawings.
.5 Supplemental Instructions.
.6 Contemplated Change Orders.
.7 Change Orders.
.8 Other modifications to Contract.
.9 Field test reports.
.10 Copy of approved work schedule.
.11 Manufacturer's installation and application instructions.

3.5. Existing Conditions

.1 Make good surfaces and finishes damaged or disturbed due to Work of this Contract to match existing. Ensure that material used to repair damage is compatible with existing work.

.2 Term "make good" shall mean repairing or filling operations performed on existing floors, walls, ceilings, sidewalks, roads, backfill, or any other exposed surfaces. Perform cutting and patching where applicable as specified herein. It is intended that finished surfaces match and line with existing adjoining surfaces.

.3 Restore site to condition equal to or, if specified elsewhere, to condition better than existing conditions.

END OF SECTION

PART 1 GENERAL

1.1. Project Cleanliness

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by owner representative. Do not burn waste materials on site.

.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.4 Provide on-site containers for collection of waste materials and debris.

.5 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

.6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

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

.9 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2. Final Cleaning

.1 Refer to CCDC 2.

.2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.4 Prior to final review remove surplus products, tools, construction machinery and equipment.

.5 Remove waste products and debris.

.6 Remove waste materials from site at regularly scheduled times or dispose of as directed by owner representative. Do not burn waste materials on site.

.7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass affected by the work.

.9 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.

.10 Clean lighting reflectors, lenses, and other lighting surfaces affected by the work.

.11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.12 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.13 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.14 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment, if affected by the work.

PART 2 PRODUCTS

2.1. Not Used

PART 3 EXECUTION

3.1. Not Used

END OF SECTION

PART 1 GENERAL

1.1. Administrative Requirements

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

1. Notify Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

2. Request Consultant's inspection.

.2 Consultant's Inspection:

1. Consultant and Contractor to inspect Work and identify defects and deficiencies.

2. Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:

1. Work: completed and inspected for compliance with Contract Documents.

2. Defects: corrected and deficiencies completed.

3. Equipment and systems: tested, adjusted and balanced and fully operational.

4. Certificates required by Boiler Inspection Branch, Fire Commissioner and Utility companies: submitted.

5. Operation of systems: demonstrated to Owner's personnel.

6. Work: complete and ready for final inspection.

.4 Final Inspection:

1. When completion tasks are done, request final inspection of Work by the Consultant, and Contractor.

2. When Work incomplete according to Owner and Consultant, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when the Owner and Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: as outlined in the CCDC 2-2020 contract as well as the Construction Act.

.7 Final Payment:

1. When the Owner and the Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

2. Refer to CCDC-2: when Work deemed incomplete by the Owner or the Consultant, complete outstanding items and request re-inspection.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

PART 2 PRODUCTS

2.1. Not Used.

PART 3 EXECUTION

3.1. Not Used

END OF SECTION

PART 1 GENERAL

1.1. Administrative Requirements

.1 Pre-warranty Meeting:

.1 Convene meeting one week before Contract completion with contractor's representative and the Consultant to:

1. Verify Project requirements.

2. Review manufacturer's installation instructions and warranty requirements.

.2 Consultant to establish communication procedures for:

1. Notifying construction warranty defects.

2. Determine priorities for type of defects.

3. Determine reasonable response time.

.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2. Action and Informational Submittals

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

.2 Two weeks before Substantial Performance of the Work, submit to the Consultant a digital copy of operating and maintenance manuals.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.3. Contents – Project Record Documents

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

1.4. As-Built Documents and Samples

.1 Maintain, in addition to requirements in General Conditions, at site one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Site test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in site office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by the Consultant.

1.5. Recording Information on Project Record Documents

.1 Record information on set of drawings, provided by the Consultant.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Site changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 Referenced Standards to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Other Documents: Maintain manufacturer's certifications, inspection certifications, site test records, required by individual specifications Sections.

.7 Provide digital photos, if requested, for site records.

1.6. Equipment and Systems

.1 For each item of equipment and each system include description of unit or system, and component parts.

.1 Give function, normal operation characteristics and limiting conditions.

.2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

.1 Include regulation, control, stopping, shut-down, and emergency instructions.

.2 Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include test and balancing reports as specified.

.15 Additional requirements: As specified in individual specification Sections.

1.7. Materials and Finishes

.1 Building products, applied materials, and finishes: Include product data, with catalogue number, size, composition, and colour and texture designations.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and weather-exposed products: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional requirements: As specified in individual specifications Sections.

1.8. Maintenance Materials

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification Sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

1. Submit inventory listing to owner representative.

2. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit before final payment.

.2 Extra Stock Materials:

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

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

1. Submit inventory listing to owner representative.

2. Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit before to final payment.

.3 Special Tools:

.1 Provide special tools, in quantities specified in individual specification Section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to site; place and store.

.4 Receive and catalogue items.

1. Submit inventory listing to owner representative.

2. Include approved listings in Maintenance Manual.

1.9. Delivery, Storage, and Handling

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by the Consultant.

1.10. Closeout Document Checklist

.1 MOL Notice of Project

.2 WSIB Certificate

.3 Insurance Certificate

.4 Copy of Bonds

.5 Occupancy Permits

.6 Fire Department Acceptance, if applicable

.7 Closed Hot Work Permits, if applicable

.8 Sub-contractor list complete with contact information

.9 Supplementary Instructions – should be indicated on drawings/specifications

.10 Signed Change Orders

.11 Certificate of Substantial Completion c/w copy of ad

.12 Architect general review letter

.13 Engineer general review letters

.14 Extended warranty letters – specifications

.15 Scanned PDF version of manual and as-built drawings

.16 Signed Transmittal of specified and turned over materials.

.17 Architectural

.1 Maintenance Information

.2 Full scale as-built drawings c/w all revisions

.3 Approved shop drawings

.18 Structural

.1 Full scale as-built drawings c/w all revisions

.2 Approved shop drawings

.3 Welding certificates of installers

.4 Inspection Reports

.19 Mechanical

.1 Warranty letter

.2 Full scale as-built drawings c/w all revision

.3 Approved shop drawings

.4 Start-up reports (all equipment) and required commissioning reports

.5 Gas filter certificate of installer

.6 Sprinkler verification

.7 Equipment Operating and Maintenance Instructions

.8 Equipment Parts Lists

.20 Electrical

.1 Warranty letter

.2 Full scale as-built drawings c/w all revisions

.3 Approved shop drawings

.4 ESA certificate,

.5 F/A verification

.6 Data Test certification

.7 Inspection Reports and required commissioning documents

.8 Equipment Operation and Maintenance Instructions

PART 2 PRODUCTS

2.1. Not Used.

PART 3 EXECUTION

3.1. Not Used

END OF SECTION

PART 1 GENERAL

1.1. Summary

.1 This Section includes requirements for the following:

.1 Selective removal and disposal of existing building interiors including but not limited to interior partitions, floor finishes, doors, frames and screens, ceiling finish assemblies, millwork, miscellaneous equipment and other items in accordance with the Drawings.

.1 Refer to Structural Drawings for additional information related to building structure demolition and modifications, and shoring requirements.

.2 Refer to Mechanical Drawings for additional information related to building services demolition and modifications including but not limited to plumbing, HVAC, and fire protection systems.

.3 Refer to Electrical drawings for additional information related to building services demolition including but not limited to power and data, lighting, and fire alarm system.

.2 Drawings contain details that suggest directions for solving some of the major demolition and removal requirements for this project; Contractor is required to develop these details further by submitting a demolition plan prepared by the Contractor.

1.2. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 02 41 00.08 – Demolition – Minor Works.

.3 Section 02 41 13 – Selective Site Demolition.

.4 Section 02 41 19.13 - Selective Building Demolition.

.5 Section 02 81 00 - Hazardous Materials.

1.3. Definitions

.1 Demolish: Detach items from existing construction and legally dispose of them off site, unless indicated to be removed and salvaged or removed and reinstalled.

.2 Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.

.3 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

.4 Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed, removed and salvaged, or removed and reinstalled.

.5 Draft Construction Waste Management Plan (Draft CWM Plan): Detailed inventory of materials in building indicating estimated quantities of reuse, recycling and landfill, prepared in accordance with Section 01 74 19 - Waste Management and Disposal and as follows:

.1 Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project.

.6 Construction Waste Management Plan (CWM Plan): Written plan addressing opportunities for reduction, reuse, or recycling of materials prepared in accordance with Section 01 74 19 - Waste Management and Disposal

.7 Construction Waste Management Report (CWM Report): Written report identifying actual materials that formed CWM Plan for reduction, reuse, or recycling of materials prepared in accordance with Section 01 74 19 - Waste Management and Disposal

.8 Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCB's, poisons, corrosive agents, flammable substances, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as defined by the Federal Hazardous Products Act (RSC 1985) including latest amendments.

1.4. Reference Standards

.1 American National Standards Institute (ANSI)

.1 ANSI A10.8, current edition, Safety Requirements for Scaffolding.

.2 ASTM International (ASTM)

.1 ASTM C475/C475M, current edition, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.3 CSA Group (CSA)

.1 CSA S350 M1980, current edition, Code of Practice for Safety in Demolition of Structures.

.4 Department of Justice Canada (Jus)

.1 Canadian Environmental Assessment Act (CEAA), current edition.

.2 Canadian Environmental Protection Act (CEPA), current edition.

.1 SOR/2003-2, On-Road Vehicle and Engine Emission Regulations.

.2 SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations.

.3 Transportation of Dangerous Goods Act (TDGA), current edition, c. 34.

.4 Motor Vehicle Safety Act (MVSA), current edition.

.5 Hazardous Materials Information Review Act, current edition.

.5 National Fire Protection Association (NFPA)

.1 NFPA 241 13, Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.5. Administrative Requirements

.1 Coordination: Coordinate with Consultant for the material ownership as follows:

.1 Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property and shall be removed from Project site.

.2 Coordinate selective demolition work so that work of this Section adheres to aesthetic criteria established by the Drawings and specified dimensions with all elements in planes as drawn, maintaining their relationships with all other building elements.

.3 Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property:

.1 Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

.2 Coordinate with Consultant, who will establish special procedures for removal and salvage.

.2 Pre Demolition Meeting: Convene pre-installation meeting one (1) week prior to beginning work of this Section, with Contractor and Consultant in accordance with Section 01 31 19 - Project Meetings to:

.1 Confirm extent of salvaged and demolished materials

.2 Review demolition plan

.1 Verify existing site conditions adjacent to demolition work

.2 Coordination with other construction sub trades

.3 Ensure key personnel attend.

.4 Consultant will provide notification of change to meeting schedule established upon contract award 24 hours prior to scheduled meeting.

1.6. Submittals

.1 Provide the following submittals before starting any work of this Section:

.1 Demolition Plan: Submit a plan of demolition area indicating extent of temporary facilities and supports, methods of removal and demolition prepared by a professional engineer in accordance with requirements of Authority Having Jurisdiction, and as follows:

.1 Proposed Dust Control and Noise Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Consultant reserves the right to make modifications where proposed methods interfere with the Owner's ongoing operation.

.2 Inventory: Submit a list of items that have been removed and salvaged after selective demolition is complete.

.3 Pre demolition Photographs: Submit photographs indicating existing conditions of adjoining construction and site improvements prior to starting Work. Include finish surfaces that may be misconstrued as damage caused by selective demolition operations.

.2 Provide the following submittals when requested by the Consultant:

.1 Qualification Data: Submit information for companies and personnel indicating their capabilities and experience to perform work of this Section including; but not limited to, lists of completed projects with project names and addresses, names and addresses of architects and owners, for work of similar complexity and extent.

1.7. Quality Assurance

.1 Regulatory Requirements: Perform work as follows; use most restrictive requirements where differences occur between the municipal, provincial and federal jurisdictions:

.1 Provincial and Federal Requirements: Perform work in accordance with governing environmental notification requirements and regulations of the Authority Having Jurisdiction.

.2 Municipal Requirements: Perform hauling and disposal operations in accordance with regulations of Authority Having Jurisdiction.

.2 Qualifications: Provide proof of qualifications when requested by Consultant:

.1 Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project:

.1 Conform to the Ontario Occupational Health and Safety Act and Regulation.

.2 Conform to Workers' Compensation Board Regulations.

.3 Conform to City bylaws and regulations governing this type of work.

1.8. Site Conditions

.1 Owner will occupy portions of building immediately adjacent to selective demolition area:

.1 Conduct selective demolition so that Owner's operations will not be disrupted.

.2 Provide not less than 72 hours notice to Consultant of activities that will affect Owner's operations.

.2 Maintain access to existing means of egress, walkways, corridors, exits, and other adjacent occupied or used facilities:

.1 Do not close or obstruct means of egress, walkways, corridors, exits, or other occupied or used facilities without written acceptance from authorities having jurisdiction.

.3 Consultant assumes no responsibility for condition of areas to be selectively demolished:

.1 Conditions existing at time of Pre Bid Site Review will be maintained by Owner as far as practical.

.2 Owner will remove the following items prior to selective demolition:

.1

.4 Hazardous Substances: Hazardous Substances are present in building to be selectively demolished. Refer to Section 01 14 25 – Designated Substances Report:

.1 Examine report to become aware of locations where hazardous materials are present.

.2 Coordinate with Section 02 81 00 - Hazardous Materials.

PART 2 PRODUCTS

2.1. Temporary Support Structures

.1 Design temporary support structures required for demolition work and underpinning and other foundation supports necessary for the project using a qualified professional engineer registered or licensed in province of the Work.

2.2. Description

.1 This section of the Work includes, but is not necessarily limited to, the following:

.1 Demolition, removal completely from site, and disposal of all identified components, materials, equipment and debris.

.2 Selective demolition to allow new walls, bulkheads, ceilings and other materials to meet existing construction as indicated.

.3 All material from demolition shall be removed from site immediately with no salvage, selling, sorting or burning permitted on site.

.4 Retain items indicated on drawings for re-use in new construction.

2.3. Debris

.1 Make all arrangements for transport and disposal of all demolished materials from the site.

2.4. Equipment

.1 Provide all equipment required for safe and proper demolition of the building interiors indicated.

2.5. Repair Materials

.1 Use repair materials identical to existing materials:

.1 If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

.2 Use a material whose installed performance equals or surpasses that of existing material.

.3 Comply with material and installation requirements specified in individual Specification Sections.

.2 Floor Patching and Levelling Compounds: Cement based, trowelable, self levelling compounds compatible with specified floor finishes; gypsum based products are not acceptable for work of this Section.

.3 Concrete Unit Masonry: Lightweight concrete masonry units, and mortar, cut and trimmed to fit existing opening to be filled. Provide standard hollow core units, square end units and bond beam units as indicated on drawings.

.4 Prefinished Sheet Steel: Prefinished sheet steel, colour to match existing radiation cabinets, bent and profiled to match existing radiation cabinets.

.5 Gypsum Board Patching Compounds: Joint compound to ASTM C475/C475M, bedding and finishing types thinned to provide skim coat consistency to patch and prepare existing gypsum board walls ready for new finishes in accordance with Section 09 21 16 - Gypsum Board Assemblies

.6 Hoarding and Dust Screens: Refer to Section 01 56 00 - Temporary Barriers and Enclosures for stud framing and gypsum board sheathing materials

2.6. Existing Materials

.1 Items to be retained for re-use in new construction include, but are not limited to the following:

.1 Lockers and cabinets.

.2 Paper towel dispensers and other miscellaneous items identified on drawings.

.3 Vertical blind vanes, and curtains and tracks.

.4 Electrical equipment and associated mounting accessories.

.5 Whiteboards and associated mounting accessories.

.6 Confirm with Consultant any materials scheduled for re-use that are not in re-usable condition prior to installation.

PART 3 EXECUTION

3.1. Examination

.1 Verify that utilities have been disconnected and capped.

.2 Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

.3 Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

.4 Notify the Consultant where existing mechanical, electrical, or structural elements conflict with intended function or design:

.1 Investigate and measure the nature and extent of conflict and submit a written report to Consultant.

.2 Consultant will issue additional instructions or revise drawings as required to correct conflict.

.5 Perform surveys as the work progresses to detect hazards resulting from selective demolition activities.

3.2. Utility Services

.1 Coordinate existing services indicated to remain and protect them against damage during selective demolition operations.

.2 Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.

.1 Arrange to shut off affected utilities with utility companies.

.2 If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.

.3 Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

.4 Cut off pipe or conduit to a minimum of 25 mm (1”) below slab and remove concrete mound. Patch concrete using cementitious grout.

.3 Coordinate with Mechanical and Electrical Divisions for shutting off, disconnecting, removing, and sealing or capping utilities.

.4 Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3. Preparation

.1 Identify and mark all equipment and materials identified to be retained by Owner or to be re used in subsequent construction. Separate and store items to be retained in an area away from area of demolition and protect from accidental disposal.

.2 Post warning signs on electrical lines and equipment that must remain energized to serve other areas during period of demolition.

.3 Confirm that all electrical and telephone service lines entering buildings are not disconnected.

.4 Do not disrupt active or energized utilities crossing the demolition site.

.5 Provide and maintain barricades, warning signs, protection for workmen and the public during the full extent of the Work. Read drawings carefully to ascertain extent of protection required.

.6 Mark all materials required to be re-used, store in a safe place until ready for re installation.

.7 Adjust all junction boxes, receptacles and switch boxes flush with new wall construction where additional layers to existing construction are indicated.

.8 Remove permanent marker lines used or found on exposed surfaces and at surfaces indicated for subsequent finish materials. Mechanically remove permanent marker lines and associated substrates where permanent marker lines occur and patch surface. Sealing or priming over permanent marker lines is not acceptable.

3.4. Concrete Slab Reinforcing

.1 Locate location of reinforcing steel in concrete slabs prior to cutting or coring using non destructive, nonionizing radio frequency locators.

.2 Core concrete slabs to avoid reinforcing steel, electrical conduit or water pipes; adjust core location and coordinate with Engineer where slab features interfere with core drilling.

.3 Notify the Engineer immediately for further instructions where coring or cutting will damage existing slab features.

3.5. Selective Demolition

.1 Demolish and dismantle work in a neat and orderly manner and in strict accordance with all regulations.

.2 At end of each day's work, leave Work in safe condition so that no part is in danger of toppling or falling.

.3 Demolish in a manner to minimize dusting and to prevent migration of dust.

.4 Selling or burning of materials on the site is not permitted.

.5 Remove concrete bases by cutting and chipping, take precautions against slab cracking and degradation. Grind edges smooth, fill and make level with self levelling grout.

.6 Fill all openings in concrete block walls with concrete masonry units, coursing to match existing, prepare ready to receive new finishes to match existing.

.1 Provide bond beams in new openings cut into existing concrete masonry unit walls.

.2 Provide finished end masonry units to patch and repair for new jamb sections in existing concrete masonry unit walls.

.7 Fill all openings in gypsum board walls with gypsum board and steel framing to match existing, skim coat to make wall smooth and even.

.8 Demolish existing carpet, resilient flooring and adhesive remnants as follows:

.1 Vacuum existing carpet thoroughly, prior to removal, using vacuum equipped with power head/sweeper.

.2 Apply fine mist water spray to carpet as required to minimize dust generation during removal. Avoid spraying near electrical outlets.

.3 Demolish existing carpet and resilient floor finishes, remove and dispose of off site.

.4 Remove adhesive to the greatest extent possible using scrapping tools and as follows:

.1 Do not use solvent based cleaners to remove adhesive remnants.

.2 Lightly shot blast or grind floor using machine designed for purpose to remove adhesive remnants.

.3 Vacuum floor ready for application of skim coating.

.4 Repair all slab depressions and damage with cementitious patching compound.

.5 Skim coat floor with minimum 1 mm (3/64”) thick cementitious floor underlayment compatible with new flooring materials.

.5 Floor substrate shall be smooth, free from ridges and depressions, and adhesive remnants that could telegraph through resilient flooring materials and carpets.

.6 Recycle materials in accordance with Section 01 74 19 - Waste Management and Disposal.

.9 Demolish existing ceramic tile finishes. Remove setting bed or adhesive to the greatest extent possible using mechanical scrapping tools and as follows:

.1 Saw cut edge of tile for clean and even transition joint between existing tile to remain and new flooring materials.

.2 Lightly shot blast or grind floor to remove remnants of setting materials.

.3 Vacuum floor ready for application of skim coating.

.4 Repair all slab depressions and damage with cementitious patching compound. Skim coat floor with minimum 1 mm thick cementitious floor underlayment compatible with new flooring materials.

.10 Demolish completely all ceiling panels and grid as indicated.

.11 Remove all wall coverings scheduled for demolition. Patch and repair wall surfaces with skim coat of gypsum board joint compound leaving wall surfaces smooth and even ready for new wall finishes.

.12 Patch and repair all walls, floor and ceilings damaged during demolition with material matching adjacent walls, prepare ready for new finishes.

.13 Patch and repair all radiation cabinets, mechanical equipment and electrical fixtures damaged or exposed during demolition to match adjacent finished surfaces.

3.6. Patching And Repairing

.1 Floors and Walls:

.1 Where walls or partitions that are demolished extend from one finished area into another, patch and repair floor and wall surfaces in the new space.

.2 Provide a level and smooth surface having uniform finish colour, texture, and appearance.

.3 Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform colour and appearance.

.4 Patch with durable seams that are as invisible as possible.

.5 Provide materials and comply with installation requirements specified in other Sections of these Specifications.

.6 Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.

.7 Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

.2 Ceilings: patch, repair, or re hang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.7. Protection

.1 Prevent debris from blocking drainage inlets and systems and ground draining, and protect material and electrical systems and services that must remain in operation.

.2 Arrange demolition and shoring work so that interference with the use of adjoining areas by the Owner and users is minimized.

.3 Maintain safe access to and egress from occupied areas adjoining.

.4 Provide and maintain fire prevention equipment and alarms accessible during demolition.

3.8. Cleaning

.1 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 74 19 - Waste Management and Disposal.

.2 Waste Management: Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal, and as follows:

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

.3 Promptly as the Work progresses, and on completion, clean up and remove from the site all rubbish and surplus material. Remove rubbish resulting from demolition work daily.

.4 Maintain access to exits clean and free of obstruction during removal of debris.

.5 Keep surrounding and adjoining roads, lanes, sidewalks, municipal rights of way clean and free of dirt, soil or debris that may be a hazard to vehicles or persons.

END OF SECTION

PART 1 GENERAL

1.1. Summary

.1 This Section includes requirements for careful removal and salvage, and reconditioning of building components identified for storage on site and/or subsequent reinstallation forming a part of Project.

1.2. Related Requirements

.1 Section 02 41 19.16 – Selective Interior Demolition

1.3. Definitions

.1 Remove and Salvage: Detach items from existing construction and deliver them to Owner.

.2 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

1.4. Administrative Requirements

.1 Coordination Existing Salvaged Work: Coordinate with Owner for confirmation of materials, components, and items of equipment identified for removal and salvage from their present existing locations and as follows:

.1 Items that are turned over to Owner.

.2 On-site storage locations.

.3 Confirmation of items that are renovated or refurbished ready for reinstallation as a part of Work.

.4 Confirmation of items that Owner will not re use, but will retain as follows:

.2 Transport identified salvaged items to Owner’s designated storage facility.

.4 Constructor is responsible for loading and handling identified salvaged items using their own forces and equipment.

PART 2 PRODUCTS

2.1. Salvaged Items

.1 Items salvaged by Constructor and retained by Owner include, but are not limited to:

Work	Deliver To
Salvage all door hardware and hand over to Owner.	On-site storage location as directed by Owner.
Remove, salvage and hand over to Owner existing millwork lower cabinets, counter tops and upper cabinets as indicated on Demolition plans.	On-site storage location as directed by Owner.
Remove, salvage and hand over to Owner existing plumbing fixtures as indicated on Demolition plans.	On-site storage location as directed by Owner.
Remove, salvage and hand over to Owner existing wall access panels and grilles as indicated on Demolition plans.	On-site storage location as directed by Owner.
Remove, salvage and hand over to Owner existing signage, display boards, white boards, and bulletin boards as indicated on Demolition plans.	On-site storage location as directed by Owner.
Remove, salvage and hand over to Owner existing lockers as indicated on Demolition plans.	On-site storage location as directed by Owner.
Remove, salvage and hand over to Owner existing electrical floor boxes unless existing installations are to be maintained.	On-site storage location as directed by Owner.
Remove, salvage and hand over to Owner existing ceiling access panels.	On-site storage location as directed by Owner.
Remove, salvage and hand over to Owner existing light fixtures including suspended strip fixtures, pot lights, recessed lay-in fixtures (2x4 classrooms / 1x4 corridor), emergency lighting.	On-site storage location as directed by Owner.
Remove all existing acoustical panels on underside of existing roof slab and locations where applied vertically. Salvage and hand over to Owner, only if panels are not damaged during removal.	On-site storage location as directed by Owner.
Remove, salvage and hand over to Owner existing motion sensors.	On-site storage location as directed by Owner.
Remove, salvage and hand over to Owner existing ethernet access points.	On-site storage location as directed by Owner.

.2 Confirm with Owner additional items that appear salvageable prior to disposal.

PART 3 EXECUTION

3.1. Salvage

.1 Remove and handle salvageable items from site to minimize damage and to ensure that usability is maintained.

.2 Clean, decontaminate, or remediate hazardous substances (lead based paint, asbestos dust, PCB residue, and similar substances) from salvaged materials so they are safe for reuse.

.3 Place materials on palettes or wrap in protective film to ensure that loose pieces and projections do not cause injury to personnel, and that salvaged items remain as complete units.

.4 Clean items of construction or building debris, or materials that are not a part of salvaged work before delivering to Owner.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 06 05 73 – Wood Treatment

.3 Section 07 84 00 – Fire Stopping

.4 Section 09 65 23 – Resilient Vinyl Sheet Flooring

.5 Section 09 65 19 – Resilient Tile Flooring

.6 Section 09 65 19.23 – Luxury Vinyl Tile and Plank Flooring

.7 Section 09 65 13 – Resilient Base and Accessories

1.2. Reference Standards

.1 The American Society of Mechanical Engineers (ASME):

.1 ASME B18.6.1, current edition, Wood Screws (Inch Series).

.2 ASTM International (ASTM):

.1 ASTM A307, current edition, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60000 PSI Tensile Strength.

.2 ASTM C954, current edition, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.

.3 ASTM D7612, current edition, Standard Practice for Categorizing Wood and Wood-Based Products According to their Fiber Sources.

.4 ASTM F1482, current edition, Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring.

.5 ASTM F1667, current edition, Standard Specification for Driven Fasteners: Nails, Spikes and Staples.

.3 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-71.26, current edition, Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems.

.4 CSA Group (CSA):

.1 CSA O86, current edition, Engineered Design in Wood.

.2 CSA O112.9, current edition, Evaluation of Adhesives for Structural Wood Products (Exterior Exposure).

.3 CSA O121, current edition, Douglas Fir Plywood.

.4 CSA O141, current edition, Softwood Lumber.

.5 CSA O151, current edition, Canadian Softwood Plywood.

.6 CSA O153, current edition, Poplar Plywood.

.7 CSA O325, current edition, Construction Sheathing.

.8 CSA-O437 Series, current edition, Standards on OSB and Waferboard.

.9 CSA O452 Series, current edition, Design Rated OSB.

.10 CAN/CSA-Z809, current edition, Sustainable Forest Management.

.5 Canadian Wood Council:

.1 Wood Design Manual, current edition.

.2 Engineering Guide for Wood Frame Construction, current edition.

.6 National Lumber Grades Authority (NLGA):

.1 Standard Grading Rules for Canadian Lumber, current edition.

.2 NLGA SPS-1, current edition, Fingerjoined Structural Lumber.

.3 NLGA SPS-2, current edition, Machine Graded Lumber.

.4 NLGA SPS-4, current edition, Fingerjoined Machine Graded Lumber.

.7 ULC Standards/UL Canada (ULC):

.1 CAN/ULC-S101, current edition, Standard Methods for Fire Endurance Tests of Building Construction and Materials.

.2 CAN/ULC-S102, current edition, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3. Submittals

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, product literature and data sheets for wood products and accessories and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Include manufacturer's pre-engineered installation details and pre-engineered floor, ceiling and roof joist span charts.

.3 Submit certified test reports for prefabricated structural members from an approved independent laboratory indicating compliance with specifications for specified performance characteristics and physical properties.

.4 Submit Canadian Construction Materials Centre (CCMC) Product Evaluation Certificate number for engineered wood products.

.5 Submit manufacturer's installation instructions.

.3 Shop Drawings:

.1 For structural applications or conditions beyond the scope of the manufacturer's pre-engineered design information, submit drawings stamped and signed by professional Structural engineer registered or licensed in Ontario, Canada.

.2 Provide a comprehensive set of engineering calculations or computer analysis and design outputs demonstrating the adequacy of the proposed system when requested by the Consultant.

.4 Material Certificates: Submit certificates for machine-graded and finger joined dimensional lumber indicating species and grade selected for each use and design values approved by the NLGA.

1.4. Delivery, Storage, and Handling

.1 Delivery and Acceptance Requirements: Protect materials from weather conditions while in transit and while on the jobsite.

.2 Storage and Handling Requirements:

.1 Store materials using pallets or blocking a minimum of 150 mm from the ground and covered with protective waterproof sheets allowing for air circulation and ventilation under the covering.

.2 Protect edges and corners of sheet materials from damage during handling and storage.

.3 Protect kiln-dried and seasoned wood materials from conditions that will cause an increase to moisture content.

.4 Store engineered lumber on its edge.

.5 Stack, lift, brace, cut and notch engineered lumber products in accordance with manufacturer's instructions and recommendations.

.6 Store separated reusable wood waste convenient to cutting station and work areas.

PART 2 PRODUCTS

2.1. Description

.1 Regulatory Requirements:

.1 Lumber Grades: Provide lumber products that are all sides finished (S4S) in nominal dimensions required for the project; grade-marked by accredited agencies of the Canadian Lumber Standards Accreditation Board and that conform to National Grading Rules published by the NLGA.

1. Grading: Machine Grading, Visual Grading, or Both.

2. Moisture Content: Kiln Dry, 19% or less.

3. Structural Design Properties: Strength and related properties in accordance with CSA O86.

4. Sizes: Nominal dressed dimensions described in CSA O141 for surfaced dry conditions and wood species.

.2 Panel Grades: Provide panel products that are grade-marked by agencies recognized by CSA O325 and National Institute of Standards and Technology, Voluntary Product Standard PS 2 04 Performance Standard for Wood-Based Structural-Use Panels as modified by other listed CSA panel standards.

2.2. Performance Criteria

.1 Plywood Grades: Provide plywood products in nominal dimensions required for the project; grade-marked by accredited agencies of the APA and that conform to the Canadian Plywood Grading Guide, and tolerances described for specific plywood Products below, and identified as follows:

.1 Name of Standard CSA O121 or CSA O151;

.2 Manufacturer's Mill Identification;

.3 Bond Quality (Exterior or Interior);

.4 Commercial Species Grouping (DFP, CSP, ASP or HEM-FIR);

.5 Product Grade (SHG, SEL, SEL TF, G1S or G2S);

.6 Nominal Thickness; and

.7 Additional Grade or Product Designations (if applicable).

.2 Lumber Grades: Provide lumber products that are all sides finished (S4S) in nominal dimensions required for the project; grade marked by accredited agencies of the Canadian Lumber Standards Accreditation Board and conform to National Grading Rules published by the National Lumber Grades Authority, and as follows:

.1 Grading: Machine Grading, Visual Grading, or Both.

.2 Moisture Content: Kiln Dry, 19% or less.

.3 Structural Design Properties: Strength and related properties in accordance with CSA O86 and NLGA SPS 2.

.4 Sizes: Nominal dressed dimensions described in CSA O141 for surfaced dry conditions and wood species.

.5 Acceptable Alternative Products: Lumber products meeting requirements of the American Lumber Standards Committee designated ALS Program Lumber and that are accepted by the Canadian Lumber Standards Accreditation Board, may be acceptable for the Project when proof of compliance with strength and related properties meeting CSA O86 are submitted before purchasing any lumber products.

2.3. Material

.1 Lumber Materials:

.1 Light Framing: Provide Construction Grade with the following minimum properties:

1. Sizes: Maximum 38 mm (1 1/2") width by maximum 89 mm (3 1/2") depth.

2. Finger joined Materials: Not Allowed

3. Species Group: Spruce-Pine-Fir (SPF).

.2 Stud Framing: Provide stud grade with the following minimum properties:

1. Sizes: 38 mm (1 1/2") or 89 mm (3 1/2") width by maximum 140 mm (5 1/2") depth as noted on drawings.

2. Finger joined Materials: Not Allowed

3. Species Group: Spruce-Pine-Fir (SPF).

.3 Strapping: Provide 19 mm (3/4”) deep x 38 mm (1 1/2") wide materials as described above for stud framing and stud grade.

.4 Miscellaneous Framing: Provide furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers, and other materials matching lumber used within framed construction; or use Light Framing, No. 2 Grade or better materials where lumber grade is not indicated.

.2 Panel Materials:

.1 Floor Sheathing: Provide plywood subfloor, thickness as required by span rating and meeting requirements of CSA O325 and as follows:

1. Span Rated Plywood: Exterior rated, sheathing grade tongue and groove edged Douglas Fir or Canadian Softwood Plywood meeting requirements of CSA O121 or CSA O151.

.2 Floor Underlayment: Provide plywood, minimum thickness 10 mm (3/8”) and meeting requirements of CSA O325 and ASTM F1482, and as follows:

1. Plywood Underlayment: Exterior rated, sheathing grade square edged Poplar plywood meeting requirements of CSA O153.

.3 Plywood Blocking and Backing Panels: Douglas Fir and Canadian Softwood Plywood using exterior grade adhesives meeting requirements of CSA O121 or CSA O151; kiln dry plywood to moisture content of 15% or less, and as follows:

1. Concealed Blocking: Select Grade (SEL) Canadian Softwood Plywood).

2. Exposed Panels and Panel Boards: Good One Side (G1S) Douglas Fir Plywood.

2.2. Accessories

.1 Driven Fasteners: Steel nails, spikes, brads and staples meeting requirements of ASTM F1667. Ensure length is sufficient to penetrate connecting solid wood materials.

.1 Interior High Humidity Work: Hot-dipped galvanized.

.2 Interior Work: Electroplated zinc plated, or cadmium plated.

.2 Rough Hardware (Bolts, Nuts and Washers): Provide manufacturer recommended fastening devices and anchors meeting requirements of ASTM A307 and as follows:

.1 Ground Contact Materials: Stainless steel.

.2 Interior High Humidity Work: Hot-dipped galvanized.

.3 Interior Work: Electroplated zinc plated, or cadmium plated.

.3 Wood Screws: Steel screws meeting requirements of ASME B18.6.1 and as follows:

.1 Interior Work: Galvanized.

.4 Screws for Fastening to Cold-Formed Metal Framing: Steel screws meeting requirements of ASTM C954, except for wafer heads and reamer wings whose length should be as recommended by screw manufacturer for material being fastened.

.5 Prefabricated Metal Anchoring Systems, Framing Connectors and Hangers: Prefabricated hot-dipped zinc coated steel or stainless steel products tested or designed in accordance with CSA O86; types and configurations as indicated on drawings.

.6 Subflooring Adhesive: CAN/CGSB-71.26, cartridge loaded.

.7 General Purpose Adhesive: CSA O112.9.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: Verify conditions of substrates previously installed are acceptable for product installation in accordance with manufacturer's 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.

3.2. Installation

.1 Requirements:

.1 Accurately frame and properly assemble rough carpentry work

.2 Securely attach rough carpentry work to substrate by anchoring and fastening

.3 Include required nails, fastenings and other connectors

.4 Set rough carpentry to required levels and lines with members plumb, true to line, cut, and fitted

.5 Fit rough carpentry to other construction

.6 Scribe and cope as needed for accurate fit

.7 Locate furring, nailers, blocking, grounds, and similar supports as required when attaching to other construction.

.8 Do not use materials with defects that impair the quality of the rough carpentry or use pieces that are too small to use with a minimum number of joints or optimum joint arrangement.

.2 Wood Frame Construction: Space framing members at maximum 406 mm (16”) on centre using continuous pieces of the longest possible length and as follows:

.1 Fabricate wood frame construction to the requirements of Part 9 of the Ontario Building Code, except where more stringent requirements are indicated on the drawings.

.2 Make allowance for erection stresses.

.3 Securely brace members in place to maintain plumb and true until permanently fixed and held to structure.

.4 Minimize cutting of framing members for pipes and other penetrations by coordinating with other parts of the Work before starting work of this Section; limit cutting and hole drilling to limitations listed in Part 9 of the Ontario Building Code.

.5 Floor Sheathing:

1. Install subfloor sheathing with the length in the direction of face orientation at right angles to floor framing.

2. Offset joints parallel to the floor joists.

3. Make panels continuous over two or more supports.

4. Use a continuous bead of adhesive along each floor framing member and screw fasten at 150 mm (5 7/8”) along edges and 305 mm (12”) along floor framing in middle of sheathing.

5. Nail size and pattern noted above is a minimum requirement; increase number and decrease spacing, or increase size as required to meet site conditions.

6. Butt joints tightly together, use only tongue and grooved floor sheathing materials to maintain edge support.

7. Support all edges of tongue and grooved plywood with 38 mm (1 1/2") x 89 mm (3 1/2”) framing where indicated for diaphragm construction.

8. Leave a minimum 3-mm gap between subfloor sheathing panels where panels will be covered with underlayment. Butt panels into light contact for combined subfloor and underlayment sheathing.

9. Drill holes in subfloor sheathing in ponded areas where flooding has occurred to allow standing water to drain from floor; repair holes in combined subfloor and underlayment sheathing prior to installation of floor finish materials.

.6 Floor Underlayment:

1. Install underlayment using adhesive and nails fastened at 150 mm (5 7/8”) on center throughout the entire piece of underlayment.

2. Run sheets perpendicular to subfloor underlayment sheathing.

3. Offset underlayment joints by a minimum of one joist space from sheathing joints, stagger end joints of underlayment.

4. Butt end and edge joints into light contact to form a smooth and uniform surface ready for installation of floor finish materials.

5. Maintain a minimum 6 mm (1/4”) space around room perimeters.

6. Install underlayment immediately prior to installation of flooring materials; coordinate with Section

.3 Telecommunications and Data Panel Boards:

.1 Install 19 mm (3/4”) DFP G1S, fire rated plywood on all walls in telephone and data rooms receiving wiring and equipment.

.2 Minimum 1220 mm (4’-0”) x 2440 mm (8’-0”) panels on periphery walls over 300 mm (12”) wide, mounted 150 mm (6”) off of finished floor.

.3 Coordinate installation and locations with Electrical Drawings.

.4 Provide electrical equipment backboards for mounting electrical equipment as indicated. Use 19 mm (3/4”) thick plywood on 19 mm (3/4”) x 38 mm (1 1/2") furring around spacing, perimeter and at maximum 305 mm (12”) intermediate.

3.3. Cleaning

.1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.

.2 Final Cleaning: Upon completion, remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.4. Protection

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by rough carpentry installation.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 06 40 23.12 – Plastic Laminate Finishing for Interior Architectural Woodwork.

.3 Section 06 61 16 – Solid Surfacing Fabrications.

.4 Section 07 92 00 – Joint Sealants.

.5 Section 09 91 23 – Interior Painting.

1.2. Reference Standards

.1 American National Standards Institute (ANSI)

.1 ANSI/ASME 18.6.1, current edition, Wood Screws (Inch Series).

.2 ANSI/BHMA A156.9, current edition, Cabinet Hardware.

.3 ANSI/BHMA A156.11, current edition, Cabinet Locks.

.4 ANSI/BHMA A156.16, current edition, Auxiliary Hardware.

.5 ANSI/BHMA A156.18, current edition, Materials and Finishes.

.6 ANSI/BHMA A156.20, current edition, Strap and Tee Hinges and Hasps.

.7 ANSI A208.1, current edition, Particleboard.

.8 ANSI A208.2, current edition, Medium Density Fiberboard (MDF) for Interior Applications.

.9 ANSI/HPVA HP-1, current edition, Standard for Hardwood and Decorative Plywood.

.2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)

.1 Architectural Woodwork Standards (AWMAC AWS), current edition.

.3 ASTM International (ASTM)

.1 ASTM A 153/A 153M, current edition, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

.2 ASTM E 1333, current edition, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.

.3 ASTM F1667, current edition, Standard Specification for Driven Fasteners: Nails, Spikes and Staples.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-11.3, current edition, Hardboard.

.2 CAN/CGSB-71.20, current edition, Adhesive, Contact, Brush able.

.3 CAN/CGSB-71.19, current edition, Adhesive, Contact, Sprayable.

.5 CSA Group (CSA)

.1 CSA O112-M Series, current edition, Standards for Wood Adhesives.

.2 CSA O121, current edition, Douglas Fir Plywood.

.3 CSA O141, current edition, Softwood Lumber.

.4 CSA O151, current edition, Canadian Softwood Plywood.

.5 CSA O153, current edition, Poplar Plywood.

.6 CAN/CSA-Z809, current edition, Sustainable Forest Management.

.6 Forest Stewardship Council (FSC)

.1 FSC-STD-01-001, current edition, FSC Principle and Criteria for Forest Stewardship.

.7 Green Seal Environmental Standards (GS)

.1 GS-11, current edition, Paints, Coatings, Stains and Sealers.

.2 GS-36, current edition, Adhesives for Commercial Use.

.8 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

.9 National Electrical Manufacturers Association (NEMA)

.1 ANSI/NEMA LD-3, current edition, High-Pressure Decorative Laminates (HPDL).

.10 Sustainable Forestry Initiative (SFI)

.1 SFI, current edition, Standard and Rules.

1.3. Administrative Requirements

.1 Preinstallation Meeting

.1 Before enclosing framing, convene a meeting of contractor, architectural woodwork fabricator, installer, framing subcontractor and Consultant.

1. Review locations of backing required for millwork installation as shown on shop drawings and as necessary for installation.

2. Review method of attachment for backing to wall system.

1.4. Submittals

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data:

1. Prepare and submit material list in accordance with AWMAC AWS, cross-referenced to specifications.

2. Include manufacturer's instructions, printed product literature, data sheets and catalogue pages for all materials and products to be incorporated into architectural wood casework and include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.

3. Submit two (2) copies of WHMIS SDS. Indicate VOCs for materials and adhesives.

.3 Hardware List:

1. Submit hardware list cross-referenced to specifications.

2. Include manufacturer's specification sheets indicating name, model, material, function, finish, BHMA designations and other pertinent information.

.4 Shop Drawings:

.1 Prepare and submit shop drawings in accordance with AWMAC AWS and as follows.

.2 Submit one (1) set of shop drawings for initial review in accordance with requirements of Division 01. Revise as directed, submit one (1) copy for final acceptance and distribution.

.3 Indicate details of construction, profiles, jointing, fastening and other related details.

1. Scales: profiles full size, details half full size.

.4 Indicate materials, thicknesses, finishes and hardware.

.5 Indicate locations of service outlets in millwork, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.

.6 Show location on millwork elevations of backing required in supporting structure for attachment of casework.

.7 Indicate AWMAC AWS quality grade where different from predominant grade specified.

.8 Include color schedule of all casework items, including all countertop, exposed, and semi-exposed cabinet finishes, finish material manufacturer, pattern, and color.

.5 Samples:

.1 Prepare and submit samples in accordance with AWMAC AWS and as follows.

.2 Apply sample finishes to specified substrate or core material minimum 300 mm x 300 mm (12” x 12”). For veneers with transparent finish submit three samples to illustrate range and colour of grain expected.

.3 Shop applied coatings:

1. For transparent finish, submit two (2) samples of each species and cut of wood to be used, finished as specified.

2. For opaque finish, submit two (2) samples for each colour selection, finished as specified.

.4 Submit two (2) samples of laminated plastic for each specified colour selection.

.5 Submit two (2) samples of laminated plastic joints, edging, cutouts and post-formed profiles.

.6 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.7 Submit statement of experience and qualifications of architectural millwork fabricator.

1.5. Quality Assurance

.1 Perform Work of this Section by single millwork fabricator with minimum five (5) years of current architectural millwork production experience and having completed minimum one (1) project in the past five (5) years with value within 20% of the cost of the work of this Section.

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.2 Mock-ups:

.1 Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.2 Shop prepare one (1) base cabinet unit, complete with hardware and shop applied finishes, and install where directed by Consultant.

.3 Allow 24 hours for inspection of mock-up by Consultant before proceeding with Work.

.4 When accepted, mock-up will demonstrate minimum standard for Work.

.5 Do not proceed with work before receipt of written acceptance of mock-up by Consultant.

.6 Accepted mock-up may remain as part of finished work.

1.6. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Deliver wood casework only when area of work is enclosed, plaster and concrete work is dry, and area is broom clean and site environmental conditions are acceptable for installation.

.3 Protect millwork against dampness and damage during and after delivery.

.4 Store millwork in ventilated areas, protected from extreme changes of temperature and humidity, and within range recommended by AWMAC AWS for location of project.

.5 Store materials indoors, in clean, dry, well-ventilated area.

.6 Protect architectural woodwork and hardware from nicks, scratches, and blemishes.

.7 Replace defective or damaged materials with new.

PART 2 PRODUCTS

2.1. Quality Grade

.1 Provide all materials and perform all fabrication in accordance with AWMAC AWS Custom Grade and as follows, except where specified otherwise:

.1 Premium Grade

.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.2. Lumber

.1 Softwood and Hardwood Lumber: Sound lumber to specified AWMAC AWS quality grade requirements, kiln-dried to moisture content recommended by AWMAC AWS for location of the Work

.2 Machine stress-rated lumber is acceptable for all purposes.

.3 Face framing, pulls, trims, molding, edge-banding, stiles and rails: SPF species, in profiles indicated.

2.3. Panel Materials

.1 Interior mat-formed wood particleboard: to ANSI/NPA A208.1, industrial grade M-2 or M-3, medium density (640-800 kg/m^3 (40-50 lb/ft^3), thickness 19 mm (3/4”) unless indicated otherwise.

.1 Use moisture resistant grade 2-M-2 or 2-M-3 for countertops and splash-backs to receive plumbing fixtures.

.2 MDF (medium density fiberboard) core: to ANSI A208.2, density 769 kg/m^3 (48 lb/ft^3) Standard Grade, 19 mm (3/4”) thick unless indicated otherwise.

.1 Use moisture resistant MR grade for countertops and splash-backs to receive plumbing fixtures.

.3 Douglas fir plywood (DFP): to CSA O121, standard construction

.4 Hardwood plywood: to CHPA grading rules and ANSI/HPVA HP-1.

.5 Canadian softwood plywood (CSP): to CSA O151, standard construction

.6 Poplar plywood (PP): to CSA O153, standard construction

.7 Hardboard: To CAN/CGSB-11.3

2.4. Laminated Plastic Materials

.1 Refer to Section 06 40 23.13 Plastic Laminate for Interior Architectural Woodwork.

2.5. Solid Surface Materials

.1 Refer to Section 06 61 16 Solid Surface Fabrication.

2.6. Millwork Fabrication – General

.1 Fabricate casework of specified core and surface finish materials to specified AWMAC AWS quality grade

.1 Construction type: frameless.

.2 Door-cabinet interface: flush overlay.

.2 Set nails and countersink screws and apply plain wood filler to indentations, sand smooth and leave ready to receive finish.

.3 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.

.4 Shelving to cabinetwork to be adjustable unless otherwise noted.

.5 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

.6 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

.7 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

2.7. Laminate Plastic Millwork Fabrication

.1 Do laminated plastic fabrication in compliance with NEMA LD3, Annex A and specified AWMAC AWS quality grade

.2 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.3 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 3000 mm (9'-10"). Keep joints 600 mm (2'-0") from sink cutouts.

.4 Form shaped profiles and bends as indicated, using post-forming grade laminate to laminate manufacturer's instructions.

.5 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not miter laminate edges.

.6 Apply laminate backing sheet to reverse side of core of plastic laminate work.

.7 Apply laminated plastic liner sheet where indicated.

2.8. Hardware for Drawers

.1 <u>File Drawer Slides:</u>

.1 Medium duty, side mounted, full extension drawer slide with soft close, metal ball bearing mechanism in accordance to ANSI/BHMA A156.9. Standard of Acceptance: "Medium-Duty Easy Close Slide 3932EC" by Accuride Canada Inc or approved alternate.

1. Load capacity: 68 kg (150 lbs) minimum per pair.

2. Length: To suit casework depth and drawer travel distance.

3. Finish: Clear Zinc.

.2 <u>Drawer Box Slides (typical):</u>

.1 16 gauge, steel slides complete with permanently lubricated nylon rollers and parallel self-closing action in accordance with ANSI/BHMA A156.9.

1. Dynamic load capacity: 45 kg (100 lbs) minimum.

2. Static load capacity: 57 kg (125 lbs) minimum.

3. Length: To suit casework depth and drawer travel distance.

4. White epoxy powder coat finish.

.3 Cabinet Locks:

.1 Zinc die cast body cabinet door lock with 24mm (15/16") bolt throw length to ANSI/BHMA A156.11 Grade 1 complete with full size interchangeable cores and standard accessories. Standard of Acceptance: Olympus 777 complete with Schlage Full Size IC or approved alternate.

.2 Handing to suit casework door and drawer layout / orientation.

.3 All locks to be keyed to Owner requirements.

.4 Finish specified by Consultant from standard range.

.4 Door "D" Pull and Drawer Pulls:

.1 128 mm (5 1/16") center to center mounting, 32mm (1 ¼") deep, 10 mm (3/8") dia., steel pull. Standard of Acceptance: Richelieu #BP6211128195 or approved alternate.

1. Finish: Brushed Nickel.

.5 Door and Drawer Bumpers:

.1 9 mm dia. (3/8"), clear nylon, self-adhered bumper. Standard of Acceptance: Model BP303-11 by Richelieu, or approved equal.

2.10. Accessories

.2 Wood screws: steel type and size to suit application.

.3 Nails and staples: to CSA B111 and ASTM F1667.

.4 Splines: metal.

.5 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

2.11. Laminated Plastic Countertops

.1 Refer to Section 06 40 23.13 Plastic Laminate for Interior Architectural Woodwork.

PART 3 EXECUTION

3.9. Examination

.2 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for architectural woodwork installation in accordance with manufacturer's 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.

3.10. Installation

.2 Install architectural woodwork in accordance with AWMAC AWS grade for respective items.

.3 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

.4 Install prefinished millwork at locations shown on drawings.

.1 Position accurately, level, plumb straight.

.5 Fasten and anchor millwork securely.

.1 Supply and install heavy duty fixture attachments for wall mounted cabinets.

.6 Countersink mechanical fasteners at exposed and semi-exposed surfaces, excluding installation attachment screws and screws securing cabinets end to end.

.7 Use draw bolts in countertop joints.

.8 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.

.9 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant in accordance with Section 07 92 00 - Joint Sealants.

.10 Apply moisture barrier between wood framing members and masonry or cementitious construction.

.11 Fit hardware accurately and securely in accordance with manufacturer's written instructions.

.12 Make cutouts for inset equipment and fixtures using templates provided.

3.11. Cleaning

.2 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.3 Final Cleaning: Upon completion, remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.1 Clean millwork and cabinet work, inside cupboards and drawers, and outside surfaces.

.2 Remove excess glue, pencil and ink marks from surfaces.

3.12. Protection

.1 Protect millwork and cabinet work from damage until final inspection.

.2 Protect installed products and components from damage during construction.

.3 Repair damage to adjacent materials caused by architectural woodwork installation.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Section 06 40 00 - Architectural Woodwork.

.2 Section 07 92 00 - Joint Sealants.

1.2. Reference Standards

.1 American National Standards Institute (ANSI):

.1 ANSI 208.1, current edition, Particleboard.

.2 ANSI A208.2, current edition, Medium Density Fiberboard (MDF) for Interior Applications.

.2 Architectural Woodwork Manufacturers Association of Canada (AWMAC):

.1 Architectural Woodwork Standards (AWS), current edition.

.3 ASTM International (ASTM):

.1 ASTM E 1333, current edition, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.

.4 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-71.19, current edition, Adhesive, Contact, Sprayable.

.2 CAN/CGSB-71.20, current edition, Adhesive, Contact, Brushable.

.5 CSA Group (CSA):

.1 CSA O112-M Series 1977, current edition, Standards for Wood Adhesives.

.2 CSA O121, current edition, Douglas Fir Plywood.

.3 CSA O151, current edition, Canadian Softwood Plywood.

.4 CSA O153, current edition, Poplar Plywood.

.5 CAN/CSA-Z809, current edition, Sustainable Forest Management.

.6 Forest Stewardship Council (FSC):

.1 FSC-STD-01-001, current edition, FSC Principle and Criteria for Forest Stewardship.

.7 Green Seal Environmental Standards (GS):

.1 GS-36, current edition, Commercial Adhesives.

.8 Health Canada/Workplace Hazardous Materials Information System (WHMIS):

.1 Safety Data Sheets (SDS).

.9 National Electrical Manufacturers Association (NEMA):

.1 ANSI/NEMA LD-3, current edition, High Pressure Decorative Laminates (HPDL).

.10 Scientific Equipment and Furniture Association (SEFA):

.1 SEFA 8, current edition, Laboratory Furniture.

.11 Sustainable Forestry Initiative (SFI):

.1 SFI, current edition Standard.

1.3. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for laminate, adhesive, and core materials and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit WHMIS SDS. Indicate VOC's for adhesives in g/L.

.3 Samples:

.1 Submit for review and acceptance of each unit.

.2 Samples will be returned for inclusion into work.

.3 Submit duplicate samples of joints, edging, cutouts and postformed profiles.

.4 Shop Drawings

.1 Prepare and submit shop drawings in accordance with AWMAC AWS and as follows.

.2 Indicate AWMAC AWS quality grade where different from predominant grade specified.

.3 Include color schedule of all plastic laminate work, including all countertop, exposed, and semi-exposed cabinet finishes, finish material manufacturer, pattern, and color.

.5 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.4. Closeout Submittals

.1 Provide maintenance data for laminate work for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5. Quality Assurance

.1 Perform Work of this Section by plastic laminate fabricator with minimum five (5) years of current experience and having completed minimum one project in the past five (5) years with value within 20% of the cost of the work of this Section.

.2 Mock-ups:

.1 Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.2 Prepare one typical plastic laminate finish installation where directed by Consultant.

.3 Allow 24 hours for inspection of mock-up by Consultant before proceeding with Work.

.4 When accepted, mock-up will demonstrate minimum standard for Work.

.5 Do not proceed with work before receipt of written acceptance of mock-up by Consultant.

.6 Accepted mock-up may remain as part of finished work.

1.6. Delivery, Storage, And Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Storage and Handling Requirements:

.1 Maintain indoor temperature and humidity within range recommended by the AWMAC Quality Standards for location of the project.

.2 Replace defective or damaged materials with new.

PART 2 PRODUCTS

2.1. Quality Grade

.1 Provide all materials and perform all fabrication in accordance with AWMAC AWS Custom Grade except where specified otherwise, excepting the following:

.1 Premium Grade

.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.2. Laminated Plastic Materials

.1 Performance Requirements

.1 Fire-Test-Response Characteristics: Provide decorative plastic laminate with the following surface burning characteristics as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

.2 .1 Flame-Spread Index: 25 or less.

.3 .2 Smoke-Developed Index: 450 or less.

.4 .3 Source Limitations: Obtain decorative plastic laminate materials through one source from a single manufacturer.

.2 Manufacturer

.1 Basis of Design: Formica Corporation.

.1 Fenixforinteriors-na.com

.2 Contact: 1-800-367-6222

.3 Plastic Laminate (**PLAM-2**): shall be “FENIX NTM® 1.2 mm Coloured Core” is a material produced by simultaneous application of heat and pressure, in order to obtain a homogeneous non-porous high density product. The core structure is composed of paper, impregnated with thermosetting resins. The outer surface is made of paper substrate treated with next generation acrylic resins applied to the substrate as a multilayer coating and subsequently, cured via an electron beam process. This material has a matching coloured core.

.1 Laminate Limitations: Follow guidelines in Technical guidance documents.

.2 Laminate Substrate: Follow guidance given in manufacturers specific guidelines on laminate substrates to be used.

.3 Laminate Grade: Grade JJ (HGS) 1.2 mm

.4 Laminate Color: Refer to Colour Legend

.5 Laminate Finish: FN

.6 Laminate Applications: Horizontal and Vertical

.a Interior Architectural Woodwork

.7 Edge Banding: ABS

.4 Plastic Laminate (**PLAM-3**): shall be “Uniboard

.1 Laminate Limitations: Follow guidelines in Technical guidance documents.

.1 Laminate Substrate: Follow guidance given in manufacturers specific guidelines on laminate substrates to be used.

.2 Laminate Color: Refer to Colour Legend

.3 Laminate Finish: Omnia

.4 Laminate Applications: Vertical

.a Interior Architectural Woodwork

.5 Edge Banding: PVC, in matching colour to PLAM-3

2.3. Adhesives, Sealers And Accessories

.1 Laminated plastic adhesive: contact adhesive to CAN/CGSB-71.20.

.2 Sealer: water resistant sealer or glue acceptable to laminate manufacturer.

.3 Sealants: In accordance with Section 07 92 00 – Joint Sealants.

.4 Draw bolts and splines: as recommended by fabricator.

.5 Backing sheets: Provide where recommended by manufacturer to minimize lamination warpage.

2.4. Fabrication

.1 Fabricate plastic laminate finished items in accordance with NEMA LD3, Annex A and specified AWMAC AWS quality grade requirements.

.2 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

.3 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.4 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 2400 mm (7’ 10-1/2").

.5 Apply laminate backing sheet to reverse side of core of plastic laminate work.

.6 Apply laminated plastic liner sheet where indicated.

.7 Edge treatment: Apply plastic edge mouldings in accordance with manufacturer's instructions.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for laminate, adhesive, and core materials 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.

3.2. Installation

.1 Install laminated plastic work in accordance with AWMAC AWS Custom Grade, except as follows:

.1 Premium Grade:

.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

.3 Install work plumb, true and square, neatly scribed to adjoining surfaces.

.4 Make allowances around perimeter where fixed objects pass through or project into laminated plastic work to permit normal movement without restriction.

.5 Use draw bolts and splines in counter top joints. Maximum spacing 450 mm (1’ 6”) on centre, 75 mm (3”) from edge. Make flush hairline joints.

.6 Provide cutouts for inserts, grilles, appliances, outlet boxes and other penetrations. Round internal corners, chamfer edges and seal exposed core.

.7 At junction of laminated plastic counter back splash and adjacent wall finish, apply small bead of sealant in accordance with Section 07 92 00 - Joint Sealants.

3.3. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.1 Clean to NEMA LD3, Annex B.

3.4. Protection

.1 Cover finished laminated veneered surfaces with heavy kraft paper or put in cartons during shipment.

.2 Protect installed laminated surfaces in accordance with manufacturer's written recommendations.

.1 Remove protection only immediately before final inspection.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 06 100 - Rough Carpentry

.3 Section 06 40 00 - Architectural Wood Casework

.4 Section 07 92 00 - Joint Sealants

.5 Section 12 32 00 - Manufactured Wood Casework

1.2. Reference Standards

.1 American National Standards Institute (ANSI):

.1 ANSI 208.1, Particleboard

.2 ANSI A208.2, Medium Density Fiberboard (MDF) for Interior Applications

.3 ANSI/ICPA SS-1, current edition, Performance Standard for Solid Surface Materials

.2 Architectural Woodwork Manufacturers Association of Canada (AWMAC):

.1 Architectural Woodwork Standards (AWS), current edition.

.3 ASTM International (ASTM):

.1 ASTM C920, current edition, Standard Specification for Elastomeric Joint Sealants

.2 ASTM D570, current edition, Standard Test Method for Water Absorption of Plastics

.3 ASTM D638 current edition, Standard Test Method for Tensile Properties of Plastics

.4 ASTM D785, current edition, Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials

.5 ASTM D790, current edition, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

.6 ASTM D5420, current edition, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)

.7 ASTM E84, current edition, Standard Test Method for Surface Burning Characteristics of Building Materials

.8 ASTM E228, current edition, Standard Test Method for Linear Thermal Expansion of Solid Materials with a Push-Rod Dilatometer

.9 ASTM G21, current edition, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

.10 ASTM G22, current edition, Standard Practice for Determining Resistance of Plastics to Bacteria

.11 ASTM G155, current edition, Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials

.12 ASTM D785, current edition, Standard Test Method for Rockwell Hardness of Plastics

.13 ASTM D1499, current edition, Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Plastics

.4 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-71.19, current edition, Adhesive, Contact, Sprayable

.2 CAN/CGSB-71.20, current edition, Adhesive, Contact, Brushable

.5 CSA Group (CSA):

.1 CSA O112-M Series 1977, current edition, Standards for Wood Adhesives

.2 CSA O121, current edition, Douglas Fir Plywood

.3 CSA O151, current edition, Canadian Softwood Plywood

.4 CSA O153, current edition, Poplar Plywood

.5 CAN/CSA-Z809, current edition, Sustainable Forest Management

.6 Forest Stewardship Council (FSC):

.1 FSC-STD-01-001, current edition, FSC Principle and Criteria for Forest Stewardship

.7 Green Seal Environmental Standards (GS):

.1 GS-36, current edition, Commercial Adhesives

.8 Health Canada/Workplace Hazardous Materials Information System (WHMIS):

.1 Safety Data Sheets (SDS)

.9 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards:

.1 SCAQMD Rule 1168, current edition, Adhesives and Sealants Applications

.10 ULC Standards (ULC):

.1 CAN/ULC-S102.2, current edition, Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies

1.3. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for solid surface, adhesive, and core materials and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit WHMIS SDS. Indicate VOC's for adhesives in g/L.

.3 Samples:

.1 Submit for review and acceptance of each unit.

.2 Samples will be returned for inclusion into work.

.4 Shop Drawings

.1 Submit fabricator/installer's shop drawings, including plans, elevations, sections, and details, in accordance with AWMAC AWS and indicating:

1. Dimensions, tolerances, materials, components, attachments, fabrication, edge treatment, corners, location of seams, overhangs, and inlays.

2. Locations and sizes of cutouts and holes for items to be installed in fabrications.

3. Locations and sizes of blocking, supports, and reinforcements to support fabrications. Prepare and submit shop drawings in accordance with AWMAC AWS and as follows.

4. Include color schedule of all solid surface work where exposed to view, including all countertops, desktops, window stools, finish material manufacturer, pattern, and color.

.5 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.4. Closeout Submittals

.1 Provide maintenance data for laminate work for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5. Quality Assurance

.1 Perform Work of this Section by plastic laminate fabricator with minimum 5 years of current experience and having completed minimum one project in the past five (5) years with value within 20% of the cost of the work of this Section.

.2 Mock-ups:

.1 Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.2 Prepare one (1) typical solid surface finish installation where directed by Consultant.

.3 Allow 48 hours for inspection of mock-up by Consultant before proceeding with Work.

.4 When accepted, mock-up will demonstrate minimum standard for Work.

.5 Do not proceed with work before receipt of written acceptance of mock-up by Consultant.

.6 Accepted mock-up may remain as part of finished work.

1.6. Delivery, Storage, and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Storage and Handling Requirements:

.1 Handle solid surfacing countertops in accordance with manufacturer's instructions.

.2 Protect solid surfacing countertops during handling and installation from dirt, stains, cracks, scratches, and other damage.

.3 Do not lay, transport, or carry solid surface countertops flat.

.4 Do not drop or drag solid surfacing countertops.

.5 Replace defective or damaged materials with new.

1.7. Warranty

.1 Manufacturer's Warranties: Submit in accordance with 1.3.8 Closeout Submittals, for Owner's acceptance.

.1 Solid surfacing materials: Manufacturer limited commercial warranty period of not less than ten (10) years commencing on date of Substantial Completion.

PART 2 PRODUCTS

2.1. Sustainability Characteristics

.1 Lumber, plywood and composite wood products to be CAN/CSA-Z809 or FSC or SFI certified.

.2 Composite wood products: formaldehyde emissions within the following limits when tested in accordance with ASTM E1333

.1 Hardwood plywood with veneer core (HWPW-VC): 0.05 ppm.

.2 Hardwood plywood with composite core (HWPW-CC): 0.05 ppm.

.3 Particleboard (PB): 0.09 ppm.

.4 Medium density fibreboard (MDF): 0.11 ppm.

.5 Thin (less than 8 mm) medium density fibreboard (tMDF): 0.13 ppm.

.3 Fibreboard must contain less than 10% roundwood by weight, using weighted average over three (3) month period at manufacturing locations.

.4 Adhesives: VOC limit 120 g/L maximum to SCAQMD Rule 1168.

.5 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

2.2. Quality Grade

.1 Provide all materials and perform all fabrication for Work of this Section in accordance with AWMAC AWS Custom Grade except where specified otherwise.

.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.3. Solid Surface Materials

.1 Solid Surfacing Finish (**SS**): Homogeneous, nonporous, MMA and PMMA cast resin with alumina trihydrate filler sheet good to ANSI/ICPA SS-1, 'Wilsonart Solid Surfaces' or approved alternate.

.1 Thickness: 12.7 mm (1/2") thick.

.2 Colour: Refer to Colour Legend. Colour and pattern to be uniform and consistent throughout material thickness.

.3 Tensile Strength: [6800 psi]; ASTM D 638

.4 Tensile Modulus: [1.5 x 106 psi]; ASTM D 638

.5 Tensile Elongation: 0.4 percent minimum; ASTM D 638

.6 Flexural Strength: [10,000 psi]; ASTM D 790

.7 Flexural Modulus: [1.5 x 106 psi]; ASTM D 790

.8 Thermal Expansion Coefficient: 1.37 x 105 in./in.oF; ASTM D 696

.9 Hardness (Barcol Impressor): 55-62; ASTM D 2583

.10 Impact Resistance: [144 in.] drop with no fracture; NEMA LD-3, Method 3.8

.11 Izod Impact: 0.28 (ft-lb.)/in.; ASTM D 256, Method A

.12 Light Resistance - Xenon: No effect; NEMA LD-3, Method 3.3

.13 Stain Resistance: Pass; ANSI Z 124.3, modified

.14 Wear and Cleanability: Pass; ANSI Z 124.3.

.15 Fungi Resistance: Pass; ASTM G 21.

.16 Bacterial Resistance: Pass; ASTM G 22.

.17 Boiling Water Resistance: No effect; NEMA LD-3, Method 3.5.

.18 High Temperature Resistance: No effect; NEMA LD-3, Method 3.6.

.19 Weatherability: Delta E less than 5; ASTM G 155.

.20 Moisture Absorption: Less than 0.25 percent; ASTM D 570, long term.

.21 Specific Gravity: [1.7 gram/cm3]; ASTM D 792

.22 Weight: [4.4 lb./ft2].

.23 Surface Burning Characteristics: Class I and Class A; ASTM E 84.

2.4. Accessories

.1 Adhesive: two component, solid surfacing adhesive as recommended by manufacturer.

.1 VOC limit 250 g/L maximum to SCAQMD Rule 1168.

.2 Joint Sealants: Clear silicone in accordance with Section 07 92 00 – Joint Sealants.

.3 Draw bolts and splines: as recommended by fabricator.

2.5. Core Materials

.2 In accordance with Section 06 40 00 – Architectural Woodwork and as follows:

.1 Interior mat-formed wood particleboard: to ANSI/NPA A208.1, industrial grade M-2 or M-3, medium density (640 - 800 kg/m^3), thickness 19 mm unless indicated otherwise.

1. Use moisture resistant grade 2-M-2 or 2-M-3 for countertops and splash-backs to receive plumbing fixtures.

.2 Douglas fir plywood (DFP): to CSA O121, standard construction

.3 Hardwood plywood: to ANSI/HPVA HP-1.

.4 Canadian softwood plywood (CSP): to CSA O151, standard construction

.5 Poplar plywood (PP): to CSA O153, standard construction

2.5. Fabrication

.1 Fabricate solid surface finished items in accordance with specified AWMAC AWS quality grade requirements and manufacturer's installation instructions.

.2 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

.3 Ensure adjacent parts of continuous solid surface work match in colour and pattern.

.4 Adhere solid surfacing to core material in accordance with adhesive manufacturer's instructions. Ensure core and solid surfacing coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 2400 mm (8'-0"). Keep joints 600 mm (2'-0") from sink cutouts.

.5 Form shaped profiles and bends as indicated in accordance with manufacturer's fabrication instructions.

.3 Apply interior finish to interior of millwork where indicated and in accordance with Section 06 40 00 – Architectural Woodwork

.6 Edge treatment:

.1 1.5 mm (1/16") 45° chamfer at all exposed edges.

2.6. Source Quality Control

.1 Visual Inspection of Solid Surfacing Fabrications: Do not install solid surfacing fabrications that do not pass visual inspection at Fabricator/Installer's shop.

.1 Warping: Less than 1.5 mm (1/6") per 3.0 m (10') of material

.2 Foreign Particles: Less than 3 visible particles per sheet

.3 Color Match: Same lot

.4 White Spots: Less than 3 visible particles per sheet

.5 Discoloration: None

.6 Particle Distribution: Even distribution

.7 Pit Holes: None

.8 Uneven Sanding: None

.9 Hairline Cracks: None

.10 Concave: None

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for laminate, adhesive, and core materials installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Consultant.

.1 Inform Consultant of unacceptable conditions immediately upon discovery.

.2 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2. Installation

.1 Install solid surfacing work in accordance with AWMAC AWS Custom Grade and manufacturer’s installation instructions except as follows:

.1 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

.2 Install solid surfacing countertops in accordance with manufacturer's instructions at locations indicated on the drawings.

.3 Acclimate solid surfacing countertops to room temperature before installation.

.4 Install solid surfacing work level, plumb, square, true to line, neatly scribed to adjoining surfaces and without warp.

.5 Make allowances around perimeter where fixed objects pass through or project into solid surface work to permit normal movement without restriction.

.6 Install solid surfacing countertops securely in place with proper support at perimeter, seams, cutouts, overhangs, and other locations as required.

.7 Install solid surfacing countertops with 1/8" gap for every 10' of material when surface is enclosed between 2 walls or other obstructions.

.8 Ensure seams are inconspicuous.

.9 Sand and polish solid surfacing countertops in accordance with manufacturer's instructions to specified finish and to remove scratches.

.10 Ensure solid surfacing countertop installation is color matched.

.11 Use draw bolts and splines in core material joints. Maximum spacing 450 mm (1'-6") on centre, 75 mm (3") from edge.

1. Do not install mechanical fasteners directly into solid surfacing countertops.

.12 At junction of solid surface finishes and adjacent wall finish, apply small bead of sealant.

1. Install joint sealants in accordance with Section 07 92 00 – Joint Sealants.

.

.13 Provide cutouts for inserts, grilles, appliances, outlet boxes and other penetrations. Round internal corners, chamfer edges and seal exposed core.

3.3. Site Applied Solid Surface Finishes

.1 Site apply solid surfacing finish to units as indicated.

.2 Adhere solid surfacing finish over entire surface.

.3 Make corners and join with no visible seams.

.4 Use full sized solid surfacing panels.

.5 Make joints where indicated on approved fabrication shop drawings.

.6 Offset joints in solid surfacing panel from joints in core materials and substrates.

3.4. Adjusting

.1 Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Consultant.

.2 Remove and replace damaged solid surfacing countertops that cannot be successfully repaired, as determined by Consultant.

3.5. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.1 Clean solid surfacing countertops promptly after installation in accordance with manufacturer's instructions.

.2 Remove traces of primer, caulking, epoxy and filler materials.

3.6. Protection

.1 Cover finished solid surfacing with heavy kraft paper or put in cartons during shipment.

.2 Protect installed solid surfacing finishes in accordance with manufacturer's written recommendations.

.1 Remove protection only immediately before final inspection.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 07 92 00 – Joint Sealants.

1.2. Reference Standards

.1 ASTM International (ASTM):

.1 ASTM C167, current edition, Standard Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations.

.2 ASTM C423, current edition, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

.3 ASTM C553, current edition, Standard Specification for Mineral Fibre Blanket Thermal Insulation for Commercial and Industrial Applications.

.4 ASTM C665, current edition, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

.5 ASTM C1320, current edition, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.

.6 ASTM E90, current edition, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

.7 ASTM E413, current edition, Classification for Rating Sound Insulation.

.8 ASTM F1667, current edition, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

.2 CSA Group (CSA):

.1 CSA B111, current edition, Wire Nails, Spikes and Staples.

.2 CSA B149 PACKAGE, current edition, Consists of B149.1, Natural Gas and Propane Installation Code and B149.2, Propane Storage and Handling Code.

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS):

.1 Safety Data Sheets (SDS).

.4 Underwriters Laboratories of Canada (ULC):

.1 ULC 102, current edition, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies (CAN/ULC S102).

.2 ULC 114, current edition, Standard Method of Test for Determination of Non-Combustibility in Building Materials.

.3 ULC 604, Standard for Factory-Built Type A Chimneys (CAN/ULC-S604, current edition).

.4 ULC 702, Standard for Mineral Fibre Insulation for Buildings (CAN/ULC-S702, current edition).

1.3. Administrative Requirements

.1 Pre-installation Meeting: Convene pre-installation meeting after Award of Contract and two weeks before starting work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturer's written installation instructions.

.1 Comply with Section 01 31 19 - Project Meetings and co-ordinate with other similar pre-installation meetings.

.2 Notify attendees 2 weeks prior to meeting and ensure meeting attendees include as minimum:

1. Owner,
2. Consultant,
3. Subcontractor,
4. Manufacturer's Technical Representative.

.3 Ensure meeting agenda includes review of methods and procedures related to insulation installation including co-ordination with related work.

.4 Record meeting proceedings including corrective measures and other actions required to ensure successful completion of work and distribute to each attendee within 1 week of meeting.

1.4. Submittals

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

.2 Product Data: Submit manufacturer's instructions, product literature and data sheets for blanket insulation. Include product characteristics, performance criteria, physical sizes, and limitations.

.3 Certificates: When requested, submit manufacturer's product certificates certifying materials comply with specified performance characteristics and criteria and physical requirements.

.4 Test Reports: When requested, submit certified test reports showing compliance with specified performance characteristics and physical properties.

.5 Insulation Installer Qualifications: Submit letter verifying insulation installer's experience with work similar to work of this Section.

1.5. Delivery, Storage, and Handling

.1 Deliver materials and accessories in insulation manufacture's original packaging with identification labels intact and in sizes to suit project.

.2 Storage and Handling Requirements:

.1 Store materials off ground in a clean dry location and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.6. Warranty

.1 Project Warranty: Refer to Contract Conditions for project warranty provisions.

.2 Manufacturer's warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.

.3 Warranty period: 1 year commencing on Date of Substantial Performance of Work.

PART 2 PRODUCTS

2.1. Insulation

.1 Mineral Fiber Acoustical and Fire Blanket Insulation (**INSUL**) : Non-combustible, stone wool batt insulation to CAN/ULC-S702, "AFB - Acoustical Fire Batt Insulation" by Rockwool or approved alternate.

.1 Application: Typical at lightweight steel stud framed interior partition cavities. Refer to Drawings for thickness and location.

.2 Type: 1

.3 Fire performance:

1. Non-combustibility: To CAN/ULC S114.

2. Surface Burning Characteristics: To CAN/ULC S102.

.1 Flame Spread Rating: 0 to CAN/ULC S102

.2 Smoke Developed Classification: 0 to ASTM E84

.4 Density: > 40 kg/m^3 (> 2.5 lbs/ft^3) to ASTM C167.

.5 Thermal Resistance: Type 7 Compliant to ASTM C553

.6 Thickness: as indicated on drawings.

2.2. Accessories

.1 Insulation clips:

.1 Impale type, perforated 50 x 50 mm (2” x 2”) cold rolled carbon steel 0.8 mm (1/32”) thick, adhesive back, spindle of 2.5 mm (3/32”) diameter annealed steel, length to suit insulation, 25 mm (1”) diameter washers of self locking type.

.2 Nails: galvanized steel, length to suit insulation plus 25 mm (1”), to F1667 CSA B111.

.3 Staples: minimum 12 mm (15/32”) leg.

.4 Tape: as recommended by manufacturer.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: Verify that conditions of substrate previously installed are acceptable for blanket insulation application in accordance with manufacturer's instructions.

.1 Verify all in-wall construction is complete.

.2 Verify building substrates are dry.

.3 Inform Consultant of unacceptable conditions immediately upon discovery.

.4 Proceed with installation only after unacceptable conditions have been remedied.

3.2. Insulation Installation

.1 Install insulation to maintain continuity of thermal protection to building elements and spaces, and to ASTM C1320.

.2 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.3 Fill stud space of exterior framed walls with insulation full depth of stud only where no insulation/vapour retardant indicated on exterior face of stud walls.

.4 Do not compress insulation to fit into spaces.

.5 Keep insulation minimum 75 mm (3”) from heat emitting devices such as recessed light fixtures, and minimum 50 mm (2”) from sidewalls of CAN/ULC-S604 Type A chimneys.

.6 Do not enclose insulation until it has been reviewed and is acceptable by Consultant.

END OF SECTION

PART 1 GENERAL

1.1. Summary

.1 Provide firestop systems consisting of a material, or combination of materials installed to retain the integrity of the fire-separations, fire-resistance rated construction by maintaining an effective barrier against the spread of flame, or smoke, and/or hot gases through penetrations, blank openings, construction joints, or at the gap that is created at the building perimeter of the horizontal fire resistance rated assembly, and non-fire-resistance rated exterior wall and in or adjacent to either fire-resistance or non-fire-resistance rated barriers in accordance with the requirements of the Building Code for this project.

.2 Firestop systems shall be used in locations including, but not limited to, the following:

1. Penetrations through fire-separations/fire-resistance-rated floor and roof assemblies requiring protected openings including both empty openings and openings that contain penetrations.

2. Penetrations through fire-separations/fire-resistance-rated wall assemblies including both empty openings and openings that contain penetrations.

3. Membrane penetrations in fire-separations/fire-resistance-rated wall assemblies where items penetrate one side of the barrier.

4. Joints in fire-resistance-rated assemblies that allow independent movement.

5. Perimeter of the horizontal fire-resistance rated assembly and exterior wall between a rated floor/roof and an exterior wall assembly that is not fire-resistance rated.

6. Joints, through penetrations and membrane penetrations in Smoke Barriers and Smoke Partitions.

7. Non-rated fire-separations assigned a 45-minute fire-resistance rating shall be firestopped with an “L” Rated Firestop System on both sides of the fire-separation.

.3 Work Specified Elsewhere:

.1 Firestopping and smoke seals within mechanical (i.e. inside ducts, dampers) and electrical assemblies (i.e. inside bus ducts) are specified in Divisions 15 and 16 respectively.

1.2. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Division 7 - Thermal And Moisture Protection.

.3 Division 8 - Glass, Glazing, and Metal Curtain Wall Systems.

.4 Division 9 - Gypsum Wallboard.

1.3. Definitions

.1 Fire Blocking: materials, components or system installed in a concealed space in the building to restrict the spread of fire and smoke in that concealed space or from that concealed space to an adjacent space.

.2 Fire Compartment: spaces within a building that are enclosed by exterior walls or separated from other parts of the building by enclosing Fire Separations having a Fire-Resistance Rating.

.3 Fire-Resistance Rating: time in minutes or hours that a material or assembly of materials will withstand the passage of flame and transmission of heat when exposed to fire, meeting the requirements of CAN/ULC-S101 or as determined by formal testing of material or assembly of materials, meeting requirements of CAN/ULC-S115, or an interpretation of information derived from formal testing in accordance with requirements of the Building Code and acceptable to the Authority Having Jurisdiction (AHJ).

.4 Fire Separation: assembly that acts as a barrier against the spread of fire, smoke and noxious gases resulting from combustion as defined by the Building Code and includes the following assemblies having a Fire-Resistance Rating requiring Fire Stopping as follows:

.1 Penetration-Type Fire Stop systems located within loadbearing walls and partitions.

.2 Penetration-Type Fire Stop systems located within non-loadbearing walls and partitions.

.3 Penetration-Type located within floor assemblies.

.4 Building Perimeter-Type located between floor assemblies and exterior wall and roof construction.

.5 Construction Joint-Type and other assemblies having a Fire-Resistance Rating indicated on Drawings or Schedules.

.5 Fire Stop: material, component or system, and its means of support, used to protect gaps between fire separations, between fire separations and other

construction assemblies, or used in openings where penetrating items wholly or partially penetrate fire separations, to restrict the spread of fire and smoke thus maintaining the fire-resistance continuity of a fire separation.

.6 Fire Stop System: a specific site erected construction consisting of the assembly, fire stop materials, any penetrating items and their means of support which have met the requirements for an F, FT, FH, FTH and/or L rating when tested in a fire-resistance rated assembly in accordance with CAN/ULC-S115.

.1 F-Rating: the amount of time a fire stop system can remain in place without the passage of flame through the opening or the occurrence of flaming on the unexposed face of the fire stop.

.2 FT-Rating: a fire stop system with an F-Rating for the required time period which can also resists the transmission of heat through the fire stop during the same period and limit the rise in temperature on the unexposed face and/or penetrating item of the fire stop.

.3 FH-Rating: a fire stop system with an F-Rating for the required time period which can also resist the force of a hose stream without developing openings for a prescribed period.

.4 FTH-Rating: a fire stop system with an FT-Rating for the required time period which also passes the hose stream test for a prescribed period.

.5 L-Rating: largest test sample leakage rate, determined in accordance with the optional air leakage test in CAN/ULC-S115.

.7 Multi-penetration: two or more service penetrations through an opening in the fire separation.

.8 Non-rated Fire Separation: fire separation acting as a barrier to the spread of smoke until a response is initiated such as the activation of a fire suppression system.

.9 Single-penetration: single service penetration through an opening in the fire separation.

.10 System Design Listing: document providing proof of testing with technical details, specifications and requirements that leads to the application of a specific listed fire stop system.

1.4. Reference Standards

.1 ASTM International (ASTM):

.1 ASTM A1008/A1008M, current edition, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-

Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable.

.2 ASTM C719, current edition, Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).

.3 ASTM C920, current edition, Standard Specification for Elastomeric Joint Sealants.

.4 ASTM E84, current edition, Standard Test Method for Surface Burning Characteristics of Building Materials.

.5 ASTM E119, current edition, Standard Test Methods for Fire Tests of Building Construction and Materials.

.6 ASTM E136, current edition, Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 degrees.

.7 ASTM E595, current edition, Standard Test Method for Total Mass Loss and Collected Volatile Condensable Materials from Outgassing in a Vacuum Environment.

.8 ASTM E814, current edition, Standard Test Method for Fire Tests of Penetration Firestop Systems.

.9 ASTM E1966, current edition, Standard Test Method for Fire Resistive Joint Systems.

.10 ASTM E2032, current edition, Standard Guide for Extension of Data From Fire Resistance Tests Conducted in Accordance with ASTM E 119.

.11 ASTM E2174, current edition, Standard Practice for On-Site Inspection of Installed Firestops.

.12 ASTM E2393, current edition, Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers.

.2 Firestop Contractors International Association (FCIA):

.1 FCIA Firestop Manual of Practice, current edition.

.3 Factory Mutual Approvals (FM):

.1 FM 4990, current edition, Approval Standard for Fire stopping.

.2 FM 4991, current edition, Approval Standard for Firestop Contractors.

.4 International Accreditation Service (IAS):

.1 IAS AC291, current edition, Accreditation Criteria for Special Inspection Agencies.

.5 International Firestop Council (IFC)

.1 IFC Guidelines for Evaluating Engineering Judgments.

.2 IFC Guidelines for Evaluating Engineering Judgments - Perimeter Fire Barrier Systems.

.3 IFC Inspection Guidelines for Penetration Firestop Systems and Fire Resistive Joint Systems in Fire Resistance Rated Construction, current edition.

.6 Ministry of Municipal Affairs and Housing (MMAH)

.1 Ontario Building Code (OBC), current edition.

.7 National Fire Protection Agency (NFPA):

.1 NFPA 251, current edition, Standard Methods of Tests of Fire Endurance of Building Construction and Materials.

.8 National Research Council Canada (NRC):

.1 National Building Code of Canada (NBC), current edition.

.2 Best Practice Guide on Fire Stops and Fire Blocks and Their Impact on Sound Transmission, current edition.

.9 ULC Standards (ULC):

.1 CAN/ULC-S101, current edition, Standard Method of Fire Endurance Tests of Building Construction and Materials.

.2 CAN/ULC-S102, current edition, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.3 CAN/ULC-S114, current edition, Standard Method of Test for Determination of Non-Combustibility in Building Materials.

.4 CAN/ULC-S115, current edition, Standard Method of Fire Tests of Firestop Systems.

.10 Underwriters Laboratories Inc. (UL):

.1 UL 1479, current edition, Fire Tests of Penetration Firestops.

.2 UL Qualified Firestop Contractor Program.

1.5. Administrative Requirements

.1 Pre-Installation Meetings:

.1 Hold pre-installation meeting one (1) week before beginning Work of this Section, with Contractor, Subcontractor, and Consultant in accordance with Section 01 31 19 - Project Meetings to:

1. Verify Project requirements.
2. Review installation and substrate conditions.
3. Discuss coordination with other Subcontractors.
4. Review system design listings, manufacturer's installation instructions and warranty requirements.
5. Review quantity and location of mock-ups.

.2 Hold pre-installation meetings with other trades to review:

1. Installation procedures and precautions.
2. Location, scheduling and sequencing of other work around fire stops that can affect the outcome of the installation.
3. Requirements for annular opening sizes.
4. Requirements and preparations for wall/floor single and multi-penetrations.
5. Requirements for construction and perimeter joints.
6. Mock-up requirements.

.3 Submit copies of applicable listed fire stop system details to each trade for opening preparation. Include installation details required for the listed system.

.4 Meeting minutes: Contractor to take minutes of pre-installation meetings and distribute to Consultant and each affected trade.

.2 Sequencing:

.1 Proceed with installation only when submittals have been reviewed by Consultant.

.2 Install fire stops located in floor assemblies before interior partition erections.

.3 Metal deck bonding: Unless otherwise noted on system design listing and manufacturer's installation instructions, fire stopping to precede spray-applied fireproofing to ensure required bonding.

.4 Pipe and duct insulation: Certified fire stop system component.

1. Ensure pipe and duct insulation installation precedes fire stopping.

1.6. Submittals

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

.2 Qualification Statement:

.1 Submit contractor qualification statements and certificates demonstrating compliance with the qualification requirements of this Section, as described in 1.7 Quality Assurance, within Ten working days after award of contract and before starting Work.

.3 Product Data:

.1 Submit manufacturer's product data for each type of fire stopping and smoke seal. Submit complete product data for each individual component and include:

1. Product name and product number.
2. Product characteristics and performance criteria.
3. Physical size, finish and limitations.
4. Technical data on out-gassing, off-gassing and age testing.
5. Curing time.
6. Chemical compatibility to other construction materials.
7. Shelf life.
8. Life expectancy.
9. Temperature range for installation.

10. Humidity range for installation.

11. Sound attenuation STC-Rating.

.2 Manufacture Product Certification:

1. Submit manufacturer certification certifying products supplied comply with local regulations controlling use of Volatile Organic Compounds (VOC's) and are non-toxic to building occupants.

2. Submit test reports showing compliance to ASTM E595.

.3 Submit a comprehensive list of all products and components included in submittal.

.4 Shop Drawings:

.1 Submit shop drawings showing system design listings for Project including proposed materials, reinforcement, anchorage, fastenings and method of installation.

.2 Construction details to accurately reflect actual job conditions for each product and assembly.

.3 Submit details for materials and prefabricated devices.

.4 Submit electronic copy of shop drawings and include:

1. Title page labelled "Fire and Smoke Stop System Listings". Include project name, date and the names of the installation company and the manufacturer of proposed products.

2. Table of Contents at front of each binder.

3. List of each proposed listed fire stop system and corresponding service penetration type or joint type in a matrix spreadsheet schedule, indicating floor and wall system, including rating for each.

4. Location of penetrations:

5. System Design Listings:

6. Certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.5 Manufacturer's Instructions: Submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

.6 Samples: Submit to Consultant a minimum of two (2) weeks before beginning site work:

.1 Submit two (2) 300 x 300-mm samples of each system showing actual fire stop materials proposed for Project including anchors/fasteners and damming materials.

.2 Submit two (2) samples of each type of label proposed for the identification of fire stops.

.7 Quality Assurance Submittals: Submit the following in accordance with Section 01 43 00 - Quality Assurance:

.1 Test reports in accordance with CAN/ULC-S101, CAN/ULC-S102, and CAN/ULC-S115.

1. Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.

.2 Document from Engineer of Record showing compliance of alternative fire stopping solution with CAN/ULC-S115 and the EJ guidelines provided by the National Research Council, Best Practice Guide on Fire Stops and Fire Blocks and Their Impact on Sound Transmission.

.3 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.4 Manufacturer's Instructions: Submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

.5 Manufacturer's Site Reports: Submit manufacturer's reports within three days of review, verifying compliance of Work, as described in 3.8 Site Quality Control of this Section.

.8 Engineering Judgments (EJ):

.1 Where there is no specific tested listed fire stop system available from the manufacturer for a particular fire stop configuration, review systems from other manufacturers to obtain a listed fire stop system.

.2 Submit an EJ from the system manufacturer if there are no listed systems available from other manufacturers.

.3 Prepare and submit an EJ in accordance with best practices established in the following documents:

1. IFC Guidelines for Evaluating Engineering Judgments.

2. IFC Guidelines for Evaluating Engineering Judgments - Perimeter Fire Barrier Systems.

.4 For each EJ submitted, include:

1. Project name, number and location.

2. A description of the proposed system with detailed drawing.

3. Installation instructions.

4. Complete descriptions of critical elements for the fire stop configuration.

5. Copies of all referenced system design listings which EJ is based on.

6. EJ issuer name and contact information.

7. Date of issue of EJ with authorization signature of issuer.

.5 EJ shall only be issued by fire stop manufacturer's qualified technical personnel or in collaboration with the manufacturer by a knowledgeable registered Professional Engineer, a Fire Protection Engineer or an independent testing agency that provides testing and listing services for fire stop systems similar to the EJ being contemplated.

.6 EJ shall be based upon interpolations of previously tested fire stop systems that are either sufficiently similar in nature or clearly bracket the conditions upon which the EJ is to be given. Additional knowledge and technical interpretations based upon accepted engineering principles, fire science and fire testing guidelines (e.g., ASTM E2032) may also be used as further support data.

.7 EJ shall be based upon knowledge of the elements of the construction to be protected and understanding of the probable behaviour of that construction and the recommended fire stop system protecting it were they to be subjected to the adequate standard fire test method for the required fire rating duration.

.8 EJ shall be limited to the specific conditions and configurations for which it was created and should be based upon reasonable performance expectations for the recommended fire stop system under those conditions.

.9 EJ shall be accepted only for a single specific job and location and should not be transferred to any other job or location without thorough and appropriate review of all aspects of the next job or location's circumstances.

1. Manufacturer letter stating their opinion, with supporting justification, that the EJ will perform as a fire stop system when subjected to the appropriate standard fire test method for the required fire rating duration.

.10 Once the EJ has been reviewed, submit to the AHJ for final approval.

.10 Closeout Submittals:

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.11 Operation and Maintenance Data: Submit maintenance data for incorporation into manual, including:

.1 WHMIS Safety Data Sheets (SDS).

.2 product data and manufacturer's installation and maintenance instructions for each product/system used on this project,

.3 approved system design listings and EJs, and

.4 matrix schedule listing all system design listings and EJs with a description of their penetration or joint type.

.5 Certifications:

1. Provide proof of training for each worker that performed installation on the Project.

2. Provide proof of company installing fire stopping and smoke sealsis a Member in Good Standing with FCIA.

3. Certification of company as a ULC Qualified [or FM 4991 Approved] Firestop Contractor, including the Designated Responsible Individual (DRI) certificate.

4. Accreditation of third-party inspection firm.

.6 Manufacturer's field reports.

.7 Warranty information on firestop installations.

.8 Life expectancy of each product installed as part of Project. For each system, list the installation date of products and the expected expiration date (month/year).

.12 Record Documentation:

.1 Maintain a daily log of all activities on site during the course of construction. Submit a copy of all daily logs after completion of fire stopping work.

.2 As-built Drawings:

1. Submit a marked-up set of Drawings to provide referencing system identifying the location of each fire stop.

2. Identify each penetration type fire stop with their penetration identification number.

.3 Provide detailed Drawings of system design listings for each type of fire stop (i.e., through-penetration, membrane penetration, blank opening, construction joint, building perimeter).

.4 Fire Stop Schedules:

1. Submit complete fire stop schedules for floors, walls and ceilings.

2. Indicate all penetration fire stops and joint fire stops through each reference wall, floor and ceiling in the schedules.

3. Cross-reference firestop schedules with as-built drawings and indicate design listing numbers associated to each penetration fire stop and joint fire stop.

1.7. Quality Assurance

.1 Regulatory Requirements: Use materials and methods of determining required thickness of application that have the full acceptance of AHJ and that are tested in accordance with CAN/ULC-S115 and form a part of a ULC or cUL listed system, Engineered Judgement or Equivalent Fire Resistance Rated Assembly.

.2 Provide systems selection and analysis, installation and inspection of fire stop systems in accordance with the recommended practices detailed in the following guides:

.1 FCIA Firestop Manual of Practice (MOP).

.3 Qualifications:

.1 Contractor specializing in selection and installation of fire stops with five (5) years of experience and approved by manufacturer. Submit a list of three successfully completed projects of similar scale and type.

.2 The installers are recognized as a Member in Good Standing with the Firestop Contractors International Association (FCIA). Submit proof of current membership.

.3 Training: Workers, including site supervisor, to complete:

1. Manufacturer training on the products/systems installed as part of this Section.

.4 Certified Firestop Contractor: company certified with one of the following programs:

1. ULC Qualified Firestop Contractor Program. Submit signed copy of certificate.

2. FM 4991 Approved Firestop Contractor. Submit signed copy of FM Approval certificate.

.5 Third-Party Inspection Firm: inspection agency with inspectors who have passed the ULC Firestop Exam or FM Firestop Exam.

.4 Mock-ups:

.1 Construct mock-up of fire stop systems in accordance with Section 01 43 00 - Quality Assurance.

.2 Before beginning construction, provide mock-up of each proposed listed fire stop system for review by Consultant. Mock-up shall include work by other trades to demonstrate the required finish work, such as steel stud/gypsum board trade framing out multi-penetration openings.

.3 Install proposed identification labels for each penetration.

.4 Locations for mock-ups as directed by Consultant.

.5 After mock-up completion and adequate curing time for materials, provide a minimum of 48 hours notification to Consultant to conduct review.

.6 Manufacturer's representative or inspection firm shall be present during review of mock-ups.

.7 Correct mock-up deficiencies as directed by Consultant. Mock-up may remain as part of finished work.

.8 Consultant may perform destructive tests to each mock-up to ensure the system meets or exceeds the approved system design listing.

.5 Manufacturer Site Visits:

.1 Conducted after delivery and storage of products, and when preparatory Work is complete, but before installation begins.

.2 During progress of work at 25 % and 75 % completion.

.3 Conducted again upon completion of Work and after final cleaning is complete.

1.8. Delivery, Storage and Handling

.1 Packing, shipping, handling and unloading:

.1 Perform in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, ULC markings, manufacturing date, and shelf-life expiry date.

.2 Storage and Protection:

.1 Store materials in a well-ventilated, dry indoor location and in accordance with manufacturer's instructions.

.2 Coordinate delivery of materials with scheduled installation dates to allow minimum storage time on site.

.3 Comply with recommended procedures, precautions and measures described in WHMIS Safety Data Sheets (SDS).

1.9. Ambient Conditions

.1 Ambient Conditions:

.1 Install fire stops and smoke seals when ambient and substrate temperatures are within the limits prescribed by the manufacturer and when the substrate is dry and without risk of condensation.

.2 Maintain manufacturer's recommended ambient and substrate

temperatures for 48 hours before and 72 hours after installation.

.2 Ventilate fire stops and smoke seals in accordance with manufacturers' instructions by natural means or, where this is inadequate or not available, use forced air circulation.

1.10. Warranty

.1 Extend 12-month warranty period to 24 months for Work of this Section.

.2 Manufacturers shall warrant work of this Section against defects and deficiencies in the product material for a period of 24 months. Promptly correct any defects or deficiencies which become apparent within warranty period at no expense.

.3 Contractor warrants workmanship on materials and installation for a period of 24 months. Promptly correct any defects or deficiencies which become apparent within warranty period at no expense.

PART 2 PRODUCTS

2.1. Manufacturers

.1 Provide products from a single manufacturer, to the greatest extent possible, to perform all fire stopping work. Materials of different manufacturers will not be permitted without authorization from Consultant.

.2 Provide a listed system from an alternative where there is no specific tested listed fire stop system available from the manufacturer for a particular fire stopping application to avoid providing an Engineering Judgment.

2.2. Performance/Design Criteria

.1 Fire stop and smoke seal systems consisting of a material or combination of materials installed to maintain the integrity of the fire-resistance rating of a fire separation in accordance with the requirements of the Ontario Building Code.

.2 Performance Requirements: Manufacturer shall design proprietary assemblies to withstand the listed ratings in accordance with the Ontario Building Code, ULC Standards, and AHJ, and as follows:

.1 Non-rated fire separations: Provide L-Rated smoke protection fire stop system for application on both sides of separation.

.2 Provide through-penetration fire stop and joint systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of penetrated assembly, such as:

1. Fire-resistance rated loadbearing walls, including partitions, with fire protection rated openings.

2. Fire-resistance rated non-loadbearing walls, including partitions with fire protection rated openings.

3. Fire-resistance rated floor assemblies.

.3 "F" Rated Systems: Provide through-penetration fire stop systems with F-ratings indicated, as determined by CAN/ULC-S115 or ASTM E814, and equal to or exceeding the fire-resistance rating of the penetrations created during construction.

.4 "T" Rated Systems: Where fire stop systems protect penetrating items from potential contact with adjacent materials, provide through-penetration fire stop systems with T-ratings and F-ratings indicated, as determined by CAN/ULC-S115 or ASTM E814, for the following conditions:

1. Penetrations located outside wall cavities.

2. Penetrations located outside fire resistive shaft enclosures.

3. Penetrations located in a construction containing fire protection rated openings.

4. Penetrating items larger than a 100-mm-diameter nominal pipe or 100 cm^2 in overall cross-sectional area.

.5 Fire stopping and Smoke Seal Systems Exposed to View: Provide products that after curing do not deteriorate when exposed to view, traffic, moisture, and physical damage both during and after construction, and as follows:

1. Provide moisture resistant through-penetration fire stop systems for piping penetrations for plumbing and wet pipe sprinkler systems.

2. Provide fire stopping and smoke seal systems capable of supporting anticipated floor loads either by installing floor plates or by other means for floor penetrations with annular spaces exceeding 100 mm in width and exposed to possible loading and traffic.

3. Provide fire stopping and smoke seal systems not requiring removal of insulation for penetrations involving insulated piping.

4. Provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 50 for fire stopping, smoke seal, and joint systems exposed to view.

5. Architectural considerations: When fire stop system is exposed to view, consider architectural finish, potential traffic, and exposure to moisture and heat.

.6 Fire Resistance of Joint Systems: Assembly ratings and movement capabilities shall be as indicated with assembly ratings equal to or exceeding the fire-resistance rating of constructions in which joints are located.

.3 Insulated Pipes and Ducts: Design and test listed fire stop system with the actual insulation materials penetrating the fire separation, as indicated on the system design listing.

2.3. Materials

.1 Compatibility: Under conditions of service and application, provide fire stopping and smoke seal systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating the systems, as demonstrated by fire stopping and smoke seal system manufacturer based on testing and site experience, and as follows:

.1 Asbestos-free materials and systems capable of maintaining an effective barrier against the passage of flame, smoke and water and the transmission of heat in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended, as indicated on System Design Listing.

.2 Fire Stop System Rating: To match fire-resistance rating of fire separation as indicated on Drawings and in schedule.

.3 Service penetration assemblies and fire stop components: Certified by testing laboratory to CAN/ULC-S115.

.4 Provide elastomeric seal or non-shrink foam cement mortar for fire and smoke stop systems at openings intended for re-entry, such as cables. Do not use cementitious or rigid seal at such locations.

.5 Provide elastomeric protection for fire and smoke stop systems at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control. Do not use a cementitious or rigid seal at such locations. Exemption for fire dampers.

.6 Provide elastomeric seal for fire and smoke seals behind and around mechanical and electrical boxes within wall, floor, and ceiling assemblies.

2.4. Fill Materials

.1 General:

.1 Provide fire stopping and smoke seal systems containing the types of fill materials indicated in 3.1 Schedule of this Section by reference to the types of materials described in this Article. Fill materials are those referred to in directories of the referenced testing and inspecting agencies as fill, void, or cavity materials.

.2 Fire stopping and smoke seal systems shall be tested in accordance with CAN/ULC-S115 and be comprised of asbestos free materials and systems capable of maintaining an effective barrier against flame, smoke and gases. Fire stopping and smoke seal systems not to exceed opening sizes for which they are intended for the ratings as indicated on Drawings.

.2 Latex Sealants: Single component latex formulations that after curing do not re-emulsify during exposure to moisture.

.3 Fire Stopping and Smoke Seal Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrating item.

.4 Cable Penetration Devices:

.1 Pre-manufactured intumescent blocks.

.2 Pre-manufactured sleeves, consisting of an adjustable core.

.3 Pre-manufactured cable management system, consisting of a system of intumescent inserts and adjustable cores.

.5 Intumescent Composite Sheets: Rigid panels consisting of aluminum foil faced elastomeric sheet bonded to galvanized steel sheet.

.6 Intumescent Putties: Non-hardening dielectric, water resistant putties containing no solvents, inorganic fibres, or silicone compounds.

.7 Intumescent Spray Foam: Expanding spray-in-place intumescent foam sealant.

.8 Intumescent Wrap Strips: Single component intumescent elastomeric sheets with aluminum foil on one side.

.9 Intumescent, Latex Sealant: Single-component, intumescent, latex formulation.

.10 Job-Mixed Vinyl Compound: Prepackaged vinyl-based powder product for mixing with water at Project site to produce a paintable compound, passing ASTM E136, with flame-spread and smoke-developed ratings of zero per ASTM E84.

.11 Silicone Foams: Multi-component, silicone based liquid elastomers that, when mixed, expand and cure in-place to produce a flexible, non-shrinking foam.

.12 Silicone Sealants: Moisture curing, single component, silicone based, neutral curing elastomeric sealants of grade indicated below:

.1 Grade for Horizontal Surfaces: Pourable (self-levelling) formulation for openings in floors and other horizontal surfaces.

.2 Grade for Vertical Surfaces: Non-sag formulation for openings in vertical and other surfaces.

.13 Ceramic-Fibre and Mastic Coating: Ceramic fibres in bulk form formulated for use with mastic coating, and ceramic fibre manufacturer's mastic coating.

.14 Ceramic-Fibre Sealant: Single-component formulation of ceramic fibres and inorganic binders.

2.5. Mixing

.1 For those products requiring mixing before application, comply with fire stopping and smoke seal system manufacturer's instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

2.6. Fire-Resistive Elastomeric Joint Sealants

.1 Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer that comply with ASTM C920 requirements, including those referenced for Type, Grade, Class, and Uses, and requirements specified in this Section applicable to fire-resistive joint sealants.

.2 Single-Component, Neutral-Curing Silicone Sealant: Type S; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, G, A, and (as applicable to joint substrates indicated) O.

.1 Additional Movement Capability: When tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, provide sealant with the capability to withstand the changes in joint width existing at the time of installation, and remain in compliance with other requirements of ASTM C920.

.3 Multicomponent, Non-sag, Urethane Sealant: Type M; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, A, and (as

applicable to joint substrates indicated) O.

.1 Additional Movement Capability: When tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, provide sealant with the capability to withstand the change in joint width existing at the time of installation, and remain in compliance with other requirements of ASTM C920.

.4 Single-Component, Non-sag, Urethane Sealant: Type S; Grade NS; Class 25; and Uses NT, M, A, and (as applicable to joint substrates indicated) O.

2.7. Fire Stop Identification

.1 Identification Labels and Markings: Permanent for the expected service life of the installation.

.2 Fire Stopped Penetrations:

.1 Provide identification labels at each penetration.

.2 Identification labels: adhesive plastic stickers with the following information:

1. penetration number.
2. floor number.
3. room number.
4. product name and number.
5. system design number.
6. fire rating required in hours.
7. fire stop contractor's name and phone number.
8. installer's name.
9. date of installation.
10. re-penetrated by: company, installer and date.

.3 Indicate on label that fill material around the penetration is a fire stop system and shall not be disturbed except by authorized personnel.

.3 Fire Separation (Barrier) Markings:

.1 Provide identification for all vertical fire separations.

.2 Identification markings: adhesive [stickers with lettering at least 75 mm in height with a minimum 10 -mm stroke in contrasting colour.

.3 Incorporate assembly's fire-resistance rating and the following suggested wording, "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS", or other accepted wording.

.4 For occupied areas with exposed ceilings: Use 50-mm stencil painted red dots.

2.8. Accessories

.1 Provide components for each fire stopping and smoke seal system needed to install fill materials. Use only components specified by fire stopping and smoke seal system manufacturer and approved by the qualified testing and inspecting agency for fire stopping and smoke seal systems indicated on Drawings.

.2 Primers: To manufacturer's recommendation for specific material, substrate, and end use.

.3 Water (if applicable): Potable, clean and free from harmful amounts of deleterious substances.

.4 Metal Fire Stop: Commercial galvanized steel, to ASTM A1008/A1008M, zinc coating 260 g/m^2, minimum metal core thickness 0.912 mm.

.5 Steel Deck Moulded Flute Inserts: One-piece moulded mineral fibre flute inserts, sized for steel deck profiles, for placement at top of fire-rated wall assemblies.

.6 Packing/Damming Materials, Supports and Anchoring Devices: To manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to AHJ.

.7 Fire Stop Insulation: Pre-formed, semi-rigid, non-combustible mineral wool, pre-cut in 1220-mm lengths to required depth and width.

.8 Junction Box/Outlet Sealing Putty: Intumescent putty, pre-formed in pads.

.9 Sealants: Good adhesion without use of primer, high visibility safety colours.

.1 Flame-spread rating: Maximum 25.

.2 Smoke development classification: Maximum 50.

.3 For vertical joints: Non-sagging.

.4 For horizontal joints: Single component, self-levelling.

PART 3 EXECUTION

3.1. Examination

.1 Verify that conditions of substrates previously installed are acceptable for product installation in accordance with manufacturer's instructions and approved system design listings for each condition.

.2 Verify each opening/annular space to ensure it does not exceed the maximum and minimum dimensions indicated on the approved system design listing.

.3 Verify that all joints, service penetrating elements and supporting devices/hangers have been properly installed as indicated on approved system design listings. Remove all temporary lines and markings to meet the approved system design listings.

.4 Verify that proposed fire stop system consists of components that are compatible with each other, with substrates forming the openings, and with items, if any, penetrating the fire stop under conditions of application and service, as demonstrated by the fire stop manufacturer based on testing and site experience.

.5 Pipe and Duct Insulation: Confirm that proposed fire stop system has been tested with the actual insulation penetrating the fire separation on site, as indicated in the approved system design listing. Maintain insulation around pipes and ducts penetrating the fire separation.

.6 Ensure no additional items have been installed through opening that does not appear on the approved system design listing.

.7 Ensure fire stopped areas are accessible for proper application and that conditions are suitable for installation of the fire stop system. Areas to remain accessible for inspection.

.8 Report in writing to Consultant any defective surfaces or conditions affecting the fire stop system installation immediately and before commencing any installations.

.9 Proceed only once defected surfaces or conditions have been corrected.

.10 Proceed with installation only after unacceptable conditions have been remedied.

3.2. Preparation

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.

.1 Ensure that substrates and surfaces are clean, dry and frost free.

.2 Ensure substrates and surfaces are free of dirt, grease, oil, rust, laitance, release agents, water repellents, and any other substances that may affect proper adhesion.

.2 Prepare surfaces in contact with fire stop and smoke stop materials to manufacturer's instructions.

.3 Maintain insulation around pipes and ducts penetrating fire separation [without interruption to vapour barrier].

.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

.5 Protect adjacent work areas and finish surfaces from damage during product installation.

.6 Prime surfaces as required.

.7 Ensure multi-penetration openings have been framed and boarded out around annular openings, as indicated in the system design listing before prepping the opening.

3.3. Installation

.1 Install fire stop and smoke seal materials and components in accordance with manufacturer's certified tested system listing.

.2 Coordinate with other sub-trades to ensure that all pipes, conduits, cables, and other items, which penetrate fire separations, have been permanently installed before installation of fire stop systems.

.3 Schedule work to ensure that fire separations and all other construction that conceals penetrations are not erected before installation of fire and smoke seal systems

.4 Seal holes or voids made by through-penetrations, poke-through termination devices, and un-penetrated openings or joints to ensure that both continuity and integrity of fire separation are maintained.

.5 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing per manufacturer's instructions.

.6 Tool or trowel exposed surfaces to neat finish.

.7 Remove excess compound promptly as work progresses and upon completion.

.8 Protect gaps around recessed components (e.g., panels, electrical boxes, outlets) with sealing putty in accordance with manufacturer's instructions.

.9 Do not use damaged or expired material.

3.4. Installation – Joint Fire Stops

.1 For sealant applications, install joint fillers to support fire stop materials during application. Position joint fillers to ensure fire stop material cross-sectional shape and thickness relative to the joint width allows for optimum sealant movement, while developing the required fire-resistance rating.

.2 Install fire stops using techniques recommended by the manufacturer:

.1 Fully wetting joint substrates to optimize adhesion.

.2 Completely filling recesses provided for each joint configuration.

.3 Tool non-sag fire stop materials immediately after their application and before the time skinning begins. Form smooth, uniform beads of configuration indicated or required to

1. provide required fire-resistance rating,

2. eliminate air pockets, and

3. ensure contact and adhesion with sides of joint.

.4 Joint Systems and Perimeter Fire Containment Systems:

1. For systems with dynamic joints, ensure movement capabilities of the installation meet or exceed the movement expectations of the system design listing and manufacturer's installation instructions

3.5. Installation – Through Penetration Joint Sealants

.1 Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position required to achieve fire ratings of designated through-penetration fire stop systems.

.2 Install fill materials for through-penetration fire stop systems by techniques recommended by the manufacturer to produce the following results:

.1 Completely fill voids and cavities formed by openings, forming materials,

accessories, and penetrating items.

.2 Apply materials so they contact and adhere to substrates formed by openings and penetrating items.

.3 For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

.3 Remove combustible forming materials and other accessories not indicated as permanent components of fire stop systems.

3.6. Identification

.1 General:

.1 Clean substrate before applying identification.

.2 Determine final location of identification on site.

.3 Identification is not required on both sides of the fire separation.

.4 Refer to Drawings for locations of fire separations and rating required.

.2 Fire Stopped Penetrations:

.1 Install identification label adjacent to each fire stopped wall/floor service penetration. Provide one identification label per single opening or per grouping cluster.

.2 Securely apply identification to substrate by providing adequate adhesive

.3 Secure tags with metal fasteners or hang with metal chain or wire.

.4 Identification shall be completely filled out and installed before requesting substantial performance.

.3 Fire Separations (Barriers):

.1 Position identification at least 4500 mm from end of each wall and at intervals not exceeding 9000 mm along wall/floor joint fire stops.

.2 Install markings within ceiling spaces, 600 mm below horizontal fire separation or roof structure unless otherwise indicated on Drawings.

.3 Review location of identification with Consultant for occupied areas with exposed ceilings before proceeding.

3.7. Repairs and Modifications

.1 Identify damaged or re-entered seals requiring repair or modification.

.2 Remove loose or damaged materials. If adding penetrating items, remove sufficient material to insert new elements and to avoid damaging the balance of the seal.

.3 Ensure sealed surfaces are clean and dry.

.4 Use only materials that are suitable for repair of original seal, as approved by manufacturer. Do not mix products from different manufacturers.

3.8. Site Quality Control

.1 Inspections: Notify Consultant when ready for inspection and before concealing or enclosing fire stop materials and service penetration assemblies.

.2 Manufacturer's Field Services:

.1 Mock-ups: Manufacturer to provide confirmation that the fire stop system installed meets or exceeds the system design listing requirements for each mock-up application.

.2 Obtain report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Site Reports as described in SUBMITTALS in Part 1 of this Section.

.3 Provide manufacturer's site services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.9. Inspections

.1 Third-Party Inspection Firm: Provide the services of a third-party inspection firm to conduct random inspections and direct exploratory review (i.e., destructive testing) during the course of construction and before closing off any concealed areas. Perform inspections and destructive testing in compliance with ASTM E2174 and ASTM E2393.

.2 Consultant to conduct random inspections and direct exploratory review (i.e., destructive testing) during the course of construction and before closing off any concealed areas. Perform inspections and destructive testing in compliance with ASTM E2174 and ASTM E2393.

.1 Include a minimum of [2%] of each 900-m ^{2} area for exploratory reviews for each approved system design listing and each trade involved. Perform cut tests at perimeter joints every 15 meters. Perform cut test at bottom

and top of wall joints and wall-to-wall joints and building expansion joints every 15 meters.

.2 Perform exploratory review as directed by Third-Party Inspection Firm. Cut out fire stop and remove to ensure fire stop system installation meets or exceeds the system design listing as identified.

.3 Upon completion of construction and before requesting substantial performance review, fire stop contractor [and manufacturer's representative] shall inspect all fire stopping work and prepare a deficiency list. Submit deficiency list to Consultant review. Repair any deficiencies and re-inspect work to ensure that all deficiencies have been completed.

.4 Submit formal request for substantial performance review of work once all work is completed, quality control has been performed and all fire stop installations have been inspected and identified with the approved fire stop identification labels.

.5 Consultant and Third-Party Inspection Firm will conduct the substantial performance review in the presence of the fire stop Contractor and the manufacturer's representative.

3.10. Cleaning

.1 Perform cleaning in accordance with Section 01 74 00 - Cleaning.

.2 Remove equipment, excess materials and debris and clean adjacent surfaces immediately after application. Use methods and cleaning materials approved by manufacturer

.3 Protect fire stops during and after curing period from contact with contaminating substances

.4 Remove temporary dams after initial set of fire stop and smoke seal materials.

3.11. Schedule

.1 Provide fire stop and L-Rated smoke-resistant fire stop systems indicated on Drawings and Fire Separation Plans.

.2 Design and provide through-penetration fire stopping and smoke seals as follows:

.1 Systems with no penetrating items, select one or more of the following fill materials:

1. latex sealant.

2. silicone sealant.

3. intumescent putty.

4. intumescent foam blocks or boards.

5. intumescent spray foam.

.2 Systems for metallic pipes, conduit, or tubing, select one or more of the following fill materials:

1. latex sealant.

2. silicone sealant.

3. intumescent putty.

4. intumescent foam blocks or boards.

5. intumescent spray foam.

.3 Systems for non-metallic pipe, conduit, or tubing, select one or more of the following fill materials:

1. latex sealant.

2. silicone sealant.

3. intumescent putty.

4. intumescent foam blocks or boards.

5. intumescent spray foam.

.4 Re-enterable and cable managed systems for electrical, and data and communications cables:

1. prefabricated fire stop sleeve cp653 (hilti).

2. preformed intumescent blocks cfs-bl (hilti).

3. preformed intumescent blocks (roxtec).

4. prefabricated cable pathways (ez-path).

.5 Systems for electrical, and data and communications cables, select one or more of the following fill materials:

1. latex sealant.
2. silicone sealant.
3. intumescent putty.
4. silicone foam.
5. prefabricated fire stop sleeve cp 653 (hilti).
6. preformed intumescent blocks cfs-bl (hilti).
7. preformed intumescent blocks (roxtec).
8. prefabricated cable pathways (ez-path).
9. intumescent foam blocks or boards.
10. intumescent spray foam.

.6 Systems for cable trays, select one or more of the following fill materials:

1. latex sealant.
2. intumescent putty.
3. silicone foam.
4. pillows/bags.
5. intumescent foam blocks or boards.

.7 Systems for insulated pipes, select one or more of the following fill materials:

1. latex sealant.
2. intumescent putty.
3. silicone foam.
4. intumescent wrap strips.
5. intumescent foam blocks or boards.
6. intumescent spray foam.

.8 Systems for miscellaneous electrical penetrations, select one or more of

the following fill materials:

1. latex sealant.
2. intumescent putty.
3. intumescent foam blocks or boards.
4. intumescent spray foam.

.9 Systems for miscellaneous mechanical penetrations, select one or more of the following fill materials:

1. latex sealant.
2. intumescent foam blocks or boards.
3. intumescent spray foam.

.10 Systems with no penetrating items, select one or more of the following fill materials:

1. latex sealant.
2. intumescent wrap strips.
3. fire stopping and smoke seal device.
4. intumescent composite sheet.
5. intumescent foam blocks or boards.
6. intumescent spray foam.

.3 Design and provide joint fire stopping and smoke seals as follows for:

.1 Floor-to-Floor, Fire-Resistive Joint System: Provide materials to meet the following criteria:

1. assembly rating: as indicated.
2. nominal joint width: as indicated.
3. movement capabilities: compression and extension.

.2 Floor-to-Wall, Fire-Resistive Joint System: Provide materials to meet the following criteria:

1. assembly rating: as indicated.

2. nominal joint width: as indicated.

3. movement capabilities: to be confirmed, compression, extension, or horizontal shear.

.3 Head-of-Wall, Fire-Resistive Joint System: Provide materials to meet the following criteria:

1. assembly rating: as indicated.

2. nominal joint width: as indicated.

3. movement capabilities: compression and extension.

.4 Wall-to-Wall, Fire-Resistive Joint System: Provide materials to meet the following criteria:

1. assembly rating: as indicated.

2. nominal joint width: as indicated.

3. movement capabilities: compression and extension.

.4 Design and provide perimeter fire containment fire stopping and smoke seals as follows for:

.1 Perimeter Fire Containment System: Provide materials to meet the following criteria:

1. integrity rating: as indicated.

2. insulation rating: as indicated.

3. linear opening width: as indicated.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 07 84 00 – Fire Stopping.

1.2. Reference Standards

.1 ASTM International (ASTM):

.1 ASTM C834, current edition, Standard Specification for Latex Sealants.

.2 ASTM C919, current edition, Standard Practice for Use of Sealants in Acoustical Applications.

.3 ASTM C920, current edition, Standard Specification for Elastomeric Joint Sealants.

.4 ASTM C1193, current edition, Standard Guide for Use of Joint Sealants.

.5 ASTM C1330, current edition, Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.

.6 ASTM C1481, current edition, Standard Guide for Use of Joint Sealants with Exterior Insulation and Finish Systems (EIFS).

.7 ASTM D1056, current edition, Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.

.8 ASTM D2240, current edition, Standard Test Methods for Rubber Property, Durometer Hardness.

.9 ASTM D2628, current edition, Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.

.2 Canadian General Standards Board (CGSB) 1330:

.1 CAN/CGSB-19.24, current edition, Multi-component, Chemical Curing Sealing Compound.

.3 Department of Justice Canada (Jus):

.1 Canadian Environmental Protection Act, 1999 (current edition) (CEPA).

.4 General Services Administration (GSA) - Federal Specifications (FS):

.1 FS-SS-S-200, current edition, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS):

.1 Safety Data Sheets (SDS).

.2 Sealant, Waterproofing, and Restoration Institute (SWRI): Sealants: The Professionals' Guide, current edition.

.6 Transport Canada (TC):

.1 Transportation of Dangerous Goods Act, 1992 (current edition) (TDGA).

.7 ULC Standards/ UL Canada (ULC):

1.3. Submittals

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

.2 Product Data:

.1 Submit manufacturer's product data for each type of primer, backer rod, and sealants and include product characteristics, performance criteria, available colours, compatibility warnings, compliance standards and limitations.

.2 Manufacturer's product to describe:

.3 Submit one electronic copy of WHMIS SDS.

.3 Samples:

.1 Submit two samples of each type of joint sealant material and colour.

.2 Submit two cured samples of exposed sealants of each colour to match adjacent material.

.4 Certificates: When requested by Consultant, submit manufacturer's product certificates indicating proposed sealant is appropriate for each application on this Project.

.5 Manufacturer's Instructions:

.1 Submit instructions for each type of product.

1.4. Closeout Submittals

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit maintenance data for incorporation into manual.

1.5. Quality Assurance

.1 Qualifications:

.1 Manufacturer: Obtain each type of joint sealant from a single manufacturer.

.2 Minimum three (3) years successful experience in Work of similar size and complexity.

.2 Compatibility: Ensure sealants are compatible with adjacent materials and are approved by manufacture for use with adjacent materials.

.3 Mock-Ups:

.1 Construct mock up in accordance with Section 01 43 00 - Quality Assurance.

.2 Before performing sealant work do sample applications of each type of sealant for review.

.3 Site locations for sample applications shall be designated by Consultant.

.4 Construct joint sealant mock-ups in assemblies of other Sections with joint sealants, which are referenced in this Section.

.4 Comply with requirements of WHMIS regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Safety Data Sheets (SDS) acceptable to Health Canada.

1.6. Delivery, Storage and Handling

.1 Perform in accordance with Section 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, with manufacturer's label.

.3 Storage and Handling Requirements:

.1 Store materials off ground, in a ventilated dry indoor location and in accordance with manufacturer's recommendations.

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

.3 Do not dispose of unused sealant material into sewer system, streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.4 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Consultant.

1.7. Ambient Conditions

.1 Proceed with installation of joint sealants only when:

.1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.

.2 Joint substrates are dry.

.3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

1.8. Warranty

.1 Manufacturer’s warranty: Provide manufacturer’s standard warranty documentation.

.2 Warrant that sealant work will not leak, crack, crumble, melt, shrink, run, lose adhesion or stain adjacent surfaces in accordance with General Conditions, except for five (5) years.

.3 Installer’s Warranty: Provide an installation warranty, installer agrees to repair or replace joint sealants that do not comply with requirements of this Section for two (2) years from Substantial Performance.

PART 2 PRODUCTS

2.1. Sustainability Characteristics

.1 When low toxicity sealants are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

2.2. Performance Requirements

.1 Each sealant system shall meet the following requirements for warranty period:

.1 Waterproof, flexible, and compatible with substrate under applicable service conditions.

.2 Provide a weather-tight seal that does not allow moisture penetration.

.3 Shall not de-bond, crack, or craze.

.4 Shall not leak.

2.3. Sealant Materials

.1 In air handling units and supply air system, use sealants without strong odours, without toxic chemicals, and are mould-resistant. When low toxicity sealants are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

.2 Provide primers in accordance with manufacturer recommendation.

2.4. Sealant Material Designations

.1 Type S-1: Acrylic Latex One Part, Shore A Hardness 20,

.2 Type S-2: Silicone Sealant; mold and mildew resistant.

.1 To ASTM C920, CAN/CGSB-19.13; type S; grade NS; class 50; use NT, G, and A.

.2 To ASTM C920, CAN/CGSB-19.13; type S; grade NS; class 25; use NT, G, and A.

.3 Type S-3: Silicone Sealant; general construction and air-seal sealant

.1 To ASTM C920: type S; grade NS; class 25; use NT, M, G, A, O.

.4 Type S-4: Silicone Sealant; structural glazing.

.1 To ASTM C920, CAN/CGSB-19.13: type S; grade NS; class 25; use NT, A, G, O.

.5 Type S-5: Acoustical Sealant; interior, non-skimming, non-hardening, simple component synthetic rubber sealant, to ASTM C919.

.6 Type S-7: One-component polyurethane sealant; non-sag, for general construction.

.1 To ASTM C920, CAN/CGSB-19.24: type S; grade NS; class 25; use NT,

M, A, O.

.7 Type S-13: One-component polyurethane sealant; medium-modulus, non-sag, low-VOC, UV stable, to CAN/CGSB-19.24.

2.5. **Fire-Resistive Elastomeric Joint Sealants**

.1 Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer that comply with ASTM C920 requirements, including those referenced for Type, Grade, Class, and Uses, and requirements specified in this Section applicable to fire-resistive joint sealants.

.2 Single-Component, Neutral-Curing Silicone Sealant: Type S; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, G, A, and (as applicable to joint substrates indicated) O.

.1 Additional Movement Capability: When tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, provide sealant with the capability to withstand the changes in joint width existing at the time of installation, and remain in compliance with other requirements of ASTM C920.

.3 Multicomponent, Non-sag, Urethane Sealant: Type M; Grade NS; Class 25; exposure-related Use NT, and joint-substrate-related Uses M, A, and (as applicable to joint substrates indicated) O.

.1 Additional Movement Capability: When tested for adhesion and cohesion under maximum cyclic movement per ASTM C719, provide sealant with the capability to withstand the change in joint width existing at the time of installation, and remain in compliance with other requirements of ASTM C920.

.4 Single-Component, Non-sag, Urethane Sealant: Type S; Grade NS; Class 25; and Uses NT, M, A, and (as applicable to joint substrates indicated) O.

2.6. Sealant Selection

.1 Where no specific type of sealant is scheduled, provide one of the sealants indicated in this Section appropriate for its application and consistent with manufacturer’s recommendations and the recommendations of SWRI, Sealants: The Professionals’ Guide.

.2 Make sealant selections consistent with manufacturer’s recommendations.

.3 Use acrylic sealant Type S-1 only on the interior and only in situations where little or no movement can occur.

.4 Use mold and mildew resistant silicone sealant Type S-2 for nonmoving joints in washrooms and kitchens. Do not use on floors.

.5 Use silicone general construction sealant Type S-3 or Type S-6 and S-7 for all joints, interior and exterior, where no other specific sealant type specified.

.6 Use structural glazing silicone Type S-4 for sealing glass, interior and exterior.

.7 Use acoustical sealant Type S-5 and air seal sealant Type S-3 only where they will be fully concealed and only where no constant or consistent air pressure difference will exist across the joint.

.8 Use multi component sealant type S-6, primed penetration element surfaces other than concrete, for mechanical and electrical service penetrations in concrete foundation walls.

.9 Use sealant S-13 for sealing exterior holes and penetrations around pipes and other services passing through concrete foundations and requiring greater movement capability.

2.7. Accessories

.1 Preformed compressible and non-compressible back-up materials that are non-staining, compatible with joint substrate, sealants, primers, and other joint fillers, and are approved for applications indicated by sealant manufacturer based on site experience and laboratory testing:

.1 Rod Type Sealant Backings:

1. ASTM C1330, Type C (closed cell material with a surface skin), Type O (open cell material) or Type B (bi cellular material with a surface skin).

2. Provide any of the preceding types, as approved in writing by joint sealant manufacturer for joint application indicated.

3. Size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

4. Non adhering to sealant, to maintain two-sided adhesion across joint.

.2 High Density Foam:

1. Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m ^{3} density, or neoprene foam backer, size as recommended by manufacturer.

.3 Elastomeric Tubing Joint Fillers: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D1056, non absorbent to water and gas, capable of remaining resilient at temperatures down to 15 deg C. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth and otherwise contribute to optimum sealant performance.

.4 Bond Breaker Tape:

1. Polyethylene bond breaker tape or other tape recommended by sealant manufacturer which will not bond to sealant.

.2 Preformed Sealants:

.1 Preformed Silicone Sealant System: Manufacturer's standard system consisting of pre-cured low modulus silicone extrusion, in sizes to fit joint widths indicated, combined with a neutral curing silicone sealant for bonding extrusions to substrates.

.2 Preformed Hollow Neoprene Gasket: Manufacturer's standard preformed polychloroprene elastomeric joint seal of the open cell compression type complying with ASTM D2628 and with requirements for size, profile and cross-sectional design.

.3 Bond Breaker: Pressure-sensitive plastic tape that will not bond to sealants.

.4 Joint Cleaner: Provide a non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's recommendations

.5 Primer: Provide in accordance with sealant manufacturer's recommendations.

.6 Masking Tape: Non-absorbent type, non-staining, compatible with joint sealant and joint substrates.

2.8. Colours

.1 Sealant Colours: Match colour of adjacent materials where visible, as selected by Consultant, from manufacturer’s complete colour range.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: verify that conditions of substrate previously installed are acceptable for joint sealants installation in accordance with manufacturer's instructions.

.1 Visually inspect substrate.

.2 Verify joint surfaces are dry and frost free.

.3 Verify substrates are without contaminants capable of interfering with sealant adhesion. Remove contaminants where occurring.

.4 Examine joint sizes and conditions to establish acceptable depth to width ratio for installation of backup materials and application of sealants.

.5 Verify joint widths are within the limits recommended by joint sealant manufacturer for applications indicated.

.6 Inform Consultant of unacceptable conditions immediately upon discovery.

.7 Proceed with installation only after unacceptable conditions have been remedied.

3.2. Surface Preparation

.1 Clean bonding joint surfaces of harmful contaminates including dust, rust, oil grease, and other matter which may impair adhesion.

.2 Do not apply sealants to joint substrates 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 Prepare surfaces in accordance with manufacturer's directions.

3.3. Priming

.1 Mask adjacent surfaces prior to priming and sealing where necessary to prevent staining.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately applying sealant, except when manufacturer’s instructions explicitly state priming is not required.

.3 Prime all porous material (e.g. wood, masonry, concrete, ceramic or paver tile, etc).

3.4. Backup Material

.1 Provide backer rod as specified, to limit depth of sealant and to act as bond breaker at back of joint.

.2 Install joint filler to achieve correct joint depth and shape, with approximately

30% compression.

.3 Apply paper masking tape to back of joint to act as bond break where depth of joint does not permit the use of backer rod.

.4 Ensure that no joints are formed which are bonded on adjacent sides where there is any possibility of movement.

3.5. Mixing

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

3.6. Application

.1 Sealant: Application: Apply sealants to recommendations of ASTM C1193, and of ASTM C1481 for EIFS systems, and in accordance with manufacturer's instructions, and as follows:

.1 Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature range.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 For joints where movement is possible, apply backer rod to achieve a joint depth of one half the joint width but not less than 9 mm; for joints larger than 25 mm use a depth of 13 mm

.4 Apply sealant in a continuous beads.

.5 Apply sealant using gun with proper size nozzle.

.6 Fill voids and joints solid.

.7 Form sealant surface with a smooth full bead, without from ridges, wrinkles, sags, air pockets, embedded impurities.

.8 Tool exposed surfaces before skinning begins to give slightly concave shape.

.9 Ensure bead is solid, filling entire space between sides and bedding material, exerting sufficient pressure to obtain maximum bond, by allowing sealant to bulge out in advance of nozzle.

.10 Apply sealant within recommended temperature ranges. Consult manufacturer when sealant cannot be applied within recommended temperature range.

.11 Seal at all locations where dissimilar material meet.

.2 Sealant Curing:

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until after curing has completed.

3.7. Cleaning

.1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.

.1 Clean adjacent surfaces immediately of excess primers and sealants.

.2 Remove excess and droppings, using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning upon completion.

3.8. Protection

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealants installation.

3.9. Schedule

.1 Use acrylic sealant Type S-1 only on the interior and only where little or no movement can occur.

.2 Use mould and mildew-resistant silicone sealant Type S-2 for non-moving joints in washrooms and kitchens. Do not use on floors.

.3 Use silicone general construction sealant Type S-3 or Type S-6 and S-7 for all joints, interior and exterior, where no other specific sealant type is specified.

.4 Use structural glazing silicone Type S-4 for sealing structural glass and sealing butt-to glazing joints, interior and exterior.

.5 Use acoustical sealant Type S-5 only where they will be fully concealed and only where no constant or consistent air pressure difference will exist across the joint.

.6 Use multicomponent sealant type S-6, primed penetration element surfaces

other than concrete, for mechanical and electrical service penetrations in concrete foundation walls.

.7 Use multicomponent sealant type S-6, at perimeters of exterior openings where frames meet exterior façade of building (e.g., brick, block, precast masonry).

.8 Use sealant S-13 for exterior holes and penetrations around pipes and other services passing through concrete foundations and requiring greater movement capability.

.9 In addition, provide joint sealants at the following conditions:

.10 Seal control joints in gypsum board, except where prefabricated control joints are specified.

.11 Seal junctures between interior partitions with exterior walls.

.12 Seal window and door frames around the inside perimeter, so that an airtight seal is obtained, as indicated on Drawings.

.13 Seal joints in floors and walls and around service and mechanical and electrical fixture penetrations.

.14 Perimeter of bath fixtures (e.g., sinks, tubs, urinals, water closets, basins, vanities).

.15 Joints of underside of precast beams or planks.

.16 Perimeters of interior frames, as detailed.

.17 Joints at tops of non-load bearing masonry walls at the underside of poured concrete.

.18 Exposed interior control joints in gypsum board.

.19 Seal at all locations where dissimilar material meet.

.20 Refer to Section 07 84 00 – Fire Stopping for additional requirements.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 07 92 00 – Joint Sealants

.3 Section 08 71 00 – Door Hardware

.4 Section 08 80 00 – Glazing

1.2. Reference Standards

.1 American National Standards Institute (ANSI):

.1 ANSI H35.1/H35.1M, current edition, American National Standard Alloy and Temper Designation Systems for Aluminum.

.2 ASTM International (ASTM):

.1 ASTM B209/B209M, current edition, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.2 ASTM B221, current edition, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.3 ASTM B308/B308M, current edition, Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles.

.4 ASTM B429/B429M, current edition, Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

.5 ASTM C834, current edition, Standard Specification for Latex Sealants.

.6 ASTM C920, current edition, Standard Specification for Elastomeric Joint Sealants.

.7 ASTM C1193, current edition, Standard Guide for Use of Joint Sealants.

.8 ASTM C1330, current edition, Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.

.9 ASTM E779, current edition, Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.

.3 Builders Hardware Manufacturer's Association (BHMA):

.1 ANSI/BHMA A156.1, current edition, Standard for Butts and Hinges.

.2 ANSI/BHMA A156.3, current edition, Standard for Exit Devices.

.3 ANSI/BHMA A156.4, current edition, Standard for Door Controls – Closers.

.4 ANSI/BHMA A156.5, current edition, Standard for Cylinders and Input Devices for Locks.

.5 ANSI/BHMA A156.6, current edition, American National Standard for Architectural Door Trim.

.6 ANSI/BHMA A156.8, current edition, Standard for Door Controls - Overhead Stops and Holders.

.7 ANSI/BHMA A156.13, current edition, American National Standard for Mortise Locks and Latches, Series 1000.

.8 ANSI/BHMA A156.16, current edition, Standard for Auxiliary Hardware.

.9 ANSI/BHMA A156.18, current edition, Standard for Materials and Finishes.

.10 ANSI/BHMA A156.21, current edition, Standard for Thresholds.

.11 ANSI/BHMA A156.22, current edition, American National Standard for Door Gasketing and Edge Seal Systems.

.12 ANSI/BHMA A156.26, current edition, Standard for Continuous Hinges.

.4 CSA Group (CSA):

.1 AAMA/WDMA/CSA 101/I.S.2/A440, current edition, NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights.

.2 CSA A440S1, current edition, Canadian Supplement to AAMA/WDMA/CSA A101/I.S.2/A440, current edition, NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights.

.3 CSA A440.2, current edition, Fenestration Energy Performance.

.4 CSA G40.20/G40.21, current edition, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.5 CSA G164, current edition, Hot Dip Galvanizing of Irregularly Shaped Articles.

.5 Fenestration & Amp; Glazing Industry Alliance (FGIA) (formerly American Architectural Manufacturers Association (AAMA)):

.1 AAMA 501.2, current edition, Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.

.2 AAMA 609/610, current edition, Cleaning and Maintenance Guide for Architecturally Finished Aluminum.

.3 AAMA 611, current edition, Voluntary Specification for Anodized Architectural Aluminum.

.4 AAMA 1503, current edition, Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

.5 AAMA 2604, current edition, Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.

.6 AAMA 2605, current edition, Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

.6 The Master Painters Institute (MPI):

.1 MPI Approved Products List, current edition.

.7 Underwriters Laboratories (UL):

.1 UL 2761, current edition, Sustainability for Sealants and Caulking Compounds.

1.3. Administrative Requirements

.1 Preinstallation Meetings: Hold meeting one (1) week before beginning the work of this Section, with Contractor, Subcontractor and Consultant in accordance with Section 01 31 19 - Project Meetings to:

.1 verify project requirements,

.2 review installation and substrate conditions,

.3 coordinate with other Subcontractors, and

.4 review manufacturer's installation instructions and warranty requirements.

.2 Sequencing: Comply with manufacturer's recommendations for sequencing construction operations.

1.4. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, product literature and data sheets for doors and frames and include product characteristics, performance criteria, physical size, finishes, and limitations.

1. Indicate exterior door and frame performance ratings to AAMA/WDMA/CSA 101/I.S.2/A440 including positive design pressure, negative design pressure, water penetration resistance test pressure, and Canadian air infiltration and exfiltration level.

.2 Submit WHMIS SDS.

.3 Shop Drawings:

.1 Indicate materials and profiles and include [full-size,] scaled details of components for each type of door and frame. Indicate:

1. Interior and exterior trim.
2. Connections with adjacent construction, including air and vapour membranes.
3. Connections between combination units.
4. Elevations of units.
5. Core thicknesses of components.
6. Type and location of exposed finishes, method of anchorage, number of anchors, supports, reinforcement, and accessories.
7. Location of sealants.
8. Each type of door system including location.
9. Arrangement of reinforcing for hardware and joints.
10. Arrangement of hardware and required clearances.

11. Locations of manufacturer's nameplates.

.4 Samples for Initial Selection:

.1 Submit 50 mm x 75 mm (2" x 3") samples of complete range of aluminum finishes for Consultant's selection.

.5 Manufacturer Reports: Submit manufacturer's written reports within three (3) days of review, verifying compliance of work, as described in "**Site Quality Control**" in Part 3 of this Section.

1.5. Closeout Submittals

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit maintenance data for cleaning of aluminum finishes and maintenance of operable hardware, and incorporate into manual.

.3 Warranty Documentation: Submit manufacturer's warranty documents.

1.6. Quality Assurance

.1 Qualifications:

.1 Manufacturer: Obtain aluminum doors and frames from a single manufacturer.

.2 Installers: Five years of experience with installation of aluminum doors and frames of similar complexity and scope to that required for the Project.

.3 Testing Agencies: Provide doors and frames under label service program of a testing agency acceptable to authorities having jurisdiction.

.2 Certifications: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics, and criteria and physical requirements.

.3 Test and Evaluation Reports: Submit test reports from approved independent testing laboratories certifying compliance with specifications, for

.1 airtightness,

.2 watertightness,

.3 wind load resistance, and

.4 condensation resistance.

1.7. Delivery, Storage, and Handling

.1 Perform in accordance with Section 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging with manufacturer's labels.

.1 Leave protective covering in place until final cleaning of building.

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in a clean, well-ventilated area to prevent sagging, bowing, or twisting.

.2 Store and protect aluminum doors and frames from nicks, scratches, and blemishes.

1.8. Site Conditions

.1 Site Measurements: Before fabrication, verify actual dimensions of openings by measuring on-site and indicate actual measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

.2 Established Dimensions: When site measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating doors and frames without site measurements. Coordinate site construction to ensure that actual site dimensions correspond to established dimensions.

1.9. Warranty

.1 Provide a written warranty for work of this section from manufacturer for failure due to defective materials and from contractor for failure due to defective workmanship for ten (10) years respectively from the date of Substantial Completion.

PART 2 PRODUCTS

2.1. Materials

.1 Aluminum Extrusions: To Aluminum Association alloy AA6063-T6 anodizing quality.

.2 Sheet and Plate Aluminum: To ASTM B209/B209M, and Aluminum Association alloy AA1100-H14, anodizing quality.

.3 Extruded Bars, Rods, Profiles, and Tubes: To ASTM B221, and ANSI H35.1/H35.1M, AA6061-T6 or AA6063-T6, anodizing quality.

.4 Extruded Structural Pipe and Tubes: To ASTM B429/B429M and ANSI H35.1/H35.1M, AA6061-T6 or AA6063-T6, anodizing quality.

.5 Steel Reinforcement: To CSA G40.20/G40.21, grade 300 W, anodizing quality.

.6 Aluminum Door Components:

.1 Thermal Break: To AAMA IIR-A8, Glass fibre reinforced polyamide porthole extrusion.

.2 Fasteners, screws and bolts: Cadmium plated stainless steel to meet curtain wall requirements and as recommended by manufacturer.

2.2. Aluminum Screen Frames (AN. AL.): shall be “Elite Series” as manufactured by PC350 or approved alternate.

.1 Construct aluminum sidelight and transom frames with same profiles and thicknesses as adjacent aluminum door frames.

.2 Aluminum Frame Type: Thermally broken and insulated frames, seamless aluminum extrusions, glazing throat to accommodate specified glazing, and as follows:

.1 Aluminum Wall Thickness: Minimum 3 mm (1/8”).

.2 Frame depth: 79.4 mm (4-7/8”)

.3 Frame Height: 101.6 mm (4”)

.4 Finish: Clear Anodized

2.3. Door Hardware

.1 As per Section 08 71 00 – Door Hardware and Finishing Hardware Schedule.

.1 Coordinate with Finishing Hardware Schedule for hinges to be supplied by PC350.

2.4. Glazing Materials

.1 As per Section 08 80 00 – Glazing.

2.5. Finishes

.1 Aluminum Finishes:

.1 Finish exposed surfaces of aluminum frames, screens, closures, panels and other exposed components in accordance with Aluminum Association Designation System for Aluminum Finishes.

.2 Factory finish all exposed aluminum surfaces with an anodic oxide treatment to AA-M10C21A41 or AA-M45C22A41, Class I, minimum 0.018 mm thickness.

.2 Steel Finishes: Finish steel clips and reinforcing steel with MPI 20 primer, zinc rich, epoxy.

2.6. Fabrication

.1 Fabricate doors frames and screens with hardware installed to maximum extent practical.

.2 Provide structural steel reinforcement as required.

.3 Fit joints tightly and secure mechanically. Reinforce mechanically-joined corners of doors to produce sturdy door unit. Fabricate framing members with straight profiles, without distortions or defects and with mitered or coped corners.

.4 Framing systems to allow condensation occurring within framing to migrate to the exterior.

.5 Conceal fastenings, except where Consultant has accepted visible fastener locations that are unavoidable.

.6 Provide a minimum 22 mm (55/64”) bite for insulating glazed units. Isolate glass and glazing from framing members.

.7 Mortise, reinforce, drill, and tap doors, frames and reinforcements to receive hardware using templates indicated in Section 08 71 00 - Door Hardware.

.8 Locate operating devices (e.g., handles, pulls, latches, and locks) mounted between 900 mm (2’ 11-7/16”) and 1100 mm (3’ 7-5/16”) from the floor.

.9 Isolate aluminum from direct contact with dissimilar metals, concrete and masonry by means of a heavy application of isolation coating.

2.7. Accessories

.1 Anti-Rotational Device: Manufacturer's recommended extruded aluminum channel, designed to permanently connect exterior wall assembly air membrane with pressure to aluminum frame.

.2 Fasteners: Cadmium plated Type 304 stainless steel, finished to match adjacent material and to meet curtainwall requirements and as recommended by manufacturer.

.1 Self-locking type where fasteners may be subject to loosening from thermal or structural movements, wind loads, or other vibrations.

.2 Provide slip joint construction at movement joints of materials.

.3 Where visible fasteners are unavoidable, and Consultant has accepted specific visible fastener locations, fastener finish to match adjacent material.

.3 Anchors: 3-way adjustable type that accommodate fabrication and installation tolerances.

.4 Isolation Coating: Alkali resistant bituminous paint

.5 Sealant Systems: In accordance with Section 07 92 00 - Joint Sealants.

.1 Backing Rod: To ASTM C1330, extruded, foamed, closed cell, round polyethylene rod, 25% wider than joint width.

.2 Exterior Sealants at Frame Perimeter: To ASTM C920, Use A, polyurethane type, non-sag, compatible with aluminum frame and adjacent surface.

.3 Interior Sealants at Frame Perimeter: To ASTM C834, Use A, acrylic, non-sag.

.4 Sealant Colours: To match adjacent surface.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: Verify conditions of substrates previously installed are acceptable for beginning installation of aluminum doors and frames in accordance with manufacturer's instructions.

.1 Visually inspect substrates.

.2 Proceed with installation only after unacceptable conditions have been remedied.

3.2. Installation

.1 Install exterior aluminum doors and frames to CAN/CSA A440.4.

.2 Set frames plumb, square, and level at correct elevation in alignment with adjacent work and without warp or racking.

.3 Anchor frames securely and rigidly.

.4 Install doors and hardware in accordance with hardware templates and manufacturer's instructions.

.5 Permanently isolate aluminum from direct contact with dissimilar metals, concrete, and masonry.

.6 Make allowances for deflection of building structure to ensure structural loads are not transmitted to frames.

.7 Glaze aluminum doors and frames in accordance with Section 08 80 00 - Glazing.

.8 Provide weathertight joint sealant system at outside of frames in exterior walls.

.9 Provide airtight joint sealant system inside of frames in exterior walls.

.10 Apply sealants in accordance ASTM C1193 and Section 07 92 00 - Joint Sealants.

.11 Adjust door components for a smooth and quiet operation with continuous contact with door edge seals.

3.3. Tolerances

.1 Limit variation from true location and plane to 3 mm in 3660 mm.

.2 Limit difference between diagonal measurements to 3 mm.

3.4. Site Quality Control

.1 Site Tests and Inspections: Owner may engage an independent testing agency to perform site tests and submit test reports of exterior doors and frames.

.1 Air Infiltration Testing: Perform tests for air leakage to ASTM E783.

.2 Water Penetration Testing: Perform tests for water penetration to ASTM E1105 and AAMA 501.2.

.3 Water Spray Testing: Perform test to AAMA 501.2, 3 m (9’ 10”) wide x 1 storey high. Consultant will notify Contractor where to perform test.

.4 Where assemblies do not comply with specified requirements, repair or replace components or assemblies. Same independent testing agency to perform additional site testing of corrected work at Contractor’s expense.

.2 Remove damaged, dented, defaced, defectively-finished or tool-marked components and replace with new. Replace or make good all defective, scratched, or damaged work to Consultant’s satisfaction at no additional cost to the Owner.

3.5. Cleaning

.1 Progress Cleaning: Clean doors, frames, and glazing in accordance with Section 01 74 00 - Cleaning.

.1 Clean aluminum components in accordance with AAMA 609/610.

.2 Clean as soon as possible after installation to remove construction debris and dirt.

.3 Clean aluminum with damp rag and manufacturer recommended non-abrasive cleaner.

.4 Remove excess primer, sealants, and epoxy.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning.

.1 Clean glass and glazing materials with approved non-abrasive cleaner.

3.6. Protection

.1 Protect installed products and components from damage during construction. Mark glass which may be subject to accidental breakage by Subcontractors. Use temporary markings that after removal do not stain or otherwise leave a perceptible effect.

.2 Repair damage to adjacent materials caused by aluminum door and frame installation.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 06 40 00 – Architectural Woodwork

.3 Section 08 11 13 – Hollow Metal Doors and Frames

.4 Section 08 71 00 – Door Hardware

.5 Section 08 80 00 – Glazing

.6 Section 09 91 23 – Interior Painting

1.2. Reference Standards

.1 American National Standards Institute (ANSI) / Decorative Hardwoods Association (Previously Hardwood Plywood and Veneer Association (HPVA)):

.1 ANSI/HPVA HP-1, current edition, American National Standard for Hardwood and Decorative Plywood.

.2 American National Standards Institute (ANSI) / National Electrical Manufacturers Association (NEMA):

.1 ANSI/NEMA LD3, current edition, High-Pressure Decorative Laminates (HPDL).

.3 American National Standards Institute (ANSI) / Window and Door Manufacturers Association (WDMA):

.1 ANSI/WDMA I.S. 1A, current edition, Interior Architectural Wood Flush Doors.

.2 ANSI/WDMA I.S. 6A, current edition, Interior Architectural Wood Stile and Rail Doors.

.4 Architectural Woodwork Manufacturers Association of Canada (AWMAC) / Woodwork Institute (WI):

.1 North American Architectural Woodwork Standards (NAAWS), current edition.

.5 ASTM International (ASTM):

.1 ASTM E90, current edition, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

.6 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable, current edition.

.2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable, current edition.

.7 CSA Group (CSA):

.1 AAMA/WDMA/CSA 101/I.S.2/A440, current edition, NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights.

.2 CSA A440S1, current edition, Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-11, NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights.

.3 CSA A440.2, current edition, Fenestration Energy Performance.

.4 CAN/CSA-A440.4, current edition, Window, Door, and Skylight Installation.

.5 CSA O115, current edition, Hardwood and Decorative Plywood.

.6 CAN/CSA O132.2 Series, current edition, Wood Flush Doors.

.7 CAN/CSA-O132.5, current edition, Stile and Rail Wood Doors.

.8 CAN/CSA-Z808, current edition, A Sustainable Forest Management System: Guidance Document.

.9 CSA Z809, current edition, Sustainable Forest Management.

.10 CSA Certification Program for Windows and Doors.

.8 Forest Stewardship Council (FSC):

.1 FSC-STD-01-001, current edition, FSC Principles and Criteria for Forest Stewardship.

.9 National Fire Protection Association (NFPA):

.1 NFPA 80, current edition, Standards for Fire Doors and Other Opening Protectives

.10 Sustainable Forestry Initiative (SFI):

.1 SFI Standard, current edition.

.11 Underwriters Laboratories (UL):

.1 UL 2761, current edition, Sustainability for Sealants and Caulking Compounds.

.2 UL 2762, current edition, Sustainability for Adhesives.

.3 UL 2768, current edition, Sustainability for Architectural Surface Coatings.

.12 Underwriters Laboratories of Canada (ULC):

.1 CAN/ULC-S104, current edition, Standard Method for Fire Tests of Door Assemblies.

.2 CAN/ULC-S105, current edition, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104.

1.3. Section Includes

.1 This Section describes requirements for the following:

.1 Flush wood doors and transom panels,

.2 Plastic-laminate-faced wood doors,

.3 Stile and rail wood doors,

.4 Wood doors with a fire-protection rating, and door components required for rating,

.5 Sound resistant wood doors, and sound resistant accessories required for certification including gaskets and automatic door bottoms,

.6 Factory finishing and preparation for site finishing.

1.4. Administrative Requirements

.1 Coordination:

.1 Coordinate blueprint matched wood veneer flush doors and wood veneer cabinetry with Section 06 40 00 – Architectural Woodwork.

.2 Coordinate steel door frame dimensions and installation tolerances with Section 08 11 13 – Hollow Metal Doors and Frames.

.3 Coordinate door hardware with Section 08 71 00 – Door Hardware.

.4 Coordinate glass and glazing units with Section 08 80 00 – Glazing.

.5 For fire-protection rated doors, coordinate fire-protection rated door frames to CAN/ULC-S105.

.2 Pre-Installation Meetings: Conduct meeting to verify Project requirements, manufacturer's installation instructions and manufacturer's warranty requirements in accordance with Section 01 31 19 – Project Meetings.

1.5. Submittals

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

.2 Product Data:

.1 Submit manufacturer's product data for each type of wood door. Indicate door designation, type, and model, product characteristics, door core description, fabrication details, dimensions, sound transmission class rating, fire-protection rating, and finishes.

.2 Submit WHMIS SDS - Safety Data Sheets. Indicate VOCs for door materials and adhesives.

.3 Shop Drawings: Submit to Consultant and submit to local AWMAC Chapter in accordance with AWMAC Guarantee and Inspection Service (GIS) procedures, and as follows:

.1 Shop drawing format to conform to NAAWS requirements.

.2 For each type of door include scaled details of components and indicate the following:

1. Size of door,
2. Core construction and thickness,
3. Transom panel construction, if applicable,
4. Cut-outs and locations for lites and louvres,
5. Swing direction,
6. Undercut dimensions,
7. Hardware location and preparation requirements,

8. Blocking for hardware in mineral core doors,

9. Fire-protection rating,

10. Sound Transmission Class,

11. Location of sealants,

12. Location of manufacturer's nameplates,

13. Glazing, if applicable,

14. Types of finishes.

.4 Samples:

.1 Submit three (3) sets of finished wood veneer samples a minimum 300 mm x 300 mm (12" x 12") of each wood species and cut of wood. Each sample set of three to represent the range of finish gloss level, colour, and wood grain proposed.

.2 Submit one (1) plastic laminate sample, approximately 200 mm x 200 mm (8" x 8"), for each colour/pattern required.

.3 Submit one (1) 300 mm x 300 mm (12" x 12") door section for each door type, showing corner detail, glazing detail and reinforcements.

.4 Show door construction, faces, and core, representative of all door types.

.5 Samples will not be returned for inclusion into work.

1.6. Closeout Submittals

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Warranty Documentation: Submit manufacturer's material and fabrication warranty.

1.7. Quality Assurance

.1 Submit test data indicating compliance with Sound Transmission Class (STC) requirements when tested to ASTM E90. Include laboratory name, test report number, and date of test, when requested by the Consultant.

.2 Certificates: Manufacturer's product certificates certifying materials comply with specified performance characteristics, criteria, and physical requirements.

.3 Work in accordance with AWMAC's STANDARDS (NAAWS) Grade or Grades specified.

.4 Architectural woodwork shall be manufactured to the current AWMAC's standards (NAAWS) and shall be subject to an inspection at the factory and/or site by an appointed AWMAC Certified Inspector. Inspection costs shall be included in the tender price for this project. Contact the local AWMAC Chapter for details of inspection costs. Shop drawings submitted to the AWMAC Chapter office for review before work commences. Work that does not meet AWMAC's standards (NAAWS), as specified, shall be replaced, reworked and/or refinished by the architectural woodwork contractor, to the approval of AWMAC, at no additional cost to the Owner.

.5 Qualifications:

.1 Manufacturer/Fabricator: Obtain doors from a single manufacturer. Member in good standing of AWMAC. Five (5) years minimum production experience similar to this Project.

.2 Installers: Five (5) years of experience with installation of wood doors of similar complexity and scope to that required for the Project.

1.8. Delivery, Storage, And Handling

.1 Perform in accordance with Section 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging with manufacturer's labels. Crate doors.

.3 Storage and Handling Requirements:

.1 Store materials off ground in a dry, clean, well-ventilated indoor location.

.2 Arrange for delivery after construction activities causing high humidity are completed.

.3 Unwrap and protect doors from scratches, handling marks, other damages, dampness and in accordance with manufacturer's/fabricator's recommendations and NAAWS, Section 13, CAN/CSA-O132.2 Series, Appendix A.

.4 Store doors away from direct sunlight.

1.9. Site Conditions

.1 Site Measurements: Before fabrication, verify actual dimensions of openings by

measuring on site, and indicate actual measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

.2 Established Dimensions: When site measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating doors without site measurements. Coordinate site construction to ensure that actual site dimensions correspond to established dimensions.

1.10. Warranty

.1 Manufacturer's Warranty: Submit manufacturer's standard warranty.

.2 Special Warranty:

.1 If the Subcontractor is an AWMAC manufacturer member in good standing, issue a two (2) year AWMAC Guarantee Certificate to the Owner.

.2 AWMAC Guarantee to cover replacing, reworking, and/or refinishing deficient wood doors due to faulty workmanship or defective materials supplied and installed, if discovered during two (2) year period following the date of issuance.

PART 2 PRODUCTS

2.1. Performance Criteria

.1 Affix appropriate label to each required opening indicating a labelling requirement, as follows:

.1 At standard size openings: Fire endurance rating, if any.

2.2. Solid Core Wood Flush Doors with Wood Veneer Face (SC. WD.): as manufactured by Lambton Doors.

.1 Construction: 5-ply

.2 Door Core:

.1 Solid Particleboard Core: Internal stile and rail frame bonded to particleboard core with wood lock blocks.

.3 Door Faces:

.1 Faces for Transparent Finish, Veneer Grade A Hardwood:

1. Closed grain hardwood veneer: to CSA O115-M, AWS premium grade, 0.8 mm (1/32") thick mechanically spliced.

2. Wood Species: White Oak

3. Veneer Cut: Rotary cut

4. Matching of Veneer Leaves: Book match

5. Grain Direction: Vertical

.4 Door Edges: Lambton Doors “EdgeFender”, custom match colour to match wood veneer door.

.5 Adhesive: ANSI HPVA, Type II

.6 Factory Finish: Factory pre-finish faces and edges of door in accordance with AWMAC 1st Edition 2009, System 9 UV Curable System. Provide one (1) coat clear sanding sealer and two (2) coats of PLS-102 standard colour, water based (UV) curable semi-gloss polyurethane. Factory seal top and bottom of doors. Provide touch-up kit for field touch-ups.

2.3. Glazing

.1 Glazing: as indicated in Section 08 80 00 – Glazing and as scheduled.

.2 Glazing Stop: Lite kit profile LB-7, as manufactured by Lambton Doors.

2.4. Fabrication

.1 Slab doors AWMAC’s STANDARDS (NAAWS) Premium Grade.

.2 Door Edge Construction: NAAWS Type D – Solid wood edge band, veneer face edge shows.

.1 Edge band to match face material.

.3 Provide blocking for surface-mounted hardware to prevent need for through bolting.

.4 Prepare sound resistant door bottom for installation of flush mount or recessed automatic door bottom seal, as per Hardware Schedule.

.5 Vertical Edge Profiles:

.1 Bevel vertical edges of single acting doors 3 mm (1/8”) in 50 mm (2”) on lock side and 1.5 mm (1/16”) in 50 mm (2”) on hinge side.

.2 Double Acting Doors: Radius vertical edges 60 mm (2 3/8”).

.3 Pair of Doors Meeting Edges: Flat astragal.

.6 Size of doors; type, size, and location of lights and louvers; astragals, edging, flashing, and specialty hardware; X-ray and sound requirements, and transom panels as indicated on Door Schedule.

.7 Provide waterproof non-staining membrane at cut-outs on exterior doors to exclude moisture from core. Provide metal flashing at top edge of exterior out-swinging doors.

.8 Factory-prepare holes 12.7 mm (1/2”) in diameter and larger except mounting and through-bolt holes, on site when installing hardware.

.9 Provide fire labelled doors for openings requiring fire-protection ratings.

.10 Manufacturer’s nameplates on doors are not permitted.

2.5. Finishes

.1 Primer Materials: Water-based primers are not acceptable.

.2 Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing. Finish faces, all four (4) edges if back is visible or three (3) edges if back not visible, edges of cut-outs, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.

.3 Shop Priming for Doors with Opaque Finish:

.1 Before applying shop primer, steam out deep scratches and ease sharp edges by sanding.

.2 Shop prime doors with one coat of wood primer. Primer compatible with finish paint indicated in Section 09 91 23 – Interior Painting. Apply primer to all four (4) door edges, to edges of cut outs, and to mortises.

.4 Shop Finishing Methods: Transparent finish or stained for wood veneer wood doors, and as follows:

.1 NAAWS Grade: Premium grade

.2 NAAWS Transparent Finish System: System 2-Lacquer, Pre-Catalyzed

.3 Stain: As selected by Consultant from manufacturer’s complete range

.4 Gloss Level: Satin

2.6. Accessories

.1 Glazing Stops: as specified in Section 08 80 00 – Glazing

.1 Steel: accurately fit and butt at corners glazing trim and stops, locate on secure side of door or facing interior of room.

.2 Provide special stops and stop adjusters for sound resistant glazed doors to maintain STC rating.

.2 Louvre Stops: as specified in Section 08 90 00 – Louvres and Vents

.3 Automatic Door Bottom Seal: Type to achieve STC value specified and as indicated in Section 08 71 00 – Door Hardware.

.4 Perimeter Sound Gaskets: Adjustable, type to achieve STC value specified

.5 Fire Labels: Metal, riveted

2.7. Source Quality Control

.1 Tests and Inspections:

.1 Manufacture/fabricate and install work of this Section in accordance with NAAWS.

.2 Arrange and pay for inspections at factory/shop and Project site by an appointed AWMAC Certified Inspector.

.3 Include GIS inspection costs in the price of the Contract.

.4 If work does not meet NAAWS requirements; replace, rework, or refinish to the approval of AWMAC Certified Inspector.

.2 If the Subcontractor is not an AWMAC Manufacturer member, provide the Owner a two (2) year maintenance bond, instead of the AWMAC Guarantee Certificate, to the full value of wood doors work.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: Verify conditions of substrates previously installed are acceptable and within tolerances for wood doors installation in accordance with NAAWS.

.1 Verify door frames are plumb, square, level, and in plane.

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2. Installation - General

.1 Install fire-protection rated doors in accordance with NFPA 80.

.2 Install doors in accordance with manufacturer's/fabricator's instructions and NAAWS Section 14, in accordance with grade specified and CAN/CSA-O132.2 Series, Appendix A.

.3 Install glazing in accordance with Section 08 80 00 – Glazing.

3.3. Installation – Door Hardware

.1 Install hardware described in this Section in accordance with manufacturer's instructions, using manufacturer's door hardware templates.

3.4. Site Quality Control

.1 Tolerances: To NAAWS, Section 15. Provide even margins between door and jambs and as follows:

.1 Hinge Side: 1.0 mm (3/64")

.2 Latch Side and Head: 1.5 mm (1/16")

.3 Finished floor, non-combustible sill and thresholds: Maximum 19 mm (3/4")

.4 Door clearances with fire-protection rating not less than 20 minutes: Maximum 6 mm (15/64") at bottom, and Maximum 3 mm (1/8") at sides and top.

3.5. Adjusting

.1 Adjust doors and hardware to function correctly, operate smoothly and easily, without binding. Adjust pairs of doors when closed within 1.6 mm (1/16") of flush at the meeting edge.

.2 Fill and retouch minor nicks, chips, and scratches. Replace un-repairable damaged items.

.3 Repair damage to adjacent materials caused by wood doors installation.

3.6. Cleaning

.1 Progress Cleaning: Perform in accordance with Section 01 74 00 - Cleaning, and as follows:

.1 Clean doors after installation to remove dust, fingerprints, and pencil marks.

.2 Clean glass and glazing materials with non-abrasive cleaner.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 07 92 00 – Joint Sealants

.3 Section 08 11 16 – Aluminum Doors and Frames

.4 Section 08 14 00 – Wood Doors

.5 Section 08 80 00 – Glazing

1.2. Definitions

.1 EPDM: Ethylene Propylene Diene Monomer rubber.

1.3. Reference Standards

.1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA):

.1 ANSI/BHMA A156.1, current edition, Butts and Hinges.

.2 ANSI/BHMA A156.2, current edition, Bored and Preassembled Locks and Latches.

.3 ANSI/BHMA A156.3, current edition, Exit Devices.

.4 ANSI/BHMA A156.4, current edition, Door Controls – Closers.

.5 ANSI/BHMA A156.5, current edition, Cylinders and Input Devices for .Locks

.6 ANSI/BHMA A156.6, current edition, Architectural Door Trim.

.7 ANSI/BHMA A156.8, current edition, Door Controls - Overhead Stops and Holders.

.8 ANSI/BHMA A156.10, current edition, Power Operated Pedestrian Doors.

.9 ANSI/BHMA A156.12, current edition, Interconnected Locks.

.10 ANSI/BHMA A156.13, current edition, Mortise Locks and Latches.

.11 ANSI/BHMA A156.14, current edition, Sliding and Folding Door Hardware.

.12 ANSI/BHMA A156.15, current edition, Closer Holder, Electromagnetic and Electromechanical.

.13 ANSI/BHMA A156.16, current edition, Auxiliary Hardware.

.14 ANSI/BHMA A156.17, current edition, Self Closing Hinges and Pivots.

.15 ANSI/BHMA A156.18, current edition, Materials and Finishes.

.16 ANSI/BHMA A156.19, current edition, Power Assist and Low Energy Power - Operated Doors.

.17 ANSI/BHMA A156.20, current edition, Strap and Tee Hinges and Hasps.

.18 ANSI/BHMA A156.21, current edition, Standard For Thresholds.

.19 ANSI/BHMA A156.22, current edition, Door Gasketing and Edge Seal Systems.

.20 ANSI/BHMA A156.26, current edition, Continuous Hinges.

.21 ANSI/BHMA A156.28, current edition, Recommended Practices for Keying Systems.

.22 ANSI/BHMA A156.29, current edition, American National Standard for Exit Locks, Exit Alarms, Alarms for Exit Devices.

.23 ANSI/BHMA A156.30, current edition, Standard for High Security Cylinders.

.24 ANSI/BHMA A156.34, current edition, Bored Locks and Mortise Locks with Ligature Resistant Trim.

.25 ANSI/BHMA A156.36, current edition, Standard for Auxiliary Locks.

.2 Canadian Steel Door and Frame Manufacturers' Association (CSDMA):

.1 Recommended Dimensional Standards for Commercial Steel Doors and Frames, current edition.

.3 CSA Group (CSA):

.1 CSA B651, current edition, Accessible Design for the Built Environment.

.4 National Fire Protection Association (NFPA):

.1 NFPA 80, current edition, Standard for Fire Doors and Other Opening

Protectives.

1.4. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finishes, and limitations.

.3 Samples:

.1 Submit for review and acceptance of each unit.

.2 Samples will be returned for inclusion into work.

.3 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.

.4 After approval samples will be returned for incorporation in Work.

.4 Hardware List:

.1 Submit contract hardware list, showing all hardware required for each opening.

1. Fully detail schedule to actual factory catalogue numbers, quantities, hardware locations, etc. Include catalogue cutsheets of each item of hardware.

.2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information. It shall be the responsibility of the hardware supplier to ensure that all hardware listed can be used as specified.

.5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.6 Manufacturer's Instructions: submit manufacturer's installation instructions.

1.5. Closeout Submittals

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for door hardware for incorporation into manual.

1.6. Maintenance Material Submittals

.1 Extra Stock Materials:

.1 Supply maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Tools:

1. Supply two (2) sets of wrenches for door closers, locksets, and fire exit hardware.

1.7. Quality Assurance

.1 Regulatory Requirements:

.1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.8. Delivery, Storage, And Handling

.1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

.4 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect door hardware from nicks, scratches, and blemishes.

.3 Protect prefinished surfaces with wrapping.

1.9. Warranty

.1 Extend the twelve (12) month warranty period to twenty-four (24) months for

Work of this Section.

.1 Failure of locking mechanisms, internal and external part defects, premature wear, poor operation (loose or sticking) of parts, and factory defects of finishes will be judged as defective Work.

.1 Manufacturer Warranty Certificate: Each manufacturer supplying materials for the Work of this Section must provide a written document, issued in the name of the Owner and valid for a period of twenty-four (24) months, which indicates that the manufacturer will repair and/or replace any defective door hardware, subject to the defect being due to the condition of the materials as manufactured and/or at the time of delivery to the Place of Work.

.2 Extend the twenty-four (24) month warranty period to sixty (60) months for door closer hardware and components.

.2 Installer Warranty Certificate: Installer extended workmanship warranty work of this Section must provide a written document, issued in the name of the Owner and valid for a period of two (2) years, which indicates that the manufacturer will repair and/or replace defective door hardware, subject to the defect being due to the condition of the materials as manufactured and/or at the time of delivery to the Place of Work.

.3 Submit a warranty covering the repair and replacement of defective work for a period of one (1) year from the expiration of the standard one (1) year warranty included in the Contract under the General Conditions for all other hardware.

.1 Total warranty period shall be two (2) years.

PART 2 PRODUCTS

2.1. Hardware Items

.1 Use on manufacturer's products only for similar items.

.2 Only door locksets and latches listed on ANSI/BHMA Standards list are acceptable for use.

2.2. Door Hardware

.1 Locks and latches:

.1 Bored and preassembled locks and latches: to ANSI/BHMA A156.2, series 2000 preassembled lock, grade 1, designed for function and keyed as stated in Hardware Schedule.

.2 Interconnected locks and latches: to ANSI/BHMA A156.12, series 5000 interconnected lock, grade 1, designed for function and keyed as stated in

Hardware Schedule.

.3 Mortise locks and latches: to ANSI/BHMA A156.13, series 1000 mortise lock, grade 1, designed for function and keyed as stated in Hardware Schedule.

.4 Lever handles: plain design.

.5 Roses: round.

.6 Normal strikes: box type, lip projection not beyond jamb.

.7 Cylinders: key into keying system as directed.

.8 Finish as indicated in Hardware Schedule.

.2 Butts and hinges:

.1 Butts and hinges: to ANSI/BHMA A156.1, designated by letter A and numeral identifiers, followed by size and finish, listed in Hardware Schedule.

.2 Self-closing hinges and pivots: to ANSI/BHMA A156.17, designated by letter K and numeral identifiers listed in Hardware Schedule.

.3 Strap and tee hinges and hasps: to ANSI/BHMA A156.20, designated by letter A and numeral identifiers listed in Hardware Schedule, size in accordance with ANSI/BHMA A156.20, table I, finished to 602 (cadmium plated) or 603 (zinc plated).

.3 Exit devices: to ANSI/BHMA A156.3, type 1, function 1, grade 1, slim surface mounted design, stainless steel finish.

.1 Auxiliary items: door coordinator, type 21, for pairs of doors with overlapping astragals.

.4 Door Closers and Accessories:

.1 Door controls (closers): to ANSI/BHMA A156.4, designated by letter C and numeral identifiers listed in Hardware Schedule, size in accordance with ANSI/BHMA A156.4, table A1, clear anodized finish.

.2 Door controls - overhead holders: to ANSI/BHMA A156.8, designated by letter C and numeral identifiers listed in Hardware Schedule, clear anodized finish.

.3 Closer/holder release devices: to ANSI/BHMA A156.15, designated by letter C and numeral identifiers listed in hardware schedule, clear

anodized finish.

.4 Door coordinator: concealed for pairs of doors with overlapping astragal, clear anodized finish.

.5 Door Operators:

.1 Power-operated pedestrian doors: to ANSI/BHMA A156.10

.2 Power assist and low energy power operated doors: to ANSI/BHMA A156.19

.6 Auxiliary locks and associated products: to ANSI/BHMA A156.5, designated by letter E and numeral identifiers as listed in Hardware Schedule, clear anodized finish.

.1 Dead bolt: Key into keying system as directed.

.2 Cylinders: for installation in deadlocks provided with special doors as listed in Hardware Schedule. Key into keying system as directed.

.7 Architectural door trim: to ANSI/BHMA A156.6, designated by letter J and numeral identifiers as listed in Hardware Schedule, clear anodized finish.

.1 Door protection plates: 1.27 mm thick stainless steel.

.2 Push plates: 1.27 mm thick stainless steel.

.3 Push/Pull units: stainless steel.

.8 Sliding and folding door hardware: to ANSI/BHMA A156.14, designated by letter D and numeral identifiers listed in Hardware Schedule, clear anodized finish.

.1 Heavy sliding doors (over 91 kg): box track, hanger and overhead style track supports, as listed in above standard for door weight.

.2 Bi-passing sliding door hardware: double leg steel track with fascia and hangers, as listed in above standard for door weight.

.3 Bi-folding hardware: steel track, top and bottom hung mounted components, as listed in above standard for door weight.

.4 All sets packed complete with hinges and fasteners as required.

.5 Surface bolts: cane bolt.

.6 Accessory item: door pulls, handles, stops, guides, and latch.

.9 Door bottom seal: heavy duty, door seal of extruded aluminum frame and solid closed cell neoprene weather seal, surface mounted with drip cap, closed ends, automatic retract mechanism when door is open, clear anodized finish.

.10 Thresholds: 200 mm (8") wide x full width of door opening, extruded aluminum mill finish, serrated surface, with thermal break of rigid PVC, with lip and vinyl door seal insert.

.11 Weatherstripping:

.1 Head and jamb seal:

1. Extruded aluminum frame and solid closed cell neoprene insert, clear anodized finish.

2. Adhesive backed neoprene material.

.2 Door bottom seal:

1. Extruded aluminum frame and closed cell neoprene sweep, clear anodized finish.

.12 Astragal: overlapping, extruded aluminum frame with vinyl insert, finished to match doors.

.13 Barrier Free Pneumatic Door Operator:

.1 Heavy duty pneumatically assisted door closer, capable of multi-door operation, complete with actuators, control boxes, pneumatic tubing and compressed air source.

.2 Self-contained control box/compressor combination for independent operation of two door leaves.

.3 Control boxes: complete with electric strike relay.

.4 Mount operators on either push or pull sides of doors as required to place them inside rooms.

.5 Electrical box and actuator: Hardwired low voltage actuator with stainless steel 114 mm (4 1/2") round plate, engraved blue filled with handicap symbol. Box 51 mm (2") wide x 102 mm (4") high x 50 mm (4") deep single gang electrical box, flush mounted in wall, locations indicated.

.6 Supply switched line voltage to control box. Locate switch adjacent to box.

.7 Supply low voltage wiring to each actuator and 6 mm (1/4") diameter air

tubing to each operator.

.8 Mount control box in location as directed by Consultant.

2.3. Miscellaneous Hardware

.1 Indexed key control system: to ANSI/BHMA A156.5, designated by letter E and numeral identifiers, wall mounted system, enamel paint finish, colour to be selected by Consultant.

2.4. Fastenings

.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Exposed fastening devices to match finish of hardware.

.4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.

.5 Use fasteners compatible with material through which they pass.

2.5. Keying

.1 Doors, padlocks and cabinet locks to be keyed as noted in Hardware Schedule. Prepare detailed keying schedule in conjunction with Consultant.

.2 Supply keys in duplicate for every lock in this Contract.

.3 Supply three (3) master keys for each master key or grand master key group.

.4 Stamp keying code numbers on keys and cylinders.

.5 Supply construction cores.

.6 Hand over permanent cores and keys to Consultant.

PART 3 EXECUTION

3.1. Examination

.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Supply manufacturers' instructions for proper installation of each hardware component.

.4 Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction)

.5 Where door stop contacts door pulls, mount stop to strike bottom of pull.

.6 Install key control cabinet.

.7 Use only manufacturer's supplied fasteners.

.1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.8 Remove construction cores when directed by Consultant.

.1 Install permanent cores and ensure locks operate correctly.

3.2. Adjusting

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to ensure tight fit at contact points with frames.

3.3. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.

.2 Remove protective material from hardware items where present.

.3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.4. Demonstration

.1 Keying System Setup and Cabinet:

.1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.

.2 Place file keys and duplicate keys in key cabinet on their respective hooks.

.3 Lock key cabinet and turn over key to Consultant.

.2 Maintenance Staff Briefing:

.1 Brief maintenance staff regarding:

1. Proper care, cleaning, and general maintenance of projects complete hardware.

2. Description, use, handling, and storage of keys.

3. Use, application and storage of wrenches for door closers, locksets, and fire exit hardware.

.3 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.5. Protection

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by door hardware installation.

3.6. Hardware Headings

.1 Hardware headings provided in shop drawing submissions are to match the hardware headings provided.

.2 Refer to Finishing Hardware Schedule prepared by CHC dated Nov. 4, 2026 (13 pages).

END OF SECTION

FINISHING HARDWARE SCHEDULE

PROJECT:	**LAURENTIAN UNIVERSITY INTERPROFESSIONAL HEALTH SIMULATION CENTRE**
LOCATION / OWNERS:	**LAURENTIAN UNIVERSITY 935 RAMSEY LAKE RD SUDBURY, ON P3E 2C6**
ARCHITECT:	**BELANGER SALACH ARCHITECTURE 255 LARCH STREET SUDBURY, ON P3B 1M2 PH: (705) 675-3383 ATT: AMBER SALACH**
CONTRACTOR:	**T.B.D.**
HARDWARE CONSULTANT: HARDWARE COORDINATOR:	**RICK CACCIOTTI, A.H.C. ROBERT CACCIOTTI**
HARDWARE SUPPLIER:	**CANADIAN HARDWARE CONSULTANTS (SUDBURY) LIMITED 1055 KELLY LAKE ROAD SUDBURY, ON P3E 5P5 PH. 705-673-5300 FAX 705-673-4075**
DATE:	**NOVEMBER 4TH, 2026**

Submittals

1. Submit samples of complete line of hardware and finishes to architect for approval, if and when requested to accompany any proposal for substitution.

2. With the submission of the hardware schedule submit to the architect's office, physical hardware samples as requested.

3. Catalogue cuts, templates and installation instructions for listed products available at following web sites:
Actual paper copies will not be sent but can be downloaded from the following links

Stanley	Hinges	www.stanleydoorhinges.com
Pemko	Continuous hinges, weatherstrip,	www.pemko.com
McKinney	Hinges, Continuous hinges	www.mckinneyhinge.com
Best	Locksets, cylinders	www.bestaccess.com
Assa Abloy	Sargent- locks, exit devices, closers, access control	www.sargentlock.com
Allegion	Schlage - Locks Glynn Johnson - Stops, latches Von Duprin - exit devices, electric strikes LCN - closers	http://us.allegion.com/irst/Pages/defau lt.aspx
CBH	pulls, push, plates, kickplates	www.cbhmfg.com
HES	electric strikes,	www.hesinnovations.com
KN Crowder	Pocket door frames, seals, sweeps, weatherstripping, thresholds	www.kncrowder.com
Record	automatic door operator	https://www.recorddoors.com/ca/en

*Note: templating/preps are the responsibility of the company preparing the doors/frames. Any clarifications or omissions must be reported/requested to the hardware supplier.

4. Schedules: Submit a detailed hardware schedule before proceeding with any supply of products to the project. Submit copies of the hardware schedule for approval

5. Supplier Qualifications:
The hardware supplier must be engaged regularly in contracting work. The hardware firm shall have been in the supply of contract hardware for not less than two (2) years. The supplier must have in his employment certified architectural hardware consultants (A.H.C.) or people with equivalent qualifications to periodically inspect and direct detailing, setting, applying and adjustment of all hardware.

6. Product Qualification:
The hardware items and manufacturers listed in this section shall be the only acceptable approved alternates. Any further substitutions shall be accepted upon prior approval of the architect and upon approved required data and physical samples submitted prior to the receipt of bids.

7. Keying system & schedule:
Keying requirements will be detailed in consultation between owners' representative and locking system representative in order to coordinate keying to owners requirements.

8. Electrical:
Power to be supplied by Electrical Division - Section 16. Also all raceways and boxes to wall switches and wiring to alarm system. The automatic operator supplier to supply installation of these units only in conjunction with the electric strike if required. All other electrical work is brought to each opening by the electrical contractor. The work by other trades required to be performed in order to ensure proper installation and function of the automatic operator is as follows:

1. Wiring and conduit between control devices and operator. Wiring conduit and electrical equipment required to interface with our operator/controls and any other electrical control/monitoring systems either existing or supplied by others.

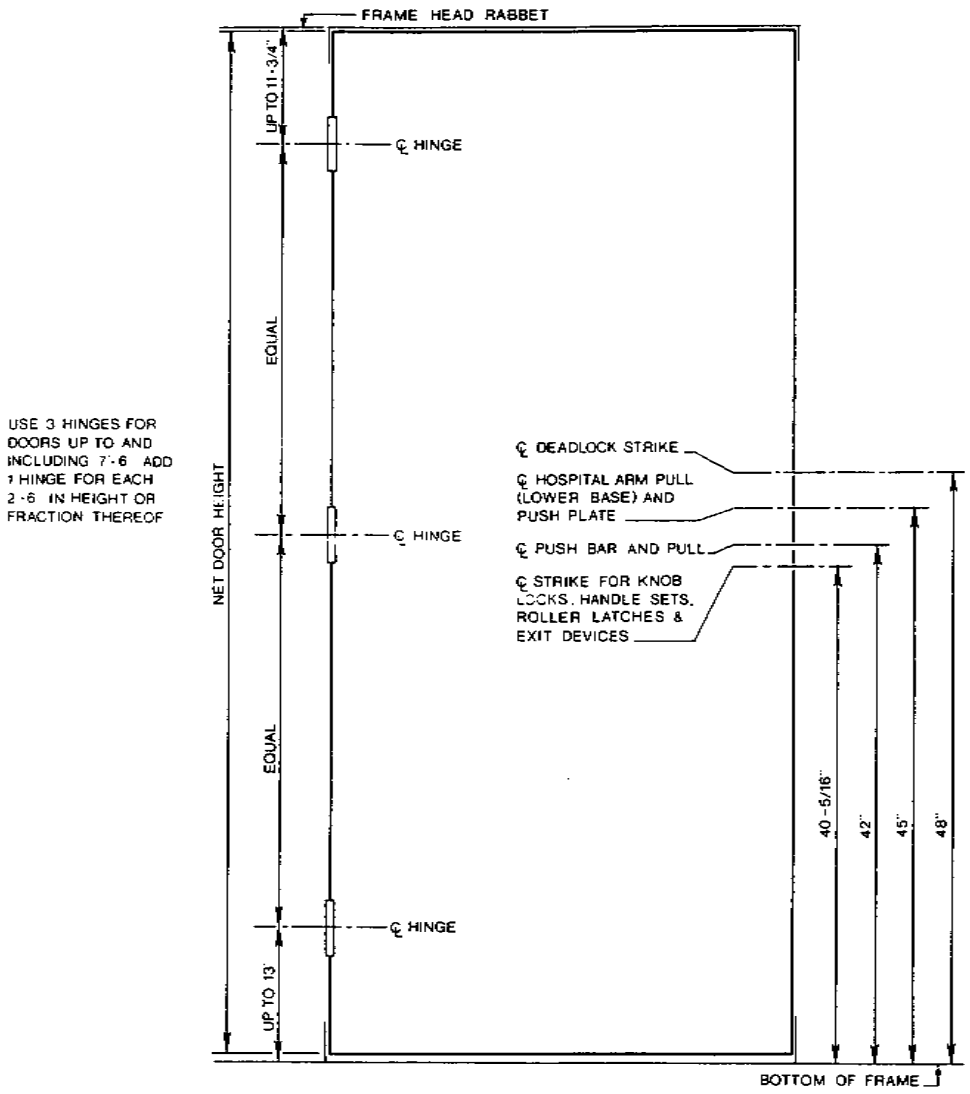
2. Automatic Door Operators are NOT Required for This Project

3. Key Card Access is Required for Dr.# 307, 308N1, 308N2, 310, 310A & 311
Mechanical Keypad Access is Required for Dr.# 308L

9. Work covered by this section of specifications consists of furnishing and delivering to the jobsite for fitting and installation all finish hardware complete, in accordance with this section and applicable drawings. It is intended that the following list of hardware will cover all finish hardware to complete the project. Omissions and discrepancies shall be brought to the architect's attention during the bidding period. Hardware for labelled openings shall meet U.L. requirements.

10. Recommended hardware locations as per attached "Location Diagram" - PG 5.

LOCATIONS DIAGRAM



EXPLANATORY NOTES

The need for a formal recommendation concerning hardware locations arises principally from changing conditions in the building construction field. Architectural handbooks treat the subject from the standpoint of traditional practice, which was based on wood doors and frames, job-fitted for hardware. In today's buildings, frames usually are of steel, and a large percentage of doors, whether of wood or metal, are being pre-fitted for hardware.

Manufacturer's Legend

Hinges	Stanley Hinge
Locksets, rim cylinders, deadlocks	Best Access Systems **(No substitutions allowed)**
Closers	LCN (Allegion)
Exit devices, electric exit devices	Sargent (Assa Abloy)
Overhead stops	Glynn Johnson (Allegion)
Kickplates, pulls, stops	Canadian Builders Hardware
Weatherstrip, thresholds, sweeps, seals	K N Crowder Mfg
Automatic Door Bottoms (Sound Control)	K N Crowder Mfg
Electric Strikes	HES (Assa Abloy)
Automatic door operators	*Not Applicable*

Finishing Legend

652	brushed chrome
630	stainless steel
626	brushed chrome
619	satin nickel on zinc
689	anodized aluminum
NEO	neoprene
628	anodized aluminum
600	paint grade
EN	painted grade/sprayed aluminum finish

Symbol Legend

NEF	non exposed fastenings
NRP	non removable pin
TB	thru bolt
Del Act	delayed action
BF	barrier free
TJM	top jamb mounted
Reg	regular mounting
RUO/PA	parallel arm application
Mtg 1 & 6	thru bolt mounting
Neo	neoprene

Heading # 0

Supply of BEST Keying System

All Cylinders to be Provided with Black Plastic Temporary Cores.

Heading # 1

1 Single Door Dr.# 307, Corridor SE300 From Learning Collaboration SE307.B RHR 90˚

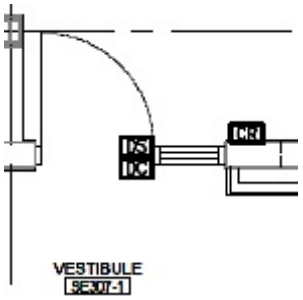
3'0"x7'0" - SCWD Type A *x ALF Type P/O S-01* **- 0 Hr.**

*	*Hinges*	*Supplied by PC350*	----
1	Lockset (Lever)	93K-7-D-14C-S3 *"Storeroom Function"*	626
1	Electric Strike	L6504 - 12/24V *"Low Profile for PC350"*	630
1	Closer	4041-XP x Rw/PA *"TJM - Push Side"*	689
1	Drop Plate	4040-18G	689
1	Kickplate	903 - 6" x 34" - NEF	630
1	Floor Stop	# 100	619
1	Automatic Door Bottom	CT53-N x 36"L *"Concealed"*	628/neo
1	Perimeter Seal (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

by Security Provider

*	*Key Card Reader*	*by Security Provider*
*	*Door Contact*	*by Security Provider*

Note (1) Security Supplier is responsible for final commissioning of access control & integrations with the electrified strikes .



Heading # 2

1 Single Door Dr.# 309, Corridor SE300 From Classroom SE309 RHR 95˚

3'0"x7'0" - SCWD Type A *x ALF Type P/O S-13* **- 0 Hr.**

*	*Hinges*	*Supplied by PC350*	----
1	Lockset (Lever)	93K-7-IN-14C-S3 *"Intruder Function"*	626
1	Closer	4041-XP x Rw/PA *"TJM - Push Side"*	689
1	Drop Plate	4040-18G	689
1	Kickplate	903 - 6" x 34" - NEF	630
1	Floor Stop	# 100	619
1	Automatic Door Bottom	CT53-N x 36"L *"Concealed"*	628/neo
1	Perimeter Seal (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

Heading # 3

1 Single Door Dr.# 308-N1, Corridor SE300 From Corridor SE308 RHR 90˚
1 Single Door Dr.# 308-N2, Corridor SE300 From Lounge / Waiting SE-308.N RHR 90˚

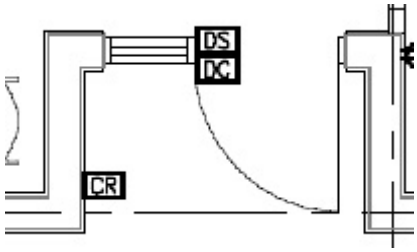
3'0"x7'0" - SCWD Type A *x ALF Type P/O S-01* **- 0 Hr.**

*	*Hinges*	*Supplied by PC350*	----
2	Locksets (Lever)	93K-7-D-14C-S3 *"Storeroom Function"*	626
2	Electric Strikes	L6504 - 12/24V *"Low Profile for PC350"*	630
2	Closers	4041-XP x Rw/PA *"TJM - Push Side"*	689
2	Drop Plates	4040-18G	689
2	Kickplates	903 - 6" x 34" - NEF	630
2	Floor Stops	# 100	619
2	Automatic Door Bottoms	CT53-N x 36"L *"Concealed"*	628/neo
2	Perimeter Seals (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

by Security Provider

*	*Key Card Reader*	*by Security Provider*
*	*Door Contact*	*by Security Provider*

Note (1) Security Supplier is responsible for final commissioning of access control & integrations with the electrified strikes .



Heading # 4

1 Single Door Dr.# 308-A, Corridor SE308 To Director's Office SE-308-A LH 90˚

3'0"x7'0" - SCWD Type B *x ALF Type P/O S-10*

*	*Hinges*	*Supplied by PC350*	----
1	Lockset (Lever)	93K-7-AB-14C-S3 *"Office Function"*	626
1	Floor Stop	# 100	619
1	Automatic Door Bottom	CT53-N x 36"L *"Concealed"*	628/neo
1	Perimeter Seal (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

Heading # 5

1 Pair of Doors Dr.# 308-B, Corridor SE308-3 To Clean Utility / Storage SE-308B RHA 90˚

1/3'0"x7'0" - SCWD Type C *x ALF Type 1*
1/1'0"x7'0" - SCWD Type C

*	*Hinges*	*Supplied by PC350*	----
*	*WD Astragal (Flat)*	*Supplied by WD Supplier (08210) - LH*	----
2	Flush Bolts.	FB358 x DP1 - LH c/w Dust Proof Strike	626
1	Lockset (Lever)	93K-7-D-14C-S3 - RH *"Storeroom"*	626
1	Closer	4041-XP - Rw/PA *"Pull Side"*	689
1	Kickplate	903 - 6" x 34" - NEF - RH	630
1	Kickplate	903 - 6" x 10" - NEF - LH	630
1	Floor Stop	# 100 - RH	619

Heading # 6

1 Single Door Dr.# 308-C, Charting SE308R To Media I.T. SE308C RH 90˚

3'0"x7'0" - SCWD Type B *x ALF Type P/O S-10*

*	*Hinges*	*Supplied by PC350*	----
1	Lockset (Lever)	93K-7-D-14C-S3 *"Storeroom Function"*	626
1	Closer	4041-XP - Rw/PA *"Pull Side"*	689
1	Kickplate	903 - 6" x 34" - NEF	630
1	Floor Stop	# 100	619
1	Automatic Door Bottom	CT53-N x 36"L *"Concealed"*	628/neo
1	Perimeter Seal (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

Heading # 7

1 Single Door Dr.# 308-D, Corridor SE-308S To Simulation Room 1SE-308D LH 90˚
1 Single Door Dr.# 308-G, Corridor SE-308S To Simulation Room 2 SE-308G RH 90˚

4'0"x7'0" - SCWD Type A *x ALF Type P/O S-08 & P/O S-08 (R.)*

*	*Hinges (5" HWT)*	*Supplied by PC350*	----
2	Locksets (Lever)	93K-7-R-14C-S3 *"Classroom Function"*	626
2	Closers	4041-XP - Rw/PA *"Pull Side"*	689
2	Kickplates	903 - 6" x 46" - NEF	630
2	Base Floor Stops	# 157	619
2	Automatic Door Bottoms	CT53-N x 48"L *"Concealed"*	628/neo
2	Perimeter Seals (Sound)	6216 - 18 ft *"Self Adhesive to Frame Stop"*	Blk

Heading # 8

1 Single Door Dr.# 308-E, Corridor SE-308S To Control Room 1 SE-308E LH 90˚
1 Single Door Dr.# 308-F, Corridor SE-308S To Control Room 2 SE-308F RH 90˚

3'0"x7'0" - SCWD Type A *x ALF Type P/O S-09 & P/O S-09 (R.)*

*	*Hinges*	*Supplied by PC350*	----
2	Locksets (Lever)	93K-7-R-14C-S3 *"Classroom Function"*	626
2	Closers	4041-XP - Rw/PA *"Pull Side"*	689
2	Kickplates	903 - 6" x 34" - NEF	630
2	Floor Stops	# 110	619
2	Automatic Door Bottoms	CT53-N x 36"L *"Concealed"*	628/neo
2	Perimeter Seals (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

Heading # 9

1 Single Door Dr.# 308-H, Corridor SE-308S To Debrief Room SE-308H RH 90˚

3'0"x7'0" - SCWD Type B *x ALF Type P/O S-07*

*	*Hinges*	*Supplied by PC350*	----
1	Locksets (Lever)	93K-7-AB-14C-S3 *"Office Function"*	626
1	Overhead Friction Stop	GJ.454-F	652
2	Overhead Stop Shims	SHM-450	652
1	Kickplates	903 - 6" x 34" - NEF	630
1	Floor Stops	# 110	619
1	Automatic Door Bottoms	CT53-N x 36"L *"Concealed"*	628/neo
1	Perimeter Seals (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

Heading # 10

1 Single Door Dr.# 308-J, Corridor SE-308S To Exam Room / Consult Office SE-308J RH 90˚

3'0"x7'0" - SCWD Type B *x ALF Type P/O S-09*

*	*Hinges*	*Supplied by PC350*	----
1	Locksets (Lever)	93K-7-AB-14C-S3 *"Office Function"*	626
1	Overhead Friction Stop	GJ.454-F	652
2	Overhead Stop Shims	SHM-450	652
1	Kickplates	903 - 6" x 34" - NEF	630
1	Floor Stops	# 110	619
1	Automatic Door Bottoms	CT53-N x 36"L *"Concealed"*	628/neo
1	Perimeter Seals (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

Heading # 11

1 Single Door Dr.# 308-M, Corridor SE308U From Electrical Closet SE-308M RHR 95˚

3'0"x7'0" - SCWD Type B *x ALF Type 1*

*	*Hinges*	*Supplied by PC350*	---
1	Lockset (Lever)	93K-7-D-14C-S3 *"Storeroom Function"*	626
1	Closer	1461 - Rw/PA *"TJM - Push Side"*	689
1	Drop Plate	1461-18	689
1	Floor Stops	# 110	619

Heading # 12

1 Single Door Dr.# 308-K1, Lounge/Waiting SE308N To Debrief Room SE308K RH 90˚
1 Single Door Dr.# 308-K2, Corridor SE-308S To Debrief Room SE308K LH 90˚

3'0"x7'0" - SCWD Type A *x x ALF Type P/O S-10 & P/O S-10 (R.)*

*	*Hinges*	*Supplied by PC350*	----
2	Locksets (Lever)	93K-7-R-14C-S3 *"Classroom Function"*	626
2	Overhead Friction Stops	GJ.454-F	652
2	Overhead Stop Shims	SHM-450	652
2	Kickplates	903 - 6" x 46" - NEF	630
1	Automatic Door Bottoms	CT53-N x 36"L *"Concealed"*	628/neo
1	Perimeter Seals (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

Heading # 13

1 Single Door Dr.# 308-L, Corridor SE-308S To Medication SE-308L LH 90˚

3'6"x7'0" - SCWD Type B *x ALF Type 1*

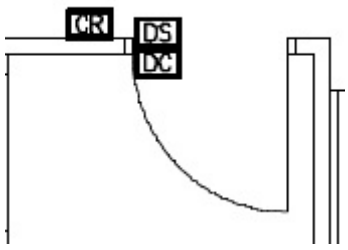
*	*Hinges (5" HWT)*	*Supplied by PC350*	----
1	Mechanical Punch Code Lock	LL1021-B-41 *c/w BEST Key Override*	626
2	Electric Strikes	L6504 - 12/24V *"Low Profile"*	630
1	Closer	4041-XP - Rw/PA *"Pull Side"*	689
1	Kickplate	903 - 6" x 40" - NEF	630
1	Base Floor Stop	# 157	619

Note LU to Confirm if Both Key Card & Mechanical Push Button Lock is Required.

by Security Provider

*	*Key Card Reader*	*by Security Provider*
*	*Door Contact*	*by Security Provider*

Note (1) Security Supplier is responsible for final commissioning of access control & integrations with the electrified strikes



Heading # 14

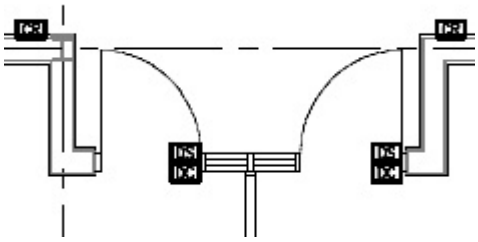
1 Single Door Dr.# 310, Corridor SE300 From Flex Space VR/Conference/Ward SE310 LHR 90˚
1 Single Door Dr.# 310A, Corridor SE300 From Flex Space VR/Conference/Ward SE310 RHR 90˚

3'0"x7'0" - SCWD Type A *x x ALF Type P/O S-12 & P/O S-12 (R.)* **- 0 Hr.**

*	*Hinges*	*Supplied by PC350*	----
2	Locksets (Lever)	93K-7-D-14C-S3 *"Storeroom Function"*	626
2	Electric Strikes	L6504 - 12/24V *"Low Profile for PC350"*	630
2	Closers	4041-XP x Rw/PA *"TJM - Push Side"*	689
2	Drop Plates	4040-18G	689
2	Kickplates	903 - 6" x 34" - NEF	630
2	Floor Stops	# 100	619
2	Automatic Door Bottoms	CT53-N x 36"L *"Concealed"*	628/neo
2	Perimeter Seals (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

by Security Provider

*	*Key Card Reader*	*by Security Provider*
*	*Door Contact*	*by Security Provider*



Note (1) Security Supplier is responsible for final commissioning of access control & integrations with the electrified strikes

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Heading # 15

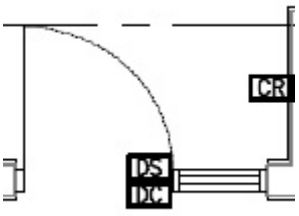
1 Single Door Dr.# 311, Corridor SE300 From Vestibule DE311 RHR 90˚

3'0"x7'0" - SCWD Type A *x ALF Type P/O S-01* **- 0 Hr.**

*	*Hinges*	*Supplied by PC350*	----
1	Lockset (Lever)	93K-7-D-14C-S3 *"Storeroom Function"*	626
1	Electric Strike	L6504 - 12/24V *"Low Profile for PC350"*	630
1	Closer	4041-XP x Rw/PA *"TJM - Push Side"*	689
1	Drop Plate	4040-18G	689
1	Kickplate	903 - 6" x 34" - NEF	630
1	Floor Stop	# 100	619
1	Automatic Door Bottom	CT53-N x 36"L *"Concealed"*	628/neo
1	Perimeter Seal (Sound)	6216 - 17 ft *"Self Adhesive to Frame Stop"*	Blk

by Security Provider

*	*Key Card Reader*	*by Security Provider*
*	*Door Contact*	*by Security Provider*



Note (1) Security Supplier is responsible for final commissioning of access control & integrations with the electrified strikes .

Heading # 16

1 Single Door Dr.# 311-A, Living Area SE-311D To Bathroom SE311 LH 90˚

3'0"x7'0" - SCWD Type B *x ALF Type 1*

*	*Hinges*	*Supplied by PC350*	----
1	Privacy Set (Lever)	93K-0-L-14C-S3 *"Coin Turn Privacy"*	626
1	Kickplate	903 - 6" x 34" - NEF	630
1	Floor Stop	# 100	619

Heading # 17

1 Pair of Doors Dr.# 311-B, Vestibule DE311 From Closet D/D 90˚

2/2'0"x7'0" - SCWD Type B *x ALF Type 1*

*	*Hinges*	*Supplied by PC350*	----
2	Door Pulls	CBH320 - 3"	630
2	Magnetic Door Catch	327	ZC

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 07 92 00 – Joint Sealants

1.2. Reference Standards

.1 American National Standards Institute (ANSI):

.1 ANSI Z97.1, Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test, current edition.

.2 ASTM International (ASTM):

.1 ASTM C542, Standard Specification for Lock-Strip Gaskets, current edition.

.2 ASTM C1503, Standard Specification for Silvered Flat Glass Mirror, current edition.

.3 ASTM D790, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials, current edition.

.4 ASTM D1003, Standard Test Method for Haze and Luminous Transmittance of Plastics, current edition.

.5 ASTM D1929, Standard Test Method for Determining Ignition Temperature of Plastics, current edition.

.6 ASTM D2240, Standard Test Method for Rubber Property - Durometer Hardness, current edition.

.7 ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials, current edition.

.8 ASTM E330, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference, current edition.

.9 ASTM F1233, Standard Test Method for Security Glazing Materials and Systems, current edition.

.3 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-12.1, and CAN/CGSB-12.20, Tempered Glazing, current edition.

.2 CAN/CGSB-12.6, Transparent (One-Way) Mirrors, current edition.

.4 CSA Group (CSA):

.1 CSA A460, Bird-Friendly Building Design, current edition.

.5 National Glass Association with GANA (NGA):

.1 GANA Glazing Manual - current edition.

.2 Laminated Glazing Reference Manual - current edition.

.6 UL Canada (UL):

.1 UL 752, Standard for Bullet-Resisting Equipment, current edition.

.2 UL 2761, Sealants and Caulking Compounds, current edition.

.7 ULC Standards (ULC):

.1 CAN/ULC S102, Test for Surface Burning Characteristics of Building Materials and Assemblies, current edition.

.2 CAN/ULC S104, Standard Method of Fire Tests for Door Assemblies, current edition.

.3 CAN/ULC S106, Standard Method of Fire Tests of Windows and Glass Block Assemblies, current edition.

1.3. Administrative Requirements

.1 Sequencing: Comply with manufacturer’s recommendations for sequencing construction operations.

1.4. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, product literature and data sheets for glass, sealants, and glazing accessories and include product characteristics, performance criteria, physical size, finish, and limitations.

.2 Submit WHMIS SDS.

.3 Shop Drawings: Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario.

.4 Samples:

.1 Submit for review and acceptance of each type of unit.

.2 Samples will not be returned for inclusion into Work.

.3 Submit 300 mm (12”) x 300 mm (12”) size samples of sealed insulating glass units.

.4 Submit manufacturer samples of surface-applied glazing films.

.5 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.6 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.1 Submit testing and analysis of glass under provisions of Section 01 43 00 - Quality Assurance.

.2 Submit shop inspection and testing for glass.

1.5. Closeout Submittals

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit maintenance data for glazing and incorporate into manual.

1.6. Quality Assurance

.1 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.2 Mock-ups: Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.1 Construct mock-up to include glass glazing.

.2 Mock-up will be used:

1. To judge quality of work, substrate preparation, and material application.

2. For testing to determine compliance with performance requirements. Perform tests as follows:

.3 Provide Consultant 48 hours to review the mock-up.

.4 Approved mock-up may remain as part of finished Work.

1.7. Warranty

.1 Provide ten (10) year warranty for glazing units from the date of Substantial Completion.

.2 Warranty shall apply against defects in workmanship and materials, and against silver deterioration and the loosening of fastenings.

1.8. Delivery, Storage, and Handling

.1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Storage and Handling Requirements:

.1 Store materials off ground and indoors in a clean dry location and in accordance with manufacturer's recommendations.

.2 Store and protect glazing from nicks, scratches, and edge damage.

.3 Protect prefinished aluminum surfaces with wrapping.

.4 Replace defective or damaged materials with new.

1.9. Ambient Conditions

.1 Ambient Requirements:

.1 Install glazing when ambient temperature is 10°C minimum. Maintain ventilated environment for 24 hours after application.

.2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

.3 Refer to manufacturer’s instructions for minimum ambient temperature for application of bird deterrent glazing film.

PART 2 PRODUCTS

2.1. Materials

.1 General: factory label every sheet of glass and keep in place until final cleaning.

.2 Design Criteria:

.1 Ensure continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:

.2 Utilize inner lite of multiple lite sealed units for continuity of air and vapour seal.

.3 Size glass to withstand wind loads, dead loads and positive and negative live loads to ASTM E330.

.4 Limit glass deflection to 1/200 flexural limit of glass with full recovery of glazing materials.

.3 Tempered Glass (**TGL**):

.1 Conforming to CAN/CGSB-12.1 and CAN/CGSB-12.20. Double layer glass total thickness shall be 1” (25.4 mm) - 2 layers of 6.3 mm (1/4”) unless indicated otherwise or required by glazing engineer to meet Ontario Building Code.

.4 One-Way Mirrored Glass (**OWMG**): .1 Conforming to CAN/CGSB-12.6. Glass shall be a minimum thickness of 6 mm (1/4”) Type 1, Class C. Total glass thickness shall be 1” (25.4 mm) - 2 layers of 6.3 mm (1/4”) unless indicated otherwise or required by glazing engineer to meet Ontario Building Code.

.6 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

.1 VOC limit 250 g/L maximum.

1. VOC limit: 5% maximum by weight to UL 2761.

2. Ensure sealant does not contain chemical restrictions to UL 2761.

2.2. Accessories

.1 Setting blocks: Neoprene, 80-90 Shore A durometer hardness to ASTM D2240, minimum 100 mm (4”) x width of glazing rabbet space minus 1.5 mm (1/16”) x height.

.2 Spacer shims: Neoprene, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm (3”) long x one half height of glazing stop x thickness to suit application.

Self-adhesive on one face.

.3 Glazing tape:

.1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D2240; coiled on release paper; black colour.

.2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2%, designed for compression of 25%, to effect an air and vapour seal.

.4 Glazing stops:

.1 Solid hardwood, mitred corners, flush moulding species matching face veneer, transparent finish. Free of open defects, shake, splits, and doze.

.2 Steel, 1.0 mm (3/64”) metal core thickness, screw attached.

.3 Provide 16 mm (5/8”) minimum stop height for factory-sealed double-glazed units.

.5 Glazing splines: resilient polyvinyl chloride, extruded shape to suit glazing channel retaining slot, colour as selected by Consultant.

.6 Lock-strip gaskets: to ASTM C542.

PART 3 EXECUTION

3.1. Manufacturer’s Instructions

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

3.2. Examination

.1 Verification of Conditions: Verify conditions of substrates previously installed are acceptable for beginning glazing installation in accordance with manufacturer’s instructions.

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

.3 Visually inspect substrates.

.4 Inform Consultant of unacceptable conditions immediately upon discovery.

.5 Proceed with installation only after unacceptable conditions have been remedied and after receipt of approval to proceed from Consultant.

3.3. Preparation

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

.4 Preparation - Glazing films:

.1 Clean glazing before beginning installation using neutral cleaning solution.

.2 Ensure no deleterious material adheres to glazing.

.3 Ensure dust, grease, and chemical residue are removed from surface of glazing before installation of film.

.4 Examine glazing under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate or cause vision transparency or distortion problems.

.5 Unless otherwise specified, dry glaze all interior glass.

3.4. Installation: Interior – Dry Method (Tape and Tape)

.1 Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

.2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm (1/16”) above sight line.

.3 Place setting blocks at 1/4 points, with edge block maximum 150 mm (6”) from corners.

.4 Rest glazing on setting blocks and push against tape for full contact at perimeter of lite or unit.

.5 Place glazing tape on free perimeter of glazing in same manner described.

.6 Install removable stop without displacement of tape. Exert pressure on tape for

full continuous contact.

.7 Knife trim protruding tape.

3.5. Installation: Plastic Film

.1 Install plastic film in accordance with film manufacturer's instructions.

.2 Place without air bubbles, creases, or visible distortion.

.3 Site Installation of Glazing Film:

.1 Remove window stops and window sealing device.

.2 Ensure dust, grease, and chemical residue are removed from surface of glazing before installation of film.

.3 Examine glazing under natural daylight and identify cracks, blisters, bubbles, discolouration, edge defects or other anomalies that may cause film to delaminate, or cause vision transparency or distortion problems. Report findings to Consultant before starting work.

.4 Proceed with work only after receipt of approval from Consultant.

.5 Install glazing film to glazing windows ensuring no blisters, bubbles, scratches, or distortions.

.4 Cut film edges straight and square.

.5 Ensure film is installed behind window stops. Fit tight to glass perimeter with razor cut edge. Cut edges in accordance with manufacturer's written instructions.

.6 Splicing:

.1 Splice film only when glazing is greater in width than film.

.2 Splice film only after receipt of written approval from Departmental Representative.

.3 Use butted factory edges only.

.4 Ensure maximum overlap of 3 mm (1/8").

.7 Use only water and film slip solution on glazing to facilitate positioning of film.

.8 Ensure removal of excess water from between film and glazing.

.9 Re-install stops and sealing devices.

.10 Wash interior and exterior of each window and film, using cleaning solution recommended by film manufacturer.

.11 Remove and replace film that continues to show blisters, bubbles, tears, scratches, edge defects or vision distortion in film when viewed under natural daylight from 2.0 m (6’ 6”) minimum after 30 day period.

3.6. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Remove traces of primer and sealants.

.2 Remove glazing materials from finish surfaces.

.3 Remove labels.

.4 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.

.5 Clean and restore any stained metal surfaces in accordance with manufacturer's recommendations. Contractor to replace at no cost to the owner if cleaning is impossible.

3.7. Protection

.1 Protect installed products and components from damage during construction.

.2 After installation, mark each lite with an "X" by using removable plastic tape or paste.

.1 Do not mark heat absorbing or reflective glass units.

.3 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

PART 1 GENERAL

1.1. Summary of Work

.1 Work of this section includes but is not limited to providing exterior and interior grade gypsum sheathing / board finish where indicated including associated beads, adhesives, trims and termination accessories. Refer to Consultant drawings under the construction assemblies schedule for additional information related to the extent of Work under this Section.

1.2. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 07 21 00 Mineral Wool Insulation

.3 Section 07 92 00 - Joint Sealants

.4 Section 09 22 16 Non-Structural Metal Framing

1.3. Reference Standards

.1 Aluminum Association (AA)

.1 AA DAF 45, current edition, Designation System for Aluminum Finishes.

.2 American Society for Testing and Materials (ASTM)

.1 ASTM C475, current edition, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.2 ASTM C514, current edition, Standard Specification for Nails for the Application of Gypsum Board.

.3 ASTM C557, current edition, Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.

.4 ASTM C754, current edition, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

.5 ASTM C840, current edition, Standard Specification for Application and Finishing of Gypsum Board.

.6 ASTM C954, current edition, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.

.7 ASTM C1002, current edition, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

.8 ASTM C1047, current edition, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

.9 ASTM C1177/C1177M, current edition, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

.10 ASTM C1280, current edition, Standard Specification for Application of Gypsum Sheathing.

.11 ASTM C1396/C1396M, current edition, Standard Specification for Gypsum board.

.3 Association of the Wall and Ceilings Industries International (AWCI)

.1 AWCI Levels of Gypsum Board Finish-GA-214, current edition.

.4 Canada Green Building Council (CaGBC)

.1 LEED Canada-NC Version 1.0, current edition, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including all Addendums to current date).

.2 LEED Canada-CI Version 1.0, current edition, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.

.5 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34, current edition, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.2 CAN/CGSB-71.25, current edition, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

.6 Green Seal Environmental Standards (GS)

.1 GS-11, current edition, Paints and Coatings.

.2 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

.3 SCAQMD Rule 1113, current edition, Architectural Coatings.

.4 SCAQMD Rule 1168, current edition, Adhesives and Sealants Applications.

.7 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S102, current edition, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

1.4. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit gypsum board assembly drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario, Canada.

.2 Indicate components such as fastener type, dimensions, spacing and locations at gypsum board edges, ends and in field of board as well as installation methods. Components and work to confirm to ASTM C 840 standard specification for application and finishing of gypsum board.

.3 Indicate type of joint compound, and number of joint compound layers.

.4 Indicate number and location of electrical boxes for wall and ceiling.

.4 Samples:

.1 Submit for review and acceptance of each component specified or necessary for complete installation. Include technical descriptive data.

.2 Submit 300 x 300 mm (12 x 12”) size samples of each gypsum board panel.

.3 Samples will be returned for inclusion into work.

.5 Certifications:

.1 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.5. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and 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 and applicable standard designation.

.1 Materials to be used within fire rated partitions and wall assemblies shall have Underwriters Laboratories of Canada (ULC) labels complete with ULC type designation attached and visible for review by Consultant on-site.

.3 Exercise care in unloading gypsum board materials shipment to prevent damage.

.4 Storage and Handling Requirements in accordance with ASTM C 840-16:

.1 Store gypsum board assemblies materials level flat off in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect gypsum board assemblies from nicks, scratches, and blemishes.

.3 Protect gypsum board from direct exposure to rain, snow, sunlight, or other excessive weather conditions.

.4 Protect ready mix joint compounds from freezing, exposure to extreme heat and direct sunlight.

.5 Protect from weather, elements and damage from construction operations.

.6 Handle gypsum boards to prevent damage to edges, ends or surfaces.

.7 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

.8 Replace defective or damaged materials with new.

.5 Develop Construction Waste Management Plan related to Work of this Section.

1.6. Ambient Conditions

.1 Maintain temperature 10 °C minimum, 21 °C maximum for 48 hours prior to and during application of gypsum boards and joint treatment, and for 48 hours minimum after completion of joint treatment.

.2 Apply board and joint treatment to dry, clean, frost-free surfaces.

.3 Ventilation: ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

PART 2 PRODUCTS

2.1. General Performance Requirements

.1 All gypsum board materials to meet CAN/ULC-S114 non-combustible classification.

.1 Flame Spread Index: < 25 to CAN/ULC-S102.

.2 Smoke Development: 0 to CAN/ULC-S102.

2.2. Interior Gypsum Board

.1 Type ‘X’ Gypsum Board: to ASTM C1396/C1396M Type ‘X’.

.1 Thickness: As required by fire resistance rating of assembly indicated on drawings. 12.7 mm (1/2”) and 15.9 mm (5/8”) thick where indicated.

.2 Short Edge: Factory Square Cut.

.3 Long Edge: Factory Tapered.

.4 Parallel Flexural Strength: 160 N (36 lbf) minimum for 12.7 mm thickness and 205 N (46 lbf) for 15.9 mm thickness to ASTM C473(B).

.5 Perpendicular Flexural Strength: 476 N (107 lbf) minimum for 12.7 mm thickness and 654 N (147 lbf) minimum for 15.9 mm thickness to ASTM C473(B).

.6 ULC Type Designation: Type ‘X’.

2.3. Accessories - General

.1 Metal furring runners, hangers, tie wires, inserts, and anchors: to ASTM C754.

.2 Drywall furring channels: 0.5 mm (24 ga) core thickness galvanized steel channels for screw attachment of gypsum board.

.3 Resilient drywall furring: 0.5 mm (24 ga) base steel thickness galvanized steel for resilient attachment of gypsum board.

.4 Nails: to ASTM C514-14

.5 Steel drill screws: to ASTM C1002-14

.6 Stud adhesive: to CAN/CGSB-71.25.

.7 Laminating compound: as recommended by manufacturer, asbestos-free.

.8 Sealants: in accordance with Section 07 92 00 - Joint Sealants.

.1 VOC limit 250 g/L maximum to SCAQMD Rule 1168.

.2 Acoustic sealant: in accordance with Section 07 92 00 - Joint Sealants.

.9 Polyethylene: to CAN/CGSB-51.34, Type 2

.10 Insulating strip: rubberized, moisture resistant, 3 mm (1/8") thick closed cell neoprene strip, 13 mm (1/2") wide, with self-sticking permanent adhesive on one face, lengths as required.

.11 Joint compound: to ASTM C475, asbestos-free

2.4. Accessories - Trims

.1 Casing Beads: 32 mm (1 1/4") x width to suit gypsum panel, paper faced metal bead, 0.5 mm base thickness, one piece length per location to ASTM C1047.

.1 Fire Rated Type: Provide fire-rated casing bead trim with intumescent tape at back side to ASTM D3678 Cass 2, UL 2079 and CAN/ULC S115 at fire separations rated greater than 0 hr.

.2 Corner Beads: 32 mm x 32mm (1 1/4" x 1 1/4") paper faced metal corner bead to ASTM C1047.

.3 Control Joint Trims: 50 mm (2") wide paper faced metal control joint trim with 6.4mm (1/4") joint width to ASTM C1047.

.1 Fire Rated Type: Provide fire-rated control joint trim with intumescent tape at back side to ASTM D3678 Cass 2, UL 2079 and CAN/ULC S115 at fire separations rated greater than 0 hr.

.4 Edge Trim: 32 mm (1 1/4") x width to suit gypsum panel, paper faced metal bead, 0.5 mm base thickness, one piece length per location to ASTM C1047.

.1 Fire Rated Type: Provide fire-rated casing bead trim with intumescent tape at back side to ASTM D3678 Cass 2, UL 2079 and CAN/ULC S115 at fire separations rated greater than 0 hr.

.5 Shadow mould: 35 mm high, snap-on trim, of 0.6 mm base steel thickness galvanized sheet pre-finished in satin enamel, white colour.

2.5. Finishes

.1 Texture finish: N/A.

.2 Primer: VOC limit 50 g/L maximum to SCAQMD Rule 1113.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for gypsum board assemblies 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.

3.2. Erection

.1 Do application and finishing of gypsum board to ASTM C840 except where specified otherwise

.2 Do application of gypsum sheathing to ASTM C1280

.3 Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C840 except where specified otherwise

.4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm (6”) of each corner and at maximum 610 mm (2’-0”) around perimeter of fixture.

.5 Install work level to tolerance of 1:1200.

.6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles and other like equipment and fixtures.

.7 Install 19 mm x 64 mm (3/4" x 2 1/2") furring channels parallel to, and at exact locations of steel stud partition header track.

.8 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.

.9 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

.10 Install wall furring for gypsum board wall finishes to ASTM C840, except where specified otherwise

.11 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.12 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

.13 Erect drywall resilient furring transversely across studs and joists where indicated on drawings, spaced maximum 610 mm (2'-0") on centre and not more than 150 mm (6") from ceiling/wall juncture. Secure to each support with 25 mm (1") drywall screws.

.14 Install 150 mm (6") continuous strip of 15.9 mm (5/8") gypsum board along base of partitions where resilient furring installed.

3.3. Application

.1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.

.2 Apply single and double layer gypsum board to wood or metal furring or framing using screw fasteners for first layer and screw fasteners for second layer where required. Maximum spacing of screws 300 mm (1'-0") on centre.

.1 Single-Layer Application:

a. Apply gypsum board on ceilings prior to application of walls to ASTM C840.

b. Apply gypsum board on walls vertically or horizontally, providing sheet lengths that will minimize number of board edges or end joints.

.2 Double-Layer Application:

a. Install gypsum board for base layer and exposed gypsum board for face layer.

b. Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm (10”).

c. Apply base layers at right angles to supports unless otherwise indicated.

d. Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm (10”) with base layer joints.

.3 Apply single and double layer gypsum board to concrete and concrete masonry unit surfaces, where indicated, using laminating adhesive.

.1 Comply with gypsum board manufacturer's recommendations.

.2 Brace or fasten gypsum board until fastening adhesive has set.

.3 Mechanically fasten gypsum board at top and bottom of each sheet.

.4 Apply 12 mm (1/2") diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, and other similar penetrations, in partitions where perimeter sealed with acoustic sealant.

.5 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm (10”).

.6 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.

.7 Install gypsum board with face side out.

.8 Do not install damaged or damp boards.

.9 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.4. Installation

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm (6”) on centre.

.2 Install casing beads around perimeter of suspended ceilings.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

.4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

.5 Install shadow mould at gypsum board/ceiling juncture as indicated. Minimize joints; use corner pieces and splicers.

.6 Construct control joints of preformed single units set in gypsum board facing and supported independently on both sides of joint.

.7 Provide continuous polyethylene dust barrier behind and across control joints.

.8 Locate control joints at 10 m (33’-0”) minimum spacing at uninterrupted straight planes of continuous finish and at approximate 15 m (50’-0”) spacing on ceilings.

.1 Where control joint spacing is not indicated on drawings, the contractor shall obtain approval of control joint locations from Consultant prior to installation of Work of this Section.

.9 Install control joints straight and true.

.10 Ensure that screws or nails are properly applied in process of attaching gypsum board to framing without damaging of gypsum board edges and ends.

.11 Install access doors to electrical and mechanical fixtures specified in respective sections.

.1 Rigidly secure frames to furring or framing systems.

.12 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

.13 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI Levels of Gypsum Board Finish:

.1 Levels of finish:

a. Level 0: no tapping, finishing or accessories required.

i. Permitted only at temporary construction or where final decoration has not been determined.

b. Level 1: embed tape for joints and interior angles in joint compound. Surfaces free of excess joint compound; tool marks and ridges are acceptable.

    i. Permitted only in plenum areas above ceiling not exposed to view, in attics or in areas where the assembly would generally be concealed.

c. Level 2: embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable.

    i. Permitted only where water resistant gypsum backing board is used as a substrate for tile or where applied finishes are greater than 6 mm (1/4") in thickness.

d. Level 3: embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

    i. Permitted only where appearance areas are to receive a heavy or medium coat of textured material, or where heavy grade wall coverings less than 6 mm (1/4”) and greater than 3 mm (1/8”) are to be applied.

    ii. Not acceptable in areas to receive protective wall covering.

e. Level 4: embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

    i. Provide by default in all areas where finish level is not otherwise specified or not permitted to be lower in finish level.

    ii. Permitted for appearance areas to receive lightly textured finishes or wall coverings.

f. Level 5: embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.

i. Provide in lieu of Level 4 finish where gloss, semi-gloss, enamel and non-textural flat paints area specified or where severe lighting conditions occur including but not limited to direct illumination from light fixtures, wall-mounted illuminated signage, feature walls and where specifically indicated on Drawings.

.14 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.15 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board, invisible after surface finish is completed.

.16 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.17 Completed installation smooth, level or plumb, free from waves and other defects and ready for surface finish.

.18 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.

.19 Mix joint compound slightly thinner than for joint taping.

.20 Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.

.21 Allow skim coat to dry completely.

.22 Remove ridges by light sanding or wiping with damp cloth.

3.5. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.6. Protection

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by gypsum board assemblies installation.

3.7. Schedules

.1 Refer to Life Safety Floor Plans and Sections for location of separations and respective fire-ratings in hours on Drawings.

.2 Construct separations assemblies which do not require a fire resistance rating (0 hour rated separations) where indicated.

.3 Construct fire-rated separation assemblies where indicated and in accordance with the following ULC tested assembly design number listings:

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 07 92 00 - Joint Sealants

1.2. Reference Standards

.1 ASTM International (ASTM)

.1 ASTM C645, current edition, Standard Specification for Non-structural Steel Framing Members.

.2 ASTM A653/A653M, current edition, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process.

.3 ASTM C754, current edition, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

.2 Underwriter's Laboratories (UL)

.1 UL-2768, current edition, Architectural Surface Coatings.

.3 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual, current edition.

.2 MPI #26, Primer, Galvanized Metal, Cementitious.

.4 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

.1 SCAQMD Rule 1168, current edition, Adhesives and Sealants Applications.

1.3. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for [metal framing] and include product characteristics,

performance criteria, physical size, finish and limitations.

.3 Samples:

.1 Submit 300 mm (1'-0") long samples of non-structural metal framing.

1.4. Quality Assurance

.1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to Site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect metal framing from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

PART 2 PRODUCTS

2.1. Materials

.1 Non-load bearing channel stud framing: to ASTM C645, at standard widths of 41 mm (1 $^{5}/_{8}$") , 64 mm (2 ½"), 92 mm (3 $^{5}/_{8}$"), 102 mm (4"), and 152 mm (6") where indicated on drawings.

.1 Roll formed from hot dipped zinc coated (galvanized) steel sheet, in accordance with ASTM A653, 0.53 mm (25 ga) thickness for stud lengths up to 3.6 m (12'-0") and 0.91 mm (20 ga) thickness above 3.6 m, for screw attachment of finishes.

a. Steel sheet thickness to accommodate max. allowable deflection of L/360, in accordance with ASTM C754 and SSMA, where framing supports plaster and gypsum board finishes.

b. Steel sheet thickness to accommodate max. allowable deflection of L/240, in accordance with ASTM C754 and SSMA, for other finish types.

.2 Knock-out service holes at 460 mm (1'-6") centres.

.2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, and as follows:

.1 Slotted Deflection Track for Fire Separations: Premanufactured slotted top runner with 63 mm down standing legs and having 6 mm wide x 38 mm high slots spaced at 25 mm on centre along length of runner; tested and certified for use in fire rated wall construction.

.2 Double Runner Deflection Track: Outside runner using 50 mm or 75 mm flanges; inner runner 33 mm; maintaining 25 mm minimum deflection space.

.3 Deep Leg Deflection Track: Top runner having 50 mm or 75 mm down standing legs; maintaining 13 mm minimum deflection space.

.4 Base Runner: Bottom track with 33 mm upstanding legs.

.3 Furring Channels: Commercial steel sheet in accordance with ASTM A653, Z180, hot dipped zinc-coated (galvanized), as follows:

.1 Hat Shaped, Rigid Furring Channels: ASTM C645, 0.75 mm thickness x 22 mm deep

.2 Resilient Furring Channels: 0.46 mm thickness x 13 mm deep members designed to reduce sound transmission having asymmetrical face attached to single flange by a slotted leg (web).

.4 Curving Tracks: Commercial steel sheet with ASTM A653, Z180, hot dipped zinc-coated (galvanized), complete with flexible sliding straps to allow for curvature indicated on drawings; width to suit framing, and as follows:

.1 Width: 65 mm or 92 mm as indicated on drawings.

.2 Minimum base metal thickness: 0.75 mm (22 ga).

.5 Metal channel stiffener: 38 x 13 mm or 19 x 13 mm size to suit stud widths, 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.

.6 Acoustical sealant: in accordance with Section 07 92 00 - Joint Sealants.

.7 Sealants: VOC limit 30 g/L maximum to GS-36.

.8 Insulating strip: rubberized, moisture resistant 3 mm thick foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for non-structural metal framing application 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 after unacceptable conditions have been remedied.

3.2. Erection

.1 Erect partitions in accordance with framing requirements of ASTM C754

.2 Align partition tracks at floor and ceiling and secure at 610 mm (2’-0”) on centre maximum, unless stated otherwise by manufacturer (Tall partitions may require tighter fastener spacing).

.3 Install damp proof course under stud shoe tracks of partitions on slabs on grade.

.4 Place studs vertically at 406 mm (16”) on centre, unless otherwise noted on drawings, and not more than 50 mm from abutting walls, and at each side of openings and corners.

.1 Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.

.5 Erect metal studding to tolerance of 1:1000.

.6 Attach studs to bottom and ceiling track using fasteners designed for use with metal stud framing.

.7 Co-ordinate simultaneous erection of studs with installation of service lines. Align web openings when erecting studs.

.8 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.

.9 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified.

.1 Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.

.10 Install heavy gauge single jamb studs at openings.

.11 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs.

.1 Secure track to studs at each end, in accordance with manufacturer's instructions.

.2 Install intermediate studs above and below openings in same manner and spacing as wall studs.

.12 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.

.13 Provide solid blocking or 19 mm (¾") DFP plywood complete with 41 mm (1 $^{5}/_{8}$") stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.

.14 Install steel studs or furring channel between studs for attaching electrical and other boxes.

.15 Extend partitions to ceiling height except where noted otherwise on drawings.

.16 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.

.1 Use 50 mm or 75 mm leg ceiling tracks as indicated.

.17 Install continuous insulating strips to isolate studs from uninsulated surfaces.

.18 Install acoustical sealant at STC rated partitions in accordance with Section 07 92 00 - Joint Sealants

.19 Curved Partition Tracks:

.1 Shape curving tracks to profiles indicated on drawings in accordance with manufacturer's instructions.

.2 Bend track to uniform curve and locate straight lengths so they form a true

tangent to arcs.

.3 Support outside leg of track by clinching steel sheet strip, 25 mm high, by thickness of track metal, to inside of cut legs using metal lock fasteners.

.4 Begin and end arc with a stud and space intermediate studs equally along arcs at stud spacing recommended in writing by gypsum board manufacturer for radii indicated. On straight lengths of minimum 2 studs at ends of arcs, place studs at 150 mm on centre.

3.3. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.4. Protection

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by non-structural metal framing application.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 07 92 00 – Joint Sealants

.3 Section 09 21 16 – Gypsum Board Assemblies

.4 Section 09 22 16 – Non-Structural Metal Framing

1.2. Reference Standards

.1 American Architectural Manufacturers Association (AAMA):

.1 AAMA 2604, current edition, Specification for Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.

.2 American Society for Testing and Materials (ASTM)

.1 ASTM D2247, current edition, Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.

.2 ASTM E84, current edition, Standard Test Method for Surface Burning Characteristics of Building Materials.

.3 ASTM E1399/E1399M-97, current edition, Standard Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems.

.4 ASTM E90-2016, current edition, Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

.3 National Association of Architectural Metal Manufacturers (NAAMM)

.1 Metal Finishes Manual for Architectural and Metal Products, current edition.

.4 California Department of Public Health (CDPH)

.1 CDPH Standard Method, current edition (CA Section 01350).

1.3. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instruction, printed product literature and data sheets for each type of partition gap closure and include product characteristics, and performance criteria.

.2 Typical detail drawings.

.3 Samples:

.1 Submit 600 mm (12") long partition gap closure and finish panel, as well as any accessories.

1.4. Closeout Submittals

.1 Operations and Maintenance Data: Submit manufacturers' maintenance and cleaning data.

.2 Warranty Documentation: Submit manufacturers' warranties.

1.5. Quality Assurance

.1 Qualifications:

.1 Manufacturers: Must have manufacturing and delivery capacity required for the project and shall have successfully completed at least five (5) projects in the last five (5) years utilizing systems, materials, and techniques as specified in this Section.

.2 Installers: Shall have a minimum of five (5) years of experience installing systems of similar type and scope as those specified in this Section.

.3 Provide epoxy adhesive and epoxy grout from the same manufacturer.

1.6. Delivery, Storage, and Handling

.1 Perform in accordance with Section 01 61 00 - Common Product Requirements.

.2 Storage and Handling Requirements:

.1 Store materials flat, off floor, indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect acoustical panel gap closures from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

1.7. Warranty

.1 Submit a warranty covering the repair and replacement of defective work for a standard period of one (1) year.

.1 Defective work shall include, but not be limited to material defects including, cracking, splitting, and warping or other deformations.

PART 2 PRODUCTS

2.1. Materials

.1 Provide metals free from surface blemishes where exposed to view in finished partition gap closure. Surfaces exhibiting pitting, seam marks, roller marks, stains, discolourations, or other imperfections are not acceptable.

.2 Partition gap closures to be factory assembled and spring-loaded to provide a tight fit for vertical junctures of partitions and window walls.

.3 Materials:

.1 Aluminium Extrusions: 6063-T5 or T6 temper alloy.

.2 Aluminium Sheet, 3000 series alloy.

2.2. Fabrication

.1 Partition Gap Closures, based on Mullion Mate Plus 5 (against the mullion), as manufactured by Gordon Architectural Solutions:

.1 Depth: As noted on drawings.

.2 Length: +/- 123.8 mm (5-1/8"")

2.3. Finishes

.1 Comply with the National Association of Architectural Metal Manufacturers (NAAMM) “Metal Finishes Manual for Architectural and Metal Products” for

recommendations related to applying and designating finishes.

.2 Factory anodized:

.1 Standard satin clear anodized.

PART 3 EXECUTION

3.1. Examination

.1 Examination of Surfaces: Installer must examine conditions under which work is to be performed and must notify Contractor in writing of unsatisfactory conditions.

.2 Verify that field measurements and block-out dimensions are as shown on Shop Drawings.

3.2. Preparation

.1 Clean surfaces thoroughly prior to installation.

.2 Prepare surfaces using the methods recommended by the Manufacturer to achieve the best result for the project conditions.

3.3. Installation

.1 Partition gap closures shall be inspected before installation to be free from dents, scratches, and other defects.

.2 Install partition gap closures in accordance with Manufacturer's written installation instructions and details.

.3 Space Enclosure: Do not install any work until space is enclosed and weatherproofed, wet-work in space is completed and nominally dry, work above ceilings is complete, and temperature and humidity shall be continuously maintained at values near those of final occupancy.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 06 10 00 – Rough Carpentry.

.3 Section 09 91 23 – Interior Painting.

.4 Section 23 37 20 – Louvres, Intakes and Vents: Air inlets and outlets to be coordinated with ceiling work.

1.2. Reference Standards

.1 ASTM International (ASTM)

.1 ASTM C423, current edition, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

.2 ASTM E580/E580M, current edition, Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.

.3 ASTM C635/C635M, current edition, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.

.4 ASTM C636/C636M, current edition, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

.5 ASTM E1264, current edition, Standard Classification for Acoustical Ceiling Products.

.6 ASTM E1414/E1414M, current edition, Standard Test Method for Sound Attenuation between Rooms Sharing a Common Ceiling Plenum.

.7 ASTM E1477, current edition, Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

.8 ASTM F1667, current edition, Standard Specification for Driven Fasteners: Nails, Spikes and Staples.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-[M86], Vapour Barrier, Polyethylene Sheet, for Use in Building Construction and Amendment No. 1, current edition.

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

.4 Underwriter's Laboratories of Canada (ULC)

.1 CAN/ULC-S102, current edition, Surface Burning Characteristics of Building Materials and Assemblies.

1.3. Coordination

.1 Do not begin erection of ceiling suspension system until work above ceiling has been inspected by Consultant.

1.4. Preinstallation Meeting

.1 Convene preinstallation meeting one week prior to beginning work of this Section and on-site installation, with contractor's representative, Consultant and other affected trades to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Coordination with work of other sections.

.4 Review manufacturer's installation instructions and warranty requirements.

.5 Review accepted shop drawings for installation requirements.

1.5. Submittals

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for acoustical suspension, acoustic panels, acoustic tiles, and system accessories. Include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit reflected ceiling plans for special grid patterns as indicated.

.2 Indicate lay-out, insert and hanger spacing and fastening details, splicing method for main and cross runners, location of access splines, change in level details, access door dimensions, and locations, acoustical unit support at ceiling fixture, lateral bracing and accessories.

.4 Delegated Design Submittals:

.1 Submit delegated design shop drawings stamped and signed by professional Structural engineer registered or licensed in the Province of Ontario, Canada.

.2 Indicate components and installation methods to conform to specified seismic design and construction requirements of Contract Documents and in general accordance with ASTM E580/E580M.

.3 Include supporting details, treatment of cross runners, main runners, and wall closures at terminal ends, suspension wire, lateral force bracing, light fixtures and services within the ceiling, seismic isolation joints and partition bracing.

.5 Samples:

.1 Submit for review and acceptance of each component specified or necessary for complete installation. Include technical descriptive data.

.2 Submit duplicate samples of each component proposed for use in each type of ceiling suspension system.

.3 Submit duplicate 150 mm x 100 mm (6” x 4”) minimum samples of each type of acoustical unit.

1.6. Closeout Submittals

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Submit operation and maintenance data for acoustical suspension for incorporation into manual.

.3 Submit final certificate from design professional responsible for delegated detail design of ceiling indicating conformity with accepted shop drawings.

1.7. Maintenance Materials

.1 Provide extra acoustical units in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide acoustical units amounting to 1% of gross ceiling area for each pattern and type of acoustical panel or tile, suspension system and trim required for project, minimum 1 complete factory-sealed package of each.

.3 Ensure extra materials are from same production run as installed materials.

.4 Deliver extra materials for each type of acoustical unit in original unopened packages clearly identified, including colour and texture.

.5 Deliver to storage location approved by Owner, upon completion of the work of this section.

1.8. Certifications

.1 Fire-resistance rated suspension system: certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements. Include certification of sustainable requirements.

1.9. Mock-Ups

.1 Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.2 Construct mock-up 10 m^2 minimum of each type of acoustical ceiling assembly including one inside corner and one outside corner. Ceiling system mock-up to show basic construction and assembly, treatment at walls, recessed fixtures, splicing, interlocking, finishes, acoustical unit installation and seismic reinforcing.

.3 Construct mock-up where directed.

.4 Allow 24 hours for inspection of mock-up by Consultant before proceeding with ceiling work.

.5 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of the finished work.

1.10. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and 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 flat, off floor, indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect acoustical ceiling panels, tiles and suspension grid components from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Store extra materials required for maintenance, where directed by Owner.

1.11. Environmental Requirements

.1 Permit wet work to dry before beginning to install.

.2 Maintain uniform minimum temperature of 15 °C and humidity of 20-40% before and during installation.

.3 Store materials in work area 24 hours prior to installation.

PART 2 PRODUCTS

2.1. Design Criteria

.1 Design Requirements:

.1 Intermediate and Heavy duty systems to ASTM C635/ASTM C635M.

.2 Maximum deflection: 1/360th of span to ASTM C635/ASTM C635M deflection test.

.2 Seismic design requirements:

.1 Design acoustical ceiling installation to resist effects of earthquake motions under seismic design conditions specified in Contract Documents. Provide components as necessary to implement design.

2.2. Acoustical Ceiling Suspension

.1 Acoustical Ceiling Suspension system (**ACS**): non fire rated, “15/16” EZ Stab Classic System” by CertainTeed Architectural or approved alternate:

.1 Cross tees feature EZ clip – reduced insertion force, easy removability

.2 Double web design manufactured of hot-dipped galvanized steel G30

.3 Main runners and cross tees feature double-web stitching to increase torsional rigidity, reduced grid rotation or bending

.4 Class: Intermediate duty to ASTM C635

.5 Finish: Bake polyester shop painted satin sheen, in colour 'white'.

.6 Tee Height: 1-1/2"

.7 Flange Size: 15/16"

.2 Basic materials for suspension system: commercial quality cold rolled steel, zinc coated.

.3 Exposed tee bar grid components: Components die cut. Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.

.4 Hanger wire: galvanized soft annealed steel wire:

.1 3.6 mm (7 ga.) diameter for access tile ceilings.

.2 To ULC design requirements for fire rated assemblies.

.3 2.6 mm (10 ga) diameter for other ceilings.

.5 Hanger inserts: purpose made.

.6 Carrying channels: 1-1/2" (38 mm channel, web height and thickness of galvanized steel in accordance with manufacturer's installation requirements.

.7 Accessories: splices, clips, wire ties, retainers and wall moulding reveal, to complement suspension system components, as recommended by system manufacturer.

.8 Seismic components and accessories: in accordance with accepted shop drawings.

2.3. Acoustical Ceiling Panels

.1 Acoustical Ceiling Panels (**ACP**): to ASTM E1264, "Symphony m High NRC NRC" 1222-85-1 by CertainTeed Architectural or approved alternate:

.1 Ceiling Suspension System Type: ACS

.2 Type: A (wet mineral fibre base) to ASTM E1264-2023.

.3 Form: A2.2 (wet formed membrane faced overlay) to ASTM E1264.

.4 Pattern Designation: E (lightly textured pattern) to ASTM E1264.

.5 Fire Classification: Class A to ASTM E1264.

a. Flame spread rating of 25 or less in accordance with CAN/ULC-S102.

b. Smoke developed 50 or less in accordance with CAN/ULC-S102.

.6 Noise Reduction Coefficient (NRC) designation of 0.85 minimum.

.7 Ceiling Attenuation Class (CAC) rating 35 minimum, in accordance with ASTM E1414.

.8 Light Reflectance (LR) range of 0.90 minimum to ASTM E1477.

.9 Edge type: Trim edge (square).

.10 Surface Coverings: Factory finish colour white.

.11 Size: 610 mm x 610 mm x 22 mm thick (2'-0" x 2'-0" x 7/8" thick).

.12 Shape: flat

.13 Fire-resistance rating: none

2.4. Accessories

.1 Spacers: galvanized wire acoustical media supports, crimped and welded, to allow space between back of unit and acoustical media, where indicated on drawings.

.2 Polyethylene: to CAN/CGSB-51.34, 0.15 mm thick.

.3 Hold down clips: purpose made clips to secure panel and tile to suspension system, approved for use in fire-rated systems.

.4 Edge trim for floating ceilings: N/A

PART 3 EXECUTION

3.1. Examination

.1 Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for acoustical ceiling tile and track 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.

3.2. Interface with Other Work

.1 Coordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

3.3. Suspension System Installation

.1 Comply with manufacturer's written installation instructions and recommendations, including product technical bulletins, product carton installation instructions, and data sheets.

.2 Install suspension system in accordance with accepted shop drawings, Certification Organizations tested design requirements and ASTM C636/C636M except where specified otherwise.

.3 Lay out centre line of ceiling both ways, to provide balanced borders at room perimeter with border units not less than 50% of standard unit width. Refer to drawings for specific grid layout requirements.

.4 Finished ceiling system to be square with adjoining walls and level within 1:1000.

.5 Secure hangers to overhead structure using attachment methods acceptable to the Consultant and in accordance with manufacturer’s installation recommendations.

.6 Install hangers spaced at maximum 1220 mm (4’-0”) centres and within 152 mm (6”) from ends of main tees.

.7 Ensure suspension system is coordinated with location of related components. Provide carrying channels as necessary to bridge at unavoidable interference between suspension system and other work above ceiling.

.8 Install wall moulding to provide correct ceiling height.

.9 Completed suspension system to support super-imposed loads, including but not limited to lighting fixtures, diffusers, grilles, speakers and other similar equipment.

.10 Support light fixtures and diffusers with additional ceiling suspension hangers within 152 mm (6”) of each corner and at maximum 610 mm (2’-0”) around perimeter of fixture.

.11 Attach cross member to main runner to provide rigid assembly.

.12 Frame at openings for light fixtures, air diffusers, speakers, other similar equipment and fixtures and at changes in ceiling heights.

.13 Expansion joints:
.1 Supply and install "Z" shaped metal trim pieces at each side of expansion joint. Design to accommodate expansion joint width as indicated on drawings and maintain visual closure. Finish metal components to match adjacent exposed metal trim. Provide backing plates behind butt joints.

.14 Install perimeter trim at floating installations securely anchored to suspension system, in accurate alignment with adjacent assemblies. Install curved trim members in smooth curves to radius indicated.

3.4. Acoustical Ceiling Panel Installation

.1 Install lay-in acoustical panels in ceiling suspension system in accordance with manufacturer’s instructions and as indicated.

.2 Install fibrous acoustical media and spacers over entire area above suspended metal panels.

.3 In fire rated ceiling systems, secure lay-in panels with hold-down clips and protect over light fixtures, diffusers, air return grilles and other appurtenances according to Certification Organizations design requirements.

3.5. Site Quality Control

.1 Arrange for periodic site visits by design professional responsible for delegated ceiling design work to review installed work for conformity to design.

.2 Submit written site reports by designer to Consultant within 3 days of visit.

3.6. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.1 Touch up scratches, abrasions, voids and other defects in painted surfaces.

3.7. Protection

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by acoustical suspension installation.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Section 09 51 13 Acoustical Panel Ceilings

.2 Section 09 21 16 Gypsum Board Assemblies

.3 Division 23 – HVAC

.4 Division 26 - Electrical

1.2. Reference Standards

.1 Aluminum Association (AA):

.1 AA DAF 45-[2003], Designation System for Aluminum Finishes

.2 ASTM International (ASTM):

.1 ASTM A641: Standard Specification for Zinc Coated (Galvanized) Carbon Steel Wire

.2 ASTM C423: Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

.3 ASTM C635: Standard Specifications for Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings

.4 ASTM C636: Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels

.5 ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials

.6 ASTM E580: Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint

.7 ASTM E795 – Practice for Mounting Test Specimens During Sound Absorption Test

.3 ULC Standards (ULC):

.1 CAN/ULC-S102-[10], Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies

1.3. Administrative Requirements

.1 Sequencing:

.1 Layout light fixture and sprinkler head penetrations at centre of panel width.

.2 Plan HVAC inlets and outlets to occur within centre of panel system or provide for equal distance on each side parallel to length of panels.

1.4. Scheduling

.1 Ensure following work is completed before installation of ceilings begins.

.1 Plastering, gypsum board finishing, painting and terrazzo work: completed and dry.

.2 Mechanical, electrical, other work above ceiling: completed.

.3 Heating, ventilating and air-conditioning systems: installed and operating.

1.5. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for acoustical panel ceilings and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Layout drawings:

.1 Submit reflected ceiling plans for special patterns as indicated.

.2 Indicate [layout] [hanger spacing and fastening details] [change in level details] [access door dimensions and locations] [lateral bracing and accessories].

.4 Samples

.1 Submit one representative module of each type wood linear plank ceiling system.

.2 Sample module to show basic construction and assembly, treatment at walls, recessed fixtures, splices, finishes.

1.6. Maintenance Material Submittals

.1 Extra Materials:

.1 Submit extra materials of linear metal ceiling components, and special maintenance tools in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide 1 carton containing mixture of each type and colour of linear strips, in lengths to match installed linear strips.

.3 Extra materials to be from same production run as installed materials.

.4 Identify each carton and its contents.

.5 Deliver to Departmental Representative, upon completion this section's work.

.6 Store where directed by Departmental Representative.

1.7. Quality Assurance

.1 Mock-ups:

.1 Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.2 Construct 10 m^2 minimum of each type linear ceiling including one inside corner and one outside corner.

.3 Coordinate type and location of mock-ups with project requirements. Accepted units will be used as standard for acceptance of production units. Remove and replace units which are not accepted.

.4 Do not proceed with remaining work until quality of work, colour, and finish are reviewed, approved and accepted] by Consultant.

.5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may [not] remain as part of finished work. Remove mock-up and dispose of materials when no longer required and when directed by Consultant.

1.8. Delivery, Storage, and Handling

.1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors and in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect specified materials from nicks, scratches, and blemishes.

.3 Windows, doors, HVAC and all wet work must be completed before unpacking and installation. Handle carefully to avoid damaging materials.

.4 Store materials in original, unopened packages in a fully-enclosed space protected against damage from moisture, direct sunlight, surface contamination, pest infestations, and other damage hazards.

.5 Prior to installation, acclimatize wood components for a minimum of 72 hours to stabilize moisture content and reach room temperature, per AWI standards.

.6 Handle Acoustic Plank Wood Members carefully to avoid chipping edges or damaging units in any way.

1.9. Site Conditions

.1 Temperature and Humidity:

.1 Material must be stored and installed only in a secured ambient environment (humidity minimum 25%, maximum 55%, temperature range 60°F to 80°F).

.2 Closely approximate temperature and humidity to levels expected upon completion and occupation.

PART 2 PRODUCTS

2.1. Materials

.1 Suspended Wood Ceiling (**WDPC**): “Continuous Linear Wood Plank” by CertainTeed Architectural.

.1 Species and Finish: Plain Sliced Natural Cherry VPCO

.2 Fire Class: A per ASTM E84

.3 Flame Spread: 25 or less per ASTM E84/ ULC S102

.4 Smoke Developed: 450 or less per ASTM E84/ ULC S102

.5 Substrate: Veneer Composite

.6 Plank Width: 6” Nominal

.7 Plank Length: 8’-0”

.8 Reveal Width: 3/4"

.9 Reveal Type: Felt Reveal (black)

.10 Accessories: Grid Clip and Furring Clip

.2 Suspended Wood Ceiling (**WDC**): “Semi-Concealed Solo Grooved G2 Acoustical Panels” (Channeled Planks), by CertainTeed Architectural.

.1 Species and Finish: Plain Sliced Natural Cherry VPCO

.2 Fire Class: A per ASTM E84

.3 Flame Spread: 25 or less per ASTM E84/ ULC S102

.4 Smoke Developed: 450 or less per ASTM E84/ ULC S102

.5 Substrate: Veneer Composite

.6 Visual Groove Pattern: G2 3 mm V-Groove 16 mm O.C. (Solo 16) Item No. 3320G2

.7 Plank Length: 6'-0"

.8 Plank Width: 1'-0"

.9 Accessories: Semi-Concealed Safety Clip

2.2. Acoustical Ceiling Suspension

.1 Acoustical Ceiling Suspension system (**ACS**): non fire rated, "Semi-Concealed 15/16" EZ Stab Classic System" by CertainTeed Architectural or approved alternate:

.1 Cross tees feature EZ clip – reduced insertion force, easy removability

.2 Double web design manufactured of hot-dipped galvanized steel G30

.3 Main runners and cross tees feature double-web stitching to increase torsional rigidity, reduced grid rotation or bending

.4 Class: Heavy duty to ASTM C635

.5 Finish: Bake polyester shop painted satin sheen, in colour 'white'.

.6 Tee Height: 1-1/2

.7 Flange Size: 15/16"

.2 Basic materials for suspension system: commercial quality cold rolled steel, zinc coated.

.3 Exposed tee bar grid components: Components die cut. Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.

.4 Hanger wire: galvanized soft annealed steel wire:

.1 3.6 mm (7 ga.) diameter for access tile ceilings.

.2 To ULC design requirements for fire rated assemblies.

.3 2.6 mm (10 ga) diameter for other ceilings.

.5 Hanger inserts: purpose made.

.6 Carrying channels: 1-1/2” (38 mm) channel, web height and thickness of galvanized steel in accordance with manufacturer’s installation requirements.

.7 Accessories: splices, clips, wire ties, retainers and wall moulding reveal, to complement suspension system components, as recommended by system manufacturer.

PART 3 SEISMIC COMPONENTS AND ACCESSORIES: IN ACCORDANCE WITH ACCEPTED SHOP DRAWINGS EXECUTION

3.1. Examination

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wood linear plank ceilings 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 Ensure HVAC system is operating, supply air and return air is filtered to remove particulates, the building is at the appropriate temperature and humidity, and the space is free from interior construction dust.

.4 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2. Site Quality Control

.1 Manufacturer's Site Services:

.1 Provide manufacturer's site services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.3. Installation

.1 General:

.1 Installation shall be by skilled tradesmen and in strict accordance with system manufacturer's printed directions to produce a first-class flush-finished surface, in true planes, and free from uneven joints, and dropping, warped, damaged tile or panels. Butt joints evenly.

.2 Install suspension system in general conformity with ASTM C636.

.3 Do not erect ceiling suspension system until work above ceiling has been inspected by Consultant.

.4 Hangers for systems shall be spaced at approximately 4'-0" (1220 mm) centres both ways, and where normally required in good standard practice for the systems specified. Supporting and grid members shall provide adequate support for the ceiling and services incorporated with a maximum deflection of 1/360 in each grid member span. Support luminaries and diffusers with additional hangers placed within 6" (150 mm) of each corner and at a maximum of 24" (600 mm) around perimeter of luminaire and/or diffuser.

.5 Secure hangers firmly to grid and to anchors. Twist wire a minimum of two (2) turns around vertical hanging wire.

.6 Erect suspension system at required elevation and level to tolerance of 1/8" (3 mm) over 12'-0" (3650 mm). Frame around recessed fixtures, diffusers, grilles and openings, and where normally required in good standard practice. Furr around ducts, beams, bulkheads or the like, as shown or required in best standard practice. Tape or adhesive attachment is unacceptable.

.7 Install main grid with intersections arranged in a basket weave pattern.

.8 Co-ordinate the work with all trades affected by the work of this Section. Provide a layout of hangers and framing suitable to accommodate fittings and units of equipment. Failure to follow this procedure will require that the hangers and channels be revised to suit as necessary without additional cost to the Owner.

.9 Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest adjacent hangers and all related carrying channels and furring as required to span the greater distance.

.10 Lay out work in accordance with reflected ceiling plans. Allowable tolerance of finished acoustical ceiling system: 1/8" (3 mm) in 12'-0" (3650 mm), and1/64" (0.4 mm) between adjacent metal members. Tolerances shall not be cumulative.

.11 Hang suspended ceilings independently of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of the longitudinal axis of face plane of adjacent members.

.12 Centre acoustical ceiling installation on room axis leaving equal border pieces but not less than half the size of the panel specified. Provide a row of hangers adjacent to and parallel with the walls for the support of the ends of the main tee runners at not more than 6" (150 mm) from the ends of runners. Carefully fit panels in place; no broken edges permitted.

.13 Install components to form a level ceiling with all parts flush and true, parallel to the module lines, and to the pattern shown. Install panels in level, uniform plane free from twist, warp, dents and flush, without gaps and exposed face of carrying members. Fit border units neatly against abutting surfaces. Ensure that flanges of recessed light fixtures fit snugly and flush to ceiling plane.

.14 Install cut panel at sprinkler heads.

3.4. Adjustments

.1 Adjust any sags or twists which develop in the suspension system and replace any part of the complete system which is damaged or faulty.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 02 41 19.16 – Selective Interior Demolition

.3 Section 06 10 00 – Rough Carpentry

.4 Section 09 21 16 – Gypsum Board Assemblies

.5 Section 09 65 16.23 – Resilient Vinyl Sheet Flooring

.6 Section 09 65 16.33 – Resilient Rubber Sheet Flooring

.7 Section 09 65 19.23 – Luxury Vinyl Tile and Plank Flooring

1.2. Reference Standards

.1 ASTM E96/E96M, current edition, Water Vapor Transmission of Materials.

.2 ASTM F1861, current edition, Standard Specification for Resilient Wall Base.

.3 ASTM F2169, current edition, Standard Specification for Resilient Stair Treads.

.2 CSA Group (CSA):

.1 CSA B651, current edition, Accessible Design for the Built Environment.

.3 General Services Administration, Federal Test Standard (FTS):

.1 FTS 101C, Method 4046, Electrostatic Properties of Materials.

.4 National Floor Covering Association (NFCA):

.1 NFCA Floor Covering Reference Manual, current edition.

.2 Quality Assurance Program (QAP).

.5 ULC Standards (ULC):

.1 CAN/ULC-S102.2, current edition, Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies.

1.3. Administrative Requirements

.1 Sequencing: Install resilient base and accessories after flooring, painting and ceiling work is complete.

1.4. Submittals

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

.2 Product Data: Submit manufacturer's instructions, product literature, and data sheets for resilient base and accessories. Include product characteristics, performance criteria, dimensions, finishes, and limitations.

.3 Samples for Initial Selection: Submit the following for Consultant’s initial selection of colours:

.1 50 mm (2”) long samples of each resilient base type and colour.

.2 50 mm (2”) long samples of each stair nosing type and colour.

.3 50 mm (2”) samples of each stair tread type and colour.

.4 50 mm (2”) samples of each stair riser type and colour.

.4 Samples for Verification:

.1 Submit before constructing mock-up duplicate 300 mm (1’-0”) long sample pieces of each base and accessory material.

1.5. Closeout Submittals

.1 Operations and Maintenance Data: Submit manufacturer’s cleaning and repair recommendations in accordance with Section 01 78 00 - Closeout Submittals.

.2 Warranty Documentation: Submit manufacturer’s warranties.

1.6. Maintenance Material Submittals

.1 Extra Materials: Supply extra materials in accordance with Section 01 78 00 - Closeout Submittals, and as follows:

.1 Supply 3.0 m (10’-0”) of resilient base, in each specified colour and size.

.2 Supply extra materials in one (1) piece, and from the same production run as installed materials.

1.7. Quality Assurance

.1 Preparation, materials, and workmanship in accordance with NFCA QAP requirements. Repair or replace deficient work in accordance with NFCA QAP requirements.

.2 Mock-Ups: Construct mock-up in accordance with Section 01 43 00 – Quality Assurance, and as follows:

.1 Construct a mock-up of resilient base and accessories at an outside wall corner and one (1) complete stair riser and tread.

.2 Acceptable mock-up may remain as part of the completed work.

1.8. Delivery, Storage, and Handling

.1 Perform in accordance with Section 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, with manufacturer's labels.

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in a clean dry location, and in accordance with manufacturer's recommendations in well-ventilated area.

.2 Protect adhesives, fillers, and sealants from freezing.

.3 Store and protect materials from nicks, scratches, and blemishes.

1.9. Site Conditions

.1 Ambient Conditions: For 72 hours before installation, continuously during, and 72 hours after installation, maintain the following conditions, except when manufacturer’s recommendations are more stringent:

.2 Ambient room temperature: 18 to 29 degrees C

.3 Floor substrate temperature: minimum 15 degrees C

.4 Relative humidity: 40 to 60%

1.10. Warranty

.1 Manufacturer’s Warranties: Submit in accordance with 1.3.8 Closeout Submittals, for Owner’s acceptance.

.1 Resilient base and accessories: Manufacturer limited warranty period of not less than five (5) years commencing on date of Substantial Completion.

PART 2 PRODUCTS

2.1. Regulatory Requirements

.1 Meet requirements of CAN/ULC S102.2 for required Flame Spread Ratings labelled and listed by ULC Standards or another agency acceptable to Authorities Having Jurisdiction (AHJ).

2.2. Materials

.1 Resilient Base (**RB-1**): To ASTM F1861, with manufactured end stops and external corners, same dye lot for entire project “Traditional” model “Dura-cove 4” by Tarkett North America or approved alternate:

.1 Type: TP – Thermoplastic Rubber

.2 Style: Coved

.3 Thickness: 3.2 mm (0.125”)

.4 Height: 101.6 mm (4")

.5 Lengths: Manufactured in continuous rolls.

.6 Colour: Refer to Colour Legend

.2 Resilient Base (**RB-2**): To ASTM F1861, with manufactured end stops and external corners, same dye lot for entire project “Baseworks Millwork” model “Monument 4”” by Tarkett North America or approved alternate:

.1 Type: TP – Non PVC Thermoset Rubber

.2 Style: Monument

.3 Thickness: 6.35 mm (0.25”)

.4 Height: 101.6 mm (4")

.5 Lengths: Manufactured in continuous rolls.

.6 Colour: Refer to Colour Legend

2.3. Accessories

.1 Primer: Where recommended by manufacturer for site conditions and application.

.1 VOC Emissions: 250g/L maximum limit to SCAQMD Rule 1168.

.2 Adhesives: Types recommended by manufacturer for substrate; above, on, or below grade.

.1 VOC Emissions: 50g/L maximum limit to SCAQMD Rule 1168.

.3 Metal Transition and Edge Strips: Meeting CSA B651 for height and slope, extruded aluminum, polished with lip to extend under sheet flooring, shoulder flush with top of adjacent floor finish.

.1 Colour: As selected by Consultant from manufacturer’s standard colour range.

.4 Resilient Transition and Edge Strips: Meeting CSA B651 for height and slope, extruded aluminum.

.1 Colour: As selected by Consultant from manufacturer’s standard colour range.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: Verify that substrate conditions are clean, free of cracks, ridges, depressions, scale, foreign materials, and acceptable for resilient sheet flooring installation in accordance with manufacturer's instructions.

.1 Proceed with installation only after unacceptable conditions are remedied.

3.2. Preparation

.1 Clean substrates of dust, mould, mildew, alkaline salts, laitance, concrete film-forming curing compounds, paint, solvents, wax, oil, grease, residual adhesive, adhesive removing compounds, sealants, soap, and other foreign material.

.2 Fill low spots, cracks, joints, holes and other defects with appropriate filler material. Trowel and float to leave smooth, flat hard surface.

.3 Prime and/or seal substrate to resilient base and accessories manufacturer's recommendations.

3.3. Installation - Base

.1 Lay out resilient base to keep the number of joints at a minimum.

.2 Clean substrate and apply one coat of adhesive.

.3 Set resilient base against wall and floor surfaces tightly by using 3 kg (6.5 lbs) hand roller.

.4 Install straight and level, to variation of 1:1000.

.5 Scribe, cut, and fit wall base to door frames and other obstructions. Install pre-moulded end pieces at flush door frames.

.6 Cope wall base at internal corners. Install formed straight wall base for external corners. Install formed straight wall base for non-90 degree corners.

.7 Refer to Drawings for locations of straight (toeless) base, cove base, and flash cove base.

3.4. Cleaning

.1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning.

.1 Clean flooring base, and stair surfaces to manufacturer's recommendations.

3.5. Protection

.1 Protect resilient base and accessory materials until adhesive is fully cured.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 02 41 19.16 - Selective Interior Demolition

.3 Section 06 10 00 - Rough Carpentry

.4 Section 09 21 16 - Gypsum Board Assemblies

1.2. Reference Standards

.1 American Association of Textile Chemists and Colorists (AATCC):

.1 AATCC 134, current edition, Electrostatic Propensity of Carpets

.2 American National Standards Institute (ANSI)/Electrostatic Discharge Association (ESD):

.1 ANSI/ESD STM7.1, current edition, For the Protection of Electrostatic Discharge Susceptible Items - Flooring Systems Resistive Characterization

.2 ANSI/ESD S20.20, current edition, Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)

.3 American National Standards Institute (ANSI)/National Floor Safety Institute (NFSI):

.1 ANSI/NFSI B101.1, current edition, Test Method for Measuring the Wet SCOF of Hard-Surface Walkways

.2 ANSI/NFSI B101.3, current edition, Test Method for Measuring the Wet DCOF of Hard Surface Walkways

.4 ASTM International (ASTM):

.1 ASTM D2047, current edition, Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine

.2 ASTM E96/E96M, current edition, Water Vapor Transmission of Materials

.3 ASTM F150, current edition, Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring

.4 ASTM F710, current edition, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

.5 ASTM F1303, current edition, Standard Specification for Sheet Vinyl Floor Covering with Backing

.6 ASTM F1482, current edition, Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring

.7 ASTM F1859, current edition, Standard Specification for Rubber Sheet Floor Covering Without Backing

.8 ASTM F1860, current edition, Standard Specification for Rubber Sheet Floor Covering With Backing

.9 ASTM F1861, current edition, Standard Specification for Resilient Wall Base

.10 ASTM F1869, current edition, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

.11 ASTM F1913, current edition, Standard Specification for Vinyl Sheet Floor Covering Without Backing

.12 ASTM F2034, current edition, Standard Specification for Sheet Linoleum Floor Covering

.13 ASTM F2169, current edition, Standard Specification for Resilient Stair Treads

.14 ASTM F2170, current edition, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

.15 ASTM F3010, current edition, Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings

.5 CSA Group (CSA):

.1 CSA B651, current edition, Accessible Design for the Built Environment

.6 General Services Administration, Federal Test Standard (FTS):

.1 FTS 101C, Method 4046, Electrostatic Properties of Materials

.7 National Floor Covering Association (NFCA):

.1 NFCA Floor Covering Reference Manual, current edition.

.2 Quality Assurance Program (QAP)

.8 ULC Standards (ULC):

.1 CAN/ULC-S102.2, current edition, Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies

1.3. Administrative Requirements

.1 Coordination:

.1 Upon request, Consultant will make available a digital drawing file of the floor finish plan illustrating complex patterns with radii and inset designs.

.2 Pre-installation Meetings: When requested by Consultant, arrange a meeting in accordance with Section 01 31 19 – Project Meetings. Discuss substrate conditions and confirm complex flooring patterns.

.3 Review NFCA QAP Inspection procedures, and reports and timing of reports for multi-phase projects.

.4 Sequencing: Install flooring after painting and ceiling work is complete.

1.4. Submittals

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

.2 Product Data: Submit manufacturer's instructions, product literature, and data sheets for resilient sheet flooring and accessories. Include product characteristics, performance criteria, dimensions, finishes, and limitations.

.3 Samples for Initial Selection: Submit the following for Consultant’s initial selection of colours:

.1 300 mm x 300 mm (1’-0” x 1’-0”) minimum samples of each type of resilient sheet flooring.

.2 Samples of sheet flooring welding beads

.3 Samples of accessories where exposed to view

.4 Samples for Verification:

.1 Submit before constructing mock-up duplicate 300 mm x 300 mm (1'-0" x 1'-0") sample pieces of each sheet material and 300mm (1'-0") long piece of each edge strip and trim.

.5 Site Quality Control Submittals:

.1 Submit floor substrate test results prior to beginning flooring installation. Include comparison of sheet flooring manufacturer's acceptable alkaline level and recommended maximum moisture emission rates to site test results for each type of flooring.

.2 Submit information in accordance with NFCA QAP procedures and requirements. Submit inspection results and reports for review. When deviations from specified physical conditions or performance criteria are found, Do not proceed without written acceptance of Consultant.

1.5. Closeout Submittals

.1 Operations and Maintenance Data: Submit manufacturer's cleaning and repair recommendations in accordance with Section 01 78 00 - Closeout Submittals.

.2 Warranty Documentation: Submit manufacturer's warranties.

.3 Bonds: Submit floor covering Subcontractor's two (2) year maintenance bond for 100% value of this work.

1.6. Maintenance Material Submittals

.1 Extra Materials: Supply extra materials in accordance with Section 01 78 00 - Closeout Submittals, and as follows:

.1 Supply 2 % of each colour, pattern and type of flooring material in full roll width for maintenance use. Also supply sheet flooring off-cuts where size is 450 mm (1-6") x 450 mm (1'-6") or larger.

.2 Supply two (2) resilient stair nosing, tread, and riser pieces.

.3 Supply 3.0 m (10'-0") of resilient base, in each specified colour and size.

.4 Supply extra materials in one (1) piece, and from the same production run as installed materials.

.5 Label each roll of sheet flooring and each container of adhesive.

1.7. Quality Assurance

.1 Preparation, materials, and workmanship in accordance with NFCA QAP requirements. Repair or replace deficient work in accordance with NFCA QAP requirements.

.2 Installers: Experienced and competent installers holding a valid certificate of accreditation / training from the manufacturer(s) of materials specified under this Section and having a minimum of three (3) years experience executing work of similar type and scale to carry out assembly and installation work including but not limited to welding bead seaming, flash cove base and integral cove base installations.

.1 Submit installer(s) certificate of accreditation issued by manufacturer, if requested by Consultant.

.3 Third-Party Independent Inspector Qualifications: Assigned by a NFCA Accredited QAP provider.

.4 Mock-Ups: Construct mock-up in accordance with Section 01 43 00 – Quality Assurance, and as follows:

.1 Construct a mock-up of resilient sheet flooring including a flooring seam and integral cove base at an outside wall corner.

.2 Acceptable mock-up may remain as part of the completed work.

1.8. Delivery, Storage, and Handling

.1 Perform in accordance with Section 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, with manufacturer's labels.

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in a clean dry location, and in accordance with manufacturer's recommendations in well-ventilated area.

.2 Protect adhesives, fillers, and sealants from freezing.

.3 Store and protect materials from nicks, scratches, and blemishes.

.4 Packaging Waste Management: Perform in accordance with Section 01 74 19 - Waste Management and Disposal.

1.9. Site Conditions

.1 Ambient Conditions: For 72 hours before installation, continuously during, and 72 hours after installation, maintain the following conditions, except when manufacturer's recommendations are more stringent:

.2 Ambient room temperature: 18 to 29 degrees C

.3 Floor substrate temperature: minimum 15 degrees C

.4 Relative humidity: 40 to 60%

1.10. Warranty

.1 Manufacturer's Warranties: Submit in accordance with 1.3.8 Closeout Submittals, for Owner's acceptance.

.1 Manufacturer limited warranty period of not less than twenty (20) years commencing on date of Substantial Completion.

PART 2 PRODUCTS

2.1. Regulatory Requirements

.1 Meet requirements of CAN/ULC S102.2 for required Flame Spread Ratings labelled and listed by ULC Standards or another agency acceptable to Authorities Having Jurisdiction (AHJ).

2.2. Materials

.1 Sheet Vinyl Flooring without Backing (**SV**): Homogeneous, high-performance commercial vinyl sheet flooring system to ASTM F1913, based on "iQ Optima" by Tarkett Canada or approved alternate:

.1 Total thickness: 2.0 mm (0.08") nominal.

.2 Sheet Width: 2.0 m (6'-7") minimum.

.3 Slip resistance:

a. Dry - static coefficient of friction: 0.60 minimum to ASTM D2047.

.4 Flame Spread Rating: Class I to CAN/ULC S102.2.

.5 Smoke Developed Classification: 450 maximum to CAN/ULC S102.2.

.6 Colour: Refer to Colour Legend

.2 Sheet Vinyl Cove Flooring **SVC**): Homogeneous, high-performance commercial vinyl sheet flooring system to ASTM F1913, based on “iQ Optima” by Tarkett Canada or approved alternate:

.1 Total thickness: 2.0 mm (0.08”) nominal.

.2 Height: 152 mm (6”)

.3 Flame Spread Rating: Class I to CAN/ULC S102.2.

.4 Smoke Developed Classification: 450 maximum to CAN/ULC S102.2.

.5 Colour: Refer to Colour Legend

2.3. Accessories

.1 Primer: Where recommended by sheet flooring manufacturer for site conditions and application.

.1 VOC Emissions: 250g/L maximum limit to SCAQMD Rule 1168.

.2 Concrete Moisture Emission Reducer: Moisture insensitive, epoxy modified, forming a permanent moisture barrier, water vapour permeability less than 6 ng/Pa·s·m 2 (0.1 perms) when tested to ASTM E96 (wet method), other test methods will be considered.

.1 VOC Emissions: 50g/L maximum limit to SCAQMD Rule 1168.

.3 Adhesives: Types recommended by flooring manufacturer for substrate; above, on, or below grade.

.1 Cove base adhesives: Type recommended by base manufacturer to suit application.

.2 Static conductive flooring adhesive: Full spread adhesive, specially formulated for static conductive flooring, and as recommended by sheet flooring manufacturer for application.

.3 VOC Emissions: 50g/L maximum limit to SCAQMD Rule 1168.

.4 Sub-floor Filler and Leveler: White premix latex requiring only water to produce cementitious paste, as recommended by sheet flooring manufacturer.

.5 Heat Welding Bead: Solid strand product, recommended by sheet flooring manufacturer for heat welding seams, and as follows:

.1 Colour and pattern: Matching colour and pattern of resilient flooring. Solid colour bead at pattern / marbleized sheet flooring is not acceptable.

.6 Chemical Bonding Compound: Type recommended by sheet flooring manufacturer for chemically bonding seams.

.7 Metal Transition and Edge Strips: Meeting CSA B651 for height and slope, extruded aluminum, polished with lip to extend under sheet flooring, shoulder flush with top of adjacent floor finish.

.1 Colour: As selected by Consultant from manufacturer's standard colour range.

.8 Resilient Transition and Edge Strips: Meeting CSA B651 for height and slope, extruded aluminum.

.1 Colour: As selected by Consultant from manufacturer's standard colour range.

.9 Edging at Floor Penetrations: Aluminum, type recommended by flooring manufacturer.

.10 Integral Cove Former Strip: Pre-formed radius to support integral and flash cove base, 32 mm (1 1/4") radius, PVC.

.11 Integral Cove Base Cap: Aluminum, square top profile, 3.0 mm (1/8") thick.

.12 Sealer and Wax: If recommended by sheet flooring manufacturer, type recommended by manufacturer.

.1 Sealer VOC Emissions: 250 g/L maximum limit to SCAQMD Rule 1168.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: Verify that substrate conditions are clean, free of cracks, ridges, depressions, scale, foreign materials, and acceptable for resilient sheet flooring installation in accordance with manufacturer's instructions.

.1 Proceed with installation only after unacceptable conditions are remedied.

.2 Pre-installation Testing: Perform tests to verify concrete floor substrates are dry, with low moisture vapour emission rate, and low alkalinity. Perform tests to ASTM F1869, except where sheet flooring manufacturer recommends more stringent test methods and requirements. Notify Consultant of testing date so they may choose to attend at their discretion.

.1 Moisture vapour emissions: Maximum 39kg/1000m^2/24 hr. Perform one test per 100 m^2 of floor area.

.2 pH range: 7 to 9. Perform one test per 100 m^2 of floor area.

.3 Perform adhesive bond test to cleaned concrete substrate, 1.0 x 1.0 m, allow to cure for 72 hours before evaluating bond strength.

3.2. Preparation

.1 Demolition of existing flooring: Where required, do selective demolition of existing floor finishes in accordance with Section 02 41 19.16 – Selective Interior Demolition. Refer to drawings for extent.

.2 If concrete floor substrate vapour emissions exceed manufacturer's recommendations, prepare substrate in accordance with ASTM F3010.

.3 Prepare concrete floor substrates to ASTM F710 and wood subfloors to ASTM F1482.

.4 Remove subfloor ridges and bumps.

.5 Clean floor of dust, mould, mildew, alkaline salts, laitance, concrete film-forming curing compounds, paint, solvents, wax, oil, grease, residual adhesive, adhesive removing compounds, sealants, soap, and other foreign material.

.6 Fill low spots, cracks, joints, holes and other defects with sub-floor filler. Trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler is dry and cured.

.7 Prime and/or seal floor substrate to resilient flooring manufacturer's recommendations.

.8 Do not use permanent markers on floor substrates.

3.3. Installation - Flooring

.1 Provide high ventilation rate maximizing 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 building air distribution system.

.2 Apply adhesive uniformly using manufacturer's recommended trowel, followed by a roller or similar tool to knock down trowel ridges and eliminate them from telegraphing through finished flooring. Do not spread more adhesive than can be covered by sheet flooring before initial set takes place.

.3 Lay flooring with seams in directions indicated on Drawings or as directed by Consultant to produce a minimum number of seams. Border widths shall be a minimum 1/3 the width of full material.

.4 Double cut sheet joints and continuously heat weld according to manufacturer's instructions.

.5 Do no install flooring over building expansion joints.

.6 As installation progresses, and after installation roll sheet flooring with a minimum 45 kg (100 lbs) roller, or other weight where indicated in manufacturer's installation recommendations, for full adhesion and to expel air bubbles.

.7 Promptly remove excess adhesive.

.8 Cut flooring neatly around fixed objects.

.9 Install feature strips and special patterns where indicated. Fit joints tightly.

.10 Install flooring in pan type floor access covers. Maintain continuity of floor pattern.

.11 Install sheet flooring continuously in areas which will be under built-in furniture.

.12 Install sheet flooring continuously through areas to receive demountable partitions.

.13 Terminate flooring under centreline of door, in openings where adjacent floor finish materials or colours are dissimilar.

.14 Install edge strips at unprotected and exposed edges where sheet flooring terminates.

3.4. Installation – Flash Cove (Integral) Base

.1 Do installation of integral base of resilient sheet flooring in accordance with manufacturer's installation guidelines.

.1 Lay out flooring to keep the number of joints at a minimum.

.2 Clean substrate and install integral cove base cap and cove former strip.

.3 Apply one (1) coat of adhesive.

.4 Set resilient floor material against wall and floor surfaces tightly by using 3 kg (6.5 lbs) hand roller.

.5 Install straight and level, to variation of 1:1000.

.6 Scribe, cut, and fit integral base to door frames and other obstructions.

.7 Trim and weld tight at internal and external corners in accordance with manufacturer's installation guidelines

.2 Refer to Room Schedule for locations of resilient base and resilient sheet cove base.

.1 Provide resilient toeless and cove base in accordance with Section 09 65 13 – Resilient Base and Accessories.

3.5. Site Quality Control

.1 Site Inspections:

.1 Third-party independent inspection agency: Provide services of a NFCA Accredited third-party independent inspection agency to conduct random inspections and issue reports during and after installation of floor covering. Inspections and reports in accordance with NFCA QAP - Part A04.

.2 Manufacturer's Site Services:

.1 Mock-ups: Manufacturer to submit written confirmation that resilient sheet flooring installed meets or exceeds product requirements.

.2 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, protecting and initial cleaning of product and submit Manufacturer's Site Reports.

.3 Provide manufacturer's site services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 For specialty resilient flooring materials or systems, the manufacturer's representative shall review all surfaces and conditions for material applications and provide sufficient site reviews and reports to ensure installation conforms with the product warranty requirements.

3.6. Cleaning

.1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning and Waste Management.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning and Waste Management.

.1 Clean flooring base, and stair surfaces to manufacturer's recommendations.

3.7. Protection

.1 Prohibit traffic on floor for a minimum of 48 hours after installation. Protect new floors until adhesive is fully cured and after initial waxing / after initial sealer is applied if applicable.

.2 Where flooring areas will receive heavy traffic, rolling loads, or pallet jacks, protect flooring with 6 mm (1/4”) thick temporary hardboard panels. Sweep or vacuum under panel areas prior to placement.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 09 65 13 – Resilient Base and Accessories.

1.2. Reference Standards

.1 American Association of Textile Chemists and Colorists (AATCC):

.1 AATCC 134- [2019], Test Method for Electrostatic Propensity of Carpets

.2 American National Standards Institute (ANSI)/Electrostatic Discharge Association (ESD):

.1 ANSI/ESD STM7.1- [20], For the Protection of Electrostatic Discharge Susceptible Items - Flooring Systems Resistive Characterization

.2 ANSI/ESD S20.20- [14], Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)

.3 ASTM International (ASTM):

.1 ASTM E96/E96M- [13], Standard Test Methods for Water Vapor Transmission of Materials

.2 ASTM F150- [06], Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring

.3 ASTM F710- [21], Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

.4 ASTM F1066- [04], Standard Specification for Vinyl Composition Floor Tile

.5 ASTM F1344- [15], Standard Specification for Rubber Floor Tile

.6 ASTM F1482- [21], Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring

.7 ASTM F1700- [20], Standard Specification for Solid Vinyl Floor Tile

.8 ASTM F1861- [21], Standard Specification for Resilient Wall Base

.9 ASTM F1869- [16a], Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

.10 ASTM F2170- [19A], Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

.11 ASTM F2471- [19], Standard Practice for Installation of Thick Poured Lightweight Cellular Concrete Underlayments and Preparation of the Surface to Receive Resilient Flooring

.12 ASTM F2873- [20], Standard Practice for the Installation of Self-Leveling Underlayment and the Preparation of Surface to Receive Resilient Flooring

.13 ASTM F3010- [18], Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings

.14 ASTM F3191- [16], Standard Practice for Field Determination of Substrate Water Absorption (Porosity) for Substrates to Receive Resilient Flooring

.4 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-25.20-95, Surface Sealer for Floors

.2 CAN/CGSB-25.21-95, Detergent-Resistant Floor Polish

.5 CSA Group (CSA):

.1 CSA A23.1/A23.2- [19], Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete

.2 CSA B651- [12], Accessible Design for the Built Environment

.6 General Services Administration, Federal Test Standard (FTS):

.1 FTS 101C, Method 4046, Electrostatic Properties of Materials

.7 International Concrete Repair Institute, Inc. (ICRI):

.1 ICRI 310.2 R- [2013], Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair

.8 National Floor Covering Association (NFCA):

.1 Floor Covering Reference Manual, [current edition]

.2 Quality Assurance Program (QAP)

.9 ULC Standards (ULC):

.1 CAN/ULC S102.2- 10, Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies

1.3. Administrative Requirements

.1 Coordination:

.1 Coordinate wood substrate floor flatness and levelness tolerances as required to begin resilient tile installation with Section 06 10 53 - Miscellaneous Rough Carpentry.

.2 Coordinate door thresholds with Section 08 71 00 - Door Hardware.

.3 Coordinate installation of floor drains, trenches, and clean-outs with Section 22 05 15 – Plumbing Specialties and Accessories.

.4 Coordinate installation of floor outlets and boxes for power and communications with Section 26 05 32 – Outlet Boxes, Conduit Boxes and Fittings.

.5 Coordinate conduit and other related materials penetrating concrete floors with Section 27 05 28 – Pathways for Communication Systems.

.2 Pre-Installation Meetings: Conduct a meeting with the Contractor, resilient flooring Subcontractor, Consultant in accordance with Section 01 31 19 – Project Meetings to discuss the following:

.1 Review substrate conditions including substrate flatness and levelness.

.2 Special coordination with other Subcontractors.

.3 Review manufacturer’s installation instructions and warranty requirements.

.4 Mock-up requirements.

.5 Review NFCA QAP Inspection procedures, and reports.

.3 Sequencing: Install flooring after painting, ceiling work, and other overhead work are complete.

1.4. Action And Informational Submittals

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

.2 Product Data: Submit manufacturer’s product literature, data sheets, and WHMIS SDS for resilient tile flooring, preparation materials, and accessories. Include product characteristics, performance criteria, physical sizes, finishes, and limitations.

.3 Shop Drawings: Submit shop drawings indicating the following:

.1 Each resilient floor tile type, installation method, locations of building movement joints, and intricate floor tile patterns.

.2 Locations and types of edge strips and reducer strips at flooring penetrations.

.4 Test and Evaluation Reports: Submit floor substrate test results before beginning resilient tile flooring installation. Include a comparison to the resilient flooring manufacturer's minimum acceptable conditions.

.5 Manufacturer's Instructions: Submit manufacturer's storage, handling, and installation instructions.

.6 Site Quality Control Submittals:

.1 Submit in accordance with NFCA QAP procedures and requirements.

.2 Submit inspection results and reports as described in SITE QUALITY CONTROL in Part 3 of this Section.

.7 Manufacturer Reports: Submit manufacturer's reports within three days of review, verifying compliance of installed resilient tile flooring as described in SITE QUALITY CONTROL in Part 3 of this Section.

.8 Qualification Statements:

.1 When requested by Consultant, submit a list of installer's similar projects completed within the last two years.

.2 Submit resilient tile flooring manufacturer's declaration that all flooring materials are compatible, when requested.

1.5. Closeout Submittals

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit maintenance, repair, and cleaning recommendations for resilient tile flooring and incorporate into manual.

.3 Record Documentation: Submit a list of materials installed, including adhesives, wall base, and accessories. Indicate manufacturers, products, types, patterns, and colour names and numbers. Indicate room/area where installed.

.4 Bonds: Floor covering Subcontractor to provide a 100% two-year maintenance bond.

1.6. Maintenance Material Submittals

.1 Operations and Maintenance Data: Submit manufacturer's cleaning and repair recommendations in accordance with Section 01 78 00 - Closeout Submittals.

.2 Submit Subcontractor's maintenance bond.

.3 Warranty Documentation: Submit manufacturer's warranties.

.4 Extra Materials: Supply extra materials for maintenance use in accordance with Section 01 78 00 - Closeout Submittals.

.1 Supply a minimum of one box of each resilient tile type, pattern, and colour installed, or an area equal to 2 % of the area installed, or a minimum 4 m 2 of each resilient tile, whichever is greater.

.2 Supply a sufficient amount of each adhesive to install maintenance materials in manufacturer's standard containers.

.3 Supply extra materials from same production run as installed materials.

.4 Label each box of resilient floor tile, and each container of adhesive with manufacturer's name, product name, and room/area where installed.

1.7. Quality Assurance

.1 Installer Qualifications:

.1 Three years of experience and successful completion of five projects of similarly installed area, materials, and complexity.

.2 Member in good standing throughout the performance of the Work of [National Floor Covering Association (NFCA)] [and employs Red Seal Floorcovering Installers] [or] [Alberta Floor Covering Association (AFCA)] [British Columbia Floor Covering Association (BCFCA)] [Fédération Québécoise des Revêtements de Sol (FQRS)] [Resilient Flooring Contractors Association of Ontario (RFCAO)].

.3 Trade qualifications to NFCA Floor Covering Reference Manual of Canada.

.4 Apprentices are acceptable when under direct supervision of qualified journeyperson in accordance with applicable trade regulation.

.2 Third-Party Independent Inspector Qualifications: A NFCA Accredited QAP provider recognized by NFCA inspection and reporting requirements.

.3 Mock-ups: Assemble a mock-up in accordance with Section 01 43 00 – Quality Assurance.

.1 Mock-up Size: [600] mm x [600] mm of each resilient tile type flooring. Mock-up to demonstrate:

.1 Installation pattern.

.2 Installation workmanship at walls and doorways.

.3 Inside corner and outside corner of wall base.

.4 Edge strips and reducer strips.

.2 Subcontractor and Consultant to attend review of mock-up.

1.8. Delivery, Storage, And Handling

.1 Perform in accordance with Section 01 61 00 - Common Product Requirements.

.2 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in dry location and in clean, temperature controlled, well-ventilated area.

.2 Store and protect specified materials from nicks, scratches, and blemishes.

.3 Coordinate delivery of materials with scheduled installation to allow minimum conditioning time on site.

1.9. Site Conditions

.1 Unless otherwise stated in manufacturer's instructions, maintain site conditions to occupancy service conditions or according to requirements in NFCA Floor Covering Reference Manual for a minimum 48 hours before installation, during installation, and a minimum 48 hours after installation. Site conditions include:

.1 Ambient, substrate and material temperatures between 18 °C and 29 °C. Temperatures may be reduced to 13 °C 72 hours after installation.

.2 Subfloor surface temperature for adhesive application between 16 °C and 29 °C.

.3 Relative humidity (RH) between 40 % and 60 % with temperature at 18 °C to 29 °C.

PART 2 PRODUCTS

2.1. Regulatory Requirements

.1 Meet requirements of CAN/ULC S102.2 for required Flame-Spread Ratings, labelled and listed by Underwriters Laboratories of Canada or another agency acceptable to AHJ.

2.2. Resilient Tile Flooring Materials

.1 Solid Vinyl Tile (**SVT**): commercial solid vinyl tile floor covering to ASTM F1700, "Texas Granite" by American Biltrite or approved alternate:

.1 Class: I – Monolithic

.2 Type: A – Smooth surface

.3 Thickness: 3.17 mm (0.125”)

.4 Size: 905 x 905 mm (36” x 36”) nominal

.5 Colour: Refer to Colour Legend

.2 Rubber tile (**RT**): commercial homogeneous PVC free rubber tile floor to ASTM F1344, “AB Pure” by American Biltrite or approved alternate:

.1 Class: 1- Homogeneous

.2 Surface: Hammered Profile c/w chip design

.3 Thickness: 3 mm (0.118”)

.4 Size: 905 x 905 mm (36” x 36”) nominal

.5 Colour: Refer to Colour Legend

2.3. Accessories

.1 Primer: Where recommended by sheet flooring manufacturer for site conditions and application.

.2 Concrete Moisture Emission Reducer Coating: Moisture insensitive, epoxy modified, forming a permanent moisture barrier, water vapour permeability less than [6] ng/Pa·s·m when tested to ASTM E96/96M (wet method). Other test methods will be considered.

.3 Adhesives: Types recommended by flooring manufacturer for substrate; above, on, or below grade.

.4 Sub-floor Filler and Leveller: Pre-mix latex requiring water only to produce cementitious paste 2-Part latex-type filler requiring no water as recommended by flooring manufacturer for use with their product.

.5 Resilient Transition and Edge Strips: Meeting CAN/CSA B651 for height and slope, extruded vinyl.

.1 Colour: As selected by Consultant

.6 Sealer: To CAN/CGSB-25.20, Type 2-water base and as recommended by resilient tile flooring manufacturer.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: Verify that conditions of substrate previously installed are acceptable for resilient tile flooring installation in accordance with manufacturer's instructions.

.1 Verify concrete floors are free of cracks, ridges, depressions, scale, foreign materials, paint, varnish, dust, oils, release agents, waxes, and sealers, and that curing and hardening compounds have been removed.

.2 Verify substrate tolerances are within resilient tile flooring manufacturer's recommendations and FF, FL to CSA A23.1/A23.2.

.3 Verify concrete surface profile is within resilient tile flooring manufacturer's recommendations and CSP 2 to ICRI 310.2.

.4 Verify that work by other Subcontractors affecting the flooring installation is acceptable.

.5 Report defective conditions affecting installation to Consultant in writing immediately upon discovery and before beginning installation.

.6 Proceed with installation only after defective surfaces and conditions have been remedied.

.2 Pre-installation Testing: Perform tests to verify concrete floors are dry, with moisture vapour emission rate, and alkalinity within the manufacturer's recommendations. Perform tests to ASTM F2170 or ASTM F1869 test methods in NFCA Floor Covering Reference Manual, except where resilient tile flooring manufacturer recommends more stringent test methods and requirements. Notify Consultant of testing date so they may choose to attend at their discretion.

.1 Perform tests before installation of subsequent products (hydraulic cement underlayment, fillers, patching materials, adhesives, etc.).

.2 Test substrate moisture vapour emissions to ASTM F710 at a maximum. Perform a minimum three tests for the first 100 m^2 and one additional test per 100 m ² of additional floor area with one test within 1.0 m of an exterior wall for concrete slabs-on-grade.

.3 Test substrate alkalinity to ASTM F710, pH range of 7 to 9. Perform one test per 100 m^2 of floor area.

.4 Test substrate porosity to ASTM F3191 using test method recommended by resilient tile flooring manufacturer.

.5 Perform adhesive bond test to cleaned 1.0 x 1.0 m concrete substrate in accordance with NFCA Floor Covering Reference Manual, unless otherwise

recommended by floor covering manufacturer, and allow to cure for 72 hours before evaluating bond strength.

3.2. Preparation

.1 Protection of In-Place Conditions: Protect face of doors, door frames, and walls from marring due to installation of resilient tile flooring.

.2 Surface Preparation: In accordance with NFCA Floor Covering Reference Manual, Part A13 and ASTM F710 for concrete floors and ASTM F2873 and ASTM F2471, manufacturer's instructions, and as follows:

.1 Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and interfering with the bonding of new adhesives.

.2 Remove pen and marker lines completely from concrete surfaces.

.3 If concrete floor substrate vapour emissions exceed manufacturer's recommendations, prepare substrate in accordance with ASTM F3010.

.4 Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with subfloor filler.

.5 Where floor substrate flatness and levelness tolerances do not meet minimum requirements to begin installation of resilient tile flooring, prepare substrate in accordance with ASTM F2873, ASTM F2471, NFCA Floor Covering Reference Manual.

.6 Clean floor of dust, mould, mildew, alkaline salts, laitance, concrete film-forming curing compounds, paint, solvents, wax, oil, grease, residual adhesive, adhesive removing compounds, sealants, soap, and other foreign material.

.7 Fill low spots, cracks, joints, holes and other defects with subfloor filler in accordance with ASTM F2873, ASTM F2471. Trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler is cured.

.8 Seal concrete slab to resilient tile flooring and adhesive to manufacturer's recommendations.

.9 Vacuum substrates.

.10 Do not use permanent markers on floor substrates.

3.3. Installation – Resilient Tile

.1 Install resilient tile flooring and accessories using tools, materials, methods, and sequence of work to NFCA Floor Covering Reference Manual recommendations and] manufacturer's recommendations.

.2 Mix and apply adhesive uniformly in accordance with manufacturer's instructions, using manufacturer-recommended trowel notching, spread, coverage rate, open times, and safety precautions. Do not spread more adhesive than can be covered by flooring before initial set.

.3 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width, but not less than 150 mm (6")wide.

.4 Install flooring to ½ ashlar/staggered pattern.

.5 Cut resilient tile and fit neatly around fixed objects.

.6 Cut resilient tile to fit tightly in pan type floor access covers and to frames, using hardware cut-outs.

.7 Install resilient tile flooring in areas which will be under built-in furniture.

.8 Install resilient tile flooring through areas to receive movable type partitions without interrupting floor pattern.

.9 Install resilient tile flooring through doorways and scribed to fit projections and vertical surfaces.

.10 Terminate flooring under centreline of door, in openings where adjacent floor finish material or colour are dissimilar.

.11 During and after installation, roll flooring in two directions with minimum weighted roller to achieve full adhesion and prevent visible adhesive or trowel marks, unless otherwise indicated by flooring manufacturer.

.12 Install edge strips at floor penetrations, and edge strips at unprotected and exposed edges where flooring terminates to suit conditions. Securely bond to substrate and in a straight line.

.13 When necessitated by material size, locate cross seams and seams at doors and pivot points in accordance with accepted shop drawings.

3.4. Site Quality Control

.1 Site Inspections:

.1 Third-Party Independent Inspection Agency: Provide services of a NFCA Accredited third-party independent inspection agency to conduct random inspections and issue reports before, during and after installation of floor covering. Inspections and reports in accordance with NFCA QAP - Part A04.

.2 Manufacturer's Site Services:

.1 Provide manufacturer's site services consisting of periodic site visits to inspect product installation in accordance with manufacturer's instructions.

.2 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, protecting and initial cleaning of product and submit Manufacturer's Site Reports.

.3 For specialty resilient flooring materials or systems, the manufacturer's representative shall review all substrates and conditions for material applications and provide sufficient site reviews and reports to verify installation conforms with product warranty.

3.5. Adjusting

.1 Repair or replace deficient work in accordance with NFCA QAP requirements.

3.6. Cleaning

.1 Progress Cleaning: Perform in accordance with Section 01 74 00 - Cleaning. Remove excess adhesive before cured.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning.

3.7. Closeout Activities

.1 Recommend cleaning and finishing products to Owner to suit site conditions and application and that will not affect flooring slip-resistance.

.2 Demonstrate to Owner periodic cleaning methods for each resilient flooring type.

3.8. Protection

.1 Protect flooring with non-marring temporary coverings until Substantial Performance.

.2 Prohibit traffic on resilient tile flooring for a minimum [48] hours after installation.

.3 Protect resilient tile flooring from heavy rolling loads during construction with plywood, hardboard, or other protection method recommended by resilient tile flooring manufacturer.

.4 Allow a minimum 24 hours for site-applied finishes to dry before permitting foot traffic and a minimum 7 days before placing furniture and similar heavy objects.

.5 Protect cork flooring with heavy kraft paper or as otherwise recommended by cork flooring manufacturer. Do not cover cork flooring with materials that may cause condensation to form.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 02 41 19.16 - Selective Interior Demolition

.3 Section 06 10 00 - Rough Carpentry

.4 Section 09 21 16 - Gypsum Board Assemblies

.5 Section 09 65 13 – Resilient Base and Accessories

1.2. Reference Standards

.1 American National Standards Institute (ANSI)/National Floor Safety Institute (NFSI):

.1 ANSI/NFSI B101.1, current edition, Test Method for Measuring the Wet SCOF of Hard-Surface Walkways

.2 ANSI/NFSI B101.3, current edition, Test Method for Measuring the Wet DCOF of Hard Surface Walkways

.2 ASTM International (ASTM):

.1 ASTM D2047, current edition, Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine

.2 ASTM E96/E96M, current edition, Water Vapor Transmission of Materials

.3 ASTM F710, current edition, Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

.4 ASTM F1482, current edition, Standard Practice for Installation and Preparation of Panel Type Underlayments to Receive Resilient Flooring

.5 ASTM F1700, current edition, Standard Specification for Solid Vinyl Floor Tile.

.6 ASTM F1861, current edition, Standard Specification for Resilient Wall Base

.7 ASTM F1869, current edition, Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

.8 ASTM F2170, current edition, Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

.3 CSA Group (CSA):

.1 CSA B651, current edition, Accessible Design for the Built Environment

.4 General Services Administration, Federal Test Standard (FTS):

.1 FTS 101C, Method 4046, Electrostatic Properties of Materials

.5 National Floor Covering Association (NFCA):

.1 NFCA Floor Covering Reference Manual, current edition.

.2 Quality Assurance Program (QAP)

.6 ULC Standards (ULC):

.1 CAN/ULC-S102.2, current edition, Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies

1.3. Administrative Requirements

.1 Coordination:

.1 Upon request, Consultant will make available a digital drawing file of the floor finish plan illustrating complex patterns with radii and inset designs.

.2 Pre-installation Meetings: When requested by Consultant, arrange a meeting in accordance with Section 01 31 19 – Project Meetings. Discuss substrate conditions and confirm complex flooring patterns.

.3 Review NFCA QAP Inspection procedures, and reports and timing of reports for multi-phase projects.

.4 Sequencing: Install flooring after painting and ceiling work is complete.

1.4. Submittals

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

.2 Product Data: Submit manufacturer's instructions, product literature, and data sheets for luxury vinyl tile and plank flooring and accessories. Include product characteristics, performance criteria, dimensions, finishes, and limitations.

.3 Samples for Initial Selection: Submit the following for Consultant's initial selection of colours:

.1 300 mm x 300 mm (1'-0" x 1'-0") minimum samples of each type of luxury vinyl tile and plank flooring.

.2 Samples of accessories where exposed to view

.4 Samples for Verification:

.1 Submit before constructing mock-up duplicate 300 mm x 300 mm (1'-0" x 1'-0") sample pieces of each tile and plank material and 300mm (1'-0") long piece of each edge strip and trim.

.5 Site Quality Control Submittals:

.1 Submit floor substrate test results prior to beginning flooring installation. Include comparison of flooring manufacturer's acceptable alkaline level and recommended maximum moisture emission rates to site test results for each type of flooring.

.2 Submit information in accordance with NFCA QAP procedures and requirements. Submit inspection results and reports for review. When deviations from specified physical conditions or performance criteria are found, Do not proceed without written acceptance of Consultant.

1.5. Closeout Submittals

.1 Operations and Maintenance Data: Submit manufacturer's cleaning and repair recommendations in accordance with Section 01 78 00 - Closeout Submittals.

.2 Warranty Documentation: Submit manufacturer's warranties.

.3 Bonds: Submit floor covering Subcontractor's two (2) year maintenance bond for 100% value of this work.

1.6. Maintenance Material Submittals

.1 Extra Materials: Supply extra materials in accordance with Section 01 78 00 - Closeout Submittals, and as follows:

.1 Supply 2 % of each colour, pattern and type of flooring material for maintenance use.

.2 Supply extra materials from the same production run as installed materials.

.3 Label each box of tile and plank flooring and each container of adhesive.

1.7. Quality Assurance

.1 Preparation, materials, and workmanship in accordance with NFCA QAP requirements. Repair or replace deficient work in accordance with NFCA QAP requirements.

.2 Installers: Experienced and competent installers holding a valid certificate of accreditation / training from the manufacturer(s) of materials specified under this Section and having a minimum of three (3) years experience executing work of similar type and scale to carry out assembly and installation work including but not limited luxury vinyl tile and plank installations.

.1 Submit installer(s) certificate of accreditation issued by manufacturer, if requested by Consultant.

.3 Third-Party Independent Inspector Qualifications: Assigned by a NFCA Accredited QAP provider.

.4 Mock-Ups: Construct mock-up in accordance with Section 01 43 00 – Quality Assurance, and as follows:

.1 Construct a mock-up of luxury tile and plank flooring and associated resilient base.

.2 Acceptable mock-up may remain as part of the completed work.

1.8. Delivery, Storage, and Handling

.1 Perform in accordance with Section 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, with manufacturer's labels.

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in a clean dry location, and in accordance with manufacturer's recommendations in well-ventilated area.

.2 Protect adhesives, fillers, and sealants from freezing.

.3 Store and protect materials from nicks, scratches, and blemishes.

1.9. Site Conditions

.1 Ambient Conditions: For 72 hours before installation, continuously during, and 72 hours after installation, maintain the following conditions, except when manufacturer's recommendations are more stringent:

.2 Ambient room temperature: 18 to 29 degrees C

.3 Floor substrate temperature: minimum 15 degrees C

.4 Relative humidity: 40 to 60%

1.10. Warranty

.1 Manufacturer's Warranties: Submit in accordance with 1.3.8 Closeout Submittals, for Owner's acceptance.

.1 Luxury Vinyl Tile and Plank Flooring: Manufacturer limited warranty period of not less than ten (10) years commencing on date of Substantial Completion.

PART 2 PRODUCTS

2.1. Regulatory Requirements

.1 Meet requirements of CAN/ULC S102.2 for required Flame Spread Ratings labelled and listed by ULC Standards or another agency acceptable to Authorities Having Jurisdiction (AHJ).

2.2. Luxury Vinyl Tile and Plank

.1 Luxury Vinyl Tile Flooring (**LVT**): Heterogeneous, slip resistant, commercial, vinyl tile floor covering composed of ceramic-reinforced urethane with film print on and solid PVC backing to ASTM F1700, "Sonata Urban Stone" by American Biltrite or approved alternate:

.1 Class: III, Printed Film Vinyl Tile to ASTM F1700.

.2 Type: A, Smooth Surface to ASTM F1700.

.3 Nominal Thickness: 2.5 mm (0.15") minimum.

.4 Wear Layer Thickness: 0.5 mm (20 mil) wear layer minimum.

.5 Size: 457 mm x 457 mm (18" x 18") nominal.

.6 Colour: Refer to Colour Legend

.7 Colour and Heat Stability: Passing both ASTM F1515 and ASTM F1514.

.8 Slip resistance:

a. Wet – dynamic coefficient of friction: 0.22 minimum to ANSI/NFSI B101.3.

b. Dry - static coefficient of friction: 0.6 minimum to ASTM D2047.

.9 Flame Spread Rating: 60 maximum to CAN/ULC S102.2.

.10 Smoke Developed Classification: 450 maximum to CAN/ULC S102.2.

.2 Luxury Vinyl Plank Flooring (**LVP**): Heterogeneous, slip resistant, commercial, vinyl tile floor covering composed of ceramic-reinforced urethane with film print on and solid PVC backing to ASTM F1700, “Sonata European Walnut” by American Biltrite or approved alternate:

.1 Class: III, Printed Film Vinyl Tile to ASTM F1700.

.2 Type: A, Smooth Surface to ASTM F1700.

.3 Nominal Thickness: 2.5 mm (0.15”) minimum.

.4 Wear Layer Thickness: 0.5 mm (20 mil) wear layer minimum.

.5 Size: 152 mm x 1,219 mm (6” x 48”) nominal.

.6 Colour: Refer to Colour Legend

.7 Colour and Heat Stability: Passing both ASTM F1515 and ASTM F1514.

.8 Slip resistance:

a. Wet – dynamic coefficient of friction: 0.22 minimum to ANSI/NFSI B101.3.

b. Dry - static coefficient of friction: 0.6 minimum to ASTM D2047.

.9 Flame Spread Rating: 60 maximum to CAN/ULC S102.2.

.10 Smoke Developed Classification: 450 maximum to CAN/ULC S102.2.

2.3. Accessories

.1 Primer: Where recommended by flooring manufacturer for site conditions and application.

.1 VOC Emissions: 250g/L maximum limit to SCAQMD Rule 1168.

.2 Concrete Moisture Emission Reducer: Moisture insensitive, epoxy modified, forming a permanent moisture barrier, water vapour permeability less than 6 ng/Pa·s·m 2 (0.1 perms) when tested to ASTM E96 (wet method), other test methods will be considered.

.1 VOC Emissions: 50g/L maximum limit to SCAQMD Rule 1168.

.3 Adhesives: Types recommended by flooring manufacturer for substrate; above, on, or below grade.

.1 VOC Emissions: 50g/L maximum limit to SCAQMD Rule 1168.

.4 Sub-floor Filler and Leveler: White premix latex requiring only water to produce cementitious paste, as recommended by flooring manufacturer.

.5 Metal Transition and Edge Strips: Meeting CSA B651 for height and slope, extruded aluminum, polished with lip to extend under flooring, shoulder flush with top of adjacent floor finish.

.1 Colour: As selected by Consultant from manufacturer's standard colour range.

.6 Edging at Floor Penetrations: Aluminum, type recommended by flooring manufacturer.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: Verify that substrate conditions are clean, free of cracks, ridges, depressions, scale, foreign materials, and acceptable for luxury vinyl and plank flooring installation in accordance with manufacturer's instructions.

.1 Proceed with installation only after unacceptable conditions are remedied.

.2 Pre-installation Testing: Perform tests to verify concrete floor substrates are dry, with low moisture vapour emission rate, and low alkalinity. Perform tests to ASTM F1869, except where flooring manufacturer recommends more stringent test methods and requirements. Notify Consultant of testing date so they may choose to attend at their discretion.

.1 Moisture vapour emissions: Maximum 39kg/1000m^2/24 hr. Perform one test per 100 m^2 of floor area.

.2 pH range: 7 to 9. Perform one test per 100 m^2 of floor area.

.3 Perform adhesive bond test to cleaned concrete substrate, 1.0 x 1.0 m, allow to cure for 72 hours before evaluating bond strength.

3.2. Preparation

.1 Demolition of existing flooring: Where required, do selective demolition of existing floor finishes in accordance with Section 02 41 19.16 – Selective Interior Demolition. Refer to drawings for extent.

.2 If concrete floor substrate vapour emissions exceed manufacturer's recommendations, prepare substrate in accordance with ASTM F3010.

.3 Prepare concrete floor substrates to ASTM F710 and wood subfloors to ASTM F1482.

.4 Remove subfloor ridges and bumps.

.5 Clean floor of dust, mould, mildew, alkaline salts, laitance, concrete film-forming curing compounds, paint, solvents, wax, oil, grease, residual adhesive, adhesive removing compounds, sealants, soap, and other foreign material.

.6 Fill low spots, cracks, joints, holes and other defects with sub-floor filler. Trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler is dry and cured.

.7 Prime and/or seal floor substrate to luxury vinyl floor tile and plank flooring manufacturer's recommendations.

.8 Vacuum substrates.

.9 Do not use permanent markers on floor substrates.

3.3. Installation – Tile and Plank Flooring

.1 Provide high ventilation rate maximizing 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 building air distribution system.

.2 Install luxury tile and plank flooring and accessories using tools, materials, methods, and sequence of work to NFCA Floor Covering Reference Manual recommendations and manufacturer's recommendations.

.3 Mix and apply adhesive uniformly in accordance with manufacturer's instructions, using manufacturer-recommended trowel notching, spread, coverage rate, open times, and safety precautions. Do not spread more adhesive than can be covered by flooring before initial set.

.4 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width, but not less than 150 mm (6") wide.

.5 Install flooring to patterns as follows:

.1 **LVT**: 1/2 joint staggered
.2 **LVP**: 1/3 offset

.6 Cut luxury vinyl tile and plank and fit neatly around fixed objects.

.7 Cut luxury vinyl tile and plank to fit tightly in pan type floor access covers and to frames, using hardware cut-outs.

.8 Install luxury vinyl tile and plank flooring in areas which will be under built-in furniture.

.9 Install luxury vinyl tile and plank flooring through areas to receive movable type partitions without interrupting floor pattern.

.10 Install luxury vinyl tile and plank flooring through doorways and scribed to fit projections and vertical surfaces.

.11 Terminate flooring under centreline of door, in openings where adjacent floor finish material or colour are dissimilar.

.12 During and after installation, roll flooring in two directions with minimum weighted roller to achieve full adhesion and prevent visible adhesive or trowel marks, unless otherwise indicated by flooring manufacturer.

.13 Install edge strips at floor penetrations, and edge strips at unprotected and exposed edges where flooring terminates to suit conditions. Securely bond to substrate and in a straight line.

.14 When necessitated by material size, locate cross seams and seams at doors and pivot points in accordance with accepted shop drawings.

.15 Apply waterproof sealant at edge of luxury vinyl tile and plank flooring abutting walls, millwork bases, and other projections in wet areas.

.16 Repair or replace deficient work.

3.4. Installation – Base

.1 Refer to Drawings for locations of straight (toeless) and cove resilient base.

.1 Provide resilient toeless and cove base in accordance with Section 09 65 13 – Resilient Base and Accessories.

3.5. Site Quality Control

.1 Site Inspections:

.1 Third-party independent inspection agency: Provide services of a NFCA Accredited third-party independent inspection agency to conduct random inspections and issue reports during and after installation of floor covering. Inspections and reports in accordance with NFCA QAP - Part A04.

.2 Manufacturer’s Site Services:

.1 Mock-ups: Manufacturer to submit written confirmation that flooring installed meets or exceeds product requirements.

.2 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, protecting and initial cleaning of product and submit Manufacturer’s Site Reports.

.3 Provide manufacturer’s site services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer’s instructions.

.3 For specialty resilient flooring materials or systems, the manufacturer’s representative shall review all surfaces and conditions for material applications and provide sufficient site reviews and reports to ensure installation conforms with the product warranty requirements.

3.6. Cleaning

.1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.

.2 Final Cleaning: Perform in accordance with Section 01 74 00 - Cleaning.

.1 Clean flooring base, and stair surfaces to manufacturer's recommendations.

3.7. Protection

.1 Prohibit traffic on floor for a minimum of 48 hours after installation and a minimum 7 days before placing furniture and similar heavy objects. Protect new floors until adhesive is fully cured.

.2 Where flooring areas will receive heavy traffic, rolling loads, or pallet jacks, protect flooring with 6 mm (1/4”) thick temporary hardboard panels. Sweep or vacuum under panel areas prior to placement.

.3 Protect flooring with non-marring temporary coverings until Substantial Performance.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 06 10 00 - Rough Carpentry

.3 Section 09 21 16 - Gypsum Board Assemblies

.4 Section 08 71 00 – Door Hardware

1.2. Reference Standards

.1 ASTM International (ASTM):

.1 ASTM E 84-05, current edition, Standard Test Method for Surface Burning Characteristics of Building Materials.

.2 ASTM B221, current edition, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

.3 ASTM C661, current edition, Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer

.4 ASTM C920, current edition, Standard Specification for Elastomeric Joint Sealants.

.5 ASTM D5420, current edition, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).

.6 ASTM G21, current edition, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

.7 ASTM D3273, current edition, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

.8 ASTM D4060, current edition, Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser

.9 ASTM D543, current edition, Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents

.2 Gypsum Association (GA)

.1 GA-214, current edition, Levels of Finish for Gypsum Panel Products.

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

.4 National Association of Architectural Metal Manufacturers (NAAMM)

.1 Metal Finishes Manual, current edition.

.5 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S102, current edition, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.2 CAN/ULC-S102.2, current edition, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.

1.3. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets indicating product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:

.1 Submit duplicate 100 mm x 100 mm (4” x 4”) minimum samples of each colour of protective wall and door covering in accordance with Section 01 33 00 - Submittal Procedures.

.4 Manufacturers' Instructions: submit manufacturer's installation instructions.

.5 Closeout Submittals:

.1 Submit maintenance data and manufacturer warranty certificate for protective wall and door coverings in accordance with Section 01 78 00 - Closeout Submittals.

a. Maintenance data shall include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

b. Manufacturer's standard warranty document to be executed by authorized manufacturer official / representative.

1.4. Quality Assurance

.1 Installer shall hold a valid certificate of accreditation / training from the manufacturer of materials specified under this Section and have a minimum of three (3) years experience executing work of similar type and scale to carry out assembly and installation work.

.1 Submit installer(s) certificate of accreditation issued by manufacturer, if requested by Consultant.

.2 Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.1 Apply protective wall and door covering of each finish and decorative effect to 10 m^2 area of surface to be covered, approximately three (3) full wall sheets, unless otherwise approved by Consultant in writing.

.2 Allow 24 hours for inspection of mock-up by Consultant before proceeding with wall and door covering work.

.3 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

1.5. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.1 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

.2 Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer. Sheets should be stored flat and be pre-conditioned a minimum of 24 hours in ambient temperatures similar to the prevailing operational conditions.

a. Store sheets in temperature-controlled environments.

b. Protective wall and door covering, adhesives and accessories must be stored in enclosed, dry conditions not subjected to temperatures below 4 degrees C or excessive heat above 38 degrees C.

.2 Verify other finishing operations, including painting, have been completed.

1.6. Ambient Conditions

.1 Temperature: maintain air temperature and structural base temperature at wall and door covering installation area above 20 degrees C and relative humidity below 80% for 72 hours before, during and 24 hours after installation.

.2 Ventilation:

.1 Provide continuous ventilation during and after adhesive application.

.3 Verify permanent HVAC is operational. If temporary heat is required, use electric or indirect heat sources work as approved by Owner. Do not use kerosene or propane in direct contact with the ambient air.

1.7. Maintenance

.1 Extra Materials:

.1 Provide extra materials of protective wall and door covering, adhesives and cleaners in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide 3 m^2 of full width material of each pattern, texture and colour of protective wall and door covering.

.3 Provide sufficient adhesive to install extra material provided.

.4 Extra materials from same production run/and or dye lot as installed materials.

.5 Identify protective wall and door coverings and containers of adhesives.

.6 Deliver to storage location as directed by Owner, upon completion of work of this Section.

1.8. Warranty

.1 Manufacturer's Warranty: Submit in accordance with 1.3.8 Closeout Submittals, for Owner's acceptance.

.1 Manufacturer limited warranty period for protective wall and door covering shall be not less than five (5) years commencing on date of Substantial Completion.

PART 2 PRODUCTS

2.1. Manufacturer Requirements

.1 All protective wall and door covering materials specified under this section shall be from one (1) manufacturer for the purpose of maintaining product system compatibility, colour texture and physical properties.

2.2. Wall Protection

.1 Protective Wall Covering Sheet (**PWC**): Vinyl/Acrylic: Rigid sheet to be high impact Acrovyn, 'Acrovyn Wall Covering 0.40" Series' by Construction Specialties Inc. or approved alternate.

.1 Nominal Sheet Width: 1220 mm (4'-0")

.2 Nominal Sheet Height: 2440 mm (8'-0")

.3 Install Height: continuous from top of wall base to varies in height between 724 mm (2'-4 1/2") – 1219 mm (4'-0") above finished floor, refer to interior elevation drawing.

.4 Thickness: 0.040" (1.02 mm) thickness

.5 Finish: Matte finish with suede texture

.6 Performance Requirements:

a. Surface Burning Characteristics: Class A to CAN/ULC-S102.

b. Flame Spread: 10 to CAN/ULC-S102.

c. Smoke Development: 45 to CAN/ULC-S102.

d. Impact Strength: Tested to ASTM F476.

e. Chemical / Stain Resistance: Tested to ASTM D1308.

.7 Colour: Allow for 3 colours. Refer to Colour Legend

1.1. Door Protection

.1 Protective Door Covering (**PDC**): 1.02 mm (0.040") engineered, PVC free, high impact resistant, through colour, semi-rigid, 'Acrovyn 4000 Series' by Construction Specialties Group or approved alternate.

.1 Width: Door width minus 50mm (2"), mount centered from either side edges of door.

.2 Height: 254 mm (10”), mount 9 mm (3/8”) from bottom edge of door.

.3 Finish: Matte finish with suede texture

.4 Performance Requirements:

a. Chemical / Stain Resistance: Tested to ASTM D543.

.5 Colour: To be selected from full standard range and provided by Consultant at later date

1.2. Accessories

.1 Adhesives and Tape:

.1 Primer and adhesive materials shall be water based and in accordance with manufacturer's printed recommendations.

.2 Adhesives shall be moisture-resistant and as recommended by wall and door covering manufacturer and able to obtain the necessary fire hazard criteria. Maximum VOC limit 50 g/L to SCAQMD Rule 1168.

.3 Sealant Compounds:

a. Chemical curing, bacteria resistant, pick resistant, water based acrylic latex sealant provided by protective wall and door covering sheet manufacturer and in accordance with the requirements of specification Section 07 90 00 - Sealants.

i. VOC Limit: 50 g/L to SCAQMD Rule 1168.

ii. Bacteria and Mold Resistance: 0 maximum to ASTM G21 and ASTM G22.

iii. Hardness: Shore A of 55 minimum to ASTM C661 and ASTM C920.

iv. Sealant colour: match to protective wall and door covering sheets.

.2 Trims:

.1 Including but not limited to: vertical inside and outside corner trims, start and edge trims, anodized aluminum trims as recommended by manufacturer and in accordance with manufacturer installation guide.

a. Thickness: 1 mm (0.040”) minimum

b. Lengths: 3050 mm (10’-0”) minimum

c. Colour of PETG trim materials to match protective wall and door covering sheets where applicable.

d. Colour of anodized aluminum trim materials to be selected by Consultant from manufacturer standard colour range.

PART 2 EXECUTION

2.1. Manufacturer’s Instructions

.1 Comply with manufacturer’s product data, including product technical bulletins, product catalog, installation instructions and product label instructions for installation.

2.2. Examination

.1 Examine conditions, substrates and work to receive work of this Section.

.1 Coordinate with Section 01 71 00 - Examination and Preparation.

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation after unacceptable conditions have been remedied and after receipt of written approval from Consultant.

.2 Verification of Conditions:

.1 Verify that:

a. Substrate conditions which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions before installation of products specified under this Section.

b. Site conditions are acceptable and are ready to receive work.

.3 Commencing installation means acceptance of existing substrates and conditions.

2.3. Substrate Preparation

.1 Do substrate preparation in accordance with manufacturer’s installation guide.

.2 Remove high points and low points with filler intended for the substrate and environmental conditions to provide smooth and level substrate.

.3 Surfaces must be permanently dry and free from all substances that may contribute to adhesive bond failure.

.4 Remove loose paint and conduct an adhesive bond test with paint.

.5 Gypsum board substrates to be painted prior to installation of Work of this Section.

.1 Apply sealer over any absorbent or porous substrate (i.e. plaster finishes and unprimed gypsum board) as recommended by manufacturer and in accordance with Section 09 91 23 - Interior Painting.

a. Apply to the surface a minimum of 12 hours prior to the installation of protective wall and door coverings.

.2 Complete interior painting Work at all areas which abut protective wall cladding material prior to installation.

2.4. Preparation

.1 Clean immediate work area to remove all dust and contaminants prior to protective wall and door covering installation.

.2 Do not perform dust generating work within immediate work area during installation.

.3 Perform additional preparation procedures as required by manufacturer's instructions.

.1 Gypsum substrates where installation of protective wall and door covering Work is scheduled to occur shall be finished not less than Level 3 in accordance with GA-214.

2.5. Installation

.1 Install protective wall and door covering in accordance with the current manufacturer’s installation guide. All joints to be joined by approved methods as detailed in the installation guide.

.1 Follow the manufacturer's printed instructions for mixing adhesive.

.2 No seams shall occur within 150 mm (6") of any inside or outside corner with joints symmetrical with wall openings wherever possible.

.3 Closely and neatly trim material to adjacent surfaces.

.4 Complete installation shall be free of buckles, blisters, loose edges, open seams and anything else that would impair the finished appearance.

.5 Apply sealant to perimeter joints and at transitions to adjacent materials in accordance with manufacturer’s printed instructions.

2.6. Cleaning

.1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: Immediately upon completion of installation, clean material in accordance with manufacturer's recommended cleaning method.

2.7. Protection

.1 Protect finished surfaces and exterior corners from damage until final inspection.

.1 Use materials that may be easily removed without leaving residue or permanent stains.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 03 30 00 - Cast-in-Place Concrete

.3 Section 06 10 00 - Rough Carpentry

.4 Section 09 91 23 - Interior Painting

.5 Division 7 - Thermal and Moisture Protection

.6 Division 15 - Mechanical

1.2. Reference Standards

.1 ASTM International (ASTM):

.1 ASTM E 84-05, current edition, Standard Test Method for Surface Burning Characteristics of Building Materials.

.2 ASTM D5420, current edition, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).

.3 ASTM G21, current edition, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

.4 ASTM D3273, current edition, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

.5 ASTM G154, current edition, Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Materials.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

.3 International Organization of Standardization (ISO)

.1 ISO 62, current edition, Plastics - Determination of Water Absorption.

.2 ISO 527-1, current edition, Plastics - Determination of Tensile Properties.

.4 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S102, current edition, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.2 CAN/ULC-S102.2, current edition, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.

1.3. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets indicating product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:

.1 Submit duplicate 305 mm x 305 mm (12” x 12”) minimum samples of each colour of hygienic wall covering in accordance with Section 01 33 00 - Submittal Procedures.

.4 Shop Drawings:

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures. Drawings shall be drawn to scale, legible when printed and contain the following information:

a. Plan and/or elevation indicating layout of whole and partial sheets, panel joints, enlarged typical details of transitions between adjacent materials, and details of trim closures and accessories.

.2 Refer to Consultant drawings and specifications for related work of this Section as required to coordinate shop drawings.

.5 Manufacturers' Instructions: submit manufacturer's installation instructions.

.6 Closeout Submittals:

.1 Submit maintenance data and manufacturer warranty certificate for hygienic wall coverings in accordance with Section 01 78 00 - Closeout Submittals.

a. Maintenance data shall include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

b. Manufacturer's standard warranty document to be executed by authorized manufacturer official / representative.

1.4. Quality Assurance

.1 Installer shall hold a valid certificate of accreditation / training from the manufacturer of materials specified under this Section and have a minimum of five (5) years experience executing work of similar type and scale to carry out assembly and installation work.

.1 Submit installer(s) certificate of accreditation issued by manufacturer, if requested by Consultant.

.2 Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.1 Apply hygienic wall covering of each finish and decorative effect to 10 m^2 area of surface to be covered, approximately three (3) full wall panels, unless otherwise approved by Consultant in writing.

.2 Allow 24 hours for inspection of mock-up by Consultant before proceeding with wall covering work.

.3 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

1.5. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.1 Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

.2 Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer. Panels should be stored flat and be pre-conditioned a minimum of 72 hours in ambient temperatures similar to the prevailing operational conditions.

a. Store panels in temperature controlled environments. Leave protective blue film on panel until ready to use.

b. Hygienic wall covering, adhesives and accessories must be stored in enclosed, dry conditions not subjected to temperatures below -5 degrees C or excessive heat above 60 degrees C.

.3 When stacking pallets, they should not be stacked more than eight (8) pallets high and stacked flat without bumps or rolls and in a square and well aligned configuration.

.2 Verify other finishing operations, including painting, have been completed.

1.6. Ambient Conditions

.1 Temperature: maintain air temperature and structural base temperature at wall covering installation area above 20 degrees C and relative humidity below 40% for 72 hours before, during and 24 hours after installation.

.2 Ventilation:

.1 Provide continuous ventilation during and after coating application.

.3 Verify permanent HVAC is operational. If temporary heat is required, use electric or indirect heat sources work as approved by Owner. Do not use kerosene or propane in direct contact with the ambient air.

1.7. Maintenance

.1 Extra Materials:

.1 Provide extra materials of hygienic wall covering, adhesives and cleaners in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide 3 m^2 of full width material of each pattern, texture and colour of hygienic wall covering.

.3 Provide sufficient adhesive to install extra material provided.

.4 Extra materials from same production run/and or dye lot as installed materials.

.5 Identify hygienic wall coverings and containers of adhesives.

.6 Deliver to storage location as directed by Owner, upon completion of work of this Section.

1.8. Warranty

.1 Manufacturer’s Warranty: Submit in accordance with 1.3.8 Closeout Submittals, for Owner’s acceptance.

.1 Manufacturer warranty period for hygienic wall covering shall be not less than twenty (20) years commencing on date of Substantial Completion.

PART 2 PRODUCTS

2.1. Materials

.1 Hygienic Wall Covering Panels (**HWC**): 2.5mm extruded semi-rigid virgin PVC sheet with UV stabilizers, “Whiterock” by Altro.

.1 Nominal Width: 1220 mm (4’-0”)

.2 Nominal Height: 2500 mm (8’-2”)

.3 Finish: Satin texture

.4 Performance Requirements:

a. Surface Burning Characteristics: Class A to CAN/ULC-S102.

b. Impact Resistance: 22 Nm minimum to ASTM D5420.

c. Tensile Strength: 48 MPa minimum to ISO 527.

d. Flexural Strength: 79 MPa minimum to ISO 178

e. Water Absorption: 0.03% maximum at 24 hrs to ISO 62

f. Fungal Resistance: 0 after 21 days to ASTM G21

g. Mold Resistance: 10 to ASTM D3273

.5 Colour: Refer to Colour Legend

.2 Adhesives and Tape:

.1 Primer and adhesive materials shall be water based and in accordance with manufacturer's printed recommendations.

.2 Adhesives shall be moisture-resistant and as recommended by wall covering manufacturer and able to obtain the necessary fire hazard criteria. Maximum VOC limit 50 g/L to SCAQMD Rule 1168.

a. Acrylic Adhesive: For porous, even substrates (and climate-controlled areas) use, one-part, water-based, acrylic adhesive as recommended by manufacturer.

b. Polyurethane Adhesive: For wet, non-porous substrate (and areas subject to temperature fluctuations) use two-part, polyurethane, adhesive as recommended by manufacturer.

.3 Sanitary Sealant Compounds:

a. Sealant shall be chemical curing, mildew resistant, silicone in accordance with the requirements of specification Section 07 90 00 - Sealants.

i. Sealant colour: match to hygienic wall covering panels.

.4 Tape Adhesion Promoter: as recommended by manufacturer.

.5 Double sided tape: as recommended by manufacturer.

.3 Jointing Material and Trims:

.1 Including but not limited to: vinyl welding rod, joint strips, start and edge trims, stainless steel corner protectors and vinyl backer for wall to floor heat weld as recommended by manufacturer and in accordance with manufacturer installation guide.

a. Colour of jointing material and trims to match Hygienic Wall Covering Panels where applicable.

PART 3 EXECUTION

3.1. Manufacturer's Instructions

.1 Comply with manufacturer's product data, including product technical bulletins, product catalog, installation instructions and product label instructions for installation.

3.2. Examination

.1 Examine conditions, substrates and work to receive work of this Section.

.1 Coordinate with Section 01 71 00 - Examination and Preparation.

.2 Inform Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation after unacceptable conditions have been remedied and after receipt of written approval from Consultant.

.2 Verification of Conditions:

.1 Verify that:

a. Substrate conditions which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions before installation of products specified under this Section.

b. Site conditions are acceptable and are ready to receive work.

.3 Commencing installation means acceptance of existing substrates and conditions.

3.3. Substrate Preparation

.1 Do substrate preparation in accordance with manufacturer’s installation guide.

.2 Verify the flatness of substate using a 2 m (6’-0”) level, paying particular attention to the corners, window reveals, and door entrances.

.3 Remove high points and low points with filler intended for the substrate and environmental conditions to provide smooth and level substrate.

.4 Surfaces must be permanently dry and free from all substances that may contribute to adhesive bond failure.

.5 Remove loose paint and conduct an adhesive bond test with paint.

.6 Gypsum board substrates to be painted prior to installation of Work of this Section.

.1 Apply sealer over any absorbent or porous substrate (i.e. plaster finishes and unprimed gypsum board) as recommended by manufacturer and in accordance with Section 09 91 23 - Interior Painting.

a. Apply to the surface a minimum of 12 hours prior to the installation of hygienic wall coverings.

.2 Complete interior painting Work at all areas which abut hygienic wall cladding material prior to installation.

3.4. Preparation

.1 Clean immediate work area to remove all dust and contaminants prior to hygienic wall covering installation.

.2 Do not perform dust generating work within immediate work area during installation.

.3 All electrical switches, power points etc. to be in a first fix state as required to perform installation.

.4 All plumbing should have pipe-work removed to a first fix state and “tails” left protruding from the substrate as required to perform installation.

.1 Holes for plumbing: Drill 3 mm (1/8”) oversize to allow for expansion and sealed with sanitary sealant recommended by manufacturer.

.2 Holes for hot pipes and steam pipes: Drill to accommodate insulation and a 3 – 6 mm (1/8” - 1/4”) expansion gap. Seal perimeter with sanitary sealant recommended by manufacturer.

.5 All other fittings, pipes, fixing bolts, etc. extending through the hygienic wall covering panels to have a minimum 1/8” (3mm) expansion gap and be sealed with sanitary sealant recommended by manufacturer.

3.5. Installation

.1 Install hygienic wall covering in accordance with the current manufacturer’s installation guide. All joints to be joined by approved methods as detailed in the installation guide.

.1 Follow the manufacturer's printed instructions for mixing adhesive.

.2 No seams shall occur within 150 mm (6") of any inside or outside corner with joints symmetrical with wall openings wherever possible.

.3 No horizontal seams permitted.

.4 Closely and neatly trim material to adjacent surfaces.

.5 Complete installation shall be free of buckles, blisters, loose edges, open seams and anything else that would impair the finished appearance.

.6 Apply sealant to perimeter joints and a transition to coved base in accordance with manufacturer’s printed instructions.

3.6. Cleaning

.1 Once all panels and joints are installed, remove protective film and clean all surfaces down with antistatic solution or antistatic wipes.

.2 Clean with a diluted soap/detergent solution in accordance with manufacturer’s care and maintenance guidelines.

.1 Temperature of cleaning solution shall not exceed 60 degrees C.

.2 Consult manufacturer for pressure cleaning requirements.

.3 Stain Removal: Use alkaline cleaner approved by manufacturer and in accordance with current manufacturer's care and maintenance guidelines.

3.7. Protection

.1 Protect finished surfaces and exterior corners from damage until final inspection.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

1.2. Reference Standards

.1 ASTM International (ASTM)

.1 ASTM C423, current edition, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-92.1, current edition, Sound Absorptive Prefabricated Acoustical Units.

.3 CSA Group (CSA)

.1 CSA B111, current edition, Wire Nails, Spikes and Staples.

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

1.3. Submittals

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

.2 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.

.1 Submit manufacturer's standard product colour selection binder / deck to Consultant for the purpose of sample selections.

1.4. Quality Assurance

.1 Construct mock-up in accordance with Section 01 43 00 - Quality Assurance.

.2 Construct one representative mock-up of each type of acoustical wall treatment system.

.3 Construct mock-up 10 m^2 (108 ft^2) minimum to indicate method of assembly, installation and fixing.

.4 Construct mock-up where directed.

.5 Allow 24 hours for inspection of mock-up by Consultant before proceeding with work.

.6 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of the finished work.

1.5. Environmental Requirements

.1 Commence installation after building enclosed and dust generating activities are completed.

.2 Permit wet work to dry prior to commencement of installation.

1.6. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.7. Maintenance

.1 Extra Materials:

.1 Provide acoustical units for maintenance use amounting to 2% of gross wall area for each pattern and type required for project.

.2 Provide sufficient adhesive to install extra material provided.

.3 Extra materials from same production run as installed materials.

.4 Identify each package of acoustical units including colour and type, and each container of adhesive.

.5 Deliver to Consultant, upon completion of the work of this section.

.6 Store where directed by Consultant.

PART 2 PRODUCTS

2.1. Materials

.1 Suspended Fibre Ceiling Baffles (CB): Acoustic PET Ceiling Baffles, “Filleted Rectangle” series by EzoBord, or approved alternate.

.1 Composition: 100% PET (60% Min. recycled content

.2 Thickness: 3/4” (19mm)

.3 Fire Testing: ASTM E-84 Class A / CAN /ULC S102-10

.4 Colour: Refer to Colour Legend

.5 Size 96” length x 11.5” height x 3/4" thick.

.6 Shape: Filleted Rectangle

2.2. Fabrication

.1 Demountable acoustic units:

.1 Use one piece trim, continuous, with mitred corners and concealed fastenings.

PART 3 EXECUTION

3.1. Manufacturer's Instructions

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

3.2. Installation

.1 Ensure substrate surface is straight to tolerance of plus or minus 3 mm (1/8”) over 3000 mm (9’-10”).

.2 Install acoustic units to clean, dry and firm substrate using manufacturer recommended affixing method.

.3 Install acoustic units plumb and aligned. Arrange units as indicated on drawings.

.4 Scribe acoustic units to fit adjacent work. Butt joints tight.

.5 Install fibrous acoustical media and spacers over entire area behind perforated acoustic units.

3.3. Cleaning

.1 Proceed in accordance with Section 01 74 00 - Cleaning.

.2 Keep acoustic installation and all components clean. Remove blemishes immediately.

3.4. Protection

.1 Use polyethylene to protect finished acoustical wall treatment from damage.

.2 Remove prior to substantial completion.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 06 40 00 – Architectural Woodwork

.3 Section 09 01 90.63 – Interior Repainting

1.2. Reference Standards

.1 Environmental Protection Agency (EPA)

.1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, EPA Method 24 - Surface Coatings.

.2 SW-846, Test Method for Evaluating Solid Waste, Physical/Chemical Methods.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

.3 Master Painters Institute (MPI)

.1 The Master Painters Institute (MPI)/Architectural Painting Specification Manual (ASM), current edition.

.2 Standard GPS-1, MPI Green Performance Standard, current edition.

.3 Standard GPS-2, MPI Green Performance Standard, current edition.

.4 National Research Council Canada (NRC)

.1 National Fire Code of Canada (NFC), current edition.

.5 Society for Protective Coatings (SSPC)

.1 SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.

.6 International Standards Organization (ISO)

.1 ISO 6504-3, current edition, Paints and Varnishes – Determination of Hiding Power – Part 3: Determination of Hiding Power of Paints for Masonry Concrete and Interior Use.

1.3. Summary of Work

.1 Work of this section includes all labor, materials, tools and other equipment, services and supervision required to complete all interior painting and decorating work as indicated on Finish Schedules and to the full extent of the drawings and specifications.

.2 Work under this contract shall also include, but not necessarily be limited to:

.1 Surface preparation of substrates as required for acceptance of painting, including cleaning, small crack repair, patching, caulking, and making good surfaces and areas to the limits defined under MPI preparation requirements.

.2 Surface preparation and prime painting surfaces for wall coverings prior to installation in accordance with MPI and wall covering manufacturer's requirements.

.3 Specific pre-treatments noted herein or specified in the MPI Architectural Painting Specification Manual.

.4 Priming (except where pre-primed with an approved primer under other Sections of work) and painting of structural steel, miscellaneous metal, ornamental metal and primed steel equipment.

.5 Priming and back-priming of wood materials as noted herein or specified in the MPI Architectural Painting Specification Manual.

.6 Painting of all semi concealed areas (e.g. inside of light troughs and valances, behind grilles, and projecting edges above and below sight lines).

.7 Painting of exposed to view mechanical (heating, ventilating and plumbing) services and equipment, e.g., ducts, sprinkler piping, etc., and electrical work to extent noted on Finish Schedule unless prefinished.

.8 Re-painting of existing surfaces and finishes when adjacent to new painting work where applicable including surface preparation, prime and finish coats in accordance with MPI Repainting requirements.

.9 Provision of safe and adequate ventilation as required over and above temporary ventilation supplied by others, where toxic and/or volatile / flammable materials are being used.

.3 Refer to drawings and schedules (e.g., Finish Schedule) for type, location and extent of finishes required, and include all touch-ups and field painting necessary to complete work shown, scheduled, or specified.

1.4. Administrative Requirements

.1 Scheduling

.1 Submit work schedule for various stages of painting to Consultant for review. Provide schedule minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization from Consultant and Owner for changes in work schedule.

.3 Schedule new additions to existing building coordinate painting operations with other trades.

1.5. Submittals

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

.2 Product Data:

.1 Provide manufacturer's instructions, printed product literature and data sheets for paint and paint products and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Confirm products to be used are in MPI's approved product list.

.3 Upon completion, provide records of products used. List products in relation to finish system and include the following:

.1 Product name, type and use.

.2 Manufacturer's product number.

.3 Colour numbers.

.4 MPI Environmentally Friendly classification system rating.

.5 Manufacturer's Safety Data Sheets (SDS).

.6 MPI numbers.

.4 Samples:

.1 Submit full range colour sample chips to indicate where colour availability is restricted.

.2 Submit duplicate 100 mm x 200 mm (4” x 8”) minimum sample panels of each paint, stain, clear coating and special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:

1. 13 mm (1/2”) sanded wood veneer plywood or solid dressed and sanded lumber matching wood species, grade and surface preparation to receive finishes.

2. Three (3) panel penetration and opacity test cards (PENOPAC) in accordance with ISO 6504-3 with coated black, coated white and uncoated white test areas for all other substrates including finishes over metal surfaces, gypsum surfaces and concrete block surfaces.

.3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.

.5 Test reports: Provide certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.

.1 Lead, cadmium and chromium: presence of and amounts.

.2 Mercury: presence of and amounts.

.3 Organochlorines and PCBs: presence of and amounts.

.6 Certificates: Provide certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.7 Manufacturer's Instructions:

.1 Provide manufacturer's installation and application instructions.

1.6. Closeout Submittals

.1 Provide in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Provide operation and maintenance data for painting materials for incorporation into manual.

.3 Include:

.1 Product name, type and use.

.2 Manufacturer's product number.

.3 Colour numbers.

.4 MPI Environmentally Friendly classification system rating.

1.7. Maintenance Materials Submittals

.1 Extra Stock Materials:

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 At project completion, provide four (4) liters (1 gallon) of each type and color of paint from same production run (batch mix) used in unopened cans, properly labeled and identified with colour and paint type in relation to established colour schedule and finish system for Owner’s use during maintenance. Store where directed.

1.8. Quality Assurance

.1 Qualifications:

.1 Contractor: to have a minimum of 5 years proven satisfactory experience. When requested, provide list of last 3 comparable jobs including, job name and location, specifying authority, and project manager.

.2 Qualified journeypersons as defined by local jurisdiction to be engaged in painting work

.3 Apprentices: may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.

.4 Conform to latest MPI requirements for exterior painting work including preparation and priming.

.5 Materials: in accordance with MPI Painting Specification Manual "Approved Product" listing and from a single manufacturer for each system used.

.6 Retain purchase orders, invoices and documents to prove conformance with noted MPI requirements when requested by Consultant.

.7 Standard of Acceptance:

1. Walls: no defects visible from a distance of 1000 mm (3’-4”) at 90 degrees to surface.

2. Soffits: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.

3. Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

.2 Mock-Ups:

.1 When requested by Consultant or Paint Inspection Agency, prepare and paint designated surface, area, room or item to requirements specified herein, with specified paint or coating showing selected colours, number of coats, gloss/sheen, textures and quality of work to MPI Painting Specification Manual standards for review and approval.

.2 Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

1. Provide 3 m^2 (30 sq ft) minimum mock-ups. Prepare and paint designated surface, area, room or item (in each colour scheme) to specified requirements, with specified paint or coating showing selected colours, gloss/sheen, textures.

2. Locate where directed by Consultant.

3. Allow 24 hours for inspection of mock-up before proceeding with Work.

4. When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work. Remove mock-up and dispose of materials when no longer required and when directed by Consultant.

1.9. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and 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.

.1 Labels to indicate:

1. Type of paint or coating.

2. Compliance with applicable standard.

3. Colour number in accordance with established colour schedule.

.3 Storage and Handling Requirements:

.1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Observe manufacturer's recommendations for storage and handling.

.3 Store materials and supplies away from heat generating devices.

.4 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.

.5 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.

.6 Remove paint materials from storage only in quantities required for same day use.

.7 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.8 Fire Safety Requirements:

1. Provide one 9 kg Type ABC fire extinguisher adjacent to storage area.

2. Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

3. Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada (NFC).

1.10. Site Conditions

.1 Ambient Conditions:

.1 Heating, Ventilation and Lighting:

1. Ventilate enclosed spaces in accordance with Section 01 57 00 Temporary Controls.

2. Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.

3. Provide continuous ventilation for seven (7) days after completion of application of paint.

4. Coordinate use of existing ventilation system with Consultant and ensure its operation during and after application of paint as required.

5. Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.

6. Provide minimum lighting level of 323 Lux (30-foot candles) on surfaces to be painted.

.2 Surface and Environmental Conditions:

1. Perform no painting or decorating work when the relative humidity is above 85% or when the dew point is less than 3° C (5° F) variance between the air / surface temperature.

2. Perform no painting or decorating work when the maximum moisture content of the substrate exceeds:

   a. 15% for wood.

   b. 12 % for plaster and gypsum board.

3. Conduct all moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple cover patch test.

4. Test concrete, masonry and plaster surfaces for alkalinity as required.

5. Apply paint 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.

PART 2 PRODUCTS

2.1. Performance Requirements

.1 Environmental Performance Requirements:

.1 Provide paint products meeting MPI "Environmentally Friendly" E2 and E3 ratings based on VOC (EPA Method 24) content levels.

.2 Green Performance in accordance with MPI Standard GPS-2.

1. Refer to GPS-1 rating standards where MPI category under approved product list (APL) has no GPS-2 paints listed.

2.2. Materials

.1 Only paint materials listed in latest edition of MPI Approved Products List (APL) are acceptable for use on this project.

.2 Provide paint materials for paint systems from single manufacturer.

.3 Only qualified products with E2 and E3 "Environmentally Friendly" ratings are acceptable for use on this project.

.4 Conform to latest MPI requirements for interior painting work including preparation and priming

.5 Provide paint products meeting MPI "Environmentally Friendly" E2 or E3 rating based on VOC (EPA Method 24) content levels.

.6 Use MPI listed materials having minimum E3 rating where indoor air quality (odour) requirements exist.

.7 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids to be:

.1 Water-based.

.2 non-flammable and biodegradable.

.3 Be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.

.4 Be manufactured without compounds which contribute to smog in the lower atmosphere.

.5 Do not contain methylene chloride, chlorinated hydrocarbons or toxic metal pigments.

.8 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:

.1 Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.

.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.

.9 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" E2 rating.

.10 Recycled water-borne surface coatings to contain 50 % post-consumer material by volume.

.11 Recycled water-borne surface coatings must not contain:

.1 Lead in excess of 600.0 ppm weight/weight total solids.

.2 Mercury in excess of 50.0 ppm weight/weight total product.

.3 Cadmium in excess of 1.0 ppm weight/weight total product.

.4 Hexavalent chromium in excess of 3.0 ppm weight/weight total product.

.5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

2.3. Colours

.1 Consultant will provide Colour Schedule after Contract award.

.2 Colour schedule will be based upon selection of five (5) base colours and ten (10) accent colours. No more than fifteen (15) colours will be selected for entire project and no more than five (5) colours will be selected in each room/area.

.3 Selection of colours will be from manufacturers full range of colours.

.4 Where specific products are available in restricted range of colours, selection based on limited range.

.5 If requested by Consultant, second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

.6 For deep and ultra deep colours; allow for 4 coat application.

2.4. Mixing and Tinting

.1 Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Consultant for tinting of painting materials.

.2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.

.3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.

.4 Thin paint for spraying in accordance with paint manufacturer's instructions.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity. Strain as necessary.

2.5. Gloss/Sheen Ratings

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

Table 2.5.1 Master Painting Institute (MPI) Sheen Ratings

Gloss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Flat	0 to 5	10 maximum
G2	Velvet	0 to 10	10 to 35
G3	Eggshell	10 to 25	10 to 35
G4	Satin	20 to 35	35 minimum
G5	Semi-Gloss	35 to 70	
G6	Gloss	70 to 85	
G7	High Gloss	> 85	

.2 Gloss level ratings of painted surfaces as specified and as noted on Finish Schedule.

2.6. Interior Painting Systems

.1 Unless otherwise specified herein, all painting work shall be in accordance with MPI Premium Grade finish requirements.

.2 Reference Room Finish Schedule (RFS) and Drawings for location and extent of painting systems.

.3 Concrete Vertical Surfaces:

.1 INT 3.1C - High performance architectural latex (over water-based alkali-resistant primer), eggshell finish, for interior concrete partitions and walls in typical dry areas.

1. One (1) coat MPI 3, Water-based alkali resistant primer.

2. Two (2) coats MPI 139, High-performance architectural latex paint, G3 (eggshell) finish.

.4 Concrete Masonry Units:

.1 INT 4.2J - Epoxy-Modified Latex coating (over latex block filler), semi-gloss finish, for interior CMU partitions and walls in high-traffic, dry areas.

1. One (1) coat MPI 4, Latex block filler.

2. Two (2) coats MPI 215, Epoxy-modified latex, G5 (semigloss) finish.

.5 Plaster and gypsum board:

.1 INT 9.2A – Latex, flat finish (over latex primer/sealer). Typical at interior gypsum board ceilings and bulkheads.

1. One (1) coat MPI 50, Latex primer / sealer.

2. Two (2) coats MPI 53, Latex, G1 (Flat/ Matte) finish.

.2 INT 9.2B - High performance architectural latex (over latex primer/sealer), eggshell finish. Typical at interior gypsum board walls and partitions, chases, shafts, and other similar vertical surfaces.

1. One (1) coat MPI 50, Latex primer / sealer.

2. Two (2) coats MPI 139, High performance architectural latex, G3 (Eggshell) finish.

2.7. Source Quality Control

.1 Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned. Testing by laboratory or facility which has been accredited by Standards Council of Canada.

.1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846

.2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846

.3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846

PART 3 EXECUTION

3.1. Manufacturer's Instructions

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

3.2. General

.1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3. Examination

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable to be painted 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.

.2 Interior repainting work: In accordance with Section 09 01 90.63 Interior Repainting.

.3 Interior surfaces requiring repainting: inspected by both painting contractor who will notify Consultant in writing of defects or problems, prior to commencing repainting work, or after surface preparation if unseen substrate damage is discovered.

3.4. Preparation

.1 Protection (not applicable to new painting work):

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Consultant.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames, firestopping system labels, signage, etc..

.3 Protect factory finished products and equipment.

.4 Protect building occupants and the general public in and about the building.

.2 Surface Preparation (not applicable to new painting work):

.1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.

.2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.3 Post "WET PAINT" signs, in both English and French, in occupied areas as painting operations progress. Signs to approval of Consultant and Owner.

.3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

.1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air as appropriate.

.2 Wash surfaces with a biodegradable detergent and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.

.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.4 Allow surfaces to drain completely and allow to dry thoroughly.

.5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.6 Use trigger operated spray nozzles for water hoses.

.7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.

.4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

.5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.

.1 Apply sealer to MPI #36 over knots, pitch, sap and resinous areas

.2 Apply wood filler to nail holes and cracks.

.3 Tint filler to match stains for stained woodwork.

.6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm (3’-4”).

.7 Carried out during shop priming: clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, blowing with clean dry compressed air or vacuum cleaning.

.8 Touch up of shop primers with primer as specified.

.9 Do not apply paint until prepared surfaces have been accepted by Consultant.

3.5. Existing Conditions

.1 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Consultant. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

.2 Maximum moisture content as follows:

.1 Stucco: 12 %.

.2 Concrete: 12 %.

.3 Clay and Concrete Block/Brick: 12 %.

.4 Hard Wood: 15 %.

.5 Soft Wood: 17 %

3.6. Application

.1 Method of application to be as approved by Consultant. Apply paint by brush, roller, and/or airless sprayer in accordance with the manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:

.1 Apply paint in uniform layer using brush and/or roller type suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.

.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Spray application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.

.4 Brush out immediately all runs and sags.

.5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.

.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.

.5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.7 Sand and dust between coats to remove visible defects.

.8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including projecting ledges, alcoves or other similar features.

.9 Finish closets and alcoves as specified for adjoining rooms.

.10 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

.11 Wood, drywall, plaster, stucco, concrete, concrete masonry units and brick; if sprayed, must be back rolled.

3.7. Mechanical/Electrical Equipment

.1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.

.2 Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.

.3 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.

.4 Do not paint over nameplates.

.5 Keep sprinkler heads free of paint.

.6 Paint inside of ductwork where visible behind grilles, registers and diffusers with one (1) coat of primer and one (1) coat of flat/matte black paint.

.7 Paint fire protection piping red.

.8 Paint disconnect switches for fire alarm system and exit light systems in red enamel.

.9 Paint natural gas piping yellow.

.10 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

.11 Do not paint interior transformers and substation equipment.

3.8. Site Quality Control

.1 Interior surfaces requiring painting to be inspected by painting contractor who will notify Consultant and General Contractor in writing of defects or problems, prior to commencing painting work, or after prime coat shows defects in substrate.

.2 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non- MPI listed products or systems are to be used, paint or coating manufacturer will provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost.

.3 Standard of Acceptance:

.1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

.4 Advise Consultant when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.5 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Consultant.

3.9. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.10. Restoration

.1 Clean and re-install hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION

LU Interprofessional Health Simulation Centre	Job Number:	26071
COLOUR LEGEND	Date:	November 6, 2026
LEGEND (Note: This document is to be read in conjunction with the room finish schedule, specifications and architectural drawings.)		

PAINT CODES (P-)	
P-1	Benjamin Moore, Cloud White OC-130
P-2	Benjamin Moore, Georgian Bay CC-782
P-3	Benjamin Moore, Revere Pewter HC-172
P-4	Benjamin Moore, Chantilly Lace OC-65

RESILIENT BASE CODES (RB)	
RB-1	Tarkett, Traditional, Moon Rock 29, 4" High
RB-2a	Tarkett, Monument, Burnt Umber 63, 4" High
RB-2b	Tarkett, Monument, Moon Rock 29, 4" High
RB-2c	Tarkett, Monument, Peppercorn TB1, 4" High

CASEWORK **HIGH-PRESSURE LAMINATE CODES (HPL)**	
HPL-1a	Lacasse, Neocase, AIA Acacia
HPL-1b	Lacasse, Neocase, WGR Willow Grey

LUXURY VINYL TILE CODES (LVT)	
LVT-1	American Biltrite, Sonata Urban Stone, Graphite, 18” x 18”

LUXURY VINYL PLANK CODES (LVP)	
LVP-1	American Biltrite, Sonata European Walnut, Light Brown, 6” x 48”

SOLID VINYL TILE CODES (SVT)	
SVT-1	American Biltrite, Texas Granite, White/Grey, 36" x 36"

RUBBER TILE CODES (RT)	
RT-1	American Biltrite, AB Pure Hammered, Sand Castle, 36" x 36"

SHEET VINYL CODES (SV)	
SV-1	Tarkett, iQ Optima, Light Grey White, 25 m x 2 m

ACOUSTIC CEILING PANELS CODES (ACU)	
ACP-1	Certainteed, Symphony m 85 High NRC, Trim Edge (Square), 2' x 2', White

SEMI-CONCEALED WOOD CEILING PANELS CODES (WDC)	
WDC-1	Certainteed, Semi-Concealed Panels, Solo Grooved G2, 1' x 6', Plain Slice Veneer, Natural Cherry (VPC0)

CONTINUOUS LINEAR WOOD PLANK CEILING CODES (WDPC)	
WDPC-1	Certainteed, Continuous Linear Planks, Felt Reveal, Plain Slice Veneer, Natural Cherry (VPC0)

SUSPENDED FIBRE CEILING BAFFLES CODES (CB)	
CB-1a	Ezo Bord, Ceiling Baffles, Filleted Rectangle, Steel Blue SB32-D
CB-1b	Ezo Bord, Ceiling Baffles, Filleted Rectangle, Denim DE36-D

SHEET VINYL COVE CODES (SVC)	
SVC-1	Tarkett, iQ Optima, Light Grey White, 6" High, c/w Heat Weld

LU Interprofessional Health Simulation Centre	Job Number:	26071
COLOUR LEGEND	Date:	November 6, 2026
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MILLWORK **PLASTIC LAMINATE CODES (P.LAM)**	
P.LAM-1a	Wilsonart, Beachwalk 5044-60
P.LAM-1b	Wilsonart, Glacier Quartzite 5025K-22
P.LAM-2	Formica, Fenix, Blue Shaba J0792
P.LAM-3	Uniboard, Omnia Hanami HPL23

SOLID CORE WOOD DOOR (SCWD)	
SCWD-1	Lambton Doors P/S White Oak, B/R, Grade A, PLS-102 Standard Colour

SOLID SURFACE CODES (SS)	
SS-1	Wilsonart, Solid Surface, Chilled Earth 9228SS

PROTECTIVE DOOR COVERING CODES (PDC)	
PDC-1	Construction Specialties, Acrovyn Solid Colors, Colour TBD.

HYGIENIC WALL CLADDING CODES (HWC)	
HWC-1	Altro, Altro Whiterock, Colour TBD.

PROTECTIVE WALLCOVERING CODES (PWC)	
PWC-1a	Construction Specialties, Acrovyn Solid Colors, Folkstone 927
PWC-1b	Construction Specialties, Acrovyn Solid Colors, Galveston Gray 315
PWC-1c	Construction Specialties, Acrovyn Solid Colors, Putty 1472

CORNER GUARD CODES (CG)	
CG-1	Construction Specialties, Acrovyn Solid Colors, Folkstone 927

CRASH RAIL CODES (CR)	
CR-1	Construction Specialties, Acrovyn Solid Colors, Blue Silk 930

LU Interprofessional Health Simulation Centre									Job Number:	26071
COLOUR SCHEDULE									Date:	November 6, 2026
Room No.	**Room Name**	**Floor**	**Base**	**Wall**	**Accents**	**Ceiling**	**Doors**	**Frames**	**Remarks**	
Prepared by: Jasmine Éthier										
Level 3										
SE300	Corridor - North	LVT-1	RB-2a	P-1	HWC-1 / CG-1	WDPC-1 / P-4 / CB-1a / CB-1b	-	-	Refer to drawing A-403 & A-501 for extent of HWC & CG.	
SE300	Corridor - South	LVT-1	RB-2a	P-1		WDPC-1 / P-4 / CB-1a / CB-1b	-	-		
SE300A	Learning Commons	LVT-1	RB-2a	P-1		P-4 / CB-1a / CB-1b	-	-		
SE307	Vestibule	SVT-1	RB-2b	P-1	CG-1	P-4	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of CG.	
SE307A	Coat / Storage	SVT-1	RB-2b	P-1	CG-1	P-4	-	-	Refer to drawing A-403 & A-501 for extent of CG. Cabinets: HPL-1a	
SE307B	Kitchenette	SVT-1	RB-2b	P-1	CG-1	P-4	-	-	Refer to drawing A-403 & A-501 for extent of CG. Cabinets: HPL-1a / Counter: P.LAM-1a	
SE307C	Learning / Collaboration	SVT-1	RB-2b	P-1	P-2	ACP-1 / P-4	-	-	Paint east wall P-2.	
SE308	Corridor	LVT-1	RB-2a	P-1	-	WDC-1 / P-4	-	-		
SE308A	Director's Office	SVT-1	RB-2b	P-1	-	ACP-1	SCWD-1 / PDC-1	-		
SE308B	Clean Utility / Storage	SVT-1	RB-1	P-1	PWC-1b	ACP-1	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of PWC.	
SE308C	Media I.T.	SVT-1	RB-1	P-1	-	ACP-1	SCWD-1 / PDC-1	-		
SE308D	Simulation Room 1	SV-1	SVC-1	P-1	PWC-1b / CG-1	ACP-1 / P-4	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of PWC & CG.	
SE308E	Control Room 1	SVT-1	RB-2b	P-1	PWC-1b	ACP-1 / P-4	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of PWC.	
SE308F	Control Room 2	SVT-1	RB-2b	P-1	PWC-1b	ACP-1 / P-4	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of PWC.	
SE308G	Simulation Room 2	SV-1	SVC-1	P-1	PWC-1b / CG-1	ACP-1 / P-4	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of PWC & CG.	
SE308H	Debrief Room	SVT-1	RB-2b	P-1	-	ACP-1 / P-4	SCWD-1 / PDC-1	-		
SE308J	Exam Room / Consult Office	SVT-1	RB-2b	P-1	PWC-1b	ACP-1 / P-4	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of PWC. Cabinets: HPL-1a / Counter: SS-1	
SE308K	Debrief Room	SVT-1	RB-2b	P-1	P-2	WDC-1 / P-4	SCWD-1 / PDC-1	-	Paint west wall P-2. Cabinets: HPL-1a / Counter: SS-1	
SE308L	Medication	SVT-1	RB-2b	P-1	-	ACP-1	SCWD-1 / PDC-1	-	Cabinets: HPL-1a / Counter: P.LAM-1a	
SE308M	Elect. Closet	LVT-1	RB-2a	P-1	-	-	SCWD-1 / PDC-1	-		
SE308N	Lounge / Waiting	LVT-1	RB2a	P-1	CG-1	CB-1a / CB-1b	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of CG. Ceiling: Exposed Existing Precast Slab Above.	
SE308P	Nurses' Station / Clinic Reception	LVT-1	RB-2a	P-1	-	WDC-1 / P-4	-	-	Cabinets: P.LAM-2 / P.LAM-3 / Counter: SS-1	
SE308Q	Reception	LVT-1	RB-2a	P-1	-	WDC-1 / P-4	-	-	Cabinets: P.LAM-2 / P.LAM-3 / Counter: SS-1	
SE308R	Charting	LVT-1	RB-2a	P-1	CG-1	P-4	-	-	Refer to drawing A-403 & A-501 for extent of CG.	
SE308S	Corridor	LVT-1	RB-2a	P-1	PWC-1a / CR-1 / CG-1	ACP-1	-	-	Refer to drawing A-403 & A-501 for extent of PWC, CR & CG.	
SE308T	Charting	LVT-1	RB-2a	P-1	CG-1	P-4	-	-	Refer to drawing A-403 & A-501 for extent of CG.	
SE308U	Corridor	LVT-1	RB-2a	P-1	PWC-1a / CG-1	ACP-1 / P-4	-	-	Refer to drawing A-403 & A-501 for extent of PWC & CG. Cabinets: HPL-1a	

LU Interprofessional Health Simulation Centre									Job Number:	26071
COLOUR SCHEDULE									Date:	November 6, 2026
Room No.	**Room Name**	**Floor**	**Base**	**Wall**	**Accents**	**Ceiling**	**Doors**	**Frames**	**Remarks**	
Prepared by: Jasmine Éthier										
SE309	Classroom	-	-	-	-	-	SCWD-1 / PDC-1	-		
SE310	Flex Space VR / Conference / Ward	SVT-1	RB-2b	P-1	CG-1	ACP-1	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of CG.	
SE310A	Mouvement / Functional Assessment Lab	RT-1	RB-2b	P-1	CG-1	ACP-1	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of CG.	
SE311	Vestibule	LVP-1	RB-2c	P-1	CG-1	P-4	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of CG.	
SE311A	Bathroom	LVP-1	RB-2c	P-1	PWC-1c	P-4	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of PWC. Cabinets: HPL-1b / Counter: P.LAM-1b	
SE311B	Closet	LVP-1	RB-2c	P-1	CG-1	P-4	SCWD-1 / PDC-1	-	Refer to drawing A-403 & A-501 for extent of CG.	
SE311C	Kitchen	LVP-1	RB-2c	P-1	-	P-4	-	-	Cabinets: HPL-1b / Counter: P.LAM-1b	
SE311D	Living Area	LVP-1	RB-2c	P-1	P-3	ACP-1	-	-	Paint south wall P-3.	

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 06 10 00 - Rough Carpentry

.3 Section 09 21 16 - Gypsum Board Assemblies

.4 Section 09 22 00 – Supports for Plaster and Gypsum Board

1.2. Reference Standards

.1 Aluminum Association (AA)

.1 AA DAF 45, current edition, Designation System for Aluminum Finishes.

.2 ASTM International (ASTM):

.1 ASTM E 84-05, current edition, Standard Test Method for Surface Burning Characteristics of Building Materials.

.2 ASTM B221, current edition, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

.3 ASTM D5420, current edition, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).

.4 ASTM G21, current edition, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

.5 ASTM D3273, current edition, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

.6 ASTM D4060, current edition, Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser

.7 ASTM D543, current edition, Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

.4 National Association of Architectural Metal Manufacturers (NAAMM)

.1 Metal Finishes Manual, current edition.

.5 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S102, current edition, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for handrails, crash rails and horizontal wall bumpers including product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit one digital copy of WHMIS SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements. Indicate VOC's for material as follows:

a. Caulking materials during application and curing.

b. Adhesives.

.3 Installation Drawings:

.1 Indicate on drawings large scale details, materials, finishes, dimensions, anchorage and assembly.

.4 Samples:

.5 Submit duplicate 300 mm (1’-0”) long samples of profiles and colours for handrails, crash rails and horizontal wall bumpers.

.6 Closeout Submittals:

.1 Submit maintenance data and manufacturer warranty certificate for handrails, crash rails and horizontal wall bumpers in accordance with Section 01 78 00 - Closeout Submittals.

a. Maintenance data shall include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

b. Manufacturer's standard warranty document to be executed by authorized manufacturer official / representative.

1.4. Quality Assurance

.1 Provide all components of the handrail, crash rail and horizontal wall bumper systems from the same manufacturer to ensure compatibility of color, texture and physical properties.

.2 Manufacturer's qualifications: minimum five (5) years' experience in the production of specified products and a record of successful in-service performance.

.3 Installer's qualifications: minimum three (3) years' experience in installation of systems similar in scale and complexity to those required for this project.

.4 Fire performance characteristics: Provide engineered PETG wall protection system components tested to CAN/ULC S102.2 - Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies with results listed below:

.1 Flame spread: 150 or less

.2 Smoke developed: 300 or less

.5 Impact Strength: Provide assembled handrails, crash rails and horizontal wall bumpers that have been tested in accordance with the applicable provisions of ASTM F476.

.6 Chemical and stain resistance: Provide handrails, crash rails and horizontal wall bumpers system components with chemical and stain resistance in accordance with ASTM D543.

.7 Bacterial and fungal resistance: Provide handrails, crash rails and horizontal wall bumpers system components with bacterial and fungal resistance in accordance with ASTM G22 and G 21.

.8 Test Reports:

.1 Submit certified test reports showing compliance with specified performance characteristics and physical properties.

.9 Certificates:

.1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements

1.5. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.2 Storage and Handling Requirements:

.1 Store materials in original, undamaged packaging in a cool, dry place out of direct sunlight and exposure to the elements. A minimum room temperature of 4°C (40°F) and a maximum of 38°C (100°F) should be maintained.

.2 Material must be stored flat.

.3 Store and protect handrails, crash rails and horizontal wall bumpers from nicks, scratches, and blemishes.

.4 Replace defective or damaged materials with new.

.5 Verify other finishing operations, including painting, have been completed.

1.6. Ambient Conditions

.1 Temperature: maintain air temperature and structural base temperature at handrails, crash rails and horizontal wall bumpers installation area above between 18 and 24 °C and relative humidity below 80% for 24 hours before, during and 24 hours after installation.

.2 Installation areas must be enclosed and weatherproofed before installation commences.

1.7. Warranty

.1 Manufacturer’s Warranty: Submit in accordance with 1.3.8 Closeout Submittals, for Owner’s acceptance.

.1 Manufacturer limited lifetime warranty period for crash rails shall commence on date of Substantial Completion.

PART 2 PRODUCTS

2.1. Materials

.1 Crash Rail (**CR**): Surface mounted assembly consisting of a continuous extruded aluminum retainer with removable engineered PETG crash rail; Acrovyn 4000, model “SCR-80N” by Construction Specialties Inc. or approved alternate.

.1 Attachment hardware: fasteners appropriate for substrate construction and in accordance with manufacturer requirements.

.2 Mounting clearance: 13 mm (1/2”) offset from substrate.

.3 Nominal Rail Height: 8" h (203.2mm)

.4 Handrail Finish: suede texture

.5 Colour: Refer to Colour Legend

.6 End caps and corners: Color matched to crash rail and attached to allow post installation adjustment.

2.2. Accessories

.1 Fasteners: concealed fastener mounting as recommended by manufacturer.

2.3. Finishes

.1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.

.1 As fabricated or mill finish: designation AA-M10.

.2 Clear anodic finish: designation AA-A31.

.3 Integral colour anodic finish: designation AA-A32, colour to match Consultant's sample.

.4 Impregnated colour anodic finish: designation AA-A33, colour to match Consultant's sample.

.5 Electrolytically deposited colour anodic finish: designation AA-34, colour to match Consultant's sample.

.2 Appearance and properties of anodized finishes designated by the Aluminum Association as Architectural Class 1, Architectural Class 2, and Protective and Decorative.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for handrails, crash rails and horizontal wall bumpers 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.

3.2. Manufacturer's Instructions

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

3.3. Installation

.1 Install units on solid backing and erect with materials and components straight, tight and in alignment.

.2 Mechanically fasten crash rail support brackets and/or retainers to substrate at spacing in accordance with manufacturer’s installation requirements and to accommodate specified height above finish floor level.

.1 Crash rail over retainers and install end caps top and bottom.

3.4. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.3 Clean surfaces after installation using manufacturer's written recommended cleaning procedures.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

.5 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5. Protection

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by corner guard installation.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 06 10 00 - Rough Carpentry

.3 Section 09 21 16 - Gypsum Board Assemblies

1.2. Reference Standards

.1 Aluminum Association (AA)

.1 AA DAF 45, current edition, Designation System for Aluminum Finishes.

.2 ASTM International (ASTM):

.1 ASTM E 84-05, current edition, Standard Test Method for Surface Burning Characteristics of Building Materials.

.2 ASTM B221, current edition, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes

.3 ASTM D5420, current edition, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).

.4 ASTM G21, current edition, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

.5 ASTM D3273, current edition, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

.6 ASTM D4060, current edition, Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser

.7 ASTM D543, current edition, Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS).

.4 National Association of Architectural Metal Manufacturers (NAAMM)

.1 Metal Finishes Manual, current edition.

.5 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S102, current edition, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3. Submittals

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

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for corner guards and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Indicate VOC's for material as follows:

a. Caulking materials during application and curing.

b. Adhesives.

.3 Installation Drawings:

.1 Indicate on drawings large scale details, materials, finishes, dimensions, anchorage and assembly.

.4 Samples:

.5 Submit duplicate 300 mm (1’-0”) long samples of profiles and colours for corner guards.

.6 Closeout Submittals:

.1 Submit maintenance data and manufacturer warranty certificate for corner guards in accordance with Section 01 78 00 - Closeout Submittals.

a. Maintenance data shall include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

b. Manufacturer’s standard warranty document to be executed by authorized manufacturer official / representative.

1.4. Quality Assurance

.1 Test Reports:

.1 Submit certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates:

.1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements

1.5. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.2 Storage and Handling Requirements:

.1 Store materials in original, undamaged packaging in a cool, dry place out of direct sunlight and exposure to the elements. A minimum room temperature of 4°C (40°F) and a maximum of 38°C (100°F) should be maintained.

.2 Material must be stored flat.

.3 Store and protect wall and corner guards from nicks, scratches, and blemishes.

.4 Replace defective or damaged materials with new.

.5 Verify other finishing operations, including painting, have been completed.

1.6. Ambient Conditions

.1 Temperature: maintain air temperature and structural base temperature at corner guard installation area above between 18 and 24 °C and relative humidity below 80% for 24 hours before, during and 24 hours after installation.

.2 Installation areas must be enclosed and weatherproofed before installation commences.

1.7. Maintenance

.1 Extra Materials:

.1 Provide extra materials of corner guards and aluminum retainers in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide two (2) full lengths of each material and colour of corner guards.

.3 Extra materials from same production run/and or dye lot as installed materials.

.4 Deliver to storage location as directed by Owner, upon completion of work of this Section.

1.8. Warranty

.1 Manufacturer's Warranty: Submit in accordance with 1.3.8 Closeout Submittals, for Owner's acceptance.

.1 Manufacturer limited lifetime warranty period for thermoplastic corner guards shall commence on date of Substantial Completion.

PART 2 PRODUCTS

2.1. Materials

.1 Thermoplastic corner guard (**CG**): PETG thermoplastic, 90° corner guard complete with aluminum retainer and hardware; Acrovyn 4000, model "SM-10" by Construction Specialties Group or approved alternate.

.1 Thickness: 9mm (3/8") offset from surface when installed.

.2 Leg length: 76mm (3")

.3 Height: continuous from top of wall base to varies in height between 2184 mm (7'-2") – 2438 mm (8'-0") above finished floor, refer to interior elevation drawing.

.4 Colour: Refer to Colour Legend

.5 Performance criteria:

a. Bacterial and Fungal Resistant to ASTM G22 and G 21

b. Chemical and Stain Resistant to ASTM D543

c. Impact Resistant to ASTM F476

d. Fire Resistance: Class A; flame spread of less than 25 to CAN/ULC-S102

.6 Aluminum Retainer: Mechanically fastened 1.57 mm (0.62”) 6063-T6 extruded aluminum alloy snap-in retainer to ASTM B221. Profile to suit corner guard.

.7 Fasteners: Non-corrosive and compatible with aluminum retainers. Supplied by corner guard manufacturers.

2.2. Accessories

.1 Fasteners: concealed fastener mounting as recommended by manufacturer.

.2 Adhesive: water resistant type as recommended by manufacturer for substrate.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for wall and corner guards 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.

3.2. Manufacturer's Instructions

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

3.3. Installation

.1 Install units on solid backing and erect with materials and components straight, tight and in alignment.

.2 Mechanically fasten **CG** type corner guard retainers to substrate at 200 mm maximum on centre to accommodate specified corner guard height above finish floor line.

.1 Seat corner guard over corner guard retainer and install end caps top and bottom.

3.4. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.3 Clean surfaces after installation using manufacturer's written recommended cleaning procedures.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

.5 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5. Protection

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by corner guard installation.

END OF SECTION

PART 1 GENERAL

1.1. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 06 10 00 - Rough Carpentry

.3 Section 08 80 00 - Glazing

.4 Section 09 22 16 - Non-Structural Metal Framing

.5 Division 22 - Plumbing

.6 Division 26 - Electrical

1.2. Reference Standards

.1 ASTM International (ASTM)

.1 ASTM A167, current edition, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.2 ASTM B456, current edition, Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

.3 ASTM A653/A653M, current edition, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.4 ASTM A924/A924M, current edition, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

.5 ASTM F2285, current edition, Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use

.2 British Standards Group (BSI)

.1 BS 1088, current edition, Standard Specification for Marine Plywood Manufactured from Selected Untreated Tropical Hardwoods.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.81, current edition, Air Drying and Baking Alkyd Primer for Vehicles and Equipment.

.2 CAN/CGSB-1.88, current edition, Gloss Alkyd Enamel, Air Drying and Baking.

.3 CGSB 31-GP-107MA, current edition, Non-inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.

.4 CSA Group (CSA)

.1 CAN/CSA-B651, current edition, Accessible Design for the Built Environment.

.2 CAN/CSA-G164, current edition, Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CSA O121, current edition, Douglas Fir Plywood

.4 CSA O151, current edition, Canadian Softwood Plywood

.5 International Standard Organization (ISO)

.1 IEC 60601, current edition, Medical electrical equipment.

1.3. Submittals

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

.2 Product Data:

.1 Provide manufacturer's printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario, Canada for:

a. Non-load bearing metal studs and reinforcement within walls and partitions required to accommodate installation of accessories required to meet a minimum specified load capacity including:

i. Grab bars

ii. Mirror.

iii. Coat Hook

.2 For all accessories specified by this Section, submit drawings, indicating size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame and building-in details of anchors for grab bars.

.4 Samples:

.1 Make available one (1) sample of each accessory on-site for Consultant review.

1.4. Closeout Submittals

.1 Provide maintenance data for toilet and bath accessories for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5. Maintenance Material Submittals

.1 Tools:

.1 Provide special tools required for assembly, disassembly or removal for toilet and bath accessories in accordance with requirements specified in Section 01 78 00 - Closeout Submittals.

.2 Deliver special tools to Owner.

1.6. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect toilet and bathroom accessories from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

PART 2 PRODUCTS

2.1. Materials

.1 Sheet steel: to ASTM A653/A653M with ZF001 designation zinc coating.

.2 Stainless steel sheet metal: to ASTM A167, Type 304, with satin finish.

.3 Sustainability Characteristics:

.1 Laminate Adhesives.

a. Urea Formaldehyde Free.

.4 Stainless steel tubing: Type 304, commercial grade, seamless welded, 1.2 mm wall thickness.

.5 Fasteners: concealed screws and bolts hot dip galvanized, exposed fasteners to match face material of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.

.6 Backing:

.1 19 mm (3/4”), Sheathing (SHG), Grade C, Douglas Fir Plywood (DFP), to CSA O121 typical.

.2 25 mm (1”) marine grade sheathing, to BS 1088.

.7 Solid Blocking:

.1 Metal Stud Type: 0.8 mm (20 ga) steel backer-bar in accordance with Section 09 22 16 - Non-Structural Metal Framing.

a. Stud framing: Where metal stud type solid blocking indicated, vertical non-loadbearing stud framing shall not be less than 0.8 mm (20 ga) thickness.

.2 Wood Type: 38 mm thick, Spruce-Pine-Fir (SPF), KD, No. 2 Grade Lumber, to depth as required to accommodate mounting area.

2.2. Grab Bars

.1 All grab bar materials and anchorage shall be designed to withstand a downward pull force of not less than 1.33 kN.

.2 Horizontal Grab Bar (**GB-1**): 38 mm (1 1/2") diameter x 1.2 mm (18 ga) wall tubing of stainless steel with snap wall flange covers, concealed screw attachment, provided with mounting flanges and all accessories, model “B-6806.99 x 24” by Bobrick Washroom Equipment Inc or approved alternate.

.1 Dimensions (HxWxD): 85 mm x 610 mm c/c x 76 mm (3 1/4” x 2’-0” x 3”).

.2 Finish: Satin with peened grip.

.3 L-Shaped Grab Bar (**GB-2**): 38 mm (1 1/2") mm diameter x 1.2 mm (18 ga) wall tubing of stainless steel with snap wall flange covers, concealed screw attachment, provided with mounting flanges and all accessories, model “B-6898.99” by Bobrick Washroom Equipment Inc or approved alternate.

.1 Dimensions (HxWxD): 762 mm (2’-6”) high vertical component x 762 mm (2’-6”) long horizontal component x 76 mm (3”).

.2 Finish: Satin with peened grip.

2.3. Holders and Hooks

.1 Coat Hook (**CH**): One (1) piece brass casting with nickle-plated finish with concealed wall plate and set screw, model ‘B-2116’ by Bobrick Washroom Equipment Inc. or approved alternate.

.1 Dimensions (HxWxD): 70 mm x 70 mm x 85 mm (2 3/4” x 2 3/4” x 3 7/16").

.2 Finish: Satin.

2.4. Mirrors

.1 Fixed Mirror (**M-1**): 1.2 mm (18 ga) type 304 stainless steel wall mounted fixed frame with 6 mm (1/4”) select float glass mirror, concealed theft-resistant mounting, model “B-290 2436” by Bobrick Washroom Equipment Inc or approved alternate.

.1 Dimensions (HxWxD): 914 mm x 610 mm x 19 mm (3’-0” x 2’-0” x 3/4”).

.2 Finish: Satin.

2.5. Fabrication

.1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.

.2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.

.3 Brake form sheet metal work with 1.5 mm (1/16”) radius bends.

.4 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.

.5 Back paint components where contact is made with building finishes to prevent electrolysis.

.6 Hot dip galvanize concealed ferrous metal anchors and fastening devices to CAN/CSA-G164

.7 Shop assemble components and package complete with anchors and fittings.

.8 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.

.9 Provide steel anchor plates and components for installation on studding and building framing.

2.6. Products Installed but Not Supplied Under this Section

.1 Soap dispenser (**SD**): Supplied by Owner retained washroom accessory vendor to site.

.2 Toilet tissue dispenser (**TTD**): Supplied by Owner retained washroom accessory vendor to site.

.3 Paper towel dispenser (**PTD**): Supplied by Owner retained washroom accessory vendor to site.

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: verify that conditions of substrates and surfaces to receive toilet and bathroom accessories previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's instructions prior to toilet and bathroom accessories installation.

.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 from Consultant.

3.2. Installation

.1 Install and secure accessories rigidly in place as follows:

.1 Stud walls: install solid blocking and/or backing to studs prior to plaster or drywall finish. Provide plate with threaded studs or plugs.

.2 Hollow masonry units, existing plaster or drywall: use toggle bolts drilled into cell or wall cavity.

.3 Solid masonry, marble, stone or concrete: use bolt with lead expansion sleeve set into drilled hole.

.2 Install grab bars on built-in anchors or solid wood or metal backing within partition and wall cavities.

.3 Use tamper proof screws/bolts for fasteners.

.4 Fill units with necessary supplies shortly before final acceptance of building.

.5 Install mirrors in accordance with Section 08 80 00 - Glazing.

3.3. Adjusting

.1 Adjust toilet and bathroom accessories components and systems for correct function and operation in accordance with manufacturer's written instructions.

.2 Lubricate moving parts to operate smoothly and fit accurately.

3.4. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.5. Protection

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by toilet and bathroom accessories installation.

3.6. Schedule

.1 Provide accessory quantities in rooms as specified on the floor plan.

.2 Locate accessories where indicated on interior elevations and as follows. Exact locations determined by Consultant, where not indicated on drawings:

.1 Horizontal Grab Bar (**GB-1**): Quantity and location as indicated on floor plan. Mount horizontally on the wall behind water closet, centered with water closet and located from 840 mm (2'-9") to 920 mm (3'-0") above finished floor or where the water closet has a flush tank, 150 mm (6") above the tank.

.2 L-Shaped Grab Bar (**GB-2**): Quantity and location as indicated on floor plan. Mount on the wall adjacent to the water closet with the horizontal component located 810 mm (2'-8") above finished floor and the vertical component located 150 mm (6") in front of the water closet bowl.

.3 Soap dispenser (**SD**): Quantity and location as indicated on floor plan. Mount on wall as indicated on drawings with underside at 1100 mm (3'-7") above finished floor.

.4 Toilet Tissue Dispenser (**TTD**): Quantity and location as indicated on floor plan. Mount on side wall adjacent to toilet, 300 mm (12") from the front of the toilet seat with the bottom of the dispenser at 610 mm (2'-0") above finished floor.

.5 Paper towel dispenser (**PTD**): Quantity and location as indicated on floor plan. Mount on wall adjacent to lavatory, as indicated on drawings, with underside at 1200 mm (3' 11") above finished floor.

.6 Coat Hook (**CH**): Quantity and location as indicated on floor plan. Mount on wall as indicated on drawings with top of hook at 1200 mm (3'-11") above finished floor.

.7 Fixed Mirror (**M-1**): Quantity and location as indicated on floor plan. Mount on wall with underside at 1000 mm (3'-3 3/8") maximum above finished floor.

END OF SECTION

PART 1 GENERAL

1.1. Summary of Work

.1 Work of this section includes but is not limited to providing factory manufactured and factory finished modular wood composite core casework as indicated including associated countertops, cabinet hardware and accessories. Refer to Consultant drawings for location and extent of work.

1.2. Definitions

.1 Thermally Fused Laminate (TFL): A manufactured composite material consisting of a single, decorative and/or textured, resin saturated, paper sheet which is adhered to a substrate of medium-density fibre board or particle board using heat and pressure (< 2.8 MPa).

.2 High Pressure Laminate (HPL): A manufactured composite material consisting of printed decorative paper fused to multiple sheets of kraft paper saturated with a synthetic thermosetting resin cured using heat and high pressure (> 6.8 MPa) to form a flexible, single, high density, wear resistant, decorative sheet that is then adhered to a substrate (often plywood or particle board) using high strength adhesive.

.3 Low Pressure Laminate (LPL): See definition of “Thermally Fused Laminate (TFL)”.

1.3. Related Requirements

.1 Division One, General Requirements is part of this Section and shall apply as if repeated here.

.2 Section 07 92 00 - Joint Sealants: Sealant materials and application.

1.4. Reference Standards

.1 American National Standards Institute (ANSI)

.1 ANSI/BIFMA e3, current edition, Furniture Sustainability Standard

.2 ANSI/BIFMA X5.5, current edition, Desk and Table Products

.3 ANSI/BIFMA X5.6, current edition, Panel Systems

.4 ANSI/BIFMA X5.9, current edition, Storage Units.

.5 ANSI/BIFMA X6.5, current edition, Home Office and Occasional-Use Desk, Table and Storage Products

.6 ANSI/BIFMA X7.1, current edition, Standard for Formaldehyde and TVOC Emissions of Low-emitting Office Furniture and Seating

.7 ANSI/BIFMA M7.1, current edition, Standard Test Method for Determining VOC Emissions From Office Furniture Systems, Components, and Seating.

.8 BIFMA PD-1, current edition, Mechanical Test Standards – Compiled Definitions

.9 ANSI/ASME 18.6.1, current edition, Wood Screws (Inch Series).

.10 ANSI/AWI1232, current edition, Manufactured Wood Casework.

.11 ANSI/BHMA A156.9, current edition, Cabinet Hardware.

.12 ANSI/BHMA A156.11, current edition, Cabinet Locks.

.13 ANSI/BHMA A156.16, current edition, Auxiliary Hardware.

.14 ANSI/BHMA A156.18, current edition, Materials and Finishes.

.15 ANSI/BHMA A156.20, current edition, Strap and Tee Hinges and Hasps.

.16 ANSI A208.1, current edition, Particleboard.

.17 ANSI A208.2, current edition, Medium Density Fiberboard (MDF) for Interior Applications.

.2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)

.1 Architectural Woodwork Standards (AWMAC AWS), current edition.

.3 ASTM International (ASTM)

.1 ASTM A 153/A 153M, current edition, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

.2 ASTM E 1333, current edition, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.

.3 ASTM F1667, current edition, Standard Specification for Driven Fasteners: Nails, Spikes and Staples.

.4 Business and Institutional Furniture Manufacturer Association (BIFMA)

.1 BIFMA HCF 8.1, current edition, Cleanability of Healthcare Furniture Standards

.5 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-11.3, current edition, Hardboard.

.2 CAN/CGSB-71.20, current edition, Adhesive, Contact, Brushable.

.3 CAN/CGSB-71.19, current edition, Adhesive, Contact, Sprayable.

.6 CSA Group (CSA)

.1 CSA O112-M Series, current edition, Standards for Wood Adhesives.

.2 CSA O121, current edition, Douglas Fir Plywood.

.3 CSA O141, current edition, Softwood Lumber.

.4 CSA O151, current edition, Canadian Softwood Plywood.

.5 CSA O153, , current edition, Poplar Plywood.

.6 CAN/CSA-Z809, current edition, Sustainable Forest Management.

.7 Forest Stewardship Council (FSC)

.1 FSC-STD-01-001, current edition, FSC Principle and Criteria for Forest Stewardship.

.8 Green Seal Environmental Standards (GS)

.1 GS-11, current edition, Paints, Coatings, Stains and Sealers.

.2 GS-36, current edition, Adhesives for Commercial Use.

.9 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.10 Safety Data Sheets (SDS).

.1 National Electrical Manufacturers Association (NEMA)

.2 ANSI/NEMA LD-3, current edition , High-Pressure Decorative Laminates (HPDL).

.3 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

.11 SCAQMD Rule 1113, current edition, Architectural Coatings.

.12 SCAQMD Rule 1168, current edition, Adhesives and Sealants Applications.

.13 Sustainable Forestry Initiative (SFI)

.1 SFI, current edition, Standard and Rules.

1.5. Pre-installation Meeting

.1 Before enclosing framing, convene a meeting of contractor, casework fabricator, casework installer, framing subcontractor and Consultant.

.1 Review locations of backing required for casework installation as shown on shop drawings and as necessary for installation.

.2 Review method of attachment for backing to wall system.

.3 Review coordination with other affected sections.

1.6. Sequencing and Phasing Requirements

.1 Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.7. Submittals

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

.2 Product Data:

.1 Prepare and submit material list in accordance with AWMAC AWS, cross-referenced to specifications.

.2 Include manufacturer's instructions, printed product literature, data sheets and catalogue pages for all materials and products to be incorporated into manufactured modular wood casework and include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.

.3 Hardware List:

.1 Submit hardware list cross-referenced to specifications.

.2 Include manufacturer's specification sheets indicating name, model, material, function, finish, BHMA designations and other pertinent information.

.4 Shop Drawings:

.1 Prepare and submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures and as follows:

.2 Submit one digital set of shop drawings for initial review in accordance with requirements of Division 01. Revise per the comments received from the Contractor and Consultant and submit digital copies for final acceptance and distribution.

a. Do not proceed with fabrication until final shop drawings, related submittals and samples as required by this Section have been reviewed by the Contractor and Consultant with no further comments for revision.

.3 Indicate details of construction, profiles, jointing, fastening and other related details.

.4 Unit system of shop drawings shall match unit system used under Consultant drawings (i.e metric or imperial).

.5 Minimum scales of drawings:

a. Draw profiles at minimum 1:4 or 3” = 1’-0”

b. Draw details at minimum 1:10 or 1” = 1’-0”

c. Draw layout and elevations at minimum 1:30 or ½” = 1’-0”

.6 Indicate materials, thicknesses, finishes and hardware.

.7 Indicate proposed edge finish based on Drawings and options specified by this Section

.8 Indicate closure material and filler panels between wall and cabinetry scribed to the wall surface.

.9 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.

.10 Include all cabinet hardware attachment to the cabinet.

.11 Show location on casework elevations of backing required in supporting structure for attachment of casework.

.12 Indicate seaming locations for countertop materials.

.13 Include colour schedule of all casework items, including all countertop, exposed, and semi-exposed cabinet finishes, finish material manufacturer, pattern, and colour.

.5 Samples:

.1 Prepare and submit samples in accordance with Section 01 33 00 - Submittal Procedures and as follows:

.2 Shop applied coatings:

a. For transparent finish, submit triplicate samples of each species and cut of wood to be used, finished to match project sample.

b. For opaque finish, submit one (1) sample for each colour selection, finished to match project sample.

.3 Submit duplicate samples of the following:

a. High Pressure Laminate (HPL) for each selected colour.

b. High Pressure Laminate (HPL) joints, edging, cutouts and post-formed profiles.

c. ABS laser edge banding for each selected colour.

d. Thermally Fused Laminate (TFL) for each selected colour.

e. Solid surface countertop material for each selected colour.

.4 Submit one sample of the following:

a. Each door and drawer pull type for each colour and finish selected.

.5 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.8. Closeout Submittals

.1 Submit manufacturer's instructions for care, cleaning and maintenance of manufactured modular wood casework, parts catalogue of accessories and manufacturer warranty certificate(s) for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.9. Quality Assurance

.1 Perform Work of this Section by single modular wood casework manufacturer with minimum ten (10) years of current modular wood casework fabrication experience and having completed minimum one project in the past five (5) years with value within 20% of the cost of the work of this Section.

.2 Independent inspection/testing agency may be engaged by Owner for purpose of inspecting and/or testing Work of this Section.

.1 Cost of inspection and testing services will be borne by Owner.

.2 Costs of inspection and testing services will be paid in accordance with Section 01 21 00 - Allowances.

.3 Construct casework of this section in accordance with BIFMA standards, and certify compliance. Provide all relevant BIFMA test results if requested by Consultant.

.4 Mock-ups:

.1 Construct mock-ups in accordance with Section 01 43 00 - Quality Assurance.

.2 Shop prepare mock-ups of each of the following:

a. One (1) base cabinet unit of each typical casework
b. One (1) wall cabinet unit of each typical casework

.3 Mock-up specified by this Section shall represent and include typical countertop type and features, hardware, fixtures, accessories, shop finishes and be installed in the typical location, height and position identified on drawings.

.4 Allow twenty-four (24) hours for inspection of mock-up by Consultant before proceeding with Work.

.5 When accepted, mock-up will demonstrate minimum standard for Work.

.6 Do not proceed with work before receipt of written acceptance of mock-up by Consultant.

.7 Accepted mock-up may remain as part of finished work.

1.10. Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Deliver casework only when area of work is enclosed, plaster and concrete work is dry, and area is broom clean and site environmental conditions are acceptable for installation.

.3 Protect casework against dampness and damage during and after delivery.

.4 Store casework in ventilated areas, protected from extreme changes of temperature and humidity, and within range recommended by AWMAC AWS for location of project.

.5 Store materials indoors, in dry location and in clean, well-ventilated area.

.6 Protect casework and hardware from nicks, scratches, and blemishes.

.7 Replace defective or damaged materials with new.

1.11. Warranty

.1 For Work of this Section, the twelve (12) month warranty period shall be extended for the following components:

.1 Casework: Provide twenty-five (25) year manufacturer warranty from date of substantial completion.

.2 Solid Surface Countertops: Provide ten (10) year manufacturer warranty against defects in material and two (2) years on installation from the date of substantial completion.

PART 2 PRODUCTS

2.1. Sustainability and Health Requirements

.1 All products shall be Greenguard Gold certified and shall comply with BIFMA X7.1 emission standards.

.2 All products shall be pre-tested and in compliance with BIFMA HCF 8.1, current edition, Cleanability of Healthcare Furniture Standards.

.3 All products shall be certified compliant with BIFMA LEVEL 2 standards.

2.2. Panel Materials

.1 Panel Substrate:

.1 Particle board, M-2 Grade, with 100% recycled wood fibre, to ANSI A208.1.

a. Refer to casework schedule and Consultant drawings for material thickness.

.2 Panel Finish:

.1 Thermally fused laminate (TFL) panel finish: Low pressure thermally fused melamine laminate to NEMA LD 3, Grade VGL , decorative laminate thermally fused under heat and pressure to panel substrate:

a. Laminate finish fused to both faces.

b. Finish: Colours by Lacasse, refer to Colour Legend, Colour Schedule, and Casework Schedule for locations

.2 High Pressure Laminate (HPL) panel finish: High pressure thermally fused melamine laminate to NEMA LD 3, Grade HGL, decorative laminate adhered to panel substrate:

a. High pressure laminated finish adhesive: contact adhesive to CAN/CGSB071.20. Test for acceptable VOC emissions in accordance with ASTM D2369 and ASTM D2832.

b. Finishes: Colours by Lacasse, refer to Colour Legend, Colour Schedule, and Casework Schedule for locations

2.3. Countertops

.1 Solid Surface Countertops:

.1 Solid surface counter with front edge skirt, with integral backsplash and sidesplash at all wet areas unless noted otherwise.

.2 Countertop: 1/2" thick solid surface

.3 Countertop Size: width and depth as shown on drawings.

.4 Edge profile: 1 1/2" thick built-up bullnose edge.

.5 Standard of Acceptance: Wilsonart colour as scheduled in Colour Legend, or approved alternate.

.6 Refer to Section 06 61 16 Solid Surfacing Fabrications.

.2 High Pressure Laminate Countertops:

.1 Countertop substrate: 28.6 mm (1 1/8”) thick, particle board, M-2 Grade, with 100% recycled wood fibre, to ANSI A208.1

.2 High Pressure Laminate (HPL) panel finish: High pressure thermally fused melamine laminate to NEMA LD 3, Grade HGL, decorative plastic laminate thermally fused under heat and pressure to particle board substrate:

a. High pressure laminated finish adhesive: contact adhesive to CAN/CGSB071.20. Test for acceptable VOC emissions in accordance with ASTM D2369 and ASTM D2832.

b. Finish: Wilsonart colour as scheduled in Colour Legend, Colour Schedule and Casework Schedule for locations.

i. 1.5 mm (1/16") ABS banding on all four (4) edges applied with laser edge banding method. Match countertop finish.

2.4. Cabinet Hardware

.1 Door Hinges:

.1 135° Fully adjustable, concealed, typical.

.2 110° degree, fully adjustable, concealed where requested.

.3 Acceptable manufacturers: Blum, Hettich, Salice

.4 Soft Closing doors and drawers are standard and required.

.2 Door "D" Pull and Drawer Pulls:

.1 128 mm (5") center to center mounting, 32mm (1 ¼") deep, 10 mm (3/8") dia., steel pull. Standard of Acceptance: Lacasse U handle or approved alternate.

a. Finish: Brushed Nickel UB.

.3 Drawer Box Slides (typical):

.1 16 gauge, steel slides complete with permanently lubricated nylon rollers and parallel self-closing action in accordance with ANSI/BHMA A156.9.

a. Dynamic load capacity: 45 kg (100 lbs) minimum.

b. Static load capacity: 57 kg (125 lbs) minimum.

c. Length: To suit casework depth and drawer travel distance.

d. White epoxy powder coat finish.

.4 File Drawer Slides:

.1 Medium duty, side mounted, full extension drawer slide with soft close, metal ball bearing mechanism in accordance to ANSI/BHMA A156.9. Standard of Acceptance: “Medium-Duty Easy Close Slide 3932EC” by Accuride Canada Inc or approved alternate.

a. Load capacity: 68 kg (150 lbs) minimum per pair.

b. Length: To suit casework depth and drawer travel distance.

c. Finish: Clear Zinc.

.5 Cabinet Locks:

.1 Zinc die cast body cabinet door lock with 24mm (15/16”) bolt throw length to ANSI/BHMA A156.11 Grade 1 complete with full size interchangeable cores and standard accessories. Standard of Acceptance: Lacasse Silver Lock cylinder S or approved alternate.

.2 Handing to suit casework door and drawer layout / orientation.

.3 All locks to be keyed to Owner requirements.

.6 Catch:

.1 Two (2) piece, magnetic catch complete with fastening hardware; Standard of Acceptance: Richelieu #BP52090 or approved alternate.

a. Static Pull Strength: 1.4 kg – 1.6 kg (3.0 lbs – 3.5 lbs)

b. Colour specified by Consultant from standard range.

.7 Door and Drawer Bumpers:

.1 9 mm dia. (3/8”), clear nylon, self-adhered bumper. Standard of Acceptance: Model BP303-11 by Richelieu, or approved equal.

.8 Plastic Grommets:

.1 Typical Round Grommet (**G**); Round polypropylene sleeve and cover with opening for cable management. Standard of Acceptance: Richelieu or Hafele, plastic grommet, cover and case, or approved alternate.

a. Bore Hole Diameter: 63 mm (2-1/2”)

b. Colour specified by Consultant from standard range.

.2 Glove box openings (**GBO**); 152 mm (6”) x 63 mm (2 ½”) oval plastic grommet liner. Standard of Acceptance: Mockett 152 mm (6”) plastic grommet cover or approved alternate.

a. Colour specified by Consultant from standard range.

.9 Shelf Supports (Wood Shelves):

.1 Metal shelf supports, 5mm (13/64”) diameter, adjustable, for shelves behind doors

.10 File System:

.1 4 sided railing system to accept filing 8½ x 11’’ and 8½ x 14’’ in all directions.

.11 Countertop support bracket:

.1 Heavy duty, factory welded steel work surface support bracket complete with epoxy coated finish. Standard of Acceptance: ‘Hebgo - Work Surface Brackets’ by Häfele or approved alternate.

a. Load capacity: minimum 500 kg (1100 lbs) per pair of brackets

b. Colour: Dark Grey

c. Bracket spacing to BIFMA requirements and bracket manufacturer requirements for specified load capacity.

.12 Keypads:

.1 Digital cabinet lock with numeric keypad interface, multi-code access, vertical orientation type, all metal housing with integrated pull handle and motorized deadbolt. Standard of acceptance: ‘Aspire Vertical Body Series with Pull Handle’ by Digilock or approved alternate.

a. ADA compliant, IP55 rated, IC certified and listed under FCC and CE

b. User codes: Reprogrammable, up to 7 digits and up to 20 users per lock.

c. User keys: Ten (10), ADA compliant keys in brush nickel finish

d. Manager keys: Two (2) ADA compliant keys in brush nickel finish

e. Programming keys : One (1) ADA compliant keys in brush nickel finish

f. Connection type: Cable

g. Indicators: Both LED light and audible feedback.

.13 Vents:

.1 Rectangular vent. Minimum size: 4 5/8" x 3 5/8" should enclose the opening from the inside and the outside, max material thickness 1", constructed black or grey metal.

.14 Closet Rods:

.1 2 mm (14 gauge), round 34 mm dia. (1-5/16" dia.) hollow steel tube profile complete with wall flanges and associated hardware. Standard of Acceptance: "Sturdy Round Chrome Rod 1-5/6 in" by Richellieu or approved alternate.

a. Finish: Chrome

b. Wall Flange: Size to suit rod, dowel mount, open type, matching rod finish.

.15 Wall Cabinet Suspension System

.1 To be constructed of a metal cleat mounted to the wall to spread the load between the cabinet and the wall. Cabinets to be internally adjustable.

.16 Furniture Leveler in laminate integral base

.1 Adjustable steel corner leveler with support lip under side panel that is screw mounted to side panel.

a. Load capacity: minimum of 90 kg (200 lbs) per leveler.

b. Provide four (4) levelers per cabinet.

c. Leveler adjustment: up to 25 mm (1") with hex driver.

d. Access to leveler adjustment to be provided via 9 mm (3/8") hole in bottom of cabinet.

2.5. Fasteners and Accessories

.1 All casework and furniture to be manufactured utilizing metal on metal connections such as a combination of threaded metal insert, machined steel dowel and metal cam wherever hardware can be visible or when a component could be subject to reconfiguration and/or replacement over time.

.2 Nails and staples shall not be utilized in casework construction

PART 3 EXECUTION

3.1. Examination

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for manufactured wood casework installation in accordance with manufacturer's 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.

3.2. Fabrication

.1 Factory fabricate and factory finish all casework items, ready for delivery to site in size easily handled packages and to ensure passage through building openings.

.2 Construct all casework with metal on metal connections such as a combination of threaded metal insert, machined steel dowel and metal cam wherever hardware can be visible or when a component could be subject to reconfiguration and/or replacement over time.

.3 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.

.4 Provide adjustable shelving unless otherwise noted.

.5 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures. Coordinate with Mechanical and Electrical.

.6 Construction:

.1 Finish components in shop, under temperature and humidity controlled conditions in accordance with ANSI/AWI 1232.

.2 Fabricate components in maximum size permissible for installation on site.

.3 Site fabrication and finishing shall be performed only on receipt of written approval of Shop Drawings.

.7 Fastening:

.1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.

.2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.

.3 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

.8 Edgebanding:

.1 Fasten edgeband to substrate utilizing laser edging process, a laser process that results in an integral and permanent bond between the edgeband and the substrate, with edgeband melted into the surface laminate to seal and eliminate visible lines and seams.

3.3. Installation

.1 Install manufactured wood casework in accordance with ANSI/AWI 1232 for respective items

.2 In case of conflict between Contract Documents and ANSI/AWI 1232 requirements, Contract Documents govern.

.3 Install manufactured wood casework at locations shown on drawings.

.4 Position accurately, level, plumb straight.

.5 Fasten and anchor casework securely.

.6 Supply and install heavy duty fixture attachments for wall mounted cabinets.

.7 Use draw bolts or hardware provided in countertop joints.

.8 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.

.9 At junction of counter back splash and adjacent wall finish, apply small bead of sealant in accordance with Section 07 92 00 - Joint Sealants.

.10 Apply moisture barrier between wood framing members and masonry or cementitious construction.

.11 Fit hardware accurately and securely in accordance with manufacturer's written instructions.

.12 Make cutouts for inset equipment and fixtures using templates provided.

.13 Install shelving.

.14 Form joints to conceal shrinkage and adjusting.

3.4. Cleaning

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

.1 Clean casework inside cupboards, drawers and outside surfaces.

.2 Remove excess glue, pencil and ink marks from surfaces.

3.5. Protection

.1 Protect casework from damage until final inspection.

.2 Protect installed products and components from damage during construction.

.3 Repair damage to adjacent materials caused by manufactured wood casework installation.

.4 Leave work to be site finished ready for finishing by Section 09 91 23 Interior Painting.

3.6. Schedules

.1 <u>Casework Boxes:</u>

.1 25 mm (1”) thick composite wood panel with thermally fused laminate (TFL) finish.

.2 Finish Colour: Refer to Part 2 Materials.

.3 Finish for edges, including concealed surfaces

a. Solid high impact edgeband, ABS, 1.5 mm (1/16”) thick

b. machine applied

c. trim face back and corners for a uniform appearance.

.4 Use low VOC Adhesive

.5 Finished casework shall have no exposed particleboard edges, including concealed surfaces.

.2 Typical Gables, Tops, Rails, Backs and Bottoms:

.1 16 mm (5/8") composite wood panel with thermally fused laminate (TFL) finish.

.2 Finish Colour: Refer to Part 2 Materials.

.3 Typical exposed edges:

a. Solid high impact edgeband, ABS, 1.5 mm (1/16") thick.

b. Laser applied.

c. Trim face back and corners for a uniform appearance.

.3 Backs:

.1 16 mm (5/8") thick).

.4 Shelves:

.1 Adjustable:

a. 25 mm (1") thick TFL composite wood panels for all shelves. 1.5 mm (1/16") ABS laser edgeband on all 4 sides of shelves.

.2 Fixed shelves:

a. 25 mm (1") thick TFL composite wood panel for shelves up to 41" wide.

i. 1.5mm (1/16") ABS laser edgeband for all 4 sides.

ii. secured at side ends and back.

.3 Interior finish for all casework:

a. Interior TFL to match exterior.

.5 Doors - Standard:

.1 16 mm (5/8”) thick TFL composite wood panel with 1.5 mm (1/16”) ABS edges.

.2 Doors are surface mounted, flush overlay style.

.6 Drawer Faces:

.1 16 mm (5/8”) thick TFL composite wood panel with 1.5 mm (1/16”) ABS edges.

.2 Drawers are surface mounted, flush overlay style.

.7 Drawer Boxes:

.1 Personal, box, storage and deep storage drawers:

a. Integrated drawer slide and side.

b. 16 mm (5/8”) TFL bottom and back panels.

.2 File Drawers:

a. Metal drawer side with TFL bottom and back panels.

b. Provide file bars for lateral filing.

.8 Toe Space:

.1 Integrated to base cabinets, all faces sealed, no exposed wood or particleboard.

.2 102 mm (4" high), unless otherwise noted on Consultant drawings.

.3 Installed after flooring is completed.

.9 Filler panels:

.1 No wider than 50 mm (2") between walls.

.2 No less than 64 mm (2 1/2") at corner cabinets.

.3 Scribe to of 0.8mm (1/32") PVC.

.4 To match the adjacent finish.

.10 Tack Board Surface:

.1 Selected from manufacturer standard offering in typical areas.

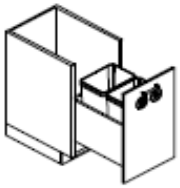
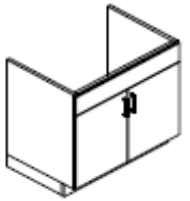
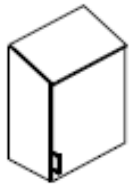
.2 Where installed in healthcare application, provide high performance, moisture resistant synthetic fabric covering specifically designed to meet or exceed the Owner's IPAC requirements including regular disinfecting and cleaning procedures in lieu of standard finish. Standard of acceptance: 'Designtex' synthetic fabrics with 'Crypton Fabric' backing by Crypton LLC or approved alternate.

a. Stain Resistance: Class 4 – 5 to AATCC 130

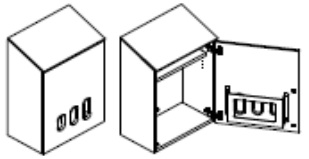
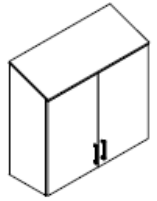
b. Hydrostatic Resistance: 100 cm minimum to AATCC 127

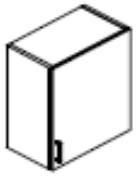
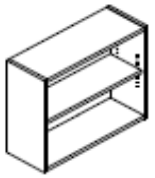
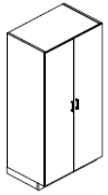
c. Bleach cleanable: Yes

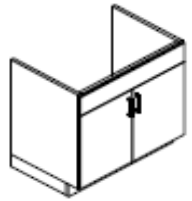
END OF SECTION

Casework Schedule - Laurentian University Interprofessional Health Simulation Centre						
ITEM	**TYPE**	**QTY**	**DESCRIPTION**	**FINISHES**	**DIMENSIONS**	**IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)**
EXAMINATION ROOM /CONSULTATION OFFICE SE308J						
BC-1	Base Cabinet with 1 door and 1 drawer	1	Lacasse Neocasse Base cabinet with 1 door and 1 drawer, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 24" x W 15" x H 35"	
BC-2	Base Cabinet with pull out waste & recylcing	1	Lacasse Neocasse Base cabinet with pull out waste and recycling module, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 24" x W 24" x H 35"	
BC-3	Sink Base Cabinet	1	Lacasse Neocasse Sink base cabinet with false front with 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 23" x W 30" x H 35"	
BFP-1	Base Cabinet Filler Panel	1	Lacasse Neocasse Base cabinet filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W +/-1" (site verify)	
CT-1	Countertop and backsplash	1	Lacasse Neocasse	Countertop: Solid Surface Colour Wilsonart Chilled Earth 9228SS	D 24" x W +/- 70" x backsplash and sidesplash H 4" (site verify)	
UC-1	Upper Cabinet c/w angled top	1	Lacasse Neocasse Upper Cabinet with 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 15" x H 30"	

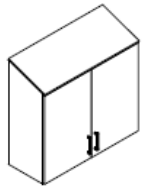
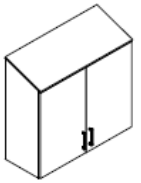
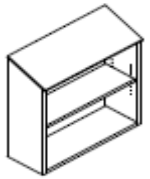
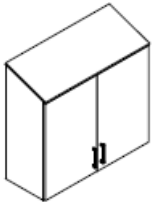
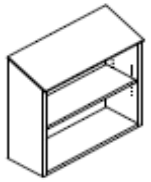
Casework Schedule - Laurentian University Interprofessional Health Simulation Centre

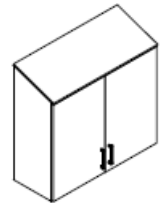
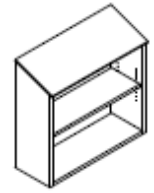
ITEM	TYPE	QTY	DESCRIPTION	FINISHES	DIMENSIONS	IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)
UC-2	Upper Cabinet c/w angled top, triple glove and paper towel dispenser	1	Lacasse Neocasse Upper cabinet with triple glove and paper towel dispenser, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 24" x H 30"	
UC-3	Upper Cabinet c/w angled top	1	Lacasse Neocasse Upper Cabinet with 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 30" x H 24"	
UFP-1	Upper Cabinet Filler Panel	1	Lacasse Neocasse filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W +/-1" (site verify)	

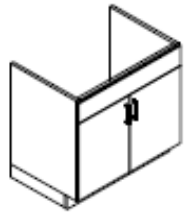
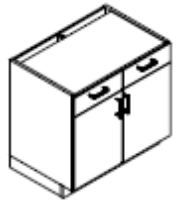
Casework Schedule - Laurentian University Interprofessional Health Simulation Centre						
ITEM	**TYPE**	**QTY**	**DESCRIPTION**	**FINISHES**	**DIMENSIONS**	**IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)**
CORRIDOR SE308U						
UC-4	Upper Cabinet	2	Lacasse Neocasse Upper Cabinet with 1 doors c/w lock x1 Left x1 Right	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 18" x H 30"	
UC-5	Open Upper Cabinet	1	Lacasse Neocasse Open Upper Cabinet	Cabinet Finish: High pressure laminate Colour: Acacia AIA	D 14" x W 21" x H 30"	
UFP-2	Upper Cabinet Filler Panel	2	Lacasse Neocasse filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W +/- 2.5" (site verify) Height: 30"	
VP-1	Valance Panel	1	Lacasse Neocasse Valence Panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W: +/- 5'-1" (site verify) H: 4"	
ST-1	Storage Cabinet	4	Lacasse Neocasse Storage Cabinet with 2 doors c/w 4 adjustable shelves and 1 fixed shelf (middle), lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 24" x W 33" x H 84"	
SFP-1	Storage Cabinet Filler Panel	2	Lacasse Neocasse filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W +/-1/2" (site verify)	
VP-2	Valance Panel	1	Lacasse Neocasse Valence Panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W: +/- 11'-0" (site verify) H: 4"	

Casework Schedule - Laurentian University Interprofessional Health Simulation Centre						
ITEM	**TYPE**	**QTY**	**DESCRIPTION**	**FINISHES**	**DIMENSIONS**	**IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)**
DEBRIEF ROOM SE308K						
ST-4	Base Cabinet with 2 door and 1 drawer, open upper cabinet, countertop, open upper cabinet, storage cabinet filler panel	1	Lacasse Neocasse Base cabinet with 2 doors and 2 drawers, locks / Open Upper Cabinet/ Laminate Countertop/ Open Upper Cabinet with sloped top/ Filler Panel	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike Countertop: Solid Surface Colour Wilsonart Chilled Earth 9228SS Panel Finish: High pressure laminate Colour: Acadia AIA	D 24" x W 36" x H 35" / D 14" x W 36" x H 24"/ D 24" x W 36"/ D 14" x W 36" x H 24"/ W +/- 1"	Refer to Casework Elevations
MEDICATION SE308L						
BC-7	Sink Base Cabinet	1	Lacasse Neocasse Base sink cabinet with 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 24" x W 36" x H 35"	
BC-8	Base Cabinet with 4 Drawers	1	Lacasse Neocasse Base cabinet with 4 drawers, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 24" x W 30" x H 35"	
BC-9	Base Cabinet with 4 Drawers	2	Lacasse Neocasse Base cabinet with 4 drawers, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 24" x W 18" x H 35"	
CT-2	L-Shaped Countertop and backsplash	1	Lacasse Neocasse L-shaped	Countertop: High pressure laminate Colour: Wilsonart Beachwalk 5044-60	D 24" x W +/-10'-8" / 96" backsplash H 4" & side splashes (site verify)	

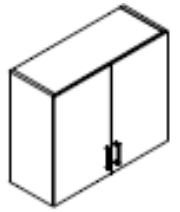
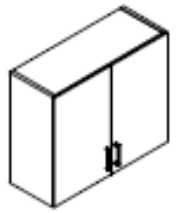
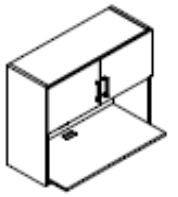
Casework Schedule - Laurentian University Interprofessional Health Simulation Centre

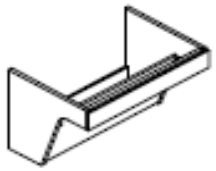
ITEM	TYPE	QTY	DESCRIPTION	FINISHES	DIMENSIONS	IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)
UC-7	Upper Cabinet c/w angled top	1	Lacasse Neocasse Upper Cabinet with sloped top and 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 30" x H 30"	
UC-8	Open Upper Cabinet	1	Lacasse Neocasse Open Upper Cabinet with sloped top, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 36" x H 30"	
UC-9	Open Upper Corner Cabinet	1	Lacasse Neocasse Open Upper Corner Cabinet with sloped top	Cabinet Finish: High pressure laminate Colour: Acacia AIA	D 14" x W 27" x H 30"	
UC-10	Open Upper Cabinet	1	Lacasse Neocasse Open Upper Cabinet with sloped top, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 36" x H 24"	
UC-11	Open Upper Cabinet	1	Lacasse Neocasse Open Upper Cabinet with sloped top	Cabinet Finish: High pressure laminate Colour: Acacia AIA	D 14" x W 30" x H 24"	

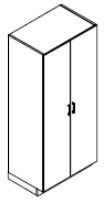
Casework Schedule - Laurentian University Interprofessional Health Simulation Centre						
ITEM	**TYPE**	**QTY**	**DESCRIPTION**	**FINISHES**	**DIMENSIONS**	**IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)**
UC-3	Open Upper Cabinet	1	Lacasse Neocasse Open Upper Cabinet with sloped top, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 30" x H 24"	
UC-18	Open Upper Cabinet	1	Lacasse Neocasse Open Upper Cabinet with sloped top	Cabinet Finish: High pressure laminate Colour: Acacia AIA	D 14" x W 15" x H 30"	
BFP-1	Base Cabinet Filler Panel	2	Lacasse Neocasse Base cabinet filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W +/-1" (site verify)	
UFP-1	Upper Cabinet Filler Panel	1	Lacasse Neocasse filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W +/- 2.5" (site verify) Height: 24"	
UFP-2	Upper Cabinet Filler Panel	1	Lacasse Neocasse filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W +/- 2.5" (site verify) Height: 30"	

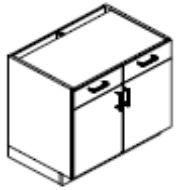
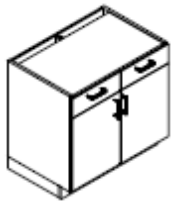
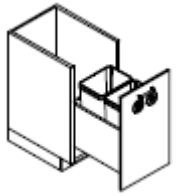
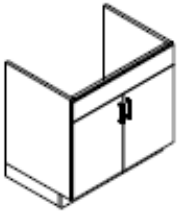
Casework Schedule - Laurentian University Interprofessional Health Simulation Centre						
ITEM	**TYPE**	**QTY**	**DESCRIPTION**	**FINISHES**	**DIMENSIONS**	**IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)**
KITCHEN SE311C						
BC-7	Sink Base Cabinet	1	Lacasse Neocasse Base sink cabinet with 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Willow Grey WGR Handle: 5" U handle brushed nickel Keyed alike	D 24" x W 36" x H 35"	
BC-8	Base Cabinet with 4 Drawers	1	Lacasse Neocasse Base cabinet with 4 drawers, locks	Cabinet Finish: High pressure laminate Colour: Willow Grey WGR Handle: 5" U handle brushed nickel Keyed alike	D 24" x W 30" x H 35"	
BC-14	Base Cabinet with 4 Drawers	1	Lacasse Neocasse Base cabinet with 4 drawers, locks	Cabinet Finish: High pressure laminate Colour: Willow Grey WGR Handle: 5" U handle brushed nickel Keyed alike	D 24" x W 36" x H 35"	
BC-15	Base Cabinet with 2 door and 2 drawer	1	Lacasse Neocasse Base cabinet with 2 doors and 2 drawers, locks	Cabinet Finish: High pressure laminate Colour: Willow Grey WGR Handle: 5" U handle brushed nickel Keyed alike	D 23" x W 36" x H 35"	

Casework Schedule - Laurentian University Interprofessional Health Simulation Centre

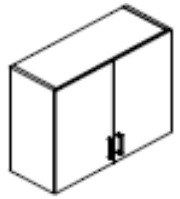
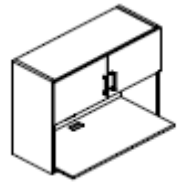
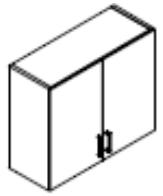
ITEM	TYPE	QTY	DESCRIPTION	FINISHES	DIMENSIONS	IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)
UC-16	Upper Cabinet	3	Lacasse Neocasse Upper Cabinet with 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Willow Grey WGR Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 36" x H 24"	
UC-17	Upper Cabinet	1	Lacasse Neocasse Upper Cabinet with 2 doors	Cabinet Finish: High pressure laminate Colour: Willow Grey WGR Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 32" x H 16"	
UC-13	Upper Cabinet with Open Shelf	1	Lacasse Neocasse Half Open Upper Cabinet with Double doors, lock	Cabinet Finish: High pressure laminate Colour: Willow Grey WGR Handle: 5" U handle brushed nickel Keyed alike	D 19.25" x W 30" x H 30"	
CT-3	Countertop and backsplash	1	Lacasse Neocasse Laminate countertop	Countertop: High pressure laminate Colour: Wilsonart Glacier Quartzite 5025K-22	D 24" x W +/-9'-1" (site verify) Backsplash H 4"	
CT-4	Countertop and backsplash	1	Lacasse Neocasse Laminate countertop	Countertop: High pressure laminate Colour: Wilsonart Glacier Quartzite 5025K-22	D 24" x W +/-2'-1" (site verify) Backsplash H 4"	

Casework Schedule - Laurentian University Interprofessional Health Simulation Centre						
ITEM	**TYPE**	**QTY**	**DESCRIPTION**	**FINISHES**	**DIMENSIONS**	**IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)**
BATHROOM SE311A						
WMC-1	Wall Mounted Sink Cabinet	1	Lacasse Neocasse Wall mounted sink cabinet with false front and 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Willow Grey WGR Keyed alike	D 24" x W 36" x 23 H "	
WMC-2	Wall Mounted Cabinet	1	Lacasse Neocasse Wall Mounted Cabinet with 3 drawers, locks	Cabinet Finish: High pressure laminate Colour: Willow Grey WGR Handle: 5" U handle brushed nickel Keyed alike	D 24" x W 18" x H 23"	
WFP-1	Wall Cabinet Filler Panel	1	Lacasse Neocasse Wall cabinet filler panel	Panel Finish: High pressure laminate Colour: Willow Grey WGR	W +/- 1" (site verify)	
CT-5	Countertop and backsplash, sidesplash	1	Lacasse Neocasse Laminate countertop	Countertop: High pressure laminate Colour: Wilsonart Glacier Quartzite 5025K-22	D 24" x W +/-4'-7" (site verify) Backsplash H 4" and sidesplash	

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ITEM	**TYPE**	**QTY**	**DESCRIPTION**	**FINISHES**	**DIMENSIONS**	**IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)**
COAT/ STORAGE SE307A						
ST-1	Storage Cabinet	1	Lacasse Neocasse Storage Cabinet with 2 doors c/w 4 adjustable shelves and 1 fixed shelf (middle)	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel	D 24" x W 33" x H 84"	
ST-2	Storage Cabinet at corner	1	Lacasse Neocasse Storage Cabinet with 1 door c/w 4 adjustable shelves and 1 fixed shelf (middle)	Cabinet Finish: High pressure laminate Handle: 5" U handle brushed nickel	D 24" x W 33" x H 84" Door W 16.5"	Refer to Casework Elevations
ST-3	Open Coat Cabinet	4	Lacasse Neocasse Open Coat Cabinet cw coat rod and fixed shelf	Cabinet Finish: High pressure laminate Colour: Acacia AIA	D 24" x W 33" x H 84"	Refer to Casework Elevations
SFP-2	Storage Cabinet Filler Panel	2	Lacasse Neocasse filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W +/-4" (site verify)	
SFP-3	Storage Cabinet Filler Panel	1	Lacasse Neocasse filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W +/-1" (site verify)	
VP-3	Valance Panel	1	Lacasse Neocasse Valence Panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W: 11'-8" (site verify) H: 4"	
VP-4	Valance Panel	1	Lacasse Neocasse Valence Panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W: 4'-3" (site verify) H: 4"	

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ITEM	**TYPE**	**QTY**	**DESCRIPTION**	**FINISHES**	**DIMENSIONS**	**IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)**
KITCHENETTE SE307B						
BC-4	Base Cabinet with 2 door and 2 drawer	1	Lacasse Neocasse Base cabinet with 2 doors and 2 drawers, locks	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 23" x W 30" x H 35"	
BC-5	Base Cabinet with 2 door and 2 drawer	1	Lacasse Neocasse Base cabinet with 2 doors and 2 drawers, locks	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 23" x W 33" x H 35"	
BC-6	Base Cabinet with 4 drawers	1	Lacasse Neocasse Base cabinet with 4 drawers, locks	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 23" x W 15" x H 35"	
BC-13	Base Cabinet with pull out waste & recylcing	1	Lacasse Neocasse Base cabinet with pull out waste and recycling module, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 23" x W 18" x H 35"	
BC-3	Sink Base Cabinet	1	Lacasse Neocasse Sink base cabinet with false front with 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 23" x W 30" x H 35"	

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ITEM	TYPE	QTY	DESCRIPTION	FINISHES	DIMENSIONS	IMAGES (MODEL REFERENCE ONLY. REFER TO FINISHES FOR COLOUR)
BFP-1	Base Cabinet Filler Panel	1	Lacasse Neocasse Base cabinet filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W +/-1" (site verify)	
CT-6	Countertop and backsplash	1	Lacasse Neocasse	Countertop: High pressure laminate Colour: Wilsonart Beachwalk 5044-60	D 24" x W +/-10'-7" (site verify) Backsplash H 4" and sidesplash	
UC-6	Upper Cabinet	1	Lacasse Neocasse Upper Cabinet with 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 30" x H 24"	
UC-13	Upper Cabinet with Open Shelf	1	Lacasse Neocasse Half Open Upper Cabinet with Double doors, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 19.25" x W 30" x H 30"	
UC-14	Upper Cabinet	2	Lacasse Neocasse Upper Cabinet with 2 doors, lock	Cabinet Finish: High pressure laminate Colour: Acacia AIA Handle: 5" U handle brushed nickel Keyed alike	D 14" x W 33" x H 24"	
UFP-2	Upper Cabinet Filler Panel	1	Lacasse Neocasse filler panel	Panel Finish: High pressure laminate Colour: Acadia AIA	W 1" (site verify)	